

International Liquidity and the Role of the SDR in the International Monetary System

PETER B. CLARK and JACQUES J. POLAK*

This paper describes how the changed conditions in the international monetary system have undermined the role originally envisaged for the SDR. It argues that the concept of a global stock of international liquidity, which was fundamental to the creation of the SDR, is now no longer relevant. Nonetheless, there are good reasons to satisfy part of the growing demand for international reserves with SDR allocations: (i) there are efficiency gains, as SDRs can be created at zero resource cost, and thus obviate the need for countries to run current account surpluses or engage in expensive borrowing to obtain reserves, and (ii) there would be a reduction in systemic risk, as SDRs would substitute to some extent for borrowed reserves, which are a less reliable and predictable source of reserves, especially in times of crisis. [JEL F33, F41]

The introduction in 1969 of the special drawing right (SDR), the reserve asset issued by the International Monetary Fund, was prompted by the desire to establish a mechanism for the deliberate creation of international reserves that would supplement existing reserve assets. In the 1960s these assets were mainly in the form of U.S. dollars, the supplies of which were constrained by the Bretton Woods system of fixed exchange rates, and of gold. The SDR was seen as a way out of the so-called Triffin dilemma whereby additions to official dollar holdings were seen as undermining the stability of the system, given the tendency on the part of some central banks to convert their dollar reserves into gold, thereby drawing down the limited U.S. gold stock.

*Peter B. Clark was a Senior Advisor in the Research Department of the International Monetary Fund when this paper was written. Jacques J. Polak was the Director of that Department from 1958 to 1979. They wish to thank Barry Newman, Harry Trines, J. Onno de B. Wijnholds, and an anonymous referee for comments on an earlier draft.

The first allocation followed shortly after the establishment of the SDR in broadly equal installments on January 1, 1970, 1971, and 1972, with the total amounting to SDR 9.3 billion. The second allocation, totaling SDR 12.1 billion, took place in three similar annual installments on January 1, 1979, 1980, and 1981. Since that time there have been no further allocations. The Fourth Amendment of the IMF Articles of Agreement, which provides for a special onetime allocation of SDR 21.9 billion and was approved by the IMF Board of Governors in 1997, still awaits ratification by the U.S. Congress before it can go into effect. Most recently, in December 2001, the IMF Executive Board discussed the question of whether there should be an SDR allocation in the period 2002–2006 and (as it had done on many previous occasions) registered insufficient support for it. With no allocation for over two decades, the share of SDRs in total world reserve assets has declined to about 1 percent.

That figure is a far cry from the initial expectations for the future of the SDR. Thirty-five years ago, one of us, using the kind of calculations that entered into the Managing Director's proposal for the first allocation, ventured the forecast that SDRs might account for over half of total world reserves before the end of the twentieth century (Polak, 1967). The figure also puts into question the degree of conviction with which the membership, some 10 years later as part of the Second Amendment, embraced (not just once but twice) the "objective . . . of making the SDR the principal reserve asset in the international monetary system."¹

While the opposition on the part of most industrial countries continues to prevent a general allocation of SDRs, proposals for use of the SDR mechanism for purposes different from those contemplated by the Articles continue to be launched by some countries and in nonofficial circles. In the mid-1980s, Executive Directors from Belgium, France, and India each sponsored a slightly different plan under which creditor countries would lend to the IMF the SDRs allocated to them, for use by the IMF in conditional credits to developing countries. The Board as a whole saw no merit in this unorthodox method of financing the Fund's business and rejected all three proposals (Boughton, 2001, pp. 948–49). In 1988, President Mitterrand of France proposed that the developed countries contribute their shares in a new allocation of SDRs to a special fund in the IMF that would guarantee the interest payments on certain obligations issued by debtor countries.

More recently, ideas have been put forward to use the SDR mechanism to enable the Fund to play the role of lender of last resort without having to worry about the means to do so. A Task Force sponsored by the Council on Foreign Relations suggested that a new "contagion facility" in the Fund be funded by a onetime, very large allocation of SDRs, with all members donating the SDRs received to that facility (Goldstein, 1999, p. 111²). Richard Cooper goes one step further. To provide the IMF with "sufficient resources to cover even the worst

¹In Article VIII, Section 7, and, again, in Article XXII.

²The report mentions illustrative numbers of \$45 billion and \$100 billion. The leading proponent of the idea on the Task Force, David A. Lipton, aimed even higher, namely an allocation of \$300 billion, with the participants in the New Arrangements to Borrow (NAB) depositing their allocations (\$205 billion) in a trust fund to be used only "as a last line of defense to defend the international financial system in times of dire threat" (Lipton, 1999, p. 363).

contingency,” he would amend its Articles of Agreement to allow it to create SDRs, on a temporary basis, as needed to deal with financial crises and to forestall creditor panic (Cooper, 2002, p. 99).

While SDR allocations have not found favor on the part of most industrial countries, they have recently received attention in nonofficial circles. For example, the Zedillo Report (United Nations, 2002) advocates a resumption of SDR allocations, and George Soros (2002) has put forward a proposal that would use part of the SDRs created under the Fourth Amendment, as well as of subsequent annual allocations, as a trust fund to finance the provision of global public goods and possibly other development assistance activities. These proposals were discussed at the UN International Conference on Financing for Development held in Monterrey, Mexico, in March 2002, but were not endorsed in the Monterrey Consensus.

Against this background, it would appear opportune to take stock of what role, if any, the SDR can play in the international monetary system. It needs to be recognized at the outset that the conditions in the international financial system that gave rise to the creation of the SDR no longer apply. The concept of a given stock of global international liquidity, which provided a constraint on the operation of the system of pegged rates, is no longer relevant. International reserves can now expand in response to demand, and the role of the SDR in relieving the constraint on the supply side has correspondingly diminished.

Notwithstanding the major changes in the international monetary system, we argue that the SDR can play a role in supplementing the growth of other reserve assets by providing essentially owned reserves to many Fund members at lower cost than they could achieve by borrowing on world capital markets. This lower cost is not likely to be matched by a correspondingly higher expected default risk borne by Fund membership in general. These owned reserves reduce the vulnerability of these holders to fluctuations in borrowing costs and thereby enhance the stability of the international monetary system, which benefits all countries. As the demand for reserves increases over time in response to the expanding scale on international transactions, modest SDR allocations are unlikely to result in significant drawdowns of total reserves (resource transfers), but countries may substitute out of SDRs into other reserve assets to obtain a higher return.

I. “Shortage” of International Liquidity and the Creation of the SDR

The creation of the SDR—the end result of a massive intellectual and negotiating effort that occupied financial policymakers for most of the 1960s—was designed to bring a definitive solution to a problem that had hovered as a threat over the international monetary system since the end of World War I. That problem was the potential inadequacy of total international liquidity and the fear that this inadequacy might hamper the growth of the world economy. If countries collectively did not possess, and could not obtain, reserves adequate to meet the balance of payments deficits that they were likely to encounter from time to time, they would feel the need to throttle down the growth of their economies. And if many countries adopted precautionary measures of this nature, the world economy might become stagnant.

In the 25 years from about 1880 until the outbreak of World War I, the gold standard prevailed over a large part of the world economy, and after the war the return to that standard was generally considered part of the “return to normal” (Nurkse, 1944, p. 7). But there was legitimate concern among economists whether the decline, resulting from the wartime and postwar inflation, in both the real value of the world stock of gold and in the profitability of gold mining, would make this possible on a lasting basis.

Ever since the end of World War I, “the adequacy of international liquidity” thus became the subject par excellence of international economics. It was discussed, but not resolved, at a number of intergovernmental conferences in the 1920s and early 1930s. It reemerged as an issue in the wartime plans for the IMF, and again in the early years of that organization. And, of course, it became *the* topic of international financial diplomacy in the course of the 1960s, leading to a major amendment of the Articles of Agreement of the IMF designed to create a new type of liquidity by the Fund, the “special drawing right” or SDR, and to the first “allocation” of SDRs, on January 1, 1970.

And then, only a few years later, the whole issue began to vanish from the screen. Since, let us say, 1980, there is no longer a concept of finite international liquidity that is seen to act, for better or for worse, as a constraint on, or an encouragement of, national economic policies. The “problem” of international liquidity is no longer discussed at meetings of the International Monetary Fund. Even the disappearance of the problem that enthralled the international financial community for over half a century seems to have gone largely unnoticed.

What is “international liquidity”? From the point of view of an individual country “international liquidity” (of the unconditional sort, that is without counting access to international credit of uncertain availability) is simply a synonym for “reserves,” and reserves are those assets of a country’s monetary authorities that can be used to finance a balance of payments deficit (Williamson, 1973, pp. 686–87). There exists a large body of studies concerning the optimum level of reserves that an individual country should seek to maintain and this subject has lost none of its relevance. But if total international liquidity meant no more than the sum of the reserves held by all countries, in the same way as “world trade” is the sum of the imports or exports of all countries, “the adequacy of total international liquidity” would not be an issue. That issue existed only as long as there was a limit on the total amount of the assets in the system that could serve as countries’ reserves.

The nature of these assets changed over time. Before World War I, the critical limit to reserves was the amount of gold held by central banks, and the constraint on the growth of that stock over time was seen as a function of gold production and the absorption of gold in the arts—even though many developing countries held a large portion of their reserves in the form of claims in sterling or dollars. The 1922 Genoa conference attempted to loosen the gold constraint by encouraging industrial countries also to hold reserves in the form of claims on reserve centers. But while it was hoped that the adoption of this recommendation by many countries, described as the replacement of the gold bullion standard by the “gold exchange standard,” would loosen somewhat the constraint on international liquidity exercised by the stock of gold, it did not remove that constraint. The Gold

Delegation of the Financial Committee of the League of Nations warned in 1930 of an imminent shortage of gold compared to the amount required to support the monetary demand for it at the prevailing price level, and assuming a growing world economy. But it also noted, as possible threats to the system, the very uneven distribution of the stock of official gold, in particular the large holdings of France and the United States, and the tendency of major countries to disregard the “rules of the game” of the gold standard.

That standard began to crumble even earlier than the Gold Delegation had predicted, starting with sterling moving off gold in 1931. The United States, and then other industrial countries, followed in 1933 to 1936. As a result of the chain reaction of devaluations, the value of the stock of gold in official reserves had, toward the end of the 1930s, increased by some 70 percent in terms of national currencies and, because of the collapse of prices during the Great Depression, even more in real terms (Nurkse, 1944, p. 132). Indeed, in 1936/37, the fear of an inflationary effect of the increased supply of gold led to a widespread discussion of the desirability of reducing its price (Nurkse, 1944, p. 133).

Although these developments removed for the time being any risk of a liquidity shortage, they were not seen as a lasting solution to the problem of reserve adequacy. The Keynes Plan for an International Clearing Union (Keynes, 1942) was designed, *inter alia*, to meet the need for “a quantum of international currency, which . . . is governed by the actual current requirements of world commerce, and is also capable of deliberate expansion and contraction to offset deflationary and inflationary tendencies in effective world demand.” When the IMF was designed during World War II to provide a regime of liberalized payments under exchange rates that were to be maintained at agreed par values, and with IMF credit facilities to assist members in dealing with balance of payments problems, the specter of a shortage of international liquidity was still seen lurking in the background. A remedy for this eventuality was built into the Articles of Agreement of the Fund, which permitted the Fund to “make uniform proportionate changes in the par values of the currencies of all members”—that is, to raise the world price of gold in terms of all currencies and to do this in an orderly way, in contrast to the haphazard experience of the 1930s.³

As the IMF started operations, the question of the adequacy of international liquidity was soon again raised and the Fund issued two reports arguing that the problem was not a matter for serious concern (IMF, 1953 and 1958). The Fund had already decided in 1949, after a long discussion in the Executive Board, that the remedy provided by the Articles, a uniform change in the price of gold, would be unworkable because if it were once applied, it would forever after undermine confidence in the new gold value of the dollar (Horsefield, 1970, pp. 254–55).

For 15 years after the end of World War II concern about the liquidity issue remained subdued as balance of payments deficits of the United States enabled other countries to rebuild their reserves, both by accumulating U.S. dollars (foreign holdings of which started out very low) and by buying back part of the excessively

³Article IV, Section 7, of the original Articles of Agreement. The provision gave the United States, the United Kingdom, and, had it joined, the U.S.S.R. a veto on a decision for a uniform change of par values.

large U.S. holdings of gold. But by 1960 Triffin had tabled his “dilemma,” suggesting a joint limitation on the extent to which U.S. dollars and U.S. gold could contribute to the reserves of other countries. While that dilemma did not pose a precise limit, it suggested that, from the point of view of confidence in the system, the amount of reserves that the rest of the world could accumulate by the withdrawal of gold from the United States plus the buildup of foreign official dollar balances should not go beyond the point where these latter balances exceeded the remaining U.S. gold stock. If the need for reserves continued to grow beyond this point, the world risked entering either a period of restrictions, currency uncertainty and deflation caused by a shortage of reserves, or a period of financial uncertainty caused by waning confidence in its main reserve currency.

Triffin’s warnings set off a widespread debate on the subject of international liquidity, initially among leading professional economists, including (to name only a few) Marcus Fleming, Milton Gilbert, Roy Harrod, Peter Kenen, and Fritz Machlup.⁴ As the official community—treasuries and central banks—also became gradually convinced of the realism of the Triffin dilemma, at least as a contingency with a degree of probability that could not safely be ignored, it undertook a long and convoluted series of studies and negotiations on the subject. These stretched over a six-year period, from 1963 to 1969, but in the end they led to an agreed international answer: the creation of an international asset that (unlike gold or reserve currencies) would have no other function than to serve the need of the system for an adequate but not excessive quantity of reserves. The method chosen to bring this “pure” reserve asset into being was to create a facility in the IMF that was authorized, under strict safeguards against abuse, to create and annul (“allocate” and “cancel”) a new form of reserve asset with the awkward name of “special drawing right” (SDR). In accordance with its intended function, the SDR would circulate in the official circuit only; it could be held only by governments, central banks, the IMF, and a narrowly defined group of other “official holders.”

The creation of the SDR was not accompanied by the abolition of gold and reserve currencies as reserve assets (official discussions to this effect surfaced only later). But the future incremental role for these traditional reserve assets in official reserves was regarded as minor. As far as one could see, newly produced gold was going to be absorbed almost entirely in industry and art, and foreign official holdings of dollars could not be allowed to increase by more than modest annual amounts without undermining confidence in the dollar and risking massive conversions into gold. Thus, the broadly (though perhaps not strongly) held official view underlying the First Amendment was that the SDR mechanism could provide a definitive solution to the problem of managing the supply of international liquidity. In 1969, in conjunction with the adoption of the First Amendment of the Articles of Agreement, Section 10 of the By-Laws of the Fund was amended to instruct the Executive Board to assess “the adequacy of global reserves” in its *Annual Report*, and the next five *Annual Reports* contain a full chapter on international liquidity.

⁴The most comprehensive collection of the profession’s views on the subject of international liquidity at that time is probably found in International Monetary Fund (1970).

As a prerequisite to rational decision making on the required magnitude of SDR allocations or cancellations, the Fund staff made a major effort to define the concept of the optimum level of international liquidity (Fleming, 1961, 1967). "Reserves and reserve growth ought to be increased," Fleming posited, "to the point at which beneficial effects in the form of higher employment and reductions of impediments to international transactions are outweighed by untoward effects in the form of inflation and recourse to official compensatory financing" (Fleming, 1967, p. 172). This statement of principle, it should be recalled, referred not to the reserve policy of an individual country but to global reserves and to a process of weighing positive and negative effects occurring in scores of countries. As noted by Kemp (1970), locating this optimum point for the world as a whole would require someone (the Board of Governors of the IMF?) maximizing a world welfare function of extreme complexity.

It was always obvious that it would take some rather heroic assumptions to move from the theory of the optimum level of international liquidity to a numerical proposal on how many SDRs to create. But the situation in the late 1960s appeared to bring an exercise of that nature within the realm of the possible: two of the components of the supply of liquidity (the stocks of official gold⁵ and SDRs) were locked in the official circuit, and the third one could (and it was expected, would) be kept under control by the United States authorities in order to avoid the risks of the Triffin dilemma. But in fact, a few months after the allocation was made on January 1, 1970, the assumption with respect to the supply of dollars proved to have been wrong. In the course of 1970, U.S. Treasury securities held by nonresidents (essentially foreign central banks) nearly doubled, from \$10.3 billion to \$19.8 billion, and in 1971 they more than doubled, to \$46.3 billion (*IFS Yearbook*). Once the United States moved off gold in August of 1971, protection of the gold stock disappeared as an inducement to prevent an excessive flow of dollars into foreign reserves.

August 1971 was also the beginning of the end of the par value system and the start of a movement toward floating exchange rates. The proposition has often been made that, in pure theory, floating rates dispense with the need for reserves (Cooper, 1970, p. 143), and if this were true, the introduction of a regime of floating rates would have done away with any problem of a shortage of international liquidity from the demand side. As discussed in the next section, empirical studies of the effect of floating on countries' actual reserve policies in the 1970s suggest, however, that its impact was at most small, and the spread of floating since then has been accompanied by persistently large increases of world reserves. But the main impact of floating on the problem of international liquidity was not that this may have brought for many countries some, at best modest, reduction in their demand for reserves. It was that it liberated the United States, and probably also other reserve centers, from concern about the magnitude of the claims on their economies held by one particular category of foreign holders, namely foreign central banks.

⁵In April 1968, the Group of Ten had decided to sever any link between their official gold stocks and the free gold market.

The freedom of capital movements and the desire on the part of investors for the diversification of their assets geographically, as well as in a number of other dimensions, have led to large financial cross-holdings among the major industrial countries. Some aspects of these holdings, such as the potential risk associated with very large foreign claims on the United States, or the shift of the United States from a net international creditor to a net international debtor, have drawn the attention of some observers, though not to the point of inducing serious consideration of possible corrective policies.⁶ In any event, whether these holdings belong to foreign central banks (probably the most stable of all holders) or other foreigners is hardly a matter of concern. Foreign official holders of assets in the United States (which are overwhelmingly foreign central banks) at the end of 2001 of \$1.0 trillion were only a small fraction of total foreign holdings of \$9.2 trillion, or \$6.6 trillion if one excludes foreign direct investment (see Nguyen, 2002).

As a result of these changes in the international monetary system, the issue of “international liquidity” has changed totally from that prevailing at the time the SDR was introduced. Two of the three components of international reserves have almost entirely ceased to function in that capacity. Gold has become a nonmonetary asset; many of even the most conservative central banks are in the process of selling their gold holdings in the market. The stock of SDRs has become so small compared to total reserves (about 1 percent) that it has become almost exclusively a vehicle for transactions between the Fund and its members. Thus the enormous increase in world reserves that occurred since 1970 was almost entirely in the form of claims on reserve centers. These claims were, however, only a small proportion of the total claims on these centers (see the figures for the United States above). For any particular group of holders, such as central banks, there was for all practical purposes no limit from the supply side on the amount they could collectively accumulate. The problem of the global adequacy of international liquidity is no longer with us, not because it has been resolved, but because it has disappeared.

With it evaporated the idea (which had never taken deep roots) that the course of the world economy might be steered by a judicious management of the stock of international liquidity. Article XVIII, which laid down the principle that the allocation of SDRs should “meet the long-term global need, as and when it arises, to supplement existing reserve assets . . .” can no longer serve as a guide for allocation in the manner those words were interpreted in 1969. That point was well made by both Mussa (1996, p. 80) and Williamson (1996, pp. 112–13) at the Fund’s 1996 conference on the future of the SDR, and it has been implicitly acknowledged by the Fund’s ceasing, since 1990, to make the required annual assessment of the adequacy of international liquidity (without repealing By-Law 10). In fact, as pointed out by Ahluwalia (1996, pp. 92–93) at the same conference, the 1978 decision to allocate could not have been taken if these words had not been ignored at that time. Any case for future allocations of SDRs will have to be based on grounds other than the need of the system for additional liquidity; instead, “need” will have to be viewed in terms of other benefits to the system, in particular the

⁶See, for example, the essay on “How Worrisome Are External Imbalances?,” in Chapter II of the IMF’s September *World Economic Outlook* (2002).

distributional benefit of permitting low-income countries to hold reserves at a much lower interest rate than they would have to pay in the market, and a lesser dependence of the system on borrowed reserves that could be recalled at the time they were most needed.

II. Demand for Reserves After the Demise of the Par Value System

The preceding section argued that as the concept of a given total stock of international liquidity has disappeared with the breakdown of the Bretton Woods system, so has the basic rationale for the allocation of SDRs based on global reserve needs in the face of expanding current and capital account fluctuations. Additions to a country's reserve holdings can be generated by running a balance of payments surplus, but this can entail high costs in terms of forgone consumption and investment. Alternatively, reserves can be borrowed on international capital markets. However, while access to capital markets has expanded enormously in the last 30 years, many countries have limited or no access. Moreover, while borrowed reserves can substitute for owned reserves to some extent, volatile capital flows demonstrate that undue reliance on international capital markets for this purpose can be risky. As described in detail in the next section, these considerations argue for SDR allocations as a supplement to other reserve assets to improve the functioning and stability of the international monetary system.

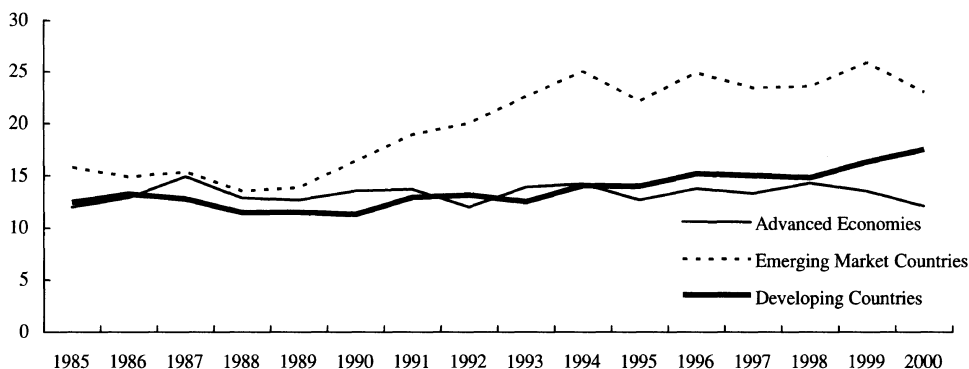
Before moving to this argument, we first describe some of the factors affecting the demand for reserves as well as the terms on which reserve assets can be acquired. This sets the stage for considering the case for allocating SDRs in order to meet the need on the part of reserve-constrained countries for owned reserves at low cost.

As international reserves are used primarily to finance external imbalances directly or indirectly through intervention in foreign exchange markets, the level of reserves would be expected to bear a fairly close relationship to those factors that affect the magnitude of these imbalances. Most studies of reserve-holding behavior indicate that such holdings are positively associated with a scale variable (either aggregate output or imports) and to external payments variability.⁷ There is less compelling evidence that reserve holdings depend on the nature of a country's exchange rate regime, the degree of openness, and the opportunity cost of holding reserves.

One relevant scale variable is the level of trade in goods and services. Figure 1 shows the ratio of reserves to imports of goods and services, measured as weeks of imports, for three major country groupings: advanced countries, emerging market economies, and developing countries. For the advanced countries, this ratio has fluctuated somewhat, but has not shown any significant net change since 1985. For developing and emerging market countries, there has been some upward trend, which has been particularly evident for the latter group of countries. Thus, based on past trends, the long-run future demand for reserves would appear to be rising at least in proportion to imports of goods and services.

⁷See Flood and Marion (2002) and *World Economic Outlook* (2003).

Figure 1. The Mean Ratio of Nongold Reserves to Imports of Goods and Services, 1985–2000
(Number of weeks import cover)



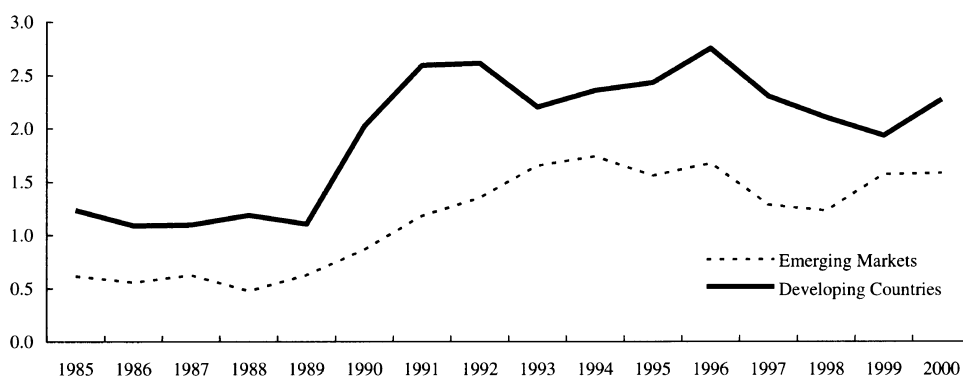
Sources: IMF, *International Financial Statistics* and *World Economic Outlook*. The classification of advanced and developing countries follows that in the *World Economic Outlook*. The list of emerging market countries follows that of Morgan Stanley Capital International.

These countries are subject to sudden withdrawals of capital, whether caused by adverse domestic developments, changes in mature financial markets, or contagion from other countries. The increasing openness of the capital account has thus heightened the vulnerability of emerging market economies to fluctuations arising in this component of the balance of payments. Reserves relative to short-term debt rose sharply in the early 1990s for emerging markets and developing countries (Figure 2), a finding that is also consistent with the enormous increases in reserves for these two groups of countries shown in Table 1. Note also that this indicator is used in the early warning system model developed by Fund staff for emerging market economies⁸ and that the Fund has been urging members to give greater prominence to holding adequate stocks of reserves to reduce external vulnerability from capital account disturbances. The future evolution of the short-term debt stocks of these countries would therefore have a bearing on the demand for reserves, in addition to the growth in their imports.

Other developments could act to reduce the demand for reserves. To the extent that countries respond to external imbalances by changes in their exchange rates, the need for reserves to intervene in the foreign exchange market would be expected to diminish. This expectation appears to conflict, however, with the massive increase in reserves for most countries since 1970. Even if a country only lightly manages its exchange rate and has a relatively closed capital account, it would still want to hold reserves, and probably increase them over time, in order to help smooth output fluctuations arising, for example, from large movements in the terms of trade. Some empirical studies (see, for example, Lizondo and Mathieson (1987), and Bahmani-Oskooee and Malixi (1987)) have found that the move to greater exchange rate flexibility following the collapse of the Bretton Woods system did appear to reduce the demand for reserves for both developed and developing countries. However,

⁸See Berg, and others (1999).

Figure 2. The Median Ratio of Nongold Reserves to Short-Term Debt, 1985–2000



Sources: IMF, *International Financial Statistics*; and Bank for International Settlements database.

Table 1. Nongold Reserves, by Major Groups and Selected Countries, 1970–2000

(In billions of SDRs)

	1970	1975	1980	1985	1990	1995	2000
Advanced Economies of which: ¹	41.9	89.1	196.4	247.6	466.7	599.3	860.4
Canada	3.9	3.8	2.4	2.3	12.5	10.1	24.5
Hong Kong SAR	...	...	...	...	17.3	37.3	82.5
Japan	4.3	10.2	19.3	24.3	55.2	123.3	272.4
Korea	0.6	0.7	2.3	2.6	10.4	22.0	73.8
Emerging Markets of which: ¹	8.8	42.3	70.9	93.8	100.3	278.2	470.0
China	...	...	2.0	11.6	20.8	50.7	129.2
India	0.8	0.9	5.4	5.8	1.1	12.1	29.1
Mexico	0.6	1.2	2.3	4.5	6.9	11.3	27.3
Poland	...	...	0.1	0.8	3.2	9.9	20.4
Developing Countries ² of which: ¹	3.7	9.4	25.5	25.5	19.2	31.1	68.5
Algeria	0.1	1.0	3.0	2.6	0.5	1.3	9.2
Kuwait	0.1	1.3	3.1	5.0	1.4	2.4	5.4
Libya	1.5	1.8	10.3	5.4	4.1	4.1	9.6
United Arab Emirates	...	0.8	1.6	2.9	3.2	5.0	10.4
Total ³	54.3	140.8	292.8	366.9	586.1	908.7	1,398.9

Source: IMF, *International Financial Statistics*.

¹ Economies with the largest increase in reserves (in billions of SDRs) between 1995 and 2000.

² Excluding emerging market economies.

³ The increase in total world reserves between 1970 and 1995 is slightly overstated because data for a few economies became available only in the latter part of the period.

Reinhart and Rogoff (2002) find that the breakup of Bretton Woods had a much less significant impact on exchange rate regimes than generally believed.⁹ This may explain why apparently floating rates appear to have caused only a modest reduction in the demand for reserves. Moreover, even with a pure float, in countries where the banking system is exposed to foreign currency risk, the central bank may wish to hold large reserves in order to be able to stem a run on domestic currency deposits.

As noted in the preceding section, there is nothing in the present international monetary system that stands in the way of monetary authorities achieving their desired reserve holdings, subject, of course, to the cost considerations they face. These reserves are overwhelmingly in the form of foreign exchange, with the U.S. dollar comprising about two-thirds of the total in the last three years.¹⁰ As the reserve-currency countries or areas (United States, EMU, Japan, and the United Kingdom) have floating exchange rates and up to now have faced few or no constraints in increasing their liabilities to foreign official holders, there is essentially no limit to the expansion of reserves in this form. Hence, except for the SDR, the stock of international reserves is fully demand determined.

However, the terms on which countries can increase their stock of reserves vary widely. Most advanced countries can borrow reserves at interest rates that are only marginally higher than the return on reserve assets. Thus, as long as there is little or no credit risk associated with lending to these countries, they can satisfactorily finance increases in desired reserve holdings by borrowing in international capital markets and have no need for an SDR allocation to supplement reserves, although they may find it useful to hold a portion of their reserves in the form of SDRs for the purpose of portfolio diversification.

The great majority of Fund members—broadly speaking, the nonindustrial countries—does not share this privileged position. Emerging market borrowers generally face much higher interest rates on their sovereign bonds, and these rates vary considerably over time. Figure 3 depicts the EMBI sovereign spread (an average across emerging markets) from 1992 to the present. Only twice—most recently in the second half of 1997 before the onset of the Asian crisis—did this spread dip below 400 basis points; for the ten-year period it has averaged around 800 basis points. Moreover, the cost of private market financing to emerging markets fluctuates sharply in response to both conditions in emerging markets themselves—for example, the Mexican and Russian crises—and developments in mature markets. Thus for most of these economies, the cost of acquiring and holding international reserves is substantial and subject to considerable uncertainty.

The acquisition of reserves tends to be even more costly for the majority of Fund members that do not have the option of borrowing foreign exchange reserves in private markets.¹¹ For these countries, which include most low-income developing countries as well as many transition countries, the primary means of obtain-

⁹Looking at market-determined exchange rates, they find that it is difficult to detect any change in exchange rate behavior for many countries, with the demise of the Bretton Woods system manifested largely in the shift to floating of the U.S. dollar, the yen, and the deutsche mark.

¹⁰See IMF *Annual Report* 2002, Appendix I, International Reserves.

¹¹Members may also have access to official sources of borrowing and grants, but these resources are typically earmarked for development purposes rather than held as reserves.

Figure 3. Emerging Market Bond Spread, 1992–2002 (mid-September)
(Basis points)



Source: JP Morgan Chase emerging market bond index (Brady narrow) sovereign spread.

ing reserves is by reducing domestic demand and therefore imports, which imposes a heavy cost in terms of forgone consumption and investment.

III. The Role for the SDR in the Post Bretton Woods System

Table 1 (above) showed that, notwithstanding any shift to greater flexibility in exchange rates, world reserves have increased by 25 times in the last 30 years. There are no strong grounds to doubt that reserves will continue to show a positive trend. Should some of this growth in demand for international reserves be met by modest allocations of SDRs?

The Cost Advantage of Providing Reserves in the Form of SDRs

Our answer to this question is in the affirmative, as we find persuasive the case made by Mussa (1996) for resuming allocations on the ground that SDRs can be created essentially costlessly, whereas reserves acquired by running a current account surplus or by borrowing in capital markets involve real costs for a country. Recipients of SDR allocations pay the SDR rate of interest on their cumulative allocations (plus a very small assessment to cover the costs of administering the SDR Department) and receive the same rate of interest on their total SDR holdings. For countries that hold their entire cumulative allocation, the net carrying cost of these reserves is effectively zero. If a country makes net use of its SDR allocation, it

incurs a net cost based on the SDR interest rate. In this way, the net user of SDRs compensates the net holder at the SDR interest rate for the real resources acquired in the drawdown of reserves.

Thus there are efficiency gains for the world economy if SDR allocations substitute, at least in part, for reserves that otherwise would be acquired by running a current account surplus or by borrowing on world capital markets. The substitution of an outside reserve asset, the SDR, for reserves in the form of liabilities of reserve currency countries creates seigniorage gains, similar to the substitution of domestic fiat money for commodity money such as gold.¹² Given that the vast majority of Fund members face high borrowing costs or high real opportunity costs, it seems reasonable that at least part of their reserve holdings be met costlessly through SDR allocations. Their savings on the cost of reserve accumulation could then be used for domestic consumption or investment.

The Risk Implications of SDR Allocations

It can be argued, however, that the assumption that SDR allocations provide reserves at no cost to Fund members that are seen by the market as poor credit risks fails to take into account the risk of default on the part of those countries.¹³ The interest rate spread on market borrowing is generally regarded as the premium that private lenders require as compensation for the risk that borrowers will not fully comply with the terms of the loan contract.

That argument appears to proceed from the assumption that the provision of reserves through allocations of SDRs would leave the risk of default unchanged, but reallocate it between private lenders and the Fund. On the one hand, if net users of SDRs meet their SDR obligations without exception, the Fund membership faces no credit risk,¹⁴ but private lenders to these countries face higher credit risks, reflecting the perception of seniority accorded to obligations to the IMF, and would therefore charge higher spreads. In this case there may be no net cost savings to some users of SDRs, as what they gain from low-cost SDRs would be matched by higher spreads. On the other hand, if account is taken of the possibility that some Fund members may default on their SDR obligations (a risk that could only materialize in the remote event of cancellation of SDRs or liquidation of the SDR Department), the default risk would be shared between the Fund membership and the private sector.¹⁵ Thus, to the extent that additional allocations raise the risk that

¹²When the SDR interest rate was originally set at 1.5 percent, SDR allocations conferred significant seigniorage benefits, which generated proposals to link SDR allocations to aid for developing countries. Now that the SDR interest rate is market-determined, attention has shifted to the benefits accruing to countries that face costs of acquiring reserves substantially above the SDR interest rate.

¹³For a discussion of this point, see IMF (2001).

¹⁴The Fund automatically debits a member's SDR account for the interest due. But once this account has been reduced to zero, the member must purchase enough SDRs to cover the interest cost.

¹⁵There are currently six members in arrears on their SDR charges: Afghanistan, the Democratic Republic of Congo, Iraq, Liberia, Somalia, and Sudan (amounting to SDR 104 million or 0.5 percent of allocations). Such arrears do not give rise to an interest risk for net holders because the Fund is required under Article XX, Section 1, to pay SDR holders the full amount of SDR interest; this is achieved by issuing SDRs to meet any shortfall, which are cancelled as overdue SDR charges are settled.

there will be losses from members who default on their SDR obligations, such allocation may not prove completely costless for Fund members.

Against this increase in risk are two factors that go in the other direction. First, the substitution of SDRs for borrowed reserves would save borrowing countries interest charges, which would make them better credit risks from the point of view of private credit markets and thus tend to lower credit spreads. It would also reduce the default risk of members in the event of liquidation or cancellation.

Second, reserves supplied by SDR allocations would tend to reduce systemic risk and thereby tend to reduce default risk on the part of individual countries. This is the case because they are a permanent addition to the world's stock of reserves, except in the unlikely event of a decision (which requires an 85 percent majority) by the Fund to cancel outstanding SDRs. By contrast, reserves obtained via borrowing in the capital market may be withdrawn under inauspicious circumstances. Such reserves need to be periodically refinanced, as otherwise existing reserve assets will need to be used to pay down maturing debts. Doubts on the part of foreign creditors about the desirability of refinancing are likely to arise when a country is facing balance of payments difficulties and in need of more, not fewer, reserves. In a general crisis situation, several countries would simultaneously face rapidly rising costs of refinancing, which would exacerbate their reserve positions and lead to possibly self-fulfilling runs on their currencies. In particular, where contagion is present, the terms and conditions for private market borrowing may fluctuate sharply and not be reflective of the country's own underlying payments situation. Indeed, in the Asian, Russian, and Latin American crises, market sentiment over-reacted to negative news in individual countries, adversely affecting the ability of other countries to refinance their debt. Borrowed reserves thus suffer from being less reliable and predictable sources of reserves than SDRs, and their cost increases in times of crises, whereas the SDR interest rate is largely unaffected, and may even decline. From this perspective, therefore, borrowed reserves entail more risk for the international monetary system than owned reserves in the form of SDRs, which can be seen as enhancing the "quality" of the stock of international reserves.

The Use of Allocated SDRs: Additions to Reserves, Debt Repayment, or Increased Spending Abroad

Notwithstanding the efficiency gains from using low-cost SDRs to satisfy the growth in reserve demand, as well as the systemic benefits from substituting SDRs for borrowed reserves, SDR allocations have been opposed on the ground that the SDRs allocated will be spent rather than held as reserves. This argument seems to be based in part on the view that developing countries are too poor to hold significant or adequate reserves, and that they are prone to "misuse" any additions to them to satisfy short-run consumption or investment needs rather than hold them and realize the return from having a stock of liquid assets to buffer shocks to their economies. Their increased spending, it is feared, could lead to higher prices and, consequently, the addition to nominal reserves would not result in increased real reserves (see Fleming, 1970). However, neither the facts nor elementary theory support this view.

First, most countries add to their reserves in rough proportion to the scale of the factors generating payments imbalances. Given this expansion in the demand for reserves, there would be no reason to expect that a modest increase in supply in the form of SDRs would lead countries to change their reserve policies and expand their absorption of goods and services.

Second, it is plausible that countries' holdings of reserves will, on average, reflect the marginal costs and benefits of assets to buffer their economies from the effects of shocks that may arise domestically or abroad. To the extent that the relative scale of such shocks increases over time, the marginal benefit of additional reserves would also rise, leading to an increase in average reserve holdings, unless offset by rising marginal costs of holding reserves. SDR allocations lower the average cost of reserve holdings, but unless they are so large as to eliminate the need for reserves from other sources, they will not lower the marginal cost. Thus, when a country receives SDR allocations at a rate below the increase in its demand for reserves, it has no incentive to increase its spending, except perhaps by the amount saved by the interest differential between allocated SDRs and reserves borrowed in the market.¹⁶

Allocations in excess of the secular growth in demand for reserves have never been envisaged. Discussions of SDR allocations by the Executive Board have always been in terms of supplements to the growth in other reserve assets, that is, an expansion in the supply in SDRs that would be a fraction of the total increase in demand for reserves. But since allocations to individual members are made as equal percentages of quotas, it is not excluded that an allocation that constitutes, for the average member, no more than a modest share of its growth in demand for reserves may well be in excess of that demand for some members. For these members, sticking to their reserve policy would mean disposing of most of the excess reserves by reducing high-cost external debt, including (especially for countries without access to international capital markets) reduced reliance on expensive supplier credits.

The saving of interest on reserves obtained by means of allocations of SDRs, which is particularly important to the poorer members of the Fund, is part of the rationale for the resumption of regular allocations of SDRs—the other part being the improved stability of the system if a larger proportion of reserves is owned and a smaller proportion borrowed. A comment is needed on the probable size of this saving. Mussa (1996, p. 78) has calculated that a *onetime* allocation of SDR 36 billion (which was the amount suggested by the Managing Director at that time) to the membership as a whole would save the nonindustrial members of the Fund about SDR 1 billion in annual interest. If the Fund resumed *annual* allocations of that order of magnitude, the annual benefit would of course increase over time

¹⁶Of course, there will always be some countries for which the opportunity cost of holding reserves is so high that even modest SDR allocations will exceed the secular increase in their demand for reserves (which may be close to zero), inducing them to spend most or all of any allocations they receive. For example, of all members that received allocations in the 1969–71 period, 10 held smaller total reserves in 1989 than in 1969. Six of these 10 countries were in arrears to the Fund in 1989.

apace with the outstanding stock of SDRs, reaching, say, SDR 10 billion a year 10 years out.¹⁷

Once it is recognized that the great majority of developing countries have demonstrated their willingness to incur the cost of a secular increase in their reserves, the observation that many of them hold SDRs in amounts well below their allocations is irrelevant as an indicator of their policies of aggregate demand. A member is not obliged, or even “expected,” to hold any particular proportion of the amount of SDRs allocated to it. Its obligations to hold or acquire SDRs do not extend beyond those spelled out in the Articles, and these obligations were designed to ensure the efficient operation of the SDR system, not to impose on the member a particular policy behavior with respect to its reserves. In the past, these obligations included, first, the obligation to reconstitute after large use and, second, the obligation to buy SDRs under “designation.” Neither of these obligations is in force any longer: the reconstitution obligation was abolished in 1978 and designation has become inoperative inasmuch as all exchanges of SDRs for currencies among members are nowadays (and have been for many years) conducted in the form of voluntary transactions. Accordingly, members are free to hold their reserves in SDRs and other assets according to their portfolio preferences. The low percentage of allocations held in the form of SDRs by many developing countries, and by some industrial countries (including the United Kingdom, France, Italy, and Australia) as well, is evidence of these countries’ portfolio preferences. Many poor developing countries no doubt prefer to hold reserve assets with a higher yield than SDRs.

The Allocation of SDRs versus the Provision of Conditional Fund Credit

Starting from the earliest discussions of what ultimately became the SDR Department in the Fund, the question has been raised whether it might not be preferable to resolve any occurrence of a shortage of international liquidity by the Fund providing more conditional credit rather than distributing new reserve assets without attaching any policy conditionality.¹⁸ When countries have to meet a balance of payments deficit of a more than transitory nature, they would do well to take some steps to adjust policy at an early stage, and conditional credit would promote such action. Moreover, for countries that do not have easy access to capital markets, the episodic use of Fund credit is significantly cheaper than holding reserves that immobilize valuable capital resources.

In considering this question from today’s perspective, it is important to bear in mind that it was only in the context of the liquidity discussions of the 1960s that the distinction between unconditional and conditional liquidity became fully explicit. Even under the Keynes Plan, whose objective, as noted above, was to ensure an adequate “quantum of international currency,” access to the Fund was to become subject to conditionality in the higher tranches. The staff’s 1958 study, *International Reserves and Liquidity* (in the drafting of which the Managing

¹⁷Even if the countries that earned this rising amount of benefits from the operation of the SDR system decided to spend all of it in additional imports, the impact on world demand for tradables would be minimal, given the magnitude of the current level of world trade of around \$6.5 trillion.

¹⁸For an extensive discussion, see Wijnholds (1977), Chapters 8 and 12.

Director, Per Jacobsson, had taken an active hand), moved seamlessly from its discussion on the adequacy of reserves to advocating, in a mild way, an increase in quotas.¹⁹

Thus, it was not surprising that when the discussion on liquidity resumed in the 1960s, some members of the Fund Board were more inclined to search for solutions in terms of quotas rather than the creation of a novel reserve asset such as the SDR. But the resulting debate clarified the distinction between reserves and conditional credit, and the conclusion was reached that there was only limited room for substitution between the two. As stated in the Fund's 1965 *Annual Report*, "ideally, countries' need for additional liquidity could be met by adequate increases in conditional liquidity. In practice, however, countries do not appear to treat conditional and unconditional liquidity as interchangeable." Therefore any attempt to meet an increasing need for reserves by the provision of conditional liquidity might induce countries to adopt "balance of payments policies which, from a broad international point of view, would have to be regarded as undesirable" (p. 15). The same view was expressed by the Group of Ten, where the negotiations about contingent liquidity creation proceeded in parallel with those in the Fund.²⁰

If at that time the Fund accepted, perhaps somewhat grudgingly, the need for countries to hold substantial reserves of their own, it has since made the holding of reserves part of its standard conditionality. It remains true, however, that reserves are an expensive investment, and few developing members hold reserves that are large enough to enable them to handle serious balance of payments problems without seeking credit from the Fund, and thus becoming subject to the Fund's conditionality, whether they receive annual SDR allocations or not. Such allocations would in any event be a much smaller percentage of quotas than a member's access to Fund credit, which under current access policies can reach 100 percent of quota per year.

We have not focused on a precise magnitude for annual allocations, which would require consideration of a number of elements, such as the demand for reserves of the countries that would have the greatest benefit from allocations, the absorption capacity of the system for additional infusions of SDRs, and any changes in the SDR facility that might make holding SDRs more attractive. But to give an indication of the order of magnitude we have in mind, these various considerations suggest to us that annual allocations in excess of 10 percent of quota would unlikely be called for. Fifteen years ago, one of us suggested that the upper limit for annual allocations should probably not exceed 10 percent of quota (Polak, 1988, p. 182); that would still appear to us a reasonable number. With the present level of quotas of SDR 213 billion, that would amount to about SDR 20 billion a year. Annual allocations would, of course, be much smaller if one adopted the idea put forward by Yaqub, Mohammed, and Zaidi (1996) that if the central aim of allocating SDRs were shifted from meeting a worldwide need for liquidity to lowering

¹⁹Its last sentence reads: "It is doubtful whether, in the circumstance of the world today, with world trade greatly expanded in volume and value, the Fund's resources are sufficient to enable it fully to perform its duties under the Articles of Agreement" (p. 99).

²⁰Group of Ten, Communiqué of Ministers and Governors and Report of Deputies (1966), para. 29.

the cost of reserves for low- and medium-income countries, it would make sense to limit these allocations to these countries only.

The provision of unconditional liquidity to all Fund members, beneficial though it may be to the great majority of low-income countries and to the system as a whole, may allow some “bad actors” to rush to spend this “easy money” on socially useless assets or move it into Swiss bank accounts. In principle, the risk of such misuse of allocations could be prevented or reduced if allocations were put in escrow accounts that would be released only if, or when, the Fund, in its surveillance capacity, gave the member a sufficiently clean bill of good conduct. A proposal for a two-step procedure of this nature was discussed by the Executive Board in 1988. It was rejected as “inconsistent with the unconditional and ‘owned’ character of the SDR” and also on the ground that it would require an amendment of the Articles. (*IMF Annual Report* for 1989, p. 22). A more telling argument would have been that the Fund would likely have drowned in a policy quagmire if, side by side with its principles and practices related to conditional credit, it were required to run another set of principles (stricter? less strict?) on conditionality for SDR releases.

In many of the Fund’s member states, monetary grants are made to all citizens who qualify by some objective criterion, such as pensions to persons above a certain age, without screening for possible character faults. Similarly, the Fund, under its Articles, unconditionally allocates SDRs to any participant in the SDR Account. In the context of the “equity allocation” of SDRs that it accepted in 1997 (which is still pending, awaiting ratification by the United States of the amendment under which it is to be authorized), it in fact established the principle of participation in SDR allocations as a right of membership. It even carried this principle to the point of promising future new members an allocation comparable to that of current members (proposed Schedule M, paragraph 3).

However, the plan for the “equity allocation” of SDRs does contain a specific and objective criterion to exclude from access to their share of that allocation a small group of members (about half a dozen) with a particularly bad record vis-à-vis the Fund: for a member with overdue obligations in any of its accounts with the Fund, that share is to be put in an escrow account until the member has cleared all of its arrears. This provision breaks with the principle of separation between the General Resources Account (GRA) and the SDR Account, but that principle has outlived its usefulness. It was introduced in the First Amendment to assuage the feelings of those who feared that the IMF could suffer from any commingling of funds with the unproven SDR scheme, to the detriment of Fund members that would refuse to become “participants” in that scheme. Now that all Fund members are also participants, and SDRs are an integral part of the financial structure of the Fund, it no longer makes sense to have a complete firewall between members’ rights and obligations in their GRA and SDR accounts, and a case has indeed been made for a full merger of the two accounts (Polak, 1999). It would in any event make sense to apply the “no arrears” rule to any future allocations of SDRs.

The no arrears clause constitutes one of the various proposals aimed at improving the SDR mechanism from the point of view of creditor countries. Others include raising the SDR interest rate and reintroduction of some sort of reconstitution obligation. But the many rounds of discussion in the Executive Board of the Fund

of these or other “improvements” do not inspire confidence that, if only the membership as a whole were willing to accept them, regular allocations of SDRs would become a reality. That result, instead, would require “a change of climate . . . as governments in industrial countries manifested either a greater concern for the welfare of the disadvantaged countries, or a greater concern about certain risks of the multi-currency reserve system” (Polak, 1988, p. 187).²¹

IV. Concluding Remarks

In the preceding section, we presented the case for the regular annual allocation of relatively moderate amounts of SDRs. That case is based on the benefits, in terms of (i) the interest costs of reserves that would accrue to the large majority of members that do not have assured access, or only very costly access, to capital markets and (ii) the enhanced strength of the international financial system as a whole if a larger part of the world’s reserves is owned rather than borrowed.

It is obvious that that case is difficult to reconcile with the original objective of the SDR mechanism, which was to ensure that the smooth development of the international economic and financial system would not be marred by either an insufficient, or an excessive, supply of international liquidity. However, as shown in Section I, those concerns about the global supply of reserves, which preoccupied international economists for the larger part of the previous century, have evaporated with the fundamental changes in the system brought about by the demise of the par value system and its succession by a world of floating exchange rates among the major economic areas.

If—and we realize that this is a major if—the membership of the Fund accepts the desirability of resuming the regular allocation of SDRs, it will have to come to terms with the fact that the provisions of Article XVIII no longer provide serviceable guidance for the allocation and cancellation of SDRs, and a choice will have to be made whether to do this (i) without an amendment of the Articles or (ii) by amendment.

- (i) The no-amendment approach is obviously the simplest. It can be justified if the “long-term global need” is read as the need of individual countries to increase their reserves as the scale of their balances of payments increases. This has been the general approach adopted by the staff ever since the second SDR allocation. With recognition of the fact that the concept of a quantitative global need for reserves—as distinguished from the quantitative needs of individual member countries—no longer has a meaning in the present system, that concept could be disregarded as a consideration for the allocation of SDRs. The 1978 decision to allocate in the second basic period in circumstances not too dissimilar from the current situation reflected at least in part this approach (Ahluwalia, 1996, p. 93).

²¹The 1994 proposal for the “equity allocation” did result from such a change in climate, as the main industrial countries became anxious to channel additional, but nonbudgetary, resources to the new members that had joined the Fund after the breakup of the Soviet Union.

- (ii) An amendment to Article XVIII would provide a more radical, but also a more difficult, solution. Such an amendment, in addition to eliminating the concept of global need, could at the same time remove the overabundance of safeguards prescribed in the present Article, in recognition of the fact that experience has proved that the single safeguard of a high qualified majority suffices, as it does with respect to quota increases. The Fourth Amendment of the Articles was adopted by the Board of Governors in 1997 to permit an SDR allocation considered desirable by the membership but that, in the opinion of some members, did not meet the test of a global need required by Article XVIII.

We briefly mention these options for the Fund to resume allocations in the present international financial structure. Any further discussion of these options would, however, appear premature until a consensus has been reached on the core finding of this paper that such allocations would be desirable.

Given the rather modest scale on which SDR allocations are contemplated, one can only be skeptical about both the rationale and the feasibility of any of the proposals, such as those mentioned in the opening section of this paper for a massive injection of SDRs in the event of some liquidity crisis that the Fund could not handle from its quota resources plus the existing NAB.

In the event of a worldwide liquidity crisis, such as occurred in the autumn of 1998, a large part of the financial stringency affects the financial markets in the main reserve centers. The central banks in these centers, the Federal Reserve and the European Central Bank, can handle that problem by open market purchases. Peripheral countries, affected by domestic problems or by contagion, may require massive support from the IMF, to an aggregate amount that could exceed the Fund's resources from quotas and the NAB. But establishing in advance the authority for the Fund to create massive amounts of SDRs in those circumstances (or as suggested by the Task Force of the Council on Foreign Relations, to use previously stockpiled SDRs) would fly in the face of the agreement, reached only a few years ago, of an NAB of no more than SDR 34 billion, and the resistance of the major industrial countries to even modest regular allocations of SDRs. In a truly severe crisis, it is far from obvious that SDRs—which cannot be used by the recipients for intervention in the markets—would be more suitable than loans of reserve currencies to the Fund from key creditor countries (perhaps as an extension of the NAB) or directly to the deficit countries.

REFERENCES

- Ahluwalia, Montek S., 1996, "SDR Allocations and the Present Articles of Agreement," in *The Future of the SDR in Light of Changes in the International Financial System*, edited by Michael Mussa, James M. Boughton, and Peter Isard (Washington: International Monetary Fund), pp. 88–100.
- Bahmani-Oskooee, M, and M. Malixi, 1987, "Effects of Exchange Rate Flexibility on the Demand for International Reserves," *Economic Letters*, Vol. 23, pp. 89–93.
- Berg, Andrew, and others, 1999, *Anticipating Balance of Payments Crises: The Role of Early Warning Systems*, IMF Occasional Paper 186 (Washington: International Monetary Fund).

- Boughton, James M., 2001, *Silent Revolution: The International Monetary Fund 1979–1989* (Washington: International Monetary Fund).
- Calvo, Guillermo, and Carmen Reinhart, 2000, “Fear of Floating,” *Quarterly Journal of Economics*, Vol. CXVII (May), pp. 379–408.
- Cooper, Richard N., 1970, “International Liquidity and Balance of Payments Adjustment,” in *International Reserves—Needs and Availability* (Washington: International Monetary Fund), pp. 125–45.
- , 2002, “Chapter 11 for Countries?” *Foreign Affairs*, Vol. 81, No. 4, pp. 90–103.
- Fleming, J. Marcus, 1961, “International Liquidity: Ends and Means,” *International Monetary Fund, Staff Papers*, Vol. 8, pp. 439–63.
- , 1967, *Towards Assessing the Need for International Reserves*, Essays in International Finance No. 58 (Princeton: Princeton University).
- , 1970, “Reserve Creation and Real Reserves,” in *International Reserves—Needs and Availability* (Washington: International Monetary Fund), pp. 521–52.
- Flood, Robert, and Nancy Marion, 2002, “Holding International Reserves in an Era of High Capital Mobility,” IMF Working Paper 02/62 (Washington: International Monetary Fund).
- Furman, Jason, and Joseph Stiglitz, 1998, “Economic Crises: Evidence and Insights from East Asia,” *Brookings Papers on Economic Activity*, 2 (Washington: Brookings Institution), pp. 1–114.
- Goldstein, Morris, 1999, *Safeguarding Prosperity in a Global Financial System—The Future International Financial Architecture*, Report of an Independent Task Force Sponsored by the Council on Foreign Relations (Washington: Institute for International Economics).
- Horsefield, J. Keith, 1970, *The International Monetary Fund, 1947–1965* (Washington: International Monetary Fund).
- International Monetary Fund, 1953, *The Adequacy of Monetary Reserves* (paper submitted to the 16th session of ECOSOC), reprinted in *International Monetary Fund, Staff Papers*, Vol. 3, pp. 181–229.
- , 1958, *International Reserves and Liquidity* (Washington: International Monetary Fund).
- , 1970, *International Reserves—Needs and Availability* (Washington: International Monetary Fund).
- , 2001, “SDR Allocation in the Eighth Basic Period—Basic Considerations,” available via the Internet at www.imf.org.
- , 2002, “How Worrisome Are External Imbalances?” Chapter II in *World Economic Outlook* (Washington: International Monetary Fund), September.
- , 2003, “Are Foreign Exchange Reserves in Asia Too High?” Chapter II in *World Economic Outlook* (Washington: International Monetary Fund), September.
- Kemp, Murray C., 1970, “World Reserve Supplementation: Long-Run Needs for Short-Run Purposes,” in *International Reserves—Needs and Availability* (Washington: International Monetary Fund), pp. 3–11.
- Keynes, J. Maynard, 1942, *Proposals for an International Currency (or Clearing) Union* (Cmd. 6437), reprinted in *The International Monetary Fund, 1947–1965*, by J. Keith Horsefield (Washington: International Monetary Fund), 1970.
- League of Nations, 1930, *Interim Report of the Gold Delegation of the Financial Committee* (Geneva: League of Nations).
- Lipton, David A., 1999, “Refocusing the Role of the International Monetary Fund,” in *Reforming the International Monetary and Financial System*, edited by Peter B. Kenen and Alexander K. Swoboda (Washington: International Monetary Fund), pp. 345–65.

- Lizondo, J. Saul, and Donald Mathieson, 1987, "The Stability of the Demand for International Reserves," *Journal of International Money and Finance*, Vol. 6, pp. 251–82.
- Mussa, Michael, 1996, "Is There a Case for Allocation Under the Present Articles?" in *The Future of the SDR in Light of Changes in the International Financial System* edited by Michael Mussa, James M. Boughton, and Peter Isard (Washington: International Monetary Fund), pp. 57–87.
- , James M. Boughton, and Peter Isard, eds., 1996, *The Future of the SDR in Light of Changes in the International Financial System* (Washington: International Monetary Fund).
- Mussa, Michael, and others, 2000, *Exchange Rate Regimes in an Increasingly Integrated World Economy*, IMF Occasional Paper 193 (Washington: International Monetary Fund).
- Nguyen, Elena L., 2002, "The International Investment Position of the United States, End 2001," *Survey of Current Business*, Vol. 82 (July), pp. 10–19.
- Nurkse, Ragnar, 1944, *International Currency Experience* (Geneva and Princeton: League of Nations).
- Polak, Jacques J., 1967, "Special Drawing Rights: The Outline of a New Facility in the Fund," *Finance and Development*, Vol. IV, No. 4, pp. 275–80.
- , 1988, "The Impasse Concerning the Role of the SDR," in *The Quest for National and Global Stability*, edited by Weitze Eizinga, E. Frans Limburg, and Jacques J. Polak (Dordrecht: Kluwer Academic Publishers), pp. 175–90.
- , 1999, "Streamlining the Financial Structure of the International Monetary Fund," *Essays in International Finance*, No. 216 (Princeton: Princeton University, Department of Economics).
- Reinhart, Carmen M., and Kenneth Rogoff, 2002, "The Modern History of Exchange Rate Arrangements: A Reinterpretation," NBER Working Paper 8963 (Cambridge, Massachusetts: National Bureau for Economic Research), June.
- Rodrik, Dani, and Roberto Velasco, 1999, "Short-Term Capital Flows," paper presented at the ABCDE Conference at the World Bank, June 28–30.
- Soros, George, 2002, *Globalization* (New York: Public Affairs).
- Suss, Esther C., 1976, "A Note on Reserve Use Under Alternative Exchange Rate Regimes," *International Monetary Fund, Staff Papers*, Vol. 23, No. 2, pp. 387–94.
- Triffin, Robert, 1960, *Gold and the Dollar Crisis* (New Haven: Yale University Press).
- United Nations, 2002, *Report of the Secretary General's High Level Panel on Financing for Development*, available via the Internet at www.un.org/esa/ffd/a55-1000.
- Wijnholds, J. Onno de B., 1977, *The Need for International Reserves and Credit Facilities* (Leiden: Martinus Nijhoff).
- , and Arend Kapteyn, 2001, "Reserve Adequacy in Emerging Market Economies," IMF Working Paper 01/143 (Washington: International Monetary Fund).
- Williamson, John, 1973 "Surveys in Applied Economics: International Liquidity," *Economic Journal*, Vol. 83, No. 331, pp. 685–746.
- , 1996, "Rationalizing SDR Allocation," in *The Future of the SDR in Light of Changes in the International Financial System*, edited by Michael Mussa, James M. Boughton, and Peter Isard (Washington: International Monetary Fund), pp. 112–17.
- Yaqub, Muhammad, Azizali Mohammed, and Iqbal Zaidi, 1996, "A Focused SDR Allocation," in *The Future of the SDR in Light of Changes in the International Financial System*, edited by Michael Mussa, James M. Boughton, and Peter Isard (Washington: International Monetary Fund), pp. 202–16.