

DESA Working Paper No. 126
ST/ESA/2013/DWP/126

August 2012

Overcoming the Technical and Political Difficulties of Using SDRs for Development Purposes

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Abstract

This paper argues that the technical and political difficulties of using SDRs for development can be overcome. This requires an SDR-based reserve system and a fully SDR-funded IMF. The IMF would allocate SDRs counter-cyclically and treat them as deposits of countries, which could be used in lending to them. A substitution account is needed for a smooth transition from major reserve currencies to SDRs. To avoid the deficiency payments, a counterpart account – which would be credited when the substitution account is in surplus and debited when in deficit – is required. Alternatively, politically-feasible cost-sharing mechanisms could be designed.

JEL Classification: F33, E52, F55, H87

Keywords: Special drawing rights, international reserve system, and innovative development finance.

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Typesetter: *Nancy Settecasì*

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Overcoming the Technical and Political Difficulties of Using SDRs for Development Purposes

*Bilge Erten**

This paper was originated as a contribution to the work programme of the Committee for Development Policy (CDP), a subsidiary body of the United Nations Economic and Social Council, on the United Nations development agenda beyond 2015. This research effort aimed at analysing and proposing alternative development models that could contribute to a sustained improvement in human wellbeing worldwide. While the views expressed here do not necessarily coincide with those of the CDP or the United Nations, the paper has benefitted from the discussions conducted at various workshops and plenary meetings of the Committee. Additional information on the CDP and its work is available at <http://www.un.org/en/development/desa/policy/cdp/index.shtml>.

Introduction

The case for using Special Drawing Rights (SDRs), the reserve asset issued by the International Monetary Fund (IMF), for development purposes and the provision of global public goods has originally been made by Soros (2002) and Stiglitz (2003), with the aim of transferring unused SDRs from industrial countries to global funds and to countries in need of development assistance. This proposal has more recently been revived at the 15th Conference of Parties (COP) of UNFCCC held in Copenhagen in 2009 where George Soros suggested using SDRs to create a global “green fund.” The idea was later supported by the previous IMF Managing Director, Dominique Strauss-Kahn, as well as many civil society organizations. Meanwhile, the governor of the People’s Bank of China, Zhou Xiaochuan, proposed that the SDR should gradually replace the dollar at the center of the international financial system and that surplus countries should be able to convert their holdings of dollar reserves into SDR-denominated assets (Zhou, 2009). Recently, the G20 group of countries expressed great interest in SDR related ideas and improved the political feasibility of an SDR-facilitated reform agenda. The Commission of Experts on Reforms of the International Monetary and Financial System convened by the President of the UN General Assembly (Stiglitz Commission) suggested regular allocations of SDR in the range of US\$150-300 billion a year (United Nations, 2009, ch. 5).

There are two distinct purposes for resuming the allocation of SDRs, the final and largest of which was US\$250 billion in 2009. First, SDR allocations reduce the need for precautionary reserve accumulation by providing access to foreign currency liquidity, thus acting essentially as a swap line. As a lower cost alternative to accumulating international reserves through borrowing or building up current account surpluses, the SDR would reduce the costs of self-insurance against currency crises for many developing countries. This can be referred as the “international liquidity purpose” of SDR allocations. Second, regular SDR allocations can form a potential source of development finance. Through SDR allocations, the seigniorage related to additional demand for global currencies accrues to the IMF member states. In proportion to IMF quotas, more than half of SDR allocations are distributed to industrial countries. The remainder of the SDR allocations accrues

to developing countries, and this creates the potential for the international seigniorage to provide resources of comparable or even higher levels of ODA.

While the “international liquidity purpose” creates an incentive to reduce self-insuring reserve accumulation, the function of raising additional development finance allows for the redistribution of international seigniorage to the provisioning of global public goods and financing to countries facing high costs of borrowing in world capital markets. Having set forth the distinction between the monetary and development finance functions of SDR, this paper focuses on the development finance function.

The rest of the paper is organized as follows. The next section discusses the problems of the current international reserve system and evaluates the potential of different paths of reform to solve these problems. The following section focuses on the estimates of SDR allocations in the literature, provides an updated estimate, and discusses their potential for development finance. The next two sections address the technical and political difficulties of implementing an SDR-based system and explore different ways to overcome them. The section following deals with complementary reforms necessary for the SDR-based system to work and the final section draws major conclusions.

International Reserve System: Multi-Currency or SDR-Based?

The unilateral decision of the USA in 1971 to abandon the gold-dollar parity was a critical milestone marking the end of the Bretton Woods system and paving the way for the current reserve system centered on a “fiduciary dollar standard” (Ocampo, 2010a) or a “semi-dollar standard” (Aglietta, 2010). Table 1 shows that in 2010 about 61.5 percent of foreign exchange reserves was held in US dollars while the share of euros follows with 26.2 percent and other currencies such as yen and sterling with 12.3 percent. Many had expected that euro would pose a major challenge to dollar as the global reserve currency. However, that did not happen. The share of euro area currencies in 1995 was in fact slightly higher than the 2010 share of euro in foreign exchange reserves, and the rise of the share of euro from 1999 to 2010 is attributable to the appreciation of the euro against the dollar during this period. In other words, the US dollar does not face any effective competition against its dominant role as a global reserve asset, and the problems of sovereign debt in the euro area make the prospects of a rising share of euro less likely.

The scale of foreign exchange reserve accumulated in 2010 was more than US\$9 trillions (see Table 1). Emerging and developing countries held about two-thirds of these reserves: slightly more than US\$6 trillions. The share of US dollars in their reserves declined from 74.3 percent in 1999 to 58.3 percent in 2010—that is, more than half of their reserves are still held in US dollars².

The reserve accumulation in developing countries has risen sharply since the 1990s and diverged from the advanced country trends. Figure 1 shows that the foreign exchange reserves of low-income and middle-income countries were similar to those of high-income countries in the 1980s, around 3–4 percent of GDP. The initial point of divergence took place in the 1990s following the emerging country crises and intensified after the 1997–8 East Asian crisis. Many developing countries sought instruments to protect themselves against global financial instability and to manage pro-cyclical capital flows. Together with the intentions to avoid

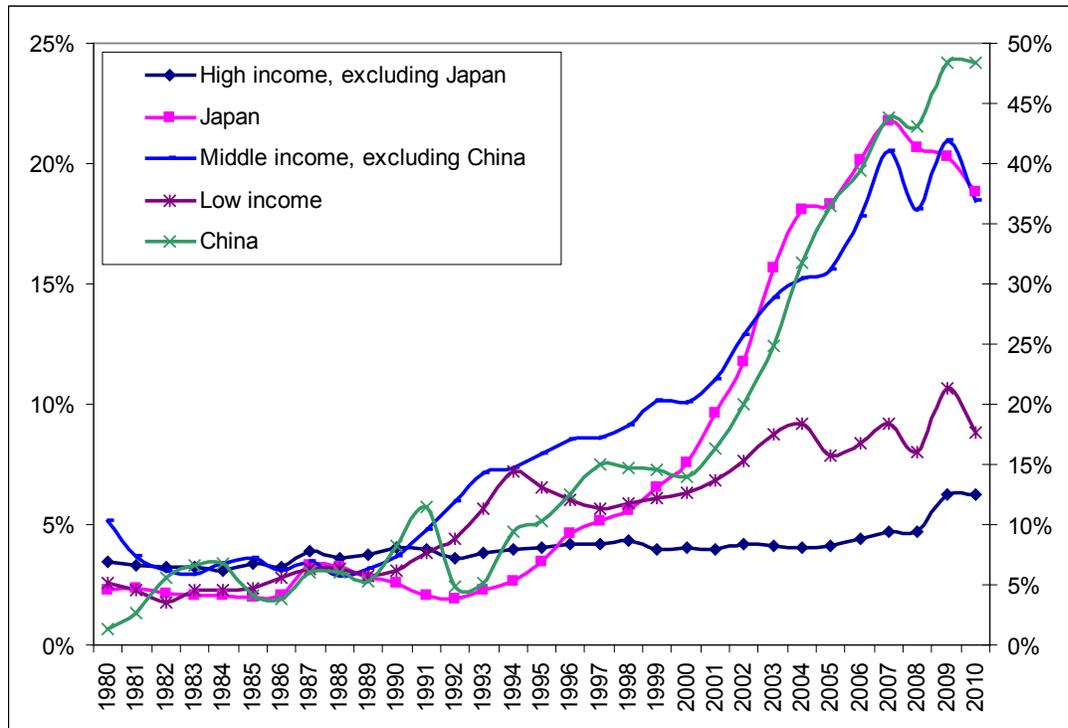
conditionalities associated with IMF lending, this generated a massive accumulation of reserves—which in fact imply transfers of resources to reserve-issuing countries. The end result is a flow of vast amounts of resources from the developing world to industrialized countries issuing reserve currencies. This unequal flow of resources from those who need them the most to those that already have plenty has been referred as the “inequity bias” in international monetary system (Ocampo 2011).

Table 1: Currency Composition of Foreign Exchange Reserves in 1995, 1999, and 2010 (in billions of US dollars)

				Percentage of allocated reserves		
	1995	1999	2010	1995	1999	2010
World						
Total foreign exchange holdings	1,389.8	1,781.9	9,258.6			
Allocated reserves	1,034.2	1,379.7	5,123.5	100.0	100.0	100.0
US dollars	610.3	979.8	3,152.6	59.0	71.0	61.5
Euros	-	247.0	1,340.4	-	17.9	26.2
Euro area currencies	279.1	-	-	27.0	-	-
Other currencies	144.8	153.0	630.5	14.0	11.1	12.3
Unallocated reserves	355.6	402.2	4,135.1	-	-	-
Advanced Economies						
Total foreign exchange holdings	932.2	1,121.8	3,092.5			
Allocated reserves	767.0	1,010.8	2,708.7	100.0	100.0	100.0
US dollars	413.2	705.7	1,745.0	53.9	69.8	64.4
Euros	-	183.0	659.0	-	18.1	24.3
Euro area currencies	238.1	-	-	31.0	-	-
Other currencies	115.8	122.1	304.6	15.1	12.1	11.2
Unallocated reserves	165.1	111.0	383.8	-	-	-
Emerging and Developing Economies						
Total foreign exchange holdings	457.6	660.2	6,166.2			
Allocated reserves	267.1	368.9	2,414.9	100.0	100.0	100.0
US dollars	197.1	274.1	1,407.6	73.8	74.3	58.3
Euros	-	64.0	681.4	-	17.3	28.2
Euro area currencies	41.0	-	-	15.3	-	-
Other currencies	29.0	30.9	325.8	10.9	8.4	13.5
Unallocated reserves	190.5	291.2	3,751.3	-	-	-

Source: International Monetary Fund, Currency Composition of Foreign Exchange Reserves (COFER)

**Figure 1: International Reserves by Level of Development (% of GDP)
(Left Hand Scale except China)**



Source: Total reserves minus gold series, World Bank, World Development Indicators, based on information from IMF.

Imperfections of the International Monetary System

Imperfections of the current international monetary system are frequently emphasized and can be grouped under three categories (see Ocampo, 2011; CEPPII, 2011; Padoa-Schioppa, 2011). First, the system has an inequity bias reflected in the growing needs of the developing countries to accumulate foreign exchange reserves. This self-insurance policy has serious downsides. First, it reflects a lack of trust in multilateral mechanisms resulting in large-scale investment in reserve assets with low yields. The difference between these yield rates and the interest rate that developing countries pay to industrial countries when they borrow from them is a transfer of resources greater than the value of ODA. Second, self-insurance suffers from a fallacy of composition: the simultaneous pursuit of current account surpluses or small current account deficits by a large number of countries contribute to the widening of global imbalances.

The second imperfection of the international monetary system is widely-known as the Triffin Dilemma named after the Belgian economist Robert Triffin. This emerges from the use of a national currency (the US dollar) as the international reserve currency. The dilemma is that either the world has to suffer from a lack of liquidity if the supply of the reserve asset is constrained (if the US aims to reduce its current account deficits or capital account surpluses), or the increasing deficits of the reserve-issuing country will eventually undermine the value of the reserve currency and lead to a breakdown of the system. The strategy of reserve accumulation is only sustainable if there is at least one reserve-issuing country large enough and willing to run ever larger current account deficits or capital account surpluses to ensure sufficient liquidity for global economic activities.

However, the rising deficits of the reserve-issuing country tend to erode confidence in the reserve currency and create a risk of loss in the value of foreign exchange reserves held in this currency.

The third imperfection of the current monetary system is the asymmetric adjustment that it places on deficit and surplus countries. The countries in external surplus have no incentive to adjust, and due to the international role of the dollar, the United States has no incentive to adjust when it is in deficit. The burden of adjustment falls onto non-dominant deficit countries, but it takes place with a long lag and rather abruptly when deficit financing suddenly dries out, creating unnecessary macroeconomic instability.

Multi-Currency Reserve System versus SDR-Based Reserve System

A fundamental reform of the global reserve system is necessary to overcome these interrelated imperfections. There are two paths of reform discussed widely. The first one is to improve the multi-currency nature of the current system with multiple reserve currencies competing against each other. This would require an increase in the use of other currencies such as euro and renminbi. While the Europeans are enthusiastic about promoting the euro as a reserve asset (see a recent report by Cepii, 2011), the recent debt crisis indicated that the backing from a heterogeneous set of countries without a fiscal union makes the euro a rather imperfect substitute for the dollar. Meanwhile, the internationalization of the renminbi is gaining pace with the emphasis Chinese authorities put on Hong Kong as a hub for renminbi-denominated asset transactions. However, China's financial markets are not well-developed and the renminbi is not fully convertible, which limits carrying out global transactions in this currency while making it less vulnerable to speculative attacks. For the renminbi to become a reserve asset, it would be important to have full convertibility for central banks that hold renminbi.

The multi-currency reserve system fails, however, to resolve imperfections of the current reserve system. First, it will require national currencies, most of which will still be currencies of major industrial countries, to be used as reserve assets. The Triffin Dilemma would then apply to the group of reserve currency countries which would have to run increasing current account deficits (or capital account surpluses) to supply the world with reserve currencies. Secondly, the diversification of reserve accumulation would come at the cost of exchange rate volatility among reserve currencies. Since none of these currencies will have stable values due to their floating nature, the central banks would respond by changing the composition of their assets, which can be rather costly if their predictions about future movements in the exchange rates turn out to be incorrect. Ocampo (2011) suggested that the multi-currency solution would require an IMF substitution account, an element of the SDR-based reform proposed in this paper, to stabilize the exchange rate fluctuations. Third, it would not solve the inequity bias of the current system, since most developing countries would still be investing their savings into reserve assets issued by industrial countries. Lastly, the multi-currency system would not put pressure on surplus countries to adjust, and therefore, continue to suffer from asymmetric adjustment problem.

The alternative path is to design a global currency as a reserve asset initially and to use it as a means of payment later. This reform path can be implemented by one of the following institutions: (i) a new institution created to function as a Global Reserve Bank, (ii) an existing network of regional institutions, or (iii) the IMF (United Nations, 2009). The first option involves negotiations for a new global institution, which would not only be time-consuming but also politically difficult to agree upon. The second and third options are complementary parts of an SDR-based reform of the global reserve system. Since the IMF is currently the only institution issuing a global currency, the SDRs, the reserve system can be built on it and supported by a

network of regional arrangements such as reserve-pooling institutions including the Chiang Mai Initiative, the Latin American Reserve Fund, and the Arab Monetary Fund.

Estimates of SDR Allocations and their Potential for Development Finance

As a response to the global crisis, the G-20 and the IMF members agreed on the allocation US\$250 billion worth of SDRs in April 2009. Despite this extraordinary allocation, the volume of total outstanding SDRs is 204 billion, which is less than 4 percent of global reserves. Partly due to this small share, the countries holding SDRs hardly trade them to pursue any developmental objectives. Instead, many countries meet their growing demand for reserves by accumulating current account surpluses, which places a deflationary pressure on the already demand-constrained world economy. The faster growth of demand for international reserves in relation to their supply creates an urgent need for larger allocations of SDRs not only for diversification of their reserve accumulation, but also as a potential source of development finance.

Previous Estimates of SDR Allocations

Table 2 provides a list of studies that proposed a regular allocation of SDRs, their methods of estimation, and the amounts of issuance estimated. Regardless of differences in estimation techniques, it is seen that recent studies propose a consistent amount of regular allocations ranging from an average of US\$200-300 billion annually. This would result in a significant diversification of reserves. For example, the IMF (2011) estimated that an annual allocation of US\$200 billion would increase the share of SDRs in total reserves to about 13 percent by 2020s.

Generally, in proposing the amount of SDR to be issued, studies rely on an indicator of global demand for additional reserves with a precautionary motive. Given that over 2003-08 the average annual holdings of reserves increased by US\$737 billion or US\$370 billion excluding China and Japan, Ocampo (2011) suggests an allocation of US\$250-300 billion a year as a reasonable estimate. The Commission of Experts on Reforms of the International Monetary and Financial System convened by the President of the UN General Assembly (Stiglitz Commission) proposed a similar estimate, US\$150-300 billion annually, with the average annual reserve accumulation in 1998-2002 as lower bound, and that in 2003-07 as upper bound. A more recent recommendation by a group of experts including Stiglitz is, however, much larger –US\$240-400 billion (Stiglitz et al. 2011).

It is important to note that the Soros proposal differs from the rest in its one-time lending from developed countries to a green fund that serves the developing world. Arguing that more than \$150 billion of the recently allocated SDRs went to the 15 largest developed economies, which could lend two thirds of this amount to a green fund for 25 years, Soros emphasized this potential means to fund climate change mitigation. However, the proposal faces several obstacles before it can be implemented. Most importantly, this requires the SDRs, which are strictly monetary assets of central banks, to be used for fiscal purposes. Their fiscal use would

have to be approved by national parliaments and it could be legally complicated to make a fiscal use of what is strictly a central bank asset (Ocampo and Griffith-Jones, 2011).

In order to ensure a stable source of liquidity in world markets, the SDRs should be allocated on a counter-cyclical basis. This means increasing the supply of SDRs in periods of global financial difficulties and reducing their supply by partly destroying them when financial markets become more stable. Such counter-cyclical allocations are crucial to offset any inflationary pressures that might otherwise arise.

Table 2: Estimates of SDR Allocations in Chronological Order

Study	Method of estimation	Proposed Amount to Issue
International Monetary Fund (June 2011)	Precautionary demand for reserves estimated based on (i) imports, (ii) short-term external debt, and (iii) broad money	US\$117–133 billion annually for three years beginning in 2014
Ocampo (2011)	Close to but slightly less than average reserve accumulation in 2003-08 (excluding China and Japan)	US\$250-300 billion annually
Stiglitz and others (2011)	Recommendation based on the previous issue of SDRs equivalent to 250 billion by the IMF in 2009	SDR 150-250 billion annually over the next three years, which equals US\$240–400 billion at current exchange rates
International Monetary Fund (January 2011)	Half of the average precautionary demand for reserves over 2000-09 (Obstfeld, Taylor, and Shambaugh, 2008)	US\$200 billion annually
International Monetary Fund (2010)	Less than average reserve accumulation over 2000-9	US\$200 billion or more annually for some years
Kenen (2010)	Recommended “to raise the share of the SDR in total reserves”	SDR 200 billion annually, which equals US\$320 billion at current exchange rates
Williamson (2010)	Annual average increase of the holdings of non-gold reserves over 2003-08	SDR 457 billion, or more realistically SDR 200 billion annually, but asymmetrically distributed: about 80% of allocations to developing countries, and 20% to industrial countries, with allocations within each group determined according to IMF quotas
Bergsten (2009)	Seen necessary for a “more balanced composition of global reserve assets”	Annual distributions totalling US\$1 trillion over the next five years
United Nations (2009)	Average annual reserve accumulation in 1998-2002 as lower bound, and that in 2003-07 as upper bound	US\$150-300 billion annually
Greenwald and Stiglitz (2008)	Global reserves were about \$3 trillion in 2008. Assuming the demand for reserves increases at the average rate of world trade (about 7%), this amount would satisfy the demand for reserves without a US payments deficit	US\$200 billion annually
Clark and Polak (2004)	Approximate demand for additional reserves	US\$25 billion annually or up to 10% of quota
Aryeetey (2004)	Based on Clark and Polak’s estimates and assuming that industrial countries donate their quota share for development finance	US\$25-30 billion annually

Source: Author’s compilation.

An Estimate of SDR Allocations

It is possible to estimate a range for the regular allocation of SDRs based on the most recent data available. The world demand for additional reserves in 2000-05 was on average US\$246 billion, but it has since then almost doubled. In 2006-10 the world demand for reserves was US\$443 billion (Table 3). Thus, the recent recommendation of analysts including Stiglitz et al. (2011) for annual allocations ranging US\$240-400 billion is in fact a rather reasonable estimate that is endorsed here. Indeed, since the estimations exclude outliers of Japan and China, they can be considered quite conservative and they might err on the side of underestimation instead of overestimation.

Table 3: World Demand for Reserves

	Foreign Exchange Reserves Minus Gold Holdings (in billions of US dollars)				Annual accumulation
	High-income ¹	Middle-income ²	Low-income	World total ³	
2000	991.072	453.317	10.409	1454.798	
2001	990.599	487.877	11.318	1489.794	34.996
2002	1143.848	567.008	13.390	1724.246	234.451
2003	1287.515	732.281	16.776	2036.572	312.326
2004	1428.870	923.365	19.756	2371.991	335.419
2005	1534.545	1132.546	18.768	2685.859	313.868
2006	1750.375	1533.108	21.852	3305.335	619.476
2007	2019.046	2159.321	28.196	4206.563	901.228
2008	2132.030	2216.566	29.139	4377.735	171.173
2009	2618.388	2365.911	40.998	5025.297	647.562
2010	2338.887	2524.776	36.654	4900.317	-124.980
Five-year average annual accumulation					
2000-05	246.212				
2005-10	442.892				

Notes: ¹ excludes Japan, ² excludes China, ³ excludes Japan and China.

Source: World Bank, World Development Indicators based on the IMF data.

SDR Allocations and Development Finance

The extent to which these SDR allocations are directed to development finance requires considering a set of additional problems. First, there is a separation in the accounts of the IMF between the “general resources” and the SDR accounts, which restricts the use of SDR allocations. Under the current IMF Articles of Agreement, it is not possible to use these allocations for financing IMF lending. This problem can be overcome with a change in the current rules that will make the SDRs the major form of financing of IMF lending. As emphasized by the Stiglitz Commission and Ocampo (2011), the unused SDRs, especially from industrial countries, could be treated as deposits in the IMF, which uses these funds to finance its lending to member countries in need.

Second, since SDRs are an international reserve asset that can only be used by central banks under the current rules, their allocation for development purposes or global public goods means that they have to be donated or transferred to a central bank or an international financial institution, which can also hold SDRs. The allocation of SDRs for specific spending purposes (such as funding developmental projects) essentially entails

them to be used as a fiscal instrument, which goes beyond their function as strictly monetary instruments. A number of analysts emphasized that the fiscal use of SDRs can create problems in practice because each time they would have to be approved in national parliaments and that it might even be legally problematic to make fiscal use of a central bank asset (Ocampo, 2011). The allocation of SDRs for any fiscal use could only be possible with changes in the IMF Articles of Agreement.

A “development link” in SDR allocations has been proposed by Ocampo (2011), which avoids the SDR allocations for development to be treated as a fiscal transaction. The IMF would use the unutilized SDRs of the member states to buy bonds from multilateral development banks, which would in turn finance development and global public goods. The idea is similar to that suggested by the Group of Experts convened by UNCTAD in the 1960s (UNCTAD 1965) and it is recently supported by the Stiglitz Commission (2009). If the bonds are offered at market rates, their use by multilateral banks would be non-concessional. It might, however, be possible to combine this form of lending with revenues from a currency transactions tax or more traditional grants, in which case the bonds that IMF buys from multilateral development banks can assist in financing concessional forms of lending as well.

If this “development link” is approved by the G-20 and the IMF, the outcome for estimated development finance could be proportional to unused SDRs allocated to industrial countries. If the IMF goes with the estimated figure of US\$240-400 billion annual allocations, the funds going to industrial countries would be over US\$144-240 billion and a conservative estimate of US\$100-200 billion would be unutilized funds. The amount – US\$100-200 billion – could be used by the IMF to buy bonds from multilateral development banks to finance development and/or global public goods.

A third issue that needs to be addressed is the fact that SDR allocations are based on existing quotas at the IMF, which do not reflect the shares of different countries in the global economy. Developing countries are under-represented based on their share of global GDP, which means that a large portion of any new allocations of SDRs is issued to industrial countries. This fact strengthens the inequity bias given that it is the developing countries that have the greatest demand for reserves. To overcome this problem, there is a need to reform quota allocations at the IMF regularly to reflect the changing shares of emerging countries in the world economy.

A way to go around this quota reallocation problem is to issue SDRs asymmetrically, in which case a larger share of allocations would be issued to emerging and developing countries given that their demand for reserves is the highest among all. For example, since these countries currently hold about 80 percent of all international reserves, they could receive 80 percent of SDR allocations and the remaining 20 percent could be allocated to industrial countries (Williamson, 2010). Allocations within each group would be determined by each country’s quota at the IMF. If the IMF allocates US\$240-400 billion worth of SDRs annually according to the 80-20 rule suggested, the developing countries would be issued US\$192-320 billion, and each developing country would receive a share of this amount according to its quota share. How much of these funds would be allocated for development finance? Each country could draw the funds they need to finance their development needs, and the cost would be the foregone interest earned on holding these SDR allocations at the IMF. However, note that the fiscal use of SDRs is not currently allowed within the current IMF rules, and there is a need for reform if this asymmetric issuance is going to increase development finance. One benefit of asymmetric SDRs allocation is a gradual diversification of developing countries away from the US dollar as an international reserve asset. In this regard, it eliminates or reduces transfer of resources from developing

to industrial countries, i.e. the inequity bias. By delinking the international reserve asset from any particular national currency, the SDR allocations also overcome the Triffin dilemma.

Technical Difficulties

In the transition towards an SDR-based reserve system, one of the technical difficulties that IMF faces is the creation of a “substitution account,” which allows countries to exchange their dollar reserves and those denominated in other currencies for the SDRs and SDR-denominated assets issued by the Fund. This would bring the benefit of preventing an abrupt depreciation of the dollar if the large-holders of dollar reserves try to sell them in the foreign exchange market. In this sense, the substitution account would be essential to maintain the stability in exchange rate movements, and it would be also highly useful in a multi-currency arrangement to prevent excessive volatility. These benefits should be weighed against the costs of a substitution account that focuses on the crucial question of “who bears the exchange rate risk?” This section will review the benefits of having a substitution account and evaluate its costs based on different options to share the exchange rate risk.

Benefits of a Substitution Account

Establishing a substitution account at the IMF to allow the countries that hold US dollar (or other currency) reserves to diversify into SDRs brings many benefits. Although difficult to quantify, two of the benefits are essential to show the desirability of its creation:

Altering the Composition of Reserves without Disruption

The developing and emerging countries hold US\$6.1 trillion worth of foreign exchange reserves, about US\$5 trillion of which is held in US dollars. Clearly with a reserve accumulation of about US\$3 trillion, China has the largest need to diversify its reserves accumulated in US dollars and invested in US government securities. This desire was expressed clearly by the governor of the People’s Bank of China, Zhou Xiaochuan, who proposed that surplus countries should be able to convert their holdings of dollar reserves into SDR-denominated assets (Zhou, 2009). If China sells these reserves in the foreign exchange market, the value of the dollar would collapse, creating a dollar crisis. The substitution account would prevent this crisis by allowing the dollar reserves to be exchanged with SDRs in an off-market reserve pool. In this sense, the substitution account would allow a timely diversification for countries holding excess dollar reserves. It is also important to emphasize that China is not alone in trying to diversify. Many developing countries in East Asia, South Asia, and Middle East accumulated excessive amounts of reserves to self-insure against crises and would benefit from a diversification mechanism away from the US dollar whose value might deteriorate over time due to structural factors.

Acting as a First Step in the Transition towards an SDR-Based Reserve System

By allowing countries to transform their dollar reserves or reserves denominated in other currencies into SDR-denominated assets in an off-market reserve pool, the creation of a substitution account is a first step toward a substantial reform of the international reserve system. The main advantage would be the stability that it provides to the system, and it would also be crucial to manage exchange rate volatility generated in a multi-currency system. Similar to the three-stage transition envisioned by Kenen (2010b), one can think of three periods in which the functions of the substitution account changes to eventually transform the SDR into

a fully developed reserve asset. In the earlier period after which the substitution account is established, the potential costs arising from maintaining the value of the reserves deposited in the account can be shared between the reserve-issuers (the United States and the Eurozone countries) and the reserve-holders (the majority being developing and emerging countries). During this period, the IMF would continue making periodic SDR allocations to its members, which would be deposited in the substitution account. In the subsequent period, each country that has a need to intervene in the foreign exchange market would be able to freely transfer some of its SDR claims on the substitution account to the country issuing the currency that it needs to access. For example, if India needs to have dollars to intervene in the foreign exchange market, it would transfer some of its SDRs to the United States in exchange for dollars at the prevailing dollar-SDR exchange rate. In the final phase, the substitution account can be consolidated with the SDR department of the IMF and any distinction between the SDRs created through substitution and SDRs created by periodic allocations would disappear. The free transferability of SDRs in exchange for other currencies would be extended to all members of the IMF including the countries that had not initially deposited any reserves into the substitution account. This would allow the SDR to become a fully developed international reserve asset, providing stability and adjustment to the global reserve system.

Costs of a Substitution Account

The creation of a substitution account within the IMF was previously debated in the late 1970s, but the negotiations failed for two reasons: (i) the US dollar began to revalue in the early 1980s, which offset the fears of dollar reserves losing value, and (ii) the United States refused to take responsibility as the single country to sustain the dollar value of the SDR-denominated assets in the substitution account.

These two factors still exist in today's world. The US dollar began to strengthen recently in response to the deepening of the Eurozone debt crisis and the safe haven status of dollar. The strengthening of the dollar was so much that many emerging countries (such as Brazil, Turkey, India) had to intervene to prevent the depreciation of their currencies while their earlier worries were all about appreciation. The second factor is also present given that the United States is unlikely to accept an arrangement in which it would be wholly responsible for the solvency of the account.

However, there are two ways to overcome these opposing forces. First, it should be recognized that even if the US dollar becomes strong during this ongoing crisis, there is no guarantee that it will be able to keep its strength for the following periods given its growing debt problem and current account deficits. Thus, for the benefit of all countries holding their reserves in dollar denominated assets, there is a need to convert them into SDRs through the substitution account without causing the dollar to depreciate against other major currencies. This would also benefit the United States whose currency will not face an unexpected and sudden depreciation if the substitution account functions properly.

Second, there are mechanisms in which the potential costs of the substitution account can be shared among the IMF members or large surplus countries such as China, Japan, and Germany. These cost-sharing mechanisms would take the burden from the United States and distribute it over a broader range of countries.

Kenen (2010b) provided historical simulations of how much the potential costs of keeping the account solvent would be and what kind of cost-sharing mechanisms would make the substitution account a viable arrangement. His simulation results vary based on (i) which year is chosen as the first year in which the

account begins to function, (ii) how much is deposited in the first year, (ii) what kinds of shocks are chosen to see the impact of changes in interest rates and exchange rates, and (iv) which cost-sharing mechanisms are implemented.

The first factor, for example, shows a large variation in cost estimates. If the year 1980 is chosen as the first year for the creation of the account starting with a deposit of US\$500 billion, the average annual deficiency payment, or the cost of keeping the account solvent, would be US\$22.6 billion, or if it is spread over the whole 29-year period, the average annual cost would be US\$16.4 billion, which could be paid with a cost-sharing mechanism between the United States and the countries depositing their reserves. However, if the first year is chosen to be 1995 and the initial deposit is assumed to be US\$1000 billion, the historical simulation results show that the total cost turns out to be zero, i.e. there would be no deficiency costs as the total value of dollar amount equals the total dollar value of the SDR amount in the substitution account for every year. Application of various shocks to this base-case scenario results in various estimates of deficiency payments, ranging from US\$322-586 billion, which are way above the base-case scenario's figures in 1980.

To overcome the problem of which party has to pay for these costs once and for all, one should pay attention to the fact that the substitution account holds surplus dollars many years before it gets into a deficit situation requiring deficiency payments. That is, it alternates between periods of surplus and deficit in terms of dollars. This calls for a **“counterpart account”** to be established in the United States (or in the IMF as an additional account) which would be credited when the substitution account is in surplus and debited when it is in deficit³. The simulations show that the accumulated credited amounts would balance out the accumulated deficits over time, making the problem of which country pays for it effectively a non-problem.

Table 4 presents a US interest rate shock of a 1 percentage point decline in 2000 to the base-case scenario of 1995 considered in Kenen (2010b). It is important to note that the balance on the substitution account is explicitly shown here whereas it was omitted in Kenen (2010b). The balance on the substitution account, which is the difference between the dollar amount in the account (column 5) and the dollar value of SDR amount (column 7) is positive for all years except 2004 and 2007. That is, the account is in surplus except for these two years, and the sum of these surplus years is US\$1,219.57 billion, which is much larger than the sum of two deficit years (US\$112.34 billion). A counterpart account could be used to balance these two items in which case the net cost could be zero—in fact, there would be a positive balance in the end. Otherwise, the sum of deficits amounts to the deficiency payments and their accumulation together with interest charges yields a figure of US\$119.53 that has to be paid either by the United States or by a cost-sharing mechanism between the United States and depositors of US dollars into IMF substitution account.

One way to share these costs in the absence of a counterpart account would be to divide the total deficiency payments between the United States and the IMF, each paying half of the total. The IMF can use its own dollar holdings or sell some of its gold holdings in order to share in the cost of holding the substitution account solvent. Another cost-sharing mechanism could be to identify those countries that would benefit by far the most (i.e. the largest surplus countries such as China, Japan, Germany) from having a substitution account in the IMF and ask these countries to carry more responsibility in sharing the costs. A G-20 summit might be a good venue to reach an agreement about how the potential costs of the substitution account might be shared. For example, it can be made proportional to the shares of dollar deposits into the account from each country. The owners of larger shares would then share a larger part of the potential cost.

Table 4: Historical Simulation with US Interest Rate Declining 1 Percentage Point in 2000

End of year	US\$ per SDR	SDR interest rate	US interest rate	Dollar amount in SA	SDR amount in SA	Dollar value of SDR amount	US interest payment	Balance on the SA	Total cost to be shared
1995	1.4865	4.58	5.65	1,000.00	672.72	1,000.00	-	-	0
1996	1.438	3.9	5.14	1,051.40	698.96	1,005.10	51.4	46.30	0
1997	1.3492	4.07	5.2	1,106.07	727.4	981.41	54.67	124.66	0
1998	1.3359	4.1	4.9	1,160.27	757.23	1,011.58	54.2	148.69	0
1999	1.3725	3.48	4.77	1,215.62	783.55	1,075.42	55.34	140.19	0
2000	1.3023	4.44	5	1,276.40	818.34	1,065.72	60.78	210.68	0
2001	1.2567	3.43	2.48	1,308.05	846.37	1,063.63	31.65	244.42	0
2002	1.3595	2.24	0.63	1,316.29	865.34	1,176.43	8.24	139.86	0
2003	1.486	1.65	0.02	1,316.55	879.61	1,307.11	0.26	9.44	0
2004	1.553	1.84	0.39	1,321.68	895.76	1,391.12	5.13	-69.43	69.43
2005	1.4293	2.6	2.15	1,421.03	919.09	1,313.65	29.91	107.38	70.92
2006	1.5044	3.69	3.72	1,473.89	953.02	1,433.73	52.86	40.16	73.56
2007	1.5803	4.05	3.41	1,524.15	991.62	1,567.06	50.26	-42.91	118.98
2008	1.5403	2.56	0.46	1,574.27	1,017.01	1,566.49	7.21	7.78	119.53

Total deficit in the account: 112.34

Total surplus in the account: 1,219.57

Total cost on the deficit amounts accumulated and charged interest: 119.53

Note: The US interest rate is assumed to fall 1 percentage point in 2000.

Source: Kenen (2010b), modified to show the balance on the account.

Another mechanism that puts the entire responsibility on the depositors would be to put the IMF in charge of collecting an annual fee of 1 percent of the dollar reserves deposited in the account at the end of each year. These annual fees would be deposited to a Substitution Account Reserve Fund (SARF), which would invest them in US government securities. This would allow the size of the SARF to grow at a compound fashion, and the accumulated amount can later be used to pay for deficits in the account. In case of an insufficiency of SARF dollar assets to cover deficits, the SARF could borrow from the IMF and pay back from following receipts of annual fees. This is the proposal advocated by Kenen (2010b, p. 11-12), who adds that this arrangement could be modified in two ways: (i) the costs can be divided between the United States and the depositors, and (ii) the SARF can borrow from the United States, instead of the IMF, if its dollar assets are insufficient.

A modified version of this proposal could be based on sharing the costs of keeping the substitution account solvent. For example, the SARF and the United States can share the cost equally, each paying half of the deficiency payments required. The cost-sharing ratios might change depending on how much the total SARF dollar assets will be accumulated. That is, if the total amount becomes easily as large as any deficiency payment required, the United States might only step in when there is an excessive rise in the deficit. In the case of an interest rate shock as in Table 4, annual contributions of 1% of total dollar reserves would amount to US\$108.6 billion by the end of 2004 and US\$150.7 billion at the end of 2007, both of which are large enough to compensate for the deficiency payments required (US\$69.4 and US\$42.9 billion respectively). However, if the simulation begins in 1980, it is seen that the SARF would be in deficit in 1990s and would have to borrow from the IMF or the United States, depending on the final arrangement.

In order to determine the cost of holding the substitution account solvent, so far we have only considered a decline in the US interest rate. Two more shocks might be important in estimating the cost: (i) a rise in the SDR interest rate, and (ii) a depreciation of the US dollar. Table 5 shows the historical simulation for the SDR interest rate increasing 1 percentage point in the year 2000. Similar to Table 4, there are two years with deficits (2004 and 2007) while the rest of the time there is a surplus in the account. The total surplus in the account (US\$1,241.96 billion) is again far greater than the total deficit (US\$118.34). This means that in the presence of a counterpart account in the United States or in the IMF, the total cost would have been zero. If there is no counterpart account in place, the total cost to be shared among the United States and the depositors would be US\$129.43 at the end of 2008. Depending on the cost-sharing mechanism, this amount could either be paid completely by the depositors, by the United States, or by both, as each party assumes a certain share of the cost.

Table 5: Historical Simulation with SDR Interest Rate Increasing 1 Percentage Point in 2000

End of year	US\$ per SDR	SDR interest rate	US interest rate	Dollar amount in SA	SDR amount in SA	Dollar value of SDR amount	US interest payment	Balance on the SA	Total cost to be shared
1995	1.4865	4.58	5.65	1,000.00	672.72	1,000.00	–		0
1996	1.438	3.9	5.14	1,051.40	698.96	1,005.10	51.4	46.30	0
1997	1.3492	4.07	5.2	1,106.07	727.4	981.41	54.67	124.66	0
1998	1.3359	4.1	4.9	1,160.27	757.23	1,011.58	54.2	148.69	0
1999	1.3725	3.48	4.77	1,215.62	783.55	1,075.42	55.34	140.20	0
2000	1.3023	5.44	6	1,288.55	826.17	1,075.92	72.94	212.63	0
2001	1.2567	4.43	3.48	1,333.39	862.74	1,084.20	44.84	249.19	0
2002	1.3595	3.24	1.63	1,355.13	890.7	1,210.91	21.73	144.22	0
2003	1.486	2.65	1.02	1,368.95	914.3	1,358.65	13.82	10.30	0
2004	1.553	2.84	1.39	1,387.98	940.23	1,460.17	19.03	-72.19	72.19
2005	1.4293	3.6	3.15	1,506.16	974.11	1,392.30	46	113.86	74.46
2006	1.5044	4.69	4.72	1,577.30	1,019.82	1,534.22	71.14	43.08	77.98
2007	1.5803	5.05	4.41	1,646.86	1,071.32	1,693.01	69.56	-46.15	127.57
2008	1.5403	3.56	1.46	1,717.73	1,109.46	1,708.90	24.72	8.83	129.43

Total deficit in the account: 118.34

Total surplus in the account: 1,241.96

Total cost on the deficit amounts accumulated and charged interest: 129.43

Note: The SDR interest rate is assumed to rise 1 percentage point in 2000.

Source: Kenen (2010b), modified to show the balance on the account.

Tables 6a and 6b show the historical simulations of the cases in which the US dollar depreciates by 10 percent and 20 percent respectively. In both cases, it is clear that a counterpart account would balance the account since the total surplus is greater than total deficit, which would enable the total cost to be equal to zero. However, in the absence of such an account, the total cost amounts to US\$13.70 billion if the dollar depreciates by 10 percent, whereas it increases to US\$321.96 billion if the dollar depreciates by 20 percent. The comparison indicates the importance of the degree to which dollar depreciates in determining what the cost of holding the substitution account solvent would be.

Table 6a: Historical Simulation with US Dollar Depreciating by 10% in 2000

End of year	US\$ per SDR	SDR interest rate	US interest rate	Dollar amount in SA	SDR amount in SA	Dollar value of SDR amount	US interest payment	Balance on the SA	Total cost to be shared
1995	1.4865	4.58	5.65	1,000.00	672.72	1000.00	–	–	
1996	1.4380	3.9	5.14	1,051.40	698.96	1005.10	51.4	46.30	0
1997	1.3492	4.07	5.2	1,106.07	727.40	981.41	54.67	124.66	0
1998	1.3359	4.1	4.9	1,160.27	757.23	1011.58	54.2	148.69	0
1999	1.3725	3.48	4.77	1,215.61	783.58	1075.46	55.34	140.15	0
2000	1.4325	4.44	6	1,288.56	818.37	1172.34	72.94	116.22	0
2001	1.3824	3.43	3.48	1,333.39	846.44	1170.09	44.84	163.30	0
2002	1.4955	2.24	1.63	1,355.12	865.40	1294.16	21.73	60.96	0
2003	1.6346	1.65	1.02	1,426.12	879.68	1437.93	14.4	-11.81	11.81
2004	1.7083	1.84	1.39	1,590.33	895.87	1530.41	21.8	59.92	11.97
2005	1.5722	2.6	3.15	1,721.92	919.16	1445.13	52.58	276.79	12.35
2006	1.6548	3.69	4.72	1,803.19	953.08	1577.19	81.33	226.01	12.93
2007	1.7383	4.05	4.41	1,882.77	991.68	1723.86	79.52	158.91	13.50
2008	1.6943	2.56	1.46	1,910.26	1017.06	1723.24	27.49	187.02	13.70

Total deficit in the account: 11.81

Total surplus in the account: 1,708.92

Total cost on the deficit amounts accumulated and charged interest: 13.70

Source: Kenen (2010b), modified to show the balance on the account.

Table 6b: Historical Simulation with US Dollar Depreciating by 20% in 2000

End of year	US\$ per SDR	SDR interest rate	US interest rate	Dollar amount in SA	SDR amount in SA	Dollar value of SDR amount	US interest payment	Balance on the SA	Total cost to be shared
1995	1.4865	4.58	5.65	1,000.00	672.72	1,000.00	–	–	
1996	1.438	3.9	5.14	1,051.40	698.96	1,005.10	51.4	46.30	0
1997	1.3492	4.07	5.2	1,106.07	727.4	981.41	54.67	124.66	0
1998	1.3359	4.1	4.9	1,160.27	757.23	1,011.58	54.2	148.69	0
1999	1.3725	3.48	4.77	1,215.61	783.55	1,075.42	55.34	140.19	0
2000	1.5628	4.44	6	1,288.56	818.34	1,278.86	72.94	9.70	0
2001	1.508	3.43	3.48	1,333.39	846.37	1,276.36	44.84	57.03	0
2002	1.6314	2.24	1.63	1,355.12	865.34	1,411.72	21.73	-56.60	56.59
2003	1.7832	1.65	1.02	1,426.12	879.61	1,568.53	14.4	-142.41	199.58
2004	1.8636	1.84	1.39	1,590.33	895.76	1,669.34	21.8	-79.01	281.36
2005	1.7152	2.6	3.15	1,721.92	919.09	1,576.38	52.58	145.54	290.22
2006	1.8053	3.69	4.72	1,803.19	953.02	1,720.47	81.33	82.72	303.92
2007	1.8964	4.05	4.41	1,882.77	991.62	1,880.47	79.52	2.30	317.33
2008	1.8484	2.56	1.46	1,910.26	1,017.01	1,879.79	27.49	30.47	321.96

Total deficit in the account: 278.01

Total surplus in the account: 787.61

Total cost on the deficit amounts accumulated and charged interest: 321.96

Source: Kenen (2010b), modified to show the balance on the account.

The worst case scenario that Kenen (2010b) considers is the case in which all of these shocks happen at the same time: the US interest rate declines by 1 percentage point, the SDR interest rate increases by 1 percentage point, and the US dollar depreciates by 20 percent. This is a highly unrealistic scenario because it assumes that the non-dollar interest rates that determine the SDR interest rate increase while the US interest rate declines simultaneously. The total cost in the worst case scenario would be US\$586.2 billion, which corresponds to 3 percent of total US foreign assets and 4.1 percent of US GDP in 2008. In terms of average annual cost, this would be equivalent to 0.2 percent of total US foreign assets and 0.3 percent of US GDP in 2008 (Kenen 2010b, p. 8). That is, the costs of maintaining the solvency of the substitution account is negligible in terms of the size of the total US foreign assets and US GDP, and it would even be much smaller if there is a cost sharing mechanism in which the US pays only half (or less than half) of this amount, depending on the arrangement.

Inflation versus Deflation Effects of SDRs

It is important to consider whether the creation of new central bank money in the form of SDRs would be inflationary or not. Counter-cyclical financing and allocations by the IMF are two mechanisms that would prevent new SDR allocations to have inflationary impact.

As suggested by the IMF economist Jacques Polak, the IMF can switch to a fully SDR-funded system, lending the countries in need with newly created SDRs during crises and destroying these SDRs when they pay back the loans (Polak 1979). Such a counter-cyclical financing mechanism would help stabilize the world liquidity level, enhancing global macroeconomic stability. This could be complemented by counter-cyclical allocations of new SDRs by the IMF, focusing their issuance in periods of financial turmoil and economic recession and partially eliminating them when the economy recovers from crisis (Ocampo 2011). Another principle for new SDR allocations is to regularly allocate SDRs as a fraction of the additional world demand for reserves, which was discussed in the previous sections. In this case, there is no money created unless countries sell their SDR assets to countries that issue freely usable currencies. Even if they exchanged SDRs for these currencies, the relevant central banks can sterilize any money creation that is undesired. As long as new SDR allocations are not made in times of strong global demand and inflationary concerns and the central banks sterilize any undesired money creation, the inflationary impact of SDR allocations is expected to be rather limited.

SDR Basket Composition

Another important debate has been whether other currencies can be added to the SDR basket to make it more representative of the composition of world output, trade and financial transactions. Given the rising share of China in the world's trading and financial system, the central focus of debate has been whether the renminbi should be included in the SDR basket composition. Including a non-convertible currency such as renminbi would enable asset holders to gain exposure to these currencies. However, it could also reduce the demand for SDRs for those countries that prefer to hold only convertible currencies. The benefit of including more countries in the basket is not only a better representation of their growing importance in the world economy, but also a lower volatility of the basket in terms of variance and standard deviation.

The Executive Board of the IMF reviews the SDR basket composition every five years and includes in the basket currencies meeting two criteria: 1) they should be issued by largest exporters, and 2) they should be

freely usable. It is important to note that the IMF does not use the term “fully convertible,” but “freely usable” which implies that it is freely usable for payments, settlements of trade and some FDI investments. Thus, a currency might be considered freely usable even though it is not fully convertible in private markets.

Currently, the SDR basket is composed of 44% US dollar, 34% euro, 11% Japanese yen, and 11% pound sterling. In broadening the SDR basket, the BRIC countries with their large export share are obvious candidates, but the question arises whether their currencies are freely usable. In this context, it is important to recognize that many currencies were actually not fully convertible when they were first introduced into the SDR basket. Thus, the partial convertibility of the renminbi should not be an issue as long as the central bank guarantees the convertibility of renminbi in official transactions.

There are also some reservations about the inclusion of renminbi into the SDR basket. Most notably, the move towards making the renminbi a fully usable currency in private markets would involve liberalizing foreign exchange controls and liberalizing financial and capital markets. This policy shift generates the fear that China might be exposed to volatile capital flows and their destabilizing impacts as in the case of East Asian crisis. Yet analysts agree that China takes a gradual approach in pursuing capital account liberalization that will culminate in the creation of the Shanghai International Financial Center by 2020 (Ikawa 2009, p. 678). The increasing internationalization of the renminbi is in the agenda of Chinese Government as a gradual transformation to prevent any vulnerable exposure to highly unstable and volatile capital flows.

SDR-denominated Bonds

The IMF began issuing bonds denominated in SDRs in 2009, and currently it has issued SDR 3.2 billion in notes to the official sector with a floating interest, and signed notes purchased agreements for SDR 45 billion (IMF, 2011). The IMF had already a framework to issue bonds that was approved in the early 1980 but was never used before 2009. When the IMF began facing cash flow problems in financing its administrative costs in 2008, the proposal to issue bonds was revived. In 2009, the SDR-denominated bonds became a mechanism to increase the resource base of IMF in order to scale up its emergency financing particularly to Eastern European countries.

The SDR-denominated bonds were designed to be traded only between IMF and the central banks of its members. As such, there is no secondary market in which private investors could trade these bonds. As the bonds are denominated in SDRs, they pay an interest rate linked to the SDR interest rate, which is composed of the interest rates linked to its composition. The maturity of the bonds is short, ranging from 12-18 months.

The SDR-denominated bonds bring many advantages for developing and emerging countries. First, they reduce the dependence of central banks on U.S. government securities. The developing countries could simply substitute U.S. treasury bills for SDR-denominated bonds by investing in these bonds. A second advantage is that buying these bonds with accumulated foreign exchange reserves does not require any budgetary or legislative approval. Linked to this property, a third advantage is that developing countries will be able to diversify the currency composition of their reserve holdings as the SDR itself is composed of four different currencies. As long as the interest rates earned by government securities of UK, Japan, and the Eurozone countries are higher than the U.S. treasury bills (as is currently the case), the SDR interest rate will be higher than rate on

U.S. treasury bills, making the SDR-denominated bonds more attractive for official investors. Last but not the least, the SDR-denominated bonds allow the developing countries to limit their financial support for the IMF to a particular period, instead of an open-ended commitment through the New Agreements to Borrow (NAB). This limitation provides leverage for the developing countries to push further quota reforms that represent them more evenly in return for making their contributions less temporary (Prasad 2009).

Issuing bonds provide the IMF more expanded resources, with which it could deal with ongoing crisis more effectively. With the highest demand for safe assets in the current financial turmoil, the expansion of the SDR-denominated bond market would be easily achieved and it would be a great service to calm down financial distress since the bonds are backed not only by a single government, but by all member states of the IMF. To create market depth and liquidity, the SDR-denominated bonds should be also sold to the private investors, who under current rules cannot buy or trade these instruments. It would, therefore, be necessary to change the current Articles and clarify the maturity structure of the bonds and the design of appropriate safeguards to prevent conflicts of interest associated with the Fund's financing role and its new role as global borrower and investor of borrowed resources. In the long-term, once sufficient market depth and liquidity is established, the SDR-denominated securities could replace other global assets in pricing risk globally, and thereby become "an embryo of global currency" (IMF 2011).

The Absence of Private Markets for SDRs

Some analysts have found the SDR-based reform of the reserve system limited because a major boost to the role of the SDR relies on its transformation into an asset held by the private sector (Cooper 2009, Eichengreen 2009). The private use of SDRs is certainly necessary for the SDR to compete with the dollar in private transactions. If the private actors are not even allowed to hold SDRs, it is hard to imagine how the SDR could replace the dollar in private markets.

The absence of private markets for SDR use does not, however, prevent its use as a central bank asset in reserve accumulation and debt settlement processes. As long as central banks agree to accept SDRs from one another in exchange for convertible currencies, the SDR performs the function of medium of exchange in inter-central bank transactions. The real issue is whether a central bank can use SDRs to intervene in the foreign exchange market. The inability to do so in the earlier period of reform creates an inconvenience that raises the question of whether SDRs are a better asset for central banks to hold (Williamson 2009).

This inconvenience can nevertheless be overcome if the free transferability of SDRs to issuers of demanded currencies in exchange for these currencies at the prevailing exchange rate is guaranteed. Each IMF member has to guarantee the obligation to freely accept SDRs in exchange for their currencies. As Kenen (2010b) discussed, this obligation can be accepted by members in the second stage of reform which comes after the regular and large scale allocations of SDRs by the IMF and their increased use as reserve assets, and it can take a decade to accomplish this initial phase. Once this phase is completed, the transition to the second stage would then allow each country to access any currency they need freely by transferring their SDRs, after which they can intervene in the foreign exchange markets to modify their exchange rates. Therefore, the absence of private markets for SDRs would no longer be an obstacle to their use in foreign exchange market intervention.

Political Difficulties

The SDR-based reform of global reserve system has to take into consideration the political difficulties and ways to reconcile them. It is well-known that the failure of the SDR to play a major role in the late 1970s was due to the unwillingness of the United States to guarantee the solvency of the substitution account as it would place the whole burden of exchange rate risk as well as less costly interest rate risks on this country. To avoid the same kind of failure to reach an agreement, it is therefore essential to design a cost-sharing mechanism that distributes the potential costs among the countries participating in the substitution account. Different types of cost-sharing mechanisms are evaluated in the previous section. In what follows we will consider the interests of the United States and the developing countries in an effort to find common grounds that can form the basis of agreement for the reserve system reform.

United States Interests

It is commonly assumed that the United States has a strong national interest against the enhanced role of the SDR since this enhancement might come at the cost of restraining dollar's international use. The situation is, however, more of a trade-off between two opposing influences:

- 1) The United States gains from international acceptance of the dollar and its reserve asset status by reducing its cost of borrowing, financing its foreign debt more cheaply, and its ability to thereby conduct strong counter-cyclical macroeconomic policies. This means that the United States is better off due to the seigniorage benefits that accrue to it. It can achieve this benefit by virtue of the "exorbitant privilege" of issuing a reserve currency as foreign official holders demand the dollar.
- 2) It loses by the increasing current account deficits that have adverse effects on the U.S. domestic demand. In order to offset this reduction in domestic demand, the U.S. has to maintain persistent expansionary fiscal and/or monetary policies that would lead to increased public and/or private indebtedness. These twin deficits require the periodic use of contractionary policies that in turn depress the U.S. economy.

The seigniorage benefits derived from the international acceptance of the dollar come at the cost of larger external deficits and higher levels of debt that encourage capital flight and create adverse effects on the U.S. economy. Another disadvantage of having the dollar as the reserve currency is the risk of losing monetary policy autonomy if the United States has to respond to the demands of major holders of the dollar reserves in U.S. government debt by not pursuing policies that would result in the depreciation of the dollar. Thus, if the U.S. desires to keep its monetary policy autonomy coupled with a reduction in its twin deficits and overall indebtedness, the transition to an SDR based reserve system that promotes global financial and economic stability is in its best interest. It is also important to keep in mind that the confidence in the dollar as a reserve currency seems to be eroding (given the depreciative impact of U.S. expansionary monetary policy), and this erosion would restrain the ability of the U.S. to continue borrowing at low interest rates.

In the transition process, it will be essential to enhance the role of SDRs first only as a reserve asset by limiting its holding to central banks and some international institutions, and not pursuing its use as an international means of payment. The use of the dollar as a means of payment increases the demands for the

U.S. financial services. Giving up this role would be costly for the U.S. economy and therefore is likely to face resistance from the U.S. congress. It is hence more politically feasible to pursue changes in the reserve asset role of the dollar, which are also in the long term interest of the U.S. given the gradual erosion of confidence in the dollar as a reserve currency.

Developing Countries Interests

The developing countries that hold large-scale dollar reserves would incur fewer costs from depreciation of dollar if they transform a large part of their reserves into SDRs through a substitution account. If the dollar depreciates in the subsequent years, it will be essential to determine who bears the cost. Under a cost-sharing mechanism, the depositors of large dollar reserves would equally share the potential costs with the United States, but as shown previously, the creation of a counterpart account could actually balance the substitution account without any costs to any parties involved. In the absence of this counterpart account, however, the developing countries with large dollar reserves would partly bear the cost of holding the substitution account solvent. Yet, these additional costs would still be less than the losses of holding dollar reserves in case of its depreciation. Thus, in the short run, it is in the best interest of developing countries to switch a large part of their reserves into SDRs.

In the medium run, periodic SDR allocations of the IMF would give the developing countries the benefit of sharing in the seigniorage resulting from reserve creation. If they continue to rely on other reserve currencies, the seigniorage benefits would be captured by the issuers of these currencies, i.e. the United States and Eurozone countries. Thus, the policy of SDR allocations is the only way that developing countries would receive part of the seigniorage benefits. Coupled with the potential costs of rising instability from shifting to a multi-currency system and the costs of an ongoing global imbalance from relying on the dollar as the major reserve currency, the advantages of moving towards an SDR-centred system for the developing countries are obvious. It should also be emphasized that the cost of borrowing reserve currencies from the international markets is rather large for many developing countries, and this would come down to very low levels if the IMF allocates SDRs to its members on a regular basis.

These benefits in the medium run would extend over the long run for developing countries whose currencies have no potential to become a reserve currency. For the obvious country whose currency is a candidate to become a major reserve currency in the future, i.e. China, some argued that the long run benefit of the ability to finance a larger current account deficit and expand domestic consumption significantly due to the demand for renminbi as a reserve currency might exceed the benefit of an SDR-based system (Subramanian, 2009). There are, however, good reasons to resist assuming the role of the reserve currency: 1) there are disadvantages of becoming a large short-term debtor due to potential instabilities this situation creates; 2) there are costs of the instability of a multi-currency system as the central banks lose from speculation about the best reserve currency composition with greatest yield; and 3) the creditor countries receive a leverage over debtor countries, having the potential to restrict their policy autonomy (Williamson, 2009). Given these potential disadvantages and costs, the benefits from running a larger deficit do not necessarily result in net benefits overall. Even if attaining the reserve currency status for the renminbi is the goal over the long term, the transition from the dollar to the SDR would carry net advantages for China in the short and medium runs.

An SDR-based reform of the reserve system would also bring to the developing countries the additional benefit of financing global public goods such as green technology transfers and health initiatives. The enhanced funding opportunities may help developing countries achieve MDGs.

Complementary Reforms for the SDR-Based System

A number of supplementary reforms are necessary for the SDR-based reserve system to function better than the current system. These include the International Clearance Unit that was originally proposed by Keynes and the regional financial arrangements including reserve pools such as the Chiang Mai Initiative, the Latin American Reserve Fund, and the Arab Monetary Fund.

International Clearance Unit and the IMF's Role

Counter-cyclical IMF allocations of SDRs and IMF lending to countries with SDRs are essential as central mechanisms to prevent any inflationary bias new SDR allocations might generate. It should be recognized, however, that the current conditionalities of the IMF credit lines and the associated negative public opinion requires a complementary reform. As Ocampo suggested, it is time to create “an overdraft facility that can be used unconditionally by all IMF members up to a certain limit and for a pre-established time period” (2010b, p. 15). An international clearance unit as an overdraft facility was part of Keynes’ original plan, but was never adopted due to disagreements among major powers. The importance of this facility is that it would partly overcome the asymmetric adjustment between surplus and deficit countries, which would not be eliminated by the shift to the SDR as a reserve currency. A penalty can be introduced for accumulating large surpluses or excessive reserves by suspending the right to receive SDR allocations (Ocampo 2010b, p. 16). A more ambitious quota reform is required to make sure not only that the new SDR allocations are distributed more evenly, but also that the decision-making within the IMF becomes more democratic, representing the realities of the current world economy.

Regional Arrangements

The Stiglitz Commission (2009) proposed that the new global reserve system should be built in a bottom-up fashion where the agreements among regional monetary arrangements play a central role. This proposal conceives the future of the IMF as a network of regional reserve funds, which is similar to the design of the World Bank coexisting with many regional development banks and other sub-regional institutions. Regional arrangements would play an important role in improving the global macroeconomic stability through a number of mechanisms: 1) by enhancing collective insurance through additional forms of credit lines and swaps, 2) by providing a venue for macroeconomic policy coordination and dialogue, and 3) by increasing the voice of smaller countries to which they respond in a timely fashion (Ocampo, 2006).

Reserve pools, among other forms of regional monetary arrangements (such as swap lines, common central banks, and payments agreements), have been major institutions that provided additional forms of collective insurance to their members. The most successful of the reserve pools are:

The Chiang Mai Initiative (CMI):

Launched in May 2000 in Chiang Mai, Thailand, the CMI consists of ten member countries of the Association of Southeast Asian Nations (ASEAN) and China, Japan and South Korea. Its central objective was to offer short-term financial support for neighboring countries that run into balance of payments problems. Originally consisting only of swap agreements among ASEAN+3 countries, the CMI was multilateralized since May 2009. That is, the bilateral currency swap agreements were transformed into a single regional pooling arrangement (Volz et al., 2011). In the wake of the financial crisis in 2009, the funds of the CMI were raised to US\$120 billion. The funding available to potential borrowers are relatively small compared to the region's foreign exchange reserves. However, it is still a multiple of the quotas of the region's less developed countries at the IMF. One downside to the operations of CMI is the "IMF link", which allows only 20% of the credit lines to be used if the borrowing country does not have a lending program with the IMF (Volz et al. 2011). This provision certainly limits the scope of lending although the size of the lending pool is substantially large.

The Latin American Reserve Fund (FLAR):

Founded in 1978 by the Andean countries (Bolivia, Colombia, Ecuador, Peru and Venezuela), the FLAR enlarged in 1989 when Costa Rica joined and in 2008 when Uruguay joined. The initial objective was to give short-term liquidity support to the balance of payments of its members. Currently, it pursues additional goals of "improving the liquidity of international reserve investments; facilitating the restructuring of public debt; and helping to harmonise the member countries' monetary, exchange and financial policies" (Volz, 2011). Despite its smaller size relative to CMI (US\$1.77 billion), the Fund provides privileged access to smaller and less developed countries such as Bolivia and Ecuador, which can borrow up to 350% of their capital contribution while others only up to 250%. The heterogeneity of member countries assures that their demand for liquidity does not coincide in time, indicating that the Fund has good capacity to prevent the spread of contagion in the region.

The Arab Monetary Fund (AMF):

Founded in 1976 by 22 Middle Eastern countries, the AMF provides balance of payments support similar to the CMI and the FLAR. Besides, it promotes Arab monetary cooperation by supporting the development of Arab financial markets and the regulatory mechanisms that would support effective functioning of these markets. Furthermore, it offers advice to member states about investment of financial resources into foreign markets, and it encourages intra-regional trade. The total amount of capital contributions to the Fund was US\$2.8 billion in 2009. The potential borrowers are net energy importers, and in this sense, the Fund can be thought of providing short-term lending from the world's largest gas and oil producers to the importers of energy in the Middle East in order to support their balance of payments. Although there is no formal IMF link, the borrowing countries that apply for extensive funding are implicitly expected to apply to international lending institutions.

Overall, despite their limitations in terms of mostly being a supplement to the IMF lending, these regional reserve funds provide a collective mechanism to defend individual countries from any speculative attacks on their currencies. Therefore, they should be seen as complementary lending facilities with crucial stabilizing functions.

Conclusions

This paper argues that it is possible to overcome the technical and political difficulties in launching an SDR-based reserve system and a fully SDR-funded IMF in order to build a more stable and equitable international monetary system. Under this system, the IMF would allocate SDRs counter-cyclically and treat them as deposits of countries, which could be used in lending to them. This would be valid even though SDRs are confined to act as a means of payment only among central banks and not private agents. Reforming the system in this way would be effective in addressing some of the core imperfections of the current global monetary system. Developing countries in particular would benefit from this reform given that they would receive part of the seigniorage related to global monetary creation, and that their balance of payments needs require them to use their SDR allocations more frequently.

Previous estimates of SDR allocations point to a range of US\$200–300 billion a year as a conservative estimate. The estimate in this paper is based on the annual average of world demand for additional reserves with the lower bound US\$246 billion over 2000-05 and the upper bound US\$443 billion over 2006-10. Thus, the recent recommendation of Stiglitz et al. (2011) for annual allocations ranging US\$240-400 billion is a reasonable estimate to satisfy the rapidly rising world demand for reserves. The most recent Fund proposal falls short of this amount with a range of US\$117–133 billion a year for three years beginning in 2014.

One of the most important technical difficulties in the transition towards an SDR-based reserve system is the costs of a substitution account which are deficiency payments that might arise from a decline in US interest rate, an increase in SDR interest rate, or a depreciation of the US dollar. In the 1970s negotiations, the United States refused to take responsibility as the single country to maintain the dollar value of SDR-denominated assets in the account, which brought the negotiations to a dead end. To prevent such an outcome again, one should pay attention to two aspects of the substitution account. First, historical simulations indicate that the substitution account alternates between periods of surplus and deficit in terms of dollars, and the deficiency payments arise only in periods of deficit. To avoid the accumulation of deficits, a counterpart account – which would be credited when the substitution account is in surplus and debited when it is in deficit – should be established. This would effectively eliminate the problem of which country would pay for the potential costs.

Second, in the absence of a counterpart account, different cost-sharing mechanisms could be devised by :

- (i) dividing the cost (the sum of deficiency payments) between the United States and the IMF as the latter can use its dollar or gold holdings;
- (ii) distributing the costs among depositor countries proportional to their shares of dollar deposits in the account such that larger holders pay a higher cost;
- (iii) having the IMF collect an annual fee of 1 percent of the dollar reserves deposited in the account such that depositors pay for the costs and establish a fund to invest these fees in US government securities; and
- (iv) modifying the previous option to have this fund and the United States share the cost in some way.

The historical simulations indicate that, even in the worst case scenario when all downside risks take place, the costs of maintaining the solvency of the substitution account would be 0.2 percent of total US foreign assets and 0.3 percent of US GDP in 2008, which is negligible and it would even be much smaller if there is a cost sharing mechanism in which the US pays half or less than half of the cost depending on the arrangement.

Other technical questions discussed could be summed up in four points. First, would the new SDR allocations have an inflationary effect? The answer is no as long as they are not made in times of strong global demand and inflationary concerns and the central banks sterilize any undesired money creation. Second, could other currencies be added into the SDR basket to better represent the composition of world output and lower the volatility of the value of SDR? The answer is positive for renminbi which satisfies IMF's criteria by being issued by one of the largest exporters and by being freely usable for payments, settlements of trade and some FDI investments as long as the central bank guarantees its convertibility in official transactions.

Third, what would be the role of SDR-denominated bonds in this reform agenda? These bonds have many advantages for developing countries by not only being a substitute for the other major short-term assets, but also serving a means to push further quota reforms at the IMF. The SDR-denominated bonds could replace other global assets if they reach sufficient market depth and liquidity with the involvement of private investors. Fourth, is the absence of private markets a problem for the use of SDRs as a central bank asset in reserve accumulation or for intervening in the foreign exchange markets? The answer is no because as long as central banks accept SDRs from one another in exchange for convertible currencies, the SDR is a medium of exchange in inter-central bank transactions. For intervening in the foreign exchange markets, each IMF member has to guarantee the obligation to freely accept SDRs in exchange for their currencies.

Political difficulties result from a diversion of interests between the United States (and other reserve issuers), and the developing countries as demanders of reserves. In the initial stages of reform, it is important to promote the SDRs only as a reserve asset and not as an international means of payment, which would be costly for the US economy. This would make the reform more politically feasible. This is also in the long term interest of the U.S. given the gradual erosion of confidence in the dollar as a reserve currency and the risk of losing monetary policy autonomy. For the developing countries holding dollar reserves, the costs of transition to an SDR-based system would be lower than the cost of dollar depreciation if they exchange their reserves for SDRs through a substitution account. In the medium run, new SDR allocations would allow developing countries to share in the seigniorage resulting from reserve creation and lower the cost of borrowing international reserves. Converting the unutilized SDRs of industrial countries into equity of global funds would help finance global public goods including climate change mitigation and adaptation and global health initiatives. By and large, the reserve issuers and demanders have more interests in common than in opposition to lay the building blocks of an SDR-based international monetary system that relies on a network of the IMF and regional monetary arrangements.

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NOTES

- * This paper was written as a background paper for WESS 2012. I am extremely grateful to the members of the WESS team who read and provided useful comments in rewriting this paper. Special thanks to José Antonio Ocampo, Manuel Montes, Pierre Kohler, Shari Spiegel, Nazrul Islam, and Oliver Schwank. Any remaining errors are mine.
- 2 This figure could indeed be higher because many analysts suspect that China does not report its holdings of foreign exchange reserves to COFER, IMF (seen as unallocated reserves in Table 1), and probably holds a larger percentage of its reserves in US-denominated assets (Kenen, 2010a).
- 3 Kenen (2010) has written that some of those who read his paper suggested this as a solution, but Kenen's own suggestion differs from this solution, which we will discuss below.