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Reforming the International Monetary System

Emmanuel Farhi
Pierre-Olivier Gourinchas
Hélène Rey

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REFORMING THE INTERNATIONAL MONETARY SYSTEM[1]

Emmanuel Farhi[2], Pierre-Olivier Gourinchas[3], and Hélène Rey[4]

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[2] Harvard University and NBER

[3] UC Berkeley, NBER and CEPR

[4] London Business School, NBER and CEPR

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EXECUTIVE SUMMARY

International liquidity. Our proposals for the reform of the international monetary system focus on liquidity provision. They will help to limit the effects of individual and systemic crises and to decrease their frequency. We make five principal recommendations.

1 – Develop alternatives to US Treasuries as the dominant reserve asset, thereby accelerating the inevitable transition to a multipolar system. In particular, we recommend the issuance of mutually guaranteed European bonds. Also necessary (though in the more distant future) are opening of the Chinese capital account, convertibility of the yuan, and development of a yuan bond market.

2 – Make permanent the temporary bilateral swap agreements that were put in place between central banks during the crisis.

3 – Strengthen and expand such International Monetary Fund facilities as Flexible Credit Lines (FCLs), Precautionary Credit Lines (PCLs), and the Global Stabilization Mechanism (GSM). Also expand the IMF's existing financing mechanisms—notably, the New Arrangements to Borrow (NAB)—and allow the IMF to borrow directly on the markets.

4 – Establish a foreign exchange reserve pooling mechanism with the IMF that will provide participating countries with more liquidity and, incidentally, allow reserves to be recycled in the financing of productive investments.

To limit moral hazard, we propose to set up specific surveillance indicators to monitor "international financing risks".

In addition, our analysis indicates that:

– an international monetary anchor is neither desirable nor realistic; and

– transforming special drawing rights (SDRs) into a true international currency would be unlikely to solve the fundamental problems of the international monetary system.

Financial account liberalization. Capital flows in emerging markets may be excessive and volatile. Under certain specific and predefined circumstances, we recognize the merits of using temporary capital controls (along with prudential and monetary measures) to ensure the macroeconomic and financial stability of such countries.

Under certain limited circumstances, capital flows may yield negative externalities in the rest of the world; hence they should be subject to mutual monitoring. Toward this end, we offer our final recommendation as follows.

5 – Extend the mandate of the IMF to the financial account, and strengthen international cooperation in terms of financial regulation.

DETAILED SUMMARY

The international financial and monetary system must adapt to the global economy's upcoming challenges by laying down the foundations for renewed world macroeconomic and financial stability.

The nonsystem that characterizes the world economy since the collapse of the Bretton Woods Agreement is the object of much criticism in terms of exchange rate volatility; abrupt reversal of private capital flows; persistent and "upstream" external imbalances (net capital flows moving from emerging to rich countries); asymmetry in the adjustment mechanisms between borrowing and lending countries; asymmetry in the adjustment mechanisms between the United States, whose currency lies at the center the current arrangement, and the rest of the world; and excessive accumulation of foreign reserves by emerging countries. Moreover, some consider this "system" to be an aggravating factor—or even a trigger—of the financial imbalances at the root of the recent financial crisis.

Taking a stand on these issues requires a two-step analysis. In the first step, we examine how the international monetary system functions (or fails to function) during systemic crises, such as the one recently experienced. Through what mechanisms did the prevailing system contribute to the weakening of the financial system and global economy? What role did the system play during the crisis itself? In other words, what are its systemic inefficiencies? Our answers to these questions reveal an essential function that the international monetary system must satisfy in times of crisis: the provision of liquidity. The absence of systematic mechanisms to allow for the sufficient and coordinated supply of liquidity is a major weakness of the current system. This deficiency exacerbates individual countries' self-insurance decisions in the form of accumulating excess foreign reserves. These decisions are individually optimal but socially inefficient.

In this paper we develop several concrete proposals that aim not only to increase the coverage of global liquidity necessary when facing individual and systemic crises but also to reduce demand for foreign reserves.

- Promote the development of alternatives to US Treasuries as a dominant reserve asset to accelerate the inevitable transition to a multipolar system. From this perspective, the issue of mutually guaranteed European bonds seems particularly desirable. In a probably more distant future, necessary steps may

include opening of the Chinese capital account, convertibility of the yuan, and development of a yuan bond market.

- Make permanent the temporary bilateral swap agreements that were put in place between central banks during the crisis.

- Strengthen and expand such IMF facilities as Flexible Credit Lines (FCLs), Precautionary Credit Lines (PCLs), and the Global Stabilization Mechanism (GSM); also, expand the IMF's existing financing mechanisms—notably, the New Arrangements to Borrow (NAB)—and allow the IMF to borrow directly on the markets.

- Establish a foreign exchange reserve pooling mechanism with the IMF that will provide participating countries with better coverage than self-insurance and, incidentally, will allow reserves to be recycled in the financing of productive investments.

These measures, which reinforce the mechanisms that provide the liquidity required for proper functioning of the global economy, will have to be paired with prudential monitoring by the IMF of the evolution of financial balance sheets (by currency and maturity) so that the terms and conditions of access to liquidity can be adjusted in times of crisis.

It is important to note that, according to our analysis, the global provision of liquidity *need not involve* the issuance of SDRs; nor does it require "anchoring" the system through coordination of foreign exchange policies. Special drawing rights are complex and poorly adapted to the liquidity needs of the global economy. Their use—which can be justified under certain limited conditions—would not, in itself, cure the structural inefficiencies of the international monetary system. And a monetary anchor assumes that the priorities of monetary policy (economic and financial stability, including stable prices) can be changed in favor of external objectives. However, such an evolution is neither feasible nor clearly desirable.

The second step of our analysis concerns the regulation of international capital flows and of the exchange rate movements that these flows induce. The consensus on these issues has changed significantly. Institutions such as the IMF now recognize the merits of targeted capital controls, especially in times of excessive volatility of capital flows. In addition, the issue of external adjustments must be examined—given that the world economy remains in a liquidity trap.

We recognize the need, in some specific cases, for temporary controls on capital inflows. Such controls should be paired with a set of prudential and monetary measures. Finally, under certain limited circumstances, capital flows may create negative externalities in the rest of the world and must therefore be subject to mutual monitoring. Toward this end, we recommend extending the mandate of the IMF to the financial account and strengthening international cooperation in terms of financial regulation.

Our proposed reforms of the international monetary system are complementary to but in no way a substitute for the equally necessary *reform of the regulatory and supervisory architecture of the financial system* (which is not the topic of this paper).

SECTION 1: BACKGROUND

The international *monetary* system is the set of rules, conventions, and institutions that govern the conduct of monetary policies, their coordination (or noncoordination), exchange rates, and the provision of international liquidity. It is intimately linked to the international *financial* system, whose operation depends notably on the modalities under which liquidity is provided. By many measures, the US dollar continues to dominate the international monetary system—nearly 40 years after the Bretton Woods Agreement, which initiated flexible exchange rates and ended the peg between gold and the dollar. Despite this dominance, there is a trend toward a "multipolar" world with more than one widely used reserve currency.

1.1. Reserve and intervention currency

The US dollar is the main reserve currency. In September 2010, the dollar alone represented about 60% of the world's reserves whose currency denomination is identified. The dollar's share was about 70% at the euro's debut in 1999.[5]

The dollar's share has remained fairly significant despite the increasing role of the euro, which rose from 18% to 27% of identified reserves over the period 1999–2010. This fact is especially striking when one recognizes the notable increase of global reserves in *absolute* terms. Official reserves identified (resp. not identified) by currency amounted to $1,200 billion (resp. $1,600 billion) in early 1999 against $5,000 billion (resp. $9,000 billion) in late 2010. See Figure 1.

Emerging economies have contributed significantly to this increase. In September 2010, China alone held 42% of emerging countries' reserves, which amounted to 27% of total world reserves. The composition of Chinese reserves in terms of currencies is not known on a continuous basis. However, in September 2010, the *China Securities Journal* revealed the following breakdown for the $2,450 billion reserves of the People's Bank of China (PBC): 65% in dollars, 26% in euros, 5% in sterling, and 3% in yen.[6] This means that the PBC held approximately $1,600 billion in dollars, at least half in the form of US Treasury bills.[7]

Meanwhile, Japan (public and private sectors) in September 2010 held about $870 billion in US Treasury bills. The United Kingdom and oil-exporting countries held about $460 billion and $220 billion (respectively) in US Treasury bills.

[5] Part of this decline is accounted for mechanically by the depreciation of the dollar over the period: about 12% depreciation (nominal effective rate) between January 1999 and September 2010.
[6] At the end of 2010, China's official reserves amounted to $2,850 billion.
[7] Figures are from the U.S. Treasury Department.

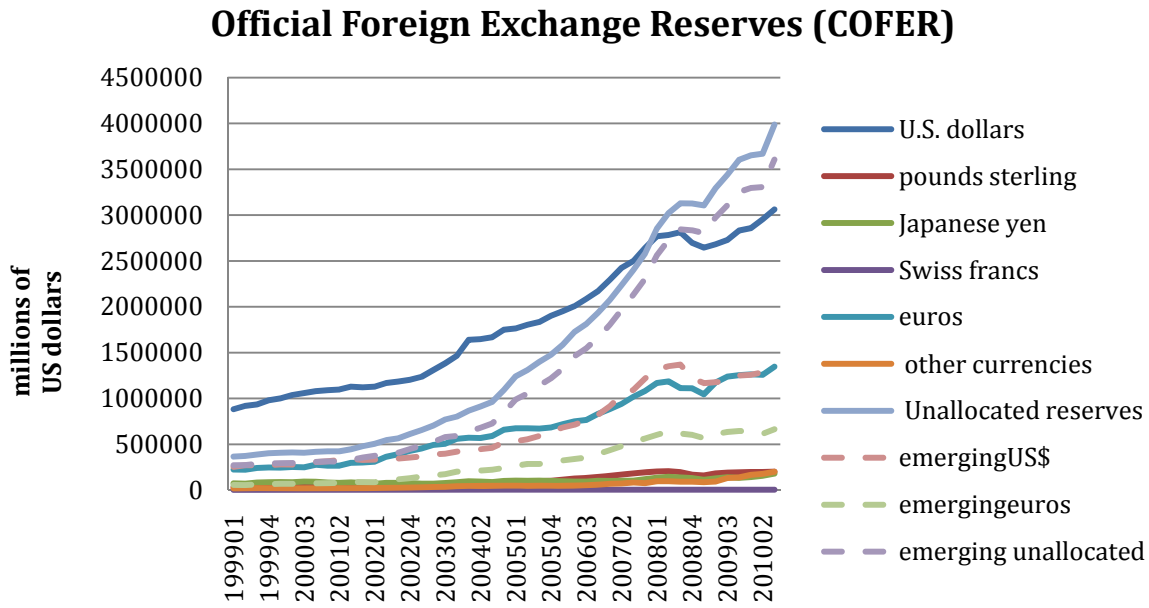

Figure 1: Breakdown of global outstanding reserves by currency.

Two factors explain the uninterrupted dominance of the dollar as reserve currency. The first is the depth of markets for US Treasury bonds, particularly T-bills. The eurozone's bond market, the only one of potentially comparable size, is not integrated because European States retain their budgetary sovereignty. The second factor is related to the (perceived) safety or reliability of US Treasury bills: the risk of erosion of their value through inflation, devaluation of the dollar, or default is considered to be low. These safety features are directly related to the perceived institutional quality of the United States and the fiscal capacity of the US government, whose solvency (as of now) is not being challenged.

The solvency of the US economy, the world's largest, is the sine qua non for the international liquidity of US Treasuries. This solvency is of particular importance in times of systemic crisis, when US Treasury bills help protect their holders from global shocks.

1.2. The dollar's other functions as an international currency

The dollar is no less dominant when it comes to most other functions of international currencies. Figures from the April 2010 Bank of International Settlements (BIS) triennial survey on transactions in foreign exchange markets suggest that the dollar is used in 85% of transactions, slightly down from its peak of 90% in 2001. By comparison, the euro's share is 39%.

The preferred currency in international trade remains the dollar. This is disproportionately true relative to the size of US exports (Goldberg and Tille 2008). In terms of exchange rate regimes between 2000 and 2007, nearly half of all currencies were directly linked to the dollar by a currency board, had a fixed exchange rate, or used the dollar as a reference in order to limit variations in currency value (Goldberg 2010).

These corroborating indicators show that the US dollar is still the international currency of choice—whether compared with the euro or with the currencies of some emerging countries.

The various functions of an international currency (reserve and intervention currency, exchange currency for trade and financial transactions, unit of account and of denomination) are complementary. A country that fixes its exchange rate vis-à-vis the dollar will tend to intervene on the foreign exchange market in dollars and also to accumulate reserves in dollars. The dollar will be this country's currency of choice for commercial and financial transactions so that it can limit currency risk. These complementarities and the network externalities associated with liquidity—currency's role as a medium of exchange—help explain why there is little change over time in the international monetary system's dominant currency.

The pound sterling, the international currency of the 19th century and early 20th century, was only gradually dislodged by the dollar starting in the 1920s (Eichengreen and Flandreau 2010) but not finishing until after World War II (Chinn and Frankel 2005).

1.3. Roles and benefits of an international currency

The economic benefits of an international currency—beyond *seigniorage*, which is traditionally valued at a few tenths of percentage points of GDP—are difficult to quantify.

The international role of the dollar reduces US transaction costs for goods and financial trades, and it also helps absorb some external shocks to the US economy (since, for example, commodity prices are fixed in dollars). It reduces the currency risk associated with investment decisions. By increasing the demand for dollar assets, it also helps to finance the external deficits of the United States.

Through its external position, the United States plays the role of global venture capitalist: borrowing via the sale of mostly low-risk assets (T-bills, US Treasury bonds) and investing in riskier foreign assets (direct investment, equities). In this way, the United States pockets a positive return differential on its external balance. This gain is estimated to be about 2% per annum in real terms over the period 1952–2009

(Gourinchas, Rey, and Govillot 2010). The return differential is attributable both to a risk premium (assets are riskier than liabilities) and to a liquidity premium on debt (especially short-term debt).

These elements—easy external financing and a positive return differential—contribute to relaxing the external budget constraints of the United States, a phenomenon sometimes called the "exorbitant privilege". However, it is important to realize that this privilege is essentially counterbalanced by an equally "exorbitant duty". Indeed, as issuer of the reserve currency, the United States provides liquidity to the world, especially in times of crisis. At the height of the financial crisis of 2008, the net position of the United States deteriorated by 19% of GDP. This net transfer to the rest of the world is the price for being issuer of the reserve currency.[8]

International liquidity

US Treasury bills sell well in the rest of the world, and they make up an important part of the external liabilities of the United States. Krishnamurthy and Vissing-Jorgensen (2010) show that the high liquidity and safety of Treasury bills makes them near substitutes for cash. Thus, T-bills benefit from a liquidity premium of approximately 70 basis points (0.7%) relative to AAA corporate bonds. Their plot, which is reproduced here as Figure 2, shows (logically enough) that the liquidity premium of Treasury bills is higher when their supply falls. For central banks, US Treasury bills constitute the reserve asset *par excellence*.

Indeed, as discussed previously, a reserve asset must be easily and quickly exchangeable and its value must be stable. These features are critical, especially in times of crisis. In normal times, liquidity in dollars is provided to the private and official sectors not only with Treasury bills but also with bonds issued by such US agencies as Freddie Mac and Fannie Mae, or even with AAA corporate bonds or AAA securitized assets. In normal times, these assets are close substitutes. They are safe in the *microeconomic* sense of the term (i.e., they are safe in the absence of macroeconomic shocks). In times of crisis, however, the liquidity and risk premium of all AAA assets diverge; only Treasury bills retain their liquidity and safety. Figure 3 shows the changes in value of financial assets held by the United States and the world over time. It is remarkable that—thanks in part to the dollar's appreciation, and unlike other classes of financial assets—the value of US Treasury bills has not declined.

[8] See Gourinchas, Rey, and Govillot (2010).

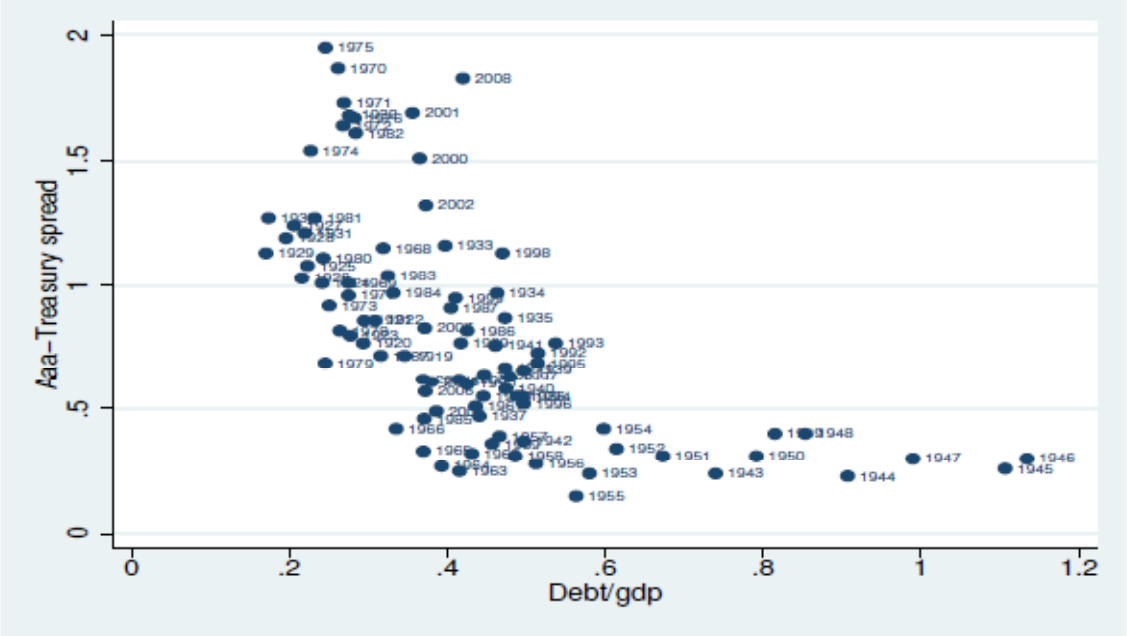

Figure 2: Spread between AAA bonds and US T-bills versus ratio of debt to GDP (percentages).
Source: Krishnamurthy and Vissing-Jorgensen (2010).

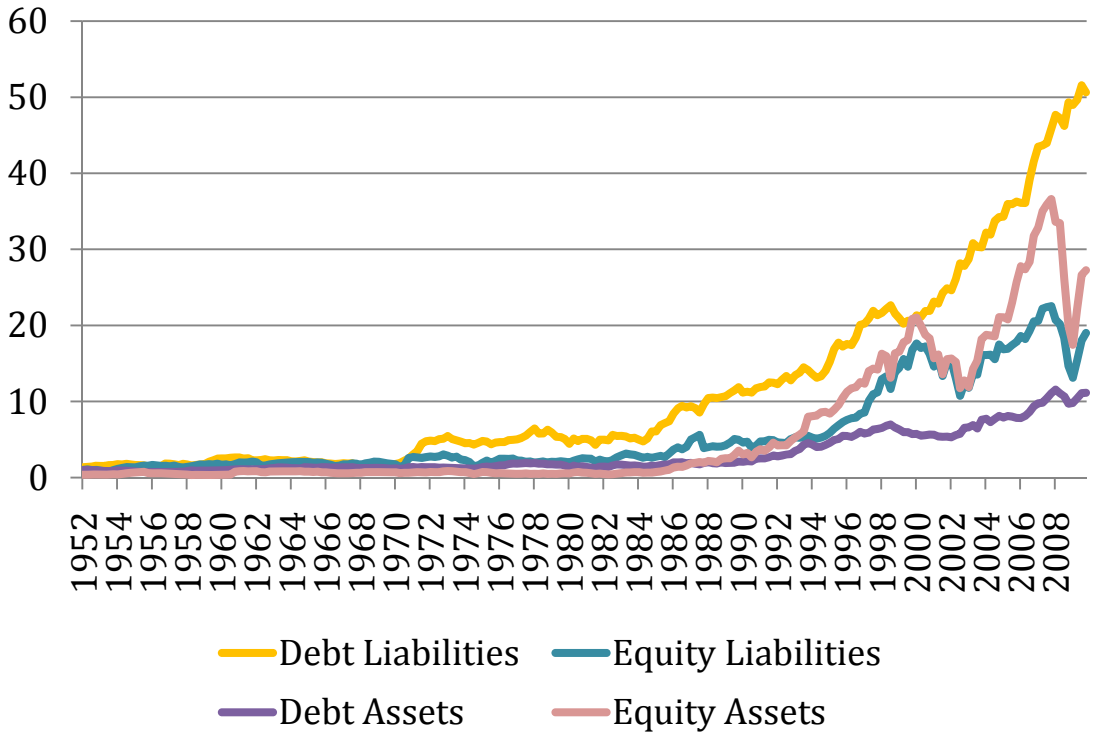

Figure 3. Stock of US external debt and equity as a percentage of GDP.
Source: Gourinchas, Rey, and Govillot (2010).

In other words, US Treasury bills provide *protection against systemic risk*; hence they are safe even in the *macroeconomic* sense of the word. Part of this negative correlation with global shocks comes from the T-bill's intrinsic qualities just described: liquidity stemming from market size; credible fiscal and institutional backing, which reduces the likelihood of their value being eroded by inflation or by default; and absence of asymmetric information. The other part is endogenous: in times of economic crisis, agents retreat to the "safe haven" of Treasury bills; this leads to a rise in their price and to an appreciation of the dollar. Table 1 (extracted from McCauley and McGuire 2009) illustrates this flight to T-bills at the height of the crisis—immediately following the collapse of Lehman Brothers, an American investment bank.

Table 1: The safe haven effect.
Source: McCauley and McGuire (2009).

Net securities flows in the US balance of payments
In billions of US dollars, annual rate

	Pre-crisis	Phase 1	Phase 2	Phase 3
	2006–Q2 2007	Q3 2007–Q2 2008	Q3 2008–Q4 2008	Q1 2009–Q2 2009
Securities, total by private investors	368.8	–36.0	358.4	–244.6
Foreign purchases of US securities	765.0	189.9	60.0	12.7
Treasury	–19.7	73.2	323.1	62.0
Coupon securities	–22.9	–10.3	49.9	73.5
Bills	2.1	83.5	273.0	–11.6
Agencies	20.9	–107.4	–183.0	–98.8
Corporate bonds	572.8	82.5	–78.5	–34.3
Equities	191.0	141.6	–1.6	83.8
US purchases of foreign securities	–396.1	–225.9	298.4	–257.2
Bonds	–247.7	–113.3	200.7	–179.1
Equities	–148.5	–112.6	97.7	–78.1
Memo:				
Foreign official assets in United States	*494.7*	*614.3*	*199.1*	*391.8*
Of which: Treasury bonds	*194.2*	*172.1*	*103.9*	*275.9*
Of which: Treasury bills	*–27.2*	*66.4*	*486.9*	*207.7*
US official assets abroad	*5.0*	*–62.1*	*–1,048.7*	*875.9*

Source: Bureau of Economic Analysis. Table 1

SECTION 2: WHAT FUTURE FOR THE US HEGEMON?

Two points can be drawn from the foregoing discussion. First, one of the essential attributes of the dollar as a reserve asset is the *liquidity* that US Treasury bills can provide to the global economy; as shown by the recent financial crisis, this liquidity is of crucial importance in times of global crisis. Second, liquidity ultimately depends on the *fiscal capacity* of the issuer. This dependence ensures the exchange value of the issuer's liabilities—in particular, with respect to foreign holders—even when the global economy is in jeopardy.[9]

With these principles in mind, we can evaluate the natural consequences of certain structural changes that are currently taking place in the global economy. These transformations have profound implications for the role of the United States and its capacity to maintain monetary hegemony.

2.1. Trends in the global economy

We identify four important trends whose consequences for the international monetary system should not be neglected. The first two trends concern the *demand* for reserve assets; the last two concern the *supply* of those assets.

i. *The "great convergence" and the demand for reserve assets*. Since the early 1990s we have been witnessing a phenomenon of massive convergence between advanced and emerging economies. The share of developed countries in world GDP fell from 78.2% in 1992 to 64.3% in 2009.[10, 11] An important part of this convergence is the natural consequence of the transition of China and countries in the former Soviet bloc from planned economies to market economies. Another part simply reflects the development and convergence process at work in emerging countries with strong growth potential, such as Brazil and India, once domestic obstacles to growth are removed. Finally, the convergence reflects the rapid enrichment

[9] That is why we focus our discussion on the provision of safe public assets. The private financial sector can also create assets that are almost without risk (e.g., credit claims rated AAA). Nonetheless, the recent crisis has dramatically illustrated how quasi–risk-free assets are not really safe in a global crisis. The public sector's capacity for mobilizing resources to guarantee the value of the state's claims ("deep pockets") has no parallel in the private sector. We elaborate on these points in Section 3.

[10] For this calculation, the group of advanced economies includes the European industrialized countries, the United States, and Japan as well as Australia, Canada, and New Zealand. The data is from the World Bank's World Development Indicators.

[11] However, the US share in world GDP has changed little over the same period: from 25.6% in 1992 to 24.3% in 2009. It follows that the declining share of developed countries is due mostly to European countries (from 36% to 29.5%) and Japan (from 15.5% to 8.7%).

of commodity-producing countries after the sharp increase in commodity prices, which itself is due to the growing demand from countries in the process of industrialization.

This great convergence has a fundamental impact on the demand for reserve assets. In the first place, economic development in emerging countries often precedes financial development. Economic growth naturally leads to increased private demand for stable financial assets as households seek a nonrisky way to transfer their buying power over time and to plan for their future needs (retirement, health, education, buying a house). Second, growth leads to a rise in public sector demand for safe assets. Commodity-producing countries in particular seek to smooth their income intertemporally by building a "war chest" for future generations, thus recycling their petrodollars (or equivalent) into the world economy.

Financial markets in many emerging countries offer few local assets that are truly risk-free, a phenomenon due in part to institutional underdevelopment.[12] In the context of a globalized financial economy, the resulting excess demand for safe assets is channeled to the financial markets of developed countries, thereby fueling the demand for reserve assets of the dollar zone.[13, 14]

Insofar as the convergence process has started but is still far from completion, we anticipate increased demand for reserve assets from emerging countries with high growth potential as well as from commodity-producing countries *unless* institutional factors enable a significant increase in the local supply of riskless assets.[15]

[12] Institutional factors that increase the risk of financial investment in emerging countries are well known. Examples include the absence of clear property rights, weaknesses in the prudential framework and financial regulation, and opacity in certain markets as well as such macroeconomic risks as taxation (explicit or implicit in the form of corruption), the risk of default, and even expropriation claims. Some of these factors are also present on the financial markets of industrialized countries, but they usually apply only to private assets. In other words, public provision of risk-free assets is itself often immune to these problems—as long as the issuer's fiscal capacity is maintained. This observation warrants further study with respect to the supply and demand of public sector assets.

[13] Private demand for safe assets is often intermediated by national central banks, some of which offer their residents sterilization bonds held against the counterparty's reserve assets.

[14] Cf. Caballero, Farhi, and Gourinchas (2008a) and Caballero and Krisnamurthy (2010).

[15] In a financially globalized world, the demand for reserve assets is not strictly tied to the surpluses (or deficits) of the current account. In particular, it is quite possible for a country to increase its stock of reserves while financing a current account deficit through private capital flows.

ii. *Financial crises and demand of reserve assets in emerging countries*. A second factor exerts upward pressure on the demand for reserve assets. The economies of emerging countries have always been subject to the hazards of the global economy, which include fluctuations in commodity prices (during the period 1974–1979 and most recently in 2006–2009), abrupt movements in world interest rates (in 1982, following the increase in US interest rates), and sudden changes in the direction of private capital flows (in 1997 during the Asian crisis, and in 2008 following the fall of Lehman Brothers). Such violent corrections often lead to abrupt jolts in the domestic economies of emerging countries, which face a drastic fall in their external financing, lower export earnings, an increased debt burden, and a sharp adjustment in the value of their currency. Following the Asian financial crisis of 1997, many developing countries began to accumulate large amounts of reserve assets in order to cope with future external shocks.

This strategy, which leads to an increase in the demand for dollar reserve assets, was at least partially validated during the recent financial crisis.[16] In other words, some empirical studies suggest that the countries holding more reserves handled the crisis better. The haste with which emerging countries resumed their accumulation of reserves in 2009 confirms that these countries have learned their lesson.

iii. *Emergence of alternative reserve currencies*. On the supply side, the creation of the euro in 1999 has created a currency area comparable in size with that of the dollar. In 2009, GDP in the euro area amounted to $12,400 billion; it stood at $14,100 billion for the United States and $5,000 billion for China. Although still far behind, China has openly declared its global ambitions for the yuan and pursues an active strategy of internationalizing its currency. In the short and medium term, these developments are not sufficient to substantially alter the supply of reserve assets. As of now, China does not provide reserve assets per se. Note also that, at the height of the financial crisis, the repositioning of international portfolios (public and private sectors) favored the dollar over the euro, which contributed to the former's

[16] See Frankel and Saravelos (2010), International Monetary Fund (2010), and Obstfeld, Shambaugh, and Taylor (2009). Other studies—see especially Blanchard, Faruqee, and Das (2010) and Rose and Spiegel (2010)—find no significant effect of reserve accumulation on impact of the crisis. However, many countries (e.g., Korea) holding large stocks of reserves decided not to use them at the height of the crisis for fear of sending a "distress signal" to financial markets.

appreciation.[17] Since then, uncertainties linked to the European sovereign debt crisis have continued to weigh on that common currency.

iv. *Fiscal and demographic trends in industrialized countries and supply of reserve assets*. In the years to come, many industrialized countries—including the United States—will face serious fiscal pressures. These pressures result from an aging population, the rapid increase in the share of health expenditure in state budgets, and the overall stabilization of public expenditure, which was greatly affected by the slowdown stemming from the financial crisis (automatic stabilizers) and by the bailouts of the banking and financial sector.[18] From this point of view, fiscal consolidation of long-term US government accounts is necessary in order to maintain the liquidity and safety of the US Treasury. These developments suggest that the fiscal capacity of the United States is not unlimited.

This brief panorama suggests that the imbalance between demand and supply of reserve assets will worsen in the near future.[19] What consequences can we expect? The answer to this question depends on whether the horizon is short term or medium term.

2.2. The short term: Imbalances are exacerbated

Destabilizing mechanisms that played an important role during the financial crisis are likely to strengthen. In particular, the excess demand for riskless assets could lead to an increase in the cost of liquidity or, in other words, a fall in global interest rates. Insofar as low-cost money fuels speculative dynamics (search for yield and/or increase in leverage via inexpensive debt), the growing imbalance may contribute to further weakening of the global economy (see Section 3).

Thus, global imbalances may persist. The demand for risk-free assets from emerging and commodity-producing countries could well contribute to the continuation of existing external (current account) imbalances.[20]

[17] The value of the euro fell from $1.60 in April 2008 to $1.26 in November of that year.

[18] According to projections by the IMF's World Economic Outlook, the net public debt of the United States, the United Kingdom, and Japan is expected to reach (respectively) 78%, 78%, and 142% of GDP in 2013.

[19] The various proposals for reforming the financial markets after the crisis could also have an impact on the demand and supply of reserve assets. For example, any regulation that reduces the financial sector's ability to manufacture safe assets will exacerbate the imbalance between demand and supply of reserve assets.

[20] One possible interpretation is that current account deficits are not, in themselves, necessarily the source of the crisis. Among other things, such deficits reflect imbalances between demand and supply of reserve assets in different geographical regions. Under this interpretation, a rebalancing of current accounts (e.g., by increasing domestic demand in Asia while reducing it in the United States) need not

2.3. The medium term: Triffin's dilemma and a multipolar world

The foregoing observations suggest the emergence of a modern version of the Triffin dilemma. In the 1960s, Robert Triffin identified a fundamental weakness in the Bretton Woods institutions. Under that system, the currencies of member countries could be exchanged at a fixed rate against the dollar while the value of the dollar was fixed against gold at $35/oz.

Triffin (1960) observed that global liquidity demand grows with the global economy. At the time, the world economy was experiencing robust growth—especially in Europe and Japan following their postwar reconstruction efforts. As the rest of the world grew, so did the stock of dollars held abroad. In the meantime, US gold stocks (which were backing the dollars held abroad) remained fairly constant.

Maintaining the gold value of the dollar had to become increasingly difficult, and a dollar crisis unavoidable, unless the United States adopted a deflationary monetary policy (hence the dilemma). Ten years before the end of the Bretton Woods system, Triffin had predicted its collapse.

The gold value of the dollar is no longer fixed, but we still live in a Triffin world. In the 1960s, the source of the problem was the mismatch between the amount of gold held by the US Federal Reserve (the "backing" of the dollar) and the outstanding dollars held abroad. Similarly, there is a growing asymmetry today between the fiscal capacity of the United States (the "backing" of US Treasury bills) and the stock of reserve assets held abroad—in other words, the US external debt.

The world economy's strong growth boosts the demand for dollar-denominated assets. However, the fiscal capacity of the United States is bound to decline relative to the size of the global economy. Beyond the exchange rate regime, it is the ability to provide liquidity in times of global economic stress that defines the issuer of the reserve currency. This capacity depends on the issuer's fiscal capacity. In a growing world, then, the United States will inevitably lose its reserve currency monopoly.

Therefore, it can only be a matter of time before the world becomes *multipolar*. Which reserve currencies will compete with the dollar? Given the size of their economies, only the euro and the yuan are viable candidates. The euro is already a regional reserve

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have much impact on the aggregate supply and demand for reserve assets and hence might have only a secondary impact on global interest rates, which would not (in itself) stabilize the global economy. There is no consensus on this matter. Some observers see the reduction of "global imbalances" as an objective that would improve the functioning of the global economy.

currency, and Chinese authorities are actively preparing for internationalization of the yuan.

2.4. Multipolar world and supply of assets: A more stable world

The emergence of this multipolar world is in itself a source of stabilization for the world economy. By increasing the supply of reserve assets, a multipolar world naturally solves the Triffin dilemma.

In other words, a multipolar world expands the fiscal capacity underlying the provision of safe assets. This fiscal capacity is now determined by the collective ability of the countries issuing the reserve currencies, so it can adapt and grow with the needs of the global economy. This increase may help to address the global shortage of safe assets. Section 3 details the benefits of such a development in terms of financial stability.

In a multipolar world, moreover, countries that issue reserve assets will be able to benefit from the liquidity premium (exorbitant privilege) as long as their fiscal capacity allows them to maintain their status as issuers of reserve assets. The resulting fiscal competition may encourage cautious fiscal policies so as to preserve fiscal capacity—the defining characteristic of any reserve currency.

Finally, through an increase of the degree of substitution between different reserve assets, a multipolar world would limit fluctuations in exchange rates and of prices of reserve assets (interest rates).[21]

From this perspective, it is desirable to accelerate the transition to a multipolar world. That requires devising concrete measures to develop a stable and liquid market for Treasury bonds denominated in euros and yuans.

In particular, it is desirable to facilitate the issuance of mutually guaranteed European bonds or "euro bonds" (e.g., the "blue bonds / red bonds" proposal of Delpla and von Weizsäcker 2010). This would allow each country in the eurozone to issue a certain amount of euro bonds (blue bonds) corresponding to a predetermined fraction of its GDP. These euro bonds would benefit from the collective guarantee of all issuing countries, and they would be senior to the rest of the country's debt. This mechanism of mutual insurance would make euro bonds extremely safe. The remaining debt (red

[21] The volatility of prices (exchange rates, interest rates, and financial asset prices more generally) and quantities (capital flows) depends on the elasticity of the supply and demand curves for these assets. In the short term, supply is probably inelastic. The more elastic demand is, the more that quantities (rather than prices) are affected by supply shocks. In this sense, if reserve assets become more substitutable then their relative prices should stabilize.

bonds) would not have these guarantees and would thus be more risky. Hence, market discipline would be maintained. The risk of moral hazard generated by the insurance provided on a portion of the debt through mutual guarantees could be limited by implementing national fiscal rules, a multilateral monitoring system, and a system of gradual penalties and sanctions.

The mechanism just described could create a market for euro bonds that would be both large and liquid, thus providing an opportunity for eurozone countries to finance a portion of their debt at low interest rates.[22]

As for China, we remark that it has a relatively limited level of financial development. For this reason, it is desirable to encourage a gradual liberalization with the opening of its capital account, the convertibility of its currency, and the gradual emergence of a market for yuan-denominated government debt.

Our initial proposal follows.

Proposal 1: Promote the development of alternatives to US Treasuries as a dominant reserve asset in order to accelerate the inevitable transition to a multipolar system. Toward this end, the issuance of mutually guaranteed European bonds seems particularly desirable. Other steps may include (albeit in the more distant future) opening of the Chinese capital account, convertibility of the yuan, and development of a yuan-denominated bond market.

2.5. Multipolar world and strategic complementarities: A riskier world

The scenario described in Section 2.4 is fairly benign, but it is not the only scenario. There is also a distinct possibility that a multipolar world would exacerbate economic and financial shocks.

What mechanisms would be at work in such a scenario? The emergence of a multipolar world implies the coexistence of safe assets denominated in different currencies. These assets cannot be safe unless they share a number of characteristics. In other words, they must be seen as largely interchangeable. A corollary of this substitutability is that small changes in fundamentals or in the perception of these fundamentals can cause massive capital flows. For instance, bad fiscal news in one of the reserve currency countries

[22] Borrowing costs in Germany could rise under this scenario because Germany has a liquidity premium in the European context; however, such costs could also decrease. Indeed, any large-scale issuance of European co-secured bonds may pique the interest of those large foreign investors who, because of their size, currently prefer to remain outside the national bond markets.

could trigger capital flight, especially since there would now exist alternative yet comparable investment opportunities.

Imagine a world where the United States, China, and the eurozone coexist, each with their own reserve currency. Their assets are regarded as highly substitutable in terms of liquidity, safety, and performance. Now imagine that one of these regions—say, the euro area—experiences a financial crisis requiring a fiscal intervention that tests the region's fiscal capacity. Investors would immediately choose to switch their holdings of euro assets into yuan- or dollar-denominated assets, which would be perceived as less risky.

This phenomenon will be reinforced by *strategic complementarities* among investors. Indeed, the value of a currency to an investor depends crucially on the perception of other investors. Thus, it would be possible for a currency to suddenly lose its reserve currency status following a collective loss of confidence in its value. Such a shift would be accompanied by violent capital flows as well as potentially large fluctuations in exchange rates and interest rates.[23] The impact of this "sudden stop" on the eurozone economy could be severe. In addition, an episode of this type would reduce (endogenously) the supply of safe assets in the global economy, thus reinforcing the Triffin dilemma.

In the absence of fundamental shocks, such crises may find their origin in self-fulfilling phenomena. A multipolar world is likely to experience periods of stability alternating with periods of crisis. These crises will be more severe because they could well activate "run" dynamics among investors, each of whose individual interest lies in anticipating the crisis by converting his reserves before the others do. The resulting systemic weaknesses could lead to a tightening bias in fiscal policies as each reserve-issuing country seeks to demonstrate that it is more virtuous than its competitors.

We have seen some of these mechanisms at work on a smaller scale within the euro area since the beginning of the European sovereign debt crisis. Until the summer of 2009, the debt securities of European states were regarded as relatively interchangeable, with relatively low spreads. This perception was shattered by the Greek crisis, which witnessed massive portfolio reallocation in favor of countries (e.g., Germany) perceived as safe.

[23] In contrast to the stabilizing effect on exchange rates of a multipolar world, as described in the previous section, the loss of reserve status would here entail a collapse in demand for these assets and thus trigger significant price adjustment.

The next two sections identify systemic inefficiencies in the current international monetary system (Section 3) and suggest some reforms that could help in addressing them (Section 4). These proposals would help manage the instability and the volatility of a multipolar Triffin world.

SECTION 3: INEFFICIENCIES DUE TO THE ACCUMULATION OF RESERVES AND TO FINANCIAL INSTABILITY

In this section we identify inefficiencies in the market for reserve assets. We isolate two fundamental inefficiencies in the supply and demand for such assets.

First, the accumulation of reserve assets is excessive, and this excess demand puts downward pressure on global interest rates. Low interest rates weaken the entire global financial system by favoring the emergence of quasi-safe assets that are actually vulnerable, by facilitating financial "bubbles", and/or by leading economic agents (in particular, financial institutions and governments) to run up their debt—especially in the short run. Section 4 presents our proposals for solving these problems.

3.1. The demand for reserve assets

A significant fraction of the global demand for reserve assets is due to *precautionary* strategies. This terminology alludes to the concept of "precautionary saving" in consumer theory. It will prove useful to develop this analogy.

The theory of precautionary saving (Leland 1968; Sandmo 1970) considers a consumer whose income is subject to random fluctuations. Concerned about smoothing the impact of income shocks on her consumption, this consumer wishes to accumulate a buffer of risk-free assets (Treasury bonds). Such savings behavior is a form of self-insurance.

However, this is an imperfect form of insurance. Indeed, it amounts to accumulating noncontingent assets. As a result, the consumer has too much savings after a series of positive shocks but not enough savings after a series of negative shocks.

It would be preferable to sign an insurance contract that guaranteed a better smoothing of consumption. Such a contract would specify the transfers received following negative shocks and the premium to be paid after positive shocks. With complete financial markets (i.e., the ideal case in which financial assets allow the hedging of all risks), a portfolio of financial assets could effect this insurance contract.

In practice, many obstacles prevent the implementation of such a sophisticated insurance contract. Some of them involve agency problems (moral hazard, asymmetric information, nonexclusivity of contracts, time inconsistency, etc.); other obstacles arise from the costs of creating market infrastructures for financial instruments. Without

insurance contracts or complete markets, self-insurance through precautionary savings is the only alternative.

This desire to self-insure makes perfect sense at the microeconomic level of a consumer, but it can be the source of macroeconomic inefficiencies. Indeed, self-insurance can lead to excessive aggregate saving and excessively low interest rates (Aiyagari 1994, 1995). This inefficiency is the result of a market imperfection—a pecuniary externality. Namely, consumers do not take into account the effect of their saving decisions on interest rates.

A similar analysis applies to the case of reserve accumulation: one need only replace consumer by country, income shocks by macroeconomic shocks, and asset accumulation by reserve accumulation. In the absence of more sophisticated insurance schemes, it is in the interest of a country to accumulate reserves so that it can weather the various macroeconomic shocks it may need to confront. Hence there is an overaccumulation of reserves in the global economy, accumulation that exerts downward pressure on global real interest rates (see Figure 4). Moreover, the decline in real interest rates increases the probability of a liquidity trap (nominal interest rates equal to zero), which would have depressive effects on the global economy.

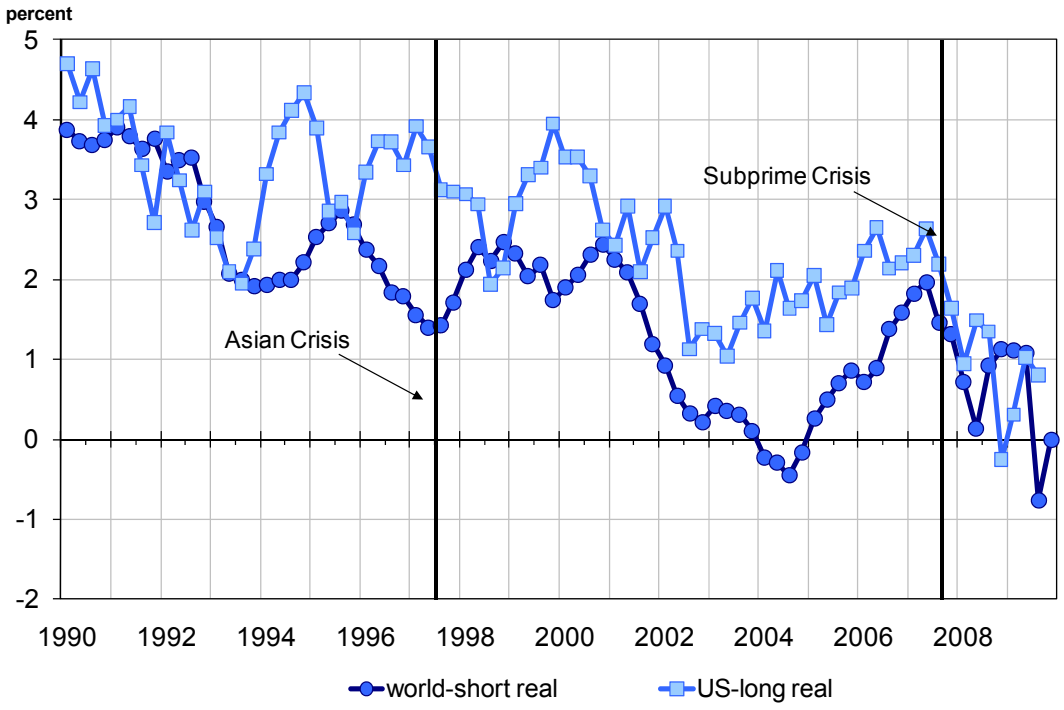

Figure 4: Real interest rates, 1990–2009.
Source: Caballero, Farhi, and Gourinchas (2008a) and authors' calculations.

3.2. The supply of reserve assets

In addition to market imperfections involving the demand for reserves, there are market imperfections associated with the supply of safe assets. We have seen that an excess demand of reserves lowers global interest rates, and low interest rates are responsible for various distortions.

First, low interest rates encourage leverage, which often leads to fragility and instability—especially in the financial sector (Caballero and Krishnamurty 2009; Diamond and Rajan 2010; Farhi and Tirole 2010). Indeed, for a given shock, higher financial leverage corresponds to a greater impact on balance sheets.

Furthermore, excessively low interest rates can spark off perverse risk-taking phenomena often referred to as "search for yield". Environments characterized by low interest rates are also prone to speculative bubbles—for instance, in housing or commodity markets (Caballero, Farhi, and Gourinchas 2008b). Such bubbles are, by their very nature, fragile. Their emergence and disappearance create excess macroeconomic volatility, which reinforces precautionary saving behaviors and thus creates a vicious cycle.

It is important to consider the *nature* of reserve assets. The word "reserve" refers to one of the three functions traditionally attributed to money: serving as a store of value. As we have already emphasized, the principal characteristics that determine the reserve potential of a financial asset are its safety and its liquidity: one must be assured that the asset will not lose its value and that this value can be quickly realized. It is particularly important that reserve assets maintain their value when the countries that had accumulated them decide to liquidate them. This is a rare characteristic, since the conditions that lead a country to liquidate part of its reserves are often associated with periods of economic stress and of low liquidity in world markets.

A strong demand for reserves generates an incentive to *create* safe assets. Thus, the scarcity of safe assets puts the financial sector under pressure. The recent expansion of the securitization industry can be viewed as a collective attempt to create safe assets via the "pooling" and "tranching" of risk. Similarly, some governments responded to this pressure by relaxing fiscal discipline. This process leads to the creation of quasi-safe assets. Yet the sudden realization that such assets are not actually safe induces violent market adjustments. Examples include the AAA-rated tranches of products based on securitization of American mortgages and the debt of some states (such as Greece and

Ireland) during the recent financial crisis. These market adjustments increase macroeconomic volatility (Caballero 2009).

The incentive to create safe assets affects more than the issuance and structuring of financial *assets*; it also has an impact on the issuance and structuring of the *liabilities* of financial institutions. Indeed, it enhances the attractiveness of short-term, risk-free debt because the demand for such a safe asset is strong. The problem with short-term debt is that it weakens balance sheets and increases the risk of financial distress. After a negative shock, financial institutions must sell longer-term assets to repay the debt. This can lead to fire sales and thereby to a vicious cycle: by selling its assets, a financial institution places downward pressure on the price of these assets, which requires other financial institutions to sell even more assets in order to cover their short-term debt. This phenomenon is the manifestation of a market imperfection—another pecuniary externality. Namely, private agents do not take into account the impact of their financing decisions on the liquidation price of assets. This explains short-term debt from a macroeconomic perspective (Stein 2010).

SECTION 4: ADDRESSING INEFFICIENCIES WITH PROPOSALS FOR REFORM

In Section 3 we identified the *shortage of reserve assets* (or safe assets) as one of the main problems of the international monetary system. To solve this problem, it is possible to influence both the supply and the demand for these assets. This section offers a menu of reforms to achieve this goal.

4.1. Development and liberalization of financial markets

First, it is important to recognize that the development, liquidity, and openness of emerging countries' financial markets will naturally lead to an increase in the global supply of reserve assets. As noted earlier, this development is inevitable and must be encouraged. Toward this end, it is also crucial for the currencies of emerging countries to become freely convertible (eventually), so that assets denominated in these currencies may be considered truly liquid.

It is also desirable to encourage governments of emerging countries to set up an effective "lender of last resort" system *in their respective economies*. This is part of a good market infrastructure. Public authorities have a comparative advantage in providing liquidity during times of macroeconomic crisis. This advantage stems from the sovereign power of taxation, which gives public authorities considerable resources ("deep pockets") and a long-term perspective. In times of crisis, then, it is natural for public authorities to provide liquidity in the form of recapitalizations, debt guarantees, loans against collateral with central banks, asset purchases, and so forth (Holmström and Tirole 1998). The natural counterpart to this function of lender of last resort is the requirement to *regulate* the beneficiary financial institutions in order to control moral hazard (Farhi and Tirole 2010).

An efficient lender-of-last-resort mechanism at the country level can help transform safe assets at the microeconomic level into safe assets in the macroeconomic level. Such a mechanism may help reduce the demand for safe assets from private actors.

4.2. Development of social safety nets

The development of social safety nets in emerging countries should also be encouraged. This will help reduce consumer precautionary savings as well as the global demand for safe assets.

4.3. Overcoming reserve accumulation for self-insurance

As remarked previously, self-insurance through reserve accumulation is an inefficient form of insurance: it results in an accumulation of *noncontingent* assets whose returns

do not depend on countries' economic ups and downs. Countries end up holding too much reserve following a series of positive shocks or not enough reserve following a series of negative shocks.

From a theoretical point of view, it would be economically more efficient to establish a form of insurance contract between countries at the global level. Such a system would allow for a more efficient use of safe assets. In doing so, it would help alleviate the world's chronic shortage of safe assets and preclude the associated negative consequences (see Section 3).

One may wonder why such insurance arrangements do not already exist. The explanation likely involves agency problems and the costs associated with market infrastructures (see Section 3). For this reason, an international agency such as the IMF would have a clear comparative advantage in the management of agency problems. It would also be able to catalyze the coordination required to create a large-scale insurance infrastructure and would have the financial strength and credibility required to perform the insurance functions and to discipline the resulting moral hazard.

There are several possible ways to achieve partial or full realization of this objective. These methods are described in the segments that follow.

Systematize swap agreements between central banks

A limited way of meeting this objective would be to systematize swap agreements, such as those that have flourished between central banks during the recent financial crisis. Indeed, one of the factors that feed the precautionary accumulation of reserves is the desire to guard against stresses in foreign exchange markets. Under certain circumstances it may be difficult for the central bank of a given country to obtain foreign currency liquidity in the market. Box 1 explains how swap agreements between central banks work.

Box 1: Swap agreements between central banks.

Consider a swap agreement between two countries' central banks, A and B. The logic is simple. Central bank A temporally credits central bank B's balance sheet with currency A. In exchange, central bank B temporarily credits A's balance sheet with currency B for the same amount.

Thus, a swap agreement is essentially the combination of two loans: central bank A lends currency A to central bank B, while central bank B lends an equivalent amount of currency B to central bank A. The two loans serve as collateral for each other.

In theory, the two central banks can use the foreign currency made available to them. In practice, however, usually just one party does so; the other party keeps the obtained foreign currency as collateral.

In a swap agreement, each party is therefore exposed to the (sovereign) default risk of the other party. This risk is reduced, but not eliminated, by the presence of collateral (Allen and Moessner 2010).

There are various reasons why country B's central bank might require access to currency A in times of crisis. It may be for the purpose of defending its currency against a speculative attack. As illustrated by the recent financial crisis, the reason could also be rooted in central bank B's responsibility for the country's financial institutions that engage in global operations. Country B's financial institutions may thus acquire country A's assets, and finance that purchase by borrowing directly in currency A, in order to avoid exposure to currency risk. Another way of hedging currency risk is for country B to borrow in its own currency but then swap it for currency A on foreign currency markets. Such borrowings in foreign currency often have a short maturity and must therefore be renewed frequently.

During a crisis, it can become difficult or even impossible for financial institutions in country B to borrow directly in currency A. If foreign exchange markets function poorly in times of stress, then it can also become difficult for financial institutions to borrow in currency B and swap it for currency A. Without access to country A's central bank liquidity facilities, financial institutions in country B may thus find themselves in a difficult position: with no direct access to the foreign currency they need to finance their international operations.

Because of this de facto quasi-segmentation of money markets in times of crisis, the only alternative to liquidating assets at fire-sale prices is turning to the central bank of country B in order to obtain liquidity in currency A. This is usually done in the form of loans against collateral or in swaps, with central bank B absorbing the potential counterparty risk.

It is therefore crucial for central bank B to have enough currency-A liquidity. Either it has foreign exchange reserves in currency A or it should acquire some. If central bank B purchases currency A only on the spot market, then it exposes itself to a significant currency risk that might induce substantial capital losses. To offset this risk, central bank B would have to combine its position with an opposite position on the futures market (and realize these two transactions simultaneously on the swap market) or to borrow currency A directly from the markets. However, the volumes required would in many

cases exceed the absorptive capacity of markets in a crisis situation. A massive purchase of currency A by central bank B could, moreover, cause an important downward adjustment of currency B relative to A on the foreign exchange markets, thereby risking further economic dislocation.

Only swap agreements with central bank A (or with another central bank that holds currency A) enable central bank B to have access to currency A without incurring currency risk. By entering into a swap agreement, central bank A responds to the increased demand for currency A in country B by increasing the available supply of currency A for agents in country B. It thus eliminates the shortage of currency A in country B and, in so doing, contains the appreciation of its own currency.

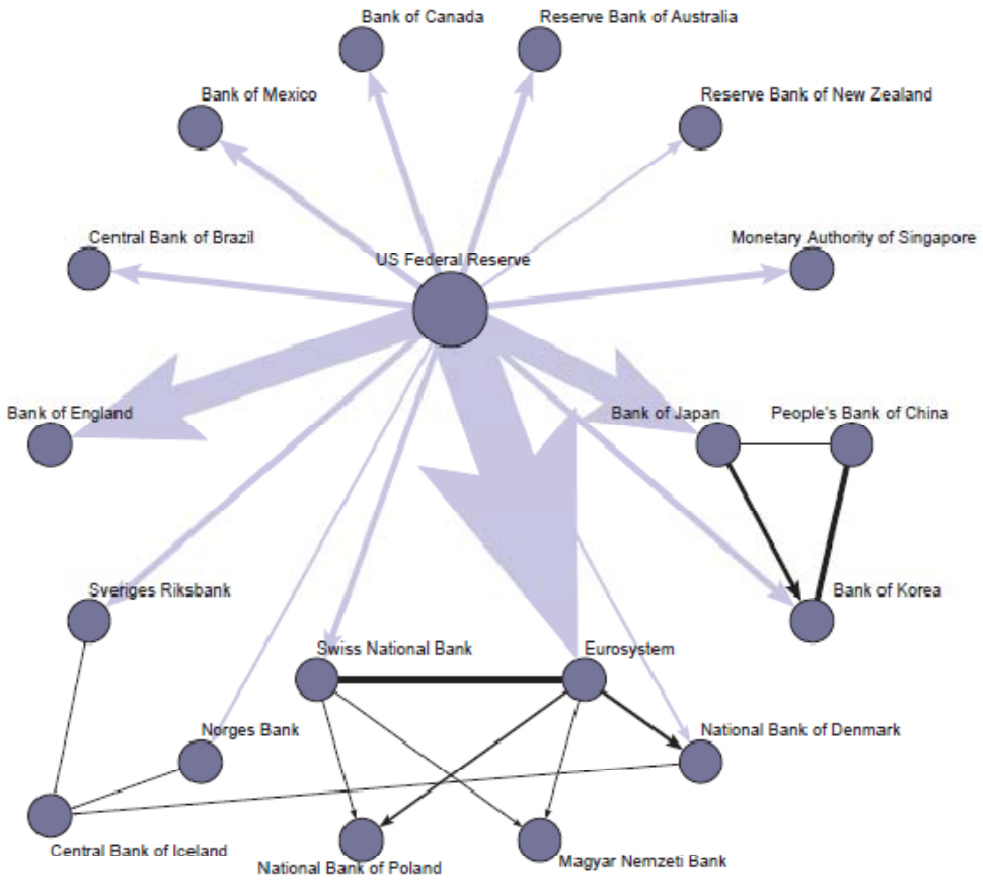

Figure 5: Network of bilateral swap agreements between central banks.
Source: McGuire and von Peter (2009).

In the absence of swap agreements, there is a need to self-insure by accumulating reserves. Yet as we have pointed out, such self-insurance is inefficient. Swap agreements are a more efficient insurance mechanism.

During the recent financial crisis, bilateral swap agreements (see Figure 5) between central banks—especially those agreements made by the Federal Reserve—played a crucial role in stabilizing markets (Aizenman, Jinjarak, and Park 2010; Allen and Moessner 2010; Goldberg 2010). Most of these agreements were concluded in a hurry at the height of the crisis. Their success inspired our second proposal for reform, as follows.

Proposal 2: Systematize and sustain the provision of international liquidity in the form of swap agreements between central banks.

Ensuring the sustainability of these agreements is desirable for two reasons. On the one hand, the swap agreements offer mutual benefits but also present risks for each party, particularly the (sovereign) default risk of the other party. In case of default the collateral is seized, but this collateral may have lost its value if the underlying currency has depreciated; also, it may be difficult to liquidate large amounts of collateral quickly.

For this reason, many emerging countries do not have access to swap agreements with major central banks. Hence swap agreements are not a full-fledged alternative to the accumulation of reserves. For swaps to be even a partial solution, one cannot be satisfied by swap agreements negotiated ex post, at the last minute. In order to become genuine insurance tools, swap agreements need to be negotiated in advance, thus providing a credible source of liquidity should the need arise.

On the other hand, it's possible that the political hurdles limiting such ex post liquidity agreements will worsen in the future—especially in the United States, which for now is the global economy's lender of last resort. For the reasons already mentioned, providing dollar liquidity to foreign central banks is a risk taken by the US Federal Reserve and thus, ultimately, a risk taken by the US Treasury (which could be required, in theory, to recapitalize the Fed in the case of losses). These considerations remain theoretical for now, since the swap agreements concluded in the last crisis have not led to Federal Reserve losses. Even so, realization of the risks taken by the Fed during the recent financial crisis—and of the problems that come with supplying massive amounts of dollars to the rest of the world—can seriously reduce the willingness and the ex post ability of the Fed to continue that way in the future.

It therefore seems desirable to systematize and sustain these agreements by setting up an organized network of established and codified agreements in advance. This is a

necessary condition for making swap agreements a partial but credible alternative to reserve accumulation and for alleviating domestic political constraints that might hinder the provision of liquidity.

Although swap lines are established on a basis of outward reciprocity (since both central banks receive an equivalent amount of foreign currency), it is important to recognize that they work asymmetrically in practice. Country B requests currency-A liquidity in order to support its financial system or to fight against a speculative attack, while central bank A simply keeps currency B as collateral on its balance sheet. In other words, the role of swap lines is to increase the global supply of liquidity in foreign currency reserves. By definition, not all currencies are reserve currencies!

This asymmetry—clearly demonstrated during the last crisis, as swap lines essentially resulted in the provision of dollar liquidity—would have a significant impact on the establishment of a network of permanent swap lines. Indeed, it requires that the central banks controlling the supply of reserve currencies be compensated ex ante for the liquidity service they provide when swap lines are activated. This compensation, which offsets the risks involved, is conceptually similar to the collection of an insurance premium. The methods for determining the amount of this premium are complex and beyond the scope of this paper. However, it is important to recognize that, in the absence of premiums, it is not in the interest of countries issuing a reserve currency to commit ex ante to provide liquidity ex post. Although it may be in their interest to provide this liquidity ex post, the lack of a guarantee will naturally lead a number of countries to opt instead for the accumulation of international reserves.

Finally, as with any insurance mechanism, it is also necessary to control moral hazard (this is discussed in more detail under “Instruments to limit moral hazard” below). But we can already note that qualification criteria for accessing swap lines will need to be established. In this system, the tasks of monitoring, determining eligibility criteria, and establishing sanctions will have to be performed by central banks in coordination with the only institution capable of monitoring the overall system: the IMF.

Such a system would have many virtues. By increasing the supply of liquidity in times of crisis, it directly improves the distribution of risks in the economy. With a better insurance system, countries no longer need to self-insure to the same extent. The resulting decline in demand would have multiple benefits. First, it reallocates the country’s assets to productive uses as the reserves are invested to promote growth and development. The decline in demand for reserve assets also helps increase real interest rates, thereby eliminating a potentially important source of financial instability by limiting the scope for leverage and speculative bubbles and/or by disciplining the

issuance of short-term debt. Finally, insofar as swap agreements grow and evolve with the global economy, they can resolve the Triffin dilemma.

A system of swap agreements requires the establishment of compensation schemes for countries that are net suppliers of liquidity. A system of decentralized bilateral negotiations on the level of compensation required, and on the detailed activation criteria of liquidity lines, would quickly become unmanageable. It is difficult to imagine, for example, how a large number of countries could each negotiate bilateral swap lines with the Federal Reserve, the European Central Bank, and the People's Bank of China. In practice, such a system would likely be limited to a small number of preswap agreements among countries whose reputation is virtually flawless—considerably reducing the potential benefits of a more inclusive system of swap lines.

An alternative, "multilateralization" approach could result from centralizing the organization of swap lines at the IMF. Doing so would replace a complex network of bilateral swaps with a star-shaped structure. The IMF would be at the center of this system and would enter into swap agreements with the central banks of participating countries. The IMF could then redistribute the liquidity to countries in need during crisis periods by simultaneously entering into a swap agreements with a liquidity-issuing country and with a country in need of liquidity.

Credit facilities and drawing rights

It is also possible to imagine a more ambitious scheme capable of solving most of these coordination problems. One possibility would be extended versions of the IMF Flexible Credit Lines (FCLs), Precautionary Credit Lines (PCLs), and Global Stabilization Mechanism (GSM). The PCL and FCL facilities already allow the IMF to provide liquidity with little or no conditionality under certain qualifying criteria.

Once qualified, a country would be guaranteed the opportunity to receive a substantial amount of liquidity in times of crisis. The risk associated with the provision of liquidity would then be borne in part by the IMF (i.e., by its shareholders) and not solely by the reserve currency countries, as occurs with swap agreements. This risk may be further limited if the credit lines obtained from the IMF have the same higher seniority as traditional IMF financing.

The GSM allows the IMF to extend temporarily these credit facilities to several qualified countries and to relax qualifying criteria. As encouragement for countries to use these facilities early enough to prevent contagion, the GSM also provides mechanisms to mitigate "first mover" and "signaling" effects. For example, the IMF could put out a

general offer to participate, make these facilities unilaterally available to a group of countries, and/or not publish the list of participating countries.

In practice, the expansion of these facilities serves the same function as bilateral swap agreements: providing liquidity in times of crisis. But our proposal centralizes the provision of liquidity—together with the associated monitoring and qualification functions—at the level of the IMF.

There are several ways through which these credit lines can be funded. One possibility is an extended version of the IMF's New Arrangements to Borrow (NAB). The NAB currently allows the IMF to borrow directly, from 26 member countries, a total of about $51 billion (SDR 34 billion). As part of the strengthening of the IMF's financial capacity, this NAB facility will soon grow to approximately $550 billion (SDR 367.5 billion) raised from 39 countries; the increase, already approved by the IMF, awaits only ratification by member countries. But the size of these arrangements must be considered in light of the potential demand for liquidity. At the height of the financial crisis, the European Central Bank (ECB) drew nearly $300 billion in the form of swap agreements with the Fed (see Figure 6).

The current capacity of the IMF to provide liquidity appears to be grossly inadequate, so it is essential to initiate a discussion on expanding the NAB. In 2010, foreign exchange reserves stood at about $9,000 billion. It seems reasonable to consider a credit facility for at least a third of this amount, approximately $3,000 billion. We thus believe that a massive increase in the NAB is necessary to enable the IMF to ensure proper liquidity provision.

Under our proposal, the IMF would have a predefined right to draw on Treasuries or central banks;[24] the IMF could also be authorized to borrow from financial markets. The IMF's bonds, being guaranteed by its members, would receive the best possible rating. Allowing the IMF to borrow would enable it to raise funds in times of crisis, to provide investors with reserve assets at a time when they need it, and to redistribute liquidity to crisis countries.

[24] With the NAB, the central banks of liquidity providers would *not* receive collateral in foreign currency (unlike the case of multilateralized swap agreements).

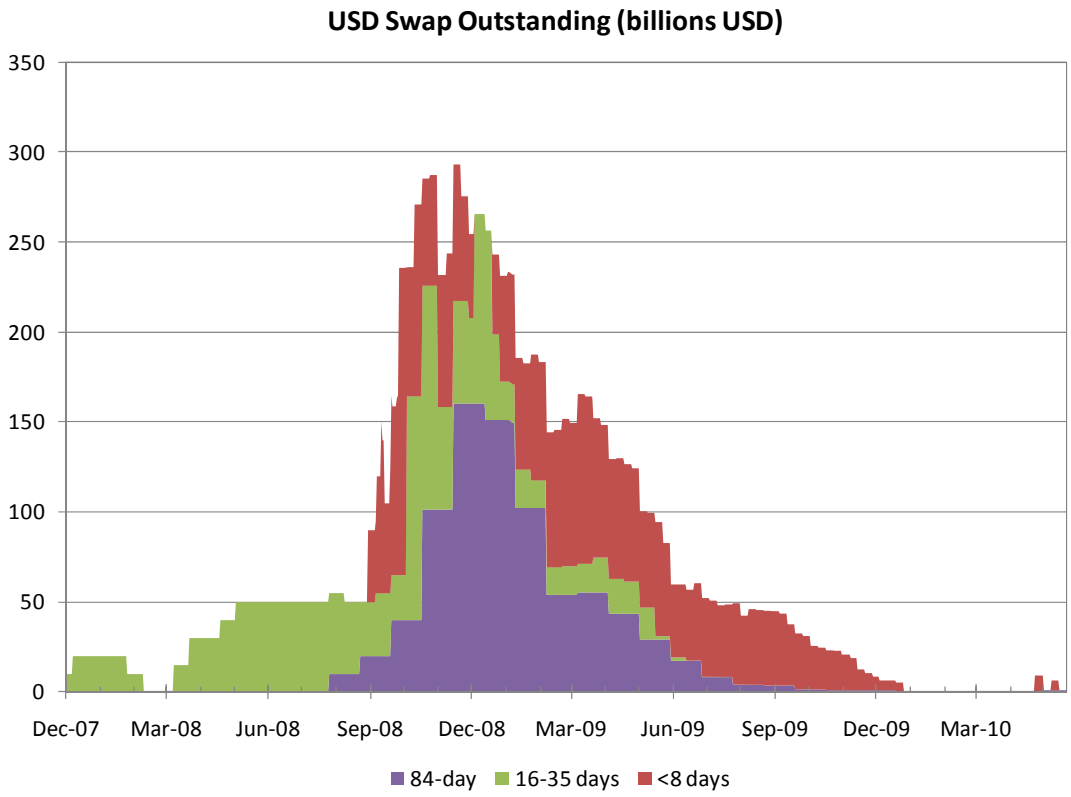

Figure 6: Outstanding ECB–Fed swap agreements by maturity.
Source: ECB and authors' calculations.

However, it is likely that the international monetary system will require an increase of the net liquidity in reserve currency during times of crisis. This will require the activation of the credit lines with the central banks of the countries at stake.

Finally, for the same reasons discussed previously, consideration should be given to the question of how the IMF will be compensated for this provision of insurance services. Such compensation is comparable to the collection of an insurance premium.[25] Centralizing such coverage at the IMF allows for simplification and coordination of the international monetary system.

Insofar as "insurance premia" are collected, the question arises of how they should be invested. One could imagine a portfolio consisting partly of sovereign debt and partly of diversified positions in other asset classes. The IMF could thus provide—in addition to an efficient insurance service with contingent access to the liquidity of national central banks in times of crisis—a service of liquidity and maturity transformation at the global

[25] The FCL facility already provides for the payment of commitment fees, which amount to insurance premiums.

level. One benefit of this scheme would be higher financial returns than those obtained from reserves used as self-insurance.

A country wishing to receive a larger credit line would, in return, have to (i) concede to the IMF larger drawing rights, (ii) pay a higher insurance premium, and/or (iii) contribute more heavily to the guaranty of the IMF's obligations (assuming the IMF were authorized to borrow on financial markets).

These arguments lead to our next proposal.

Proposal 3: Strengthen and expand the facilities of the IMF—including the Flexible Credit Lines, Precautionary Credit Lines, and Global Stabilization Mechanism—and extend IMF financing mechanisms, such as the New Arrangements to Borrow, so that the IMF can borrow directly from the markets.

As in any insurance mechanism, it is important to contain the risk of moral hazard. Hence this system should be paired with a monitoring mechanism, some of whose elements are described below (see "Instruments to limit moral hazard" later in this section).

An insurance mechanism of this kind is more effective than self-insurance and allows a more efficient use of safe assets. In so doing, it helps to relieve the chronic shortage of safe assets globally and to prevent the numerous negative impacts associated with such shortage. It also allows for natural growth in the supply of insurance and liquidity as the government's "fiscal backing" increases and the global economy grows. This is a possible answer to the Triffin dilemma.

It is noteworthy that the accumulation of foreign exchange reserves of many emerging countries, including Asian countries, accelerated after the 1997 financial crisis. Some countries affected by this crisis had a hard time dealing with the severe macroeconomic conditions that resulted from the stabilization programs negotiated by the IMF. In order to avoid any future reliance on the IMF, these countries chose to accumulate sufficient foreign exchange reserves—a development that is exactly the opposite of what we advocate. Reducing global financial instability will require that emerging countries favor the use of IMF resources over self-insurance. Toward that end, it will probably be necessary to couple any extension of the IMF's liquidity facilities with a discussion on the Fund's governance while aiming to increase the influence of emerging countries. The recent reform of quotas, which increased by 6% the representation of emerging countries, is a step in this direction.

Reserves pooling

We can imagine ways for the IMF to expand the supply of reserve assets. To do this, the IMF could provide countries wishing to participate in such a system with some liquid deposit accounts denominated in reserve currencies. Such pooling of reserves would enable better access to liquidity, much as under agreements that exist (on a smaller scale) for certain groups of countries (cf. the Chiang Mai Initiative, a currency swap arrangement of the Association of Southeast Asian Nations). In short, our fourth reform proposal reads as follows.

Proposal 4: Develop deposit facilities in foreign exchange reserves with the IMF (reserve pooling arrangements) that will serve participating countries better than self-insurance and will help recycle reserves into productive investments.

As a complement to the IMF credit lines (NAB), this latter proposal would significantly increase the IMF's resources. Moreover, it's conceivable that the Fund would invest a portion of the deposits in a portfolio comprising not only sovereign debt but also diversified positions in other asset classes. The IMF could thereby offer "liquidity transformation services" on a global scale. A benefit of this scheme would be high financial returns relative to those obtained from reserves used as self-insurance. The proposed liquidity transformation function is similar to that of a conventional bank, which transforms illiquid loans into liquid deposits while credit lines to central banks (NAB) guarantee the liquidity of deposits.

From the perspective of the countries participating in this reserve pooling program, the benefits are immediate: increased access to liquidity during crises; and high returns (relative to those on reserves used for self-insurance) on reserves deposited at the IMF. Finally, at the systemic level, the transformation of maturity reduces the net demand for safe assets and thus further strengthens overall financial stability.

What role for SDRs?

Many recent discussions concerning the reform of the international monetary system highlight the role of SDRs and their possible emergence as a reserve currency (Camdessus 2009; Padoa-Schioppa 2010). These debates intensified after the statements of Governor Zhou in favor of the emergence of SDR as an international currency (Zhou 2009).

Our analysis suggests a different conclusion for several reasons. In the first place, it is difficult to envision the creation of an international reserve currency that is not issued by any nation. Fundamental aspects of any reserve currency are the fiscal capacity of

the issuing country and the liquidity and market reliability of its treasury bonds. An international reserve currency without such fiscal backing is therefore unthinkable. This is why an international currency issued by the IMF would require explicit action from national treasuries.

Second, it is even more difficult to envisage a return to an anchoring of the international monetary system. Monetary authorities in different countries must cope with vastly different macroeconomic and financial environments. Economic theory tells us that the flexibility of nominal exchange rates is an important tool for making the necessary adjustments in response to asymmetric shocks (e.g., when a country experiences an isolated recession or a demographic shock); in such cases, the exchange rate absorbs some of the original shock. In contrast, exchange rate flexibility is actually counterproductive when shocks are symmetric (as in the case of a strong increase in the prices of raw materials or at the height of the recent financial crisis). In these situations, predatory "beggar thy neighbor" policies must be avoided because they seek to exploit the exchange rate at the expense of trading partners.

Imposing a monetary anchor is tantamount to limiting the power of monetary authorities in the face of asymmetric shocks merely to avoid inappropriate responses when faced with symmetric shocks. It would thus constitute a shift from the internal objectives of monetary policy (financial stability, including stable growth and prices) to external objectives (the value of the currency).

Economic theory identifies certain conditions under which such a shift may be desirable: when common shocks are most frequent, when factors of production (labor and capital) are mobile between nations, and when fiscal transfers exist (Mundell 1961; see also the literature on optimal currency areas). However, it is obvious that these conditions are not met across the global economy.

In sum, our discussion makes it clear that national currencies should coexist with any international currency and on the basis of a flexible exchange rate.[26]

Yet two problems immediately arise. First, we should consider the conditions under which national fiscal authorities would be able to guarantee the countervalue of their domestic currency *and* their share of the international currency, since it is not self-evident that both can be done at once. With floating exchange rates, SDRs (which are formed as a basket of currencies) become a risky asset because demand will ultimately

[26] No more realistic are proposals for an anchor to a so-called equilibrium exchange rate that would vary with national conditions. Such a measure would, or course, require that this equilibrium value be determined—a most difficult exercise from an operational standpoint.

be expressed in dollars, yuan, euros, and so forth. So the second problem is to establish *who* should bear the resulting exchange rate risk. To this day, there is no satisfactory answer to these problems.

Finally, the SDR is now but a protocurrency: a unit of account for transactions between a few central banks. Turning the SDR into a true world currency would require overcoming significant obstacles: extending its circulation, developing its use in commercial transactions, developing liquid markets in SDRs, and giving the IMF the power to issue SDRs quickly in its role as lender of last resort.

If, as we believe, the essential problem of the international monetary system is the contingent provision of liquidity in times of crisis and the demand for insurance, then the widespread use of SDRs is neither necessary nor sufficient. It is possible to maintain their current use to finance the IMF and to allocate liquidity, but such funding could also be achieved by other mechanisms (e.g., PCL, FCL, GSM, NAB). Moreover, two aspects of how SDRs currently function—their noncontingent character and the absence of conditionality—render them less flexible instruments than alternative mechanisms.

In other words: If the factors causing instability in the international monetary system are due mainly to the *shortage of reserve assets*, then they have very little to do with *monetary coordination* problems. The solution, therefore, cannot be linked to the emergence of an international currency.

It is nevertheless possible to imagine a limited role for SDRs in private markets. Indeed, if the SDR were extended to the yuan, then it would allow investors to hold an implicit long position in yuan. This could be beneficial, especially while the Chinese financial account remains unopen. Issuance (e.g., by the IMF) of bonds denominated in SDRs would then accelerate the transition to a multipolar world.

Given these considerations, one could make the following proposal (although we emphasize that it is neither necessary nor sufficient to stabilize the international monetary system).

Proposal 5: Include the yuan in the SDR basket to facilitate emergence of a private market for SDRs, and allow the IMF to issue SDR-denominated debt.

In conclusion, our analysis indicates that reform of the international monetary system should *not* involve redefinition of the monetary anchor. Coordination of exchange rate policies may still be sought on a case-by-case basis when the parties' interests are

aligned (as in the 1985 Plaza Accord and the 1987 Louvre Accord). However, it would be extremely difficult to define a systematic and precise framework ex ante.[27]

Instruments to limit moral hazard

Each of our three proposals—systematizing bilateral swap lines, expanding IMF loan facilities, and pooling reserves—involves moral hazard risks. Therefore, a mechanism for selection, monitoring, and regulation will be necessary. This implies procedures for collecting and analyzing information as well as for making corrections or imposing sanctions. It seems natural to assign these responsibilities to the IMF, possibly in coordination with the Bank for International Settlements.

A difficult issue is finding the proper balance between a system with explicit criteria and mechanical sanctions and a system that is more discretionary. The advantages of an explicit, mechanical system are predictability and accountability, since by nature it is less prone to manipulation. Even so, moral hazard manifests itself in various forms. Yet the main drawback of a mechanical system is its unresponsive rigidity; it is difficult to make an immutable list of quantitative criteria.

One possible mechanism of correction and sanctions is to employ a "carrot and stick" approach. A country that takes too much risk would be penalized. Sanctions could take several forms. Credit lines can be adjusted by tweaking qualification criteria. It would also be possible to adjust the levels of compliance, the insurance premia, and/or the seniority of credit lines.

The financial sectors of insured countries may presently be inclined to rely too much on unhedged foreign currency financing they would be better insured against liquidity risk. Indeed, the shortage of dollars on European markets during the recent financial crisis was a major source of tension in the interbank and foreign exchange markets.

Our proposal therefore requires collection of data on the funding risks of each country at regular (semi-annual or quarterly) intervals. An important indicator has been developed by the BIS to monitor the dollar shortage in the banking system (McGuire and von Peter 2009; Fender and McGuire 2010). This indicator is based on estimating the risk to the banks that fund themselves (partly with short-term funding) in foreign currency and also invest (partly in long-term assets) in another currency or in the same foreign currency. The shortage of dollars in European banks, for example, is defined as the difference between their dollar assets with long maturities and their (dollar-denominated) short-term financing needs.

[27] Such a framework would also challenge the independence of central banks.

The BIS indicator, which we call the *indicator of international financing risk,* is difficult to compute precisely because the data collected by national central banks do not contain sufficient detail on the banks' balance sheets by currency and maturity. Such data report on balance sheets in terms of currency and counterparty types, but the latter is a poor proxy for maturity. Moreover, the data collected do not contain information on outstanding derivatives (such as foreign exchange swaps markets) or, more generally, information on off–balance sheet positions or on the positions of the nonbank financial sector (hedge funds). Without proper measurement, it is not possible to observe accurately the growth of financial imbalances. Hence these problems of data collection should be addressed as soon as possible.

Qualification criteria could be established by building on appropriate indicators. Correction and sanction mechanisms would kick in when financial imbalances become too large. These mechanisms would combine communications with the markets and national or regional supervisors with peer pressure and a menu of options including conditionality, reductions in the supply of liquidity, increases in interest rates, and increases in collateral requirements.

Robustness

We have offered three proposals to improve the provision of international liquidity in times of crisis: systematize bilateral swaps, expand IMF loan facilities, and pool reserves. These reform proposals are robust.

Regardless of whether the world is unipolar or multipolar, enactment of our proposals would serve to "manage" the supply of liquidity. In a multipolar international monetary system, major currencies are more substitutable in the portfolios of institutional and private investors. We have described how this feature actually worsens the instability of a multipolar system that could be subject to "sudden stop" phenomena. Our proposals help reduce this risk.

Our reform proposals—to increase the supply of safe assets by developing mutually guaranteed European bonds and to promote the financial development of emerging countries as well as the convertibility of their currencies—would also yield benefits in either a unipolar or a multipolar world. In the long term, our proposals help to improve liquidity of the various currency areas and decrease the price effects associated with capital flows.

Similarly, it is possible to attribute the low level of real interest rates not to excess demand for safe assets but rather to excessive risk taking combined with runaway

capital flows ("capital flow bonanza" in the terminology of Reinhart and Reinhart 2008; Reinhart and Rogoff 2010). These capital flows manifest themselves in all asset classes, not only in safe assets. The flows push asset prices up, compress risk premia, put the financial sectors under pressure, and then dry up suddenly—thus causing financial crises. Improving the provision of international liquidity strengthens system stability by reducing the frequency and limiting the consequences of such "sudden stops". This is one reason why our proposals are in line with some of those discussed in Portes (2010) and Obstfeld (2009).

SECTION 5: THE FINANCIAL ACCOUNT OF EMERGING COUNTRIES

The consensus of the 2000s—according to which it was enough to pursue a monetary policy focused on price stability, without direct consideration for fluctuations in exchange rates—was shattered by the financial crisis and the sudden reversals of capital flows to emerging markets. Many countries are now trying to prevent a rapid appreciation in their currencies by imposing capital controls or by intervening directly in currency markets.

Institutions like the IMF now recognize the merits of *targeted and temporary* controls, especially during phases of heavy capital flows (Ostry et al. 2010). Besides the problems of excessive volatility of capital flows, there is also the issue of external adjustments while the global economy remains stuck in a liquidity trap.

Capital flows affect more than the current account; they also influence the fragile structure of countries' external balance sheets. It is therefore important to analyze the consequences that capital flows have on the balance sheets of countries and of financial intermediaries.

5.1. Capital flows bonanzas

When international liquidity is abundant, capital flows to emerging markets are massive and are subject to sharp reversions. Such influx of "hot money" is capable of generating financial and macroeconomic instability.

These episodes may lead to the formation of speculative bubbles. Bubbles are inherently fragile, and their bursting usually destabilizes the balance sheets of companies and financial intermediaries alike. Liquidity imbalances often develop, along with mismatches between maturity and currency. These phenomena are especially destabilizing in emerging countries because their financial systems are underdeveloped.

Also, massive flows of capital often lead to an excessive appreciation in the currencies of emerging economies. This dynamic reduces the competitiveness of the tradable sector—in particular, that of the manufacturing sector.

5.2. Economic policy options and temporary restrictions on the financial account

Any of several economic policy options could conceivably manage these imbalances, but the options must be tailored to particular circumstances: the type of capital flows, the initial degree of financial openness of the country in question, its administrative structure, and its international commitments. Macroeconomic levers must be paired with prudential levers. Prudential measures are more targeted, which is their strength

but also their weakness (to the extent that they are more easily circumvented). Capital controls may be part of the policy mix. Their explicit multilateral incidence—by nature, capital controls rely on direct discrimination against an agent's country of origin or residence—makes them particularly delicate instruments.[28] It is key to avoid scenarios in which capital controls are used as an excuse to implement a form of financial repression that artificially protects domestic financial sectors from international competition.

It is possible to manage a capital flows bonanza with macroeconomic policies. One way to fight against excessive appreciation of the exchange rate is by intervening in the foreign exchange market. The result is an accumulation of foreign currency reserves, which can then be used to defend the currency in case of a reversal in capital flows.

In practice, foreign exchange interventions are often "sterilized" in an attempt to contain the inflationary pressures that result from growth in the money supply. However, the limits of sterilization are well known. Financial authorities are then faced with a dilemma that is symptomatic of a loss of monetary control: increasing interest rates to fight against inflation may increase capital inflows by making the carry trade more attractive. Similarly, the endless accumulation of reserves is costly because it ties up resources.

In this case, it is possible to adopt a contractionary fiscal stance associated with a decline in interest rates. But this option can be expensive, ineffective, and difficult to implement in the short term. It may be preferable for emerging markets to impose *temporary* controls on capital inflows.

These macroeconomic policies cannot replace the implementation of prudential measures. In fact, it is necessary to reinforce prudential regulation in countries that are recipients of capital flows.[29] Such countries can impose unremunerated reserve requirements that are proportional to the amount of loans contracted abroad. These requirements can be adjusted depending on the maturity of the loan. Recipient countries can also impose reserves or set limits on the leverage of foreign exchange

[28] In the longer term, the development of local currency bond markets can reduce the incidence of currency mismatches and strengthen financial stability. From this point of view, there is much to learn from the experience of Brazil, which has successfully reduced its dependence on the dollar by developing financial markets in its own currency (the *real*). Recall from Sections 2 and 3 that we recommend this approach to improve the stability of the international monetary system.

[29] Prudential regulation of financial intermediaries in capital-exporting countries is also important, but by definition it is not the responsibility of capital-receiving countries. Regulators and supervisors of capital-exporting countries should prevent risk taking on the part of their cross-border financial intermediaries that is highly concentrated in certain sectors or markets. Tools at their disposal include, for example, increased reserve requirements and capital requirements related to the investments at stake.

positions. They can set up a tax on any liability denominated in foreign currency, and they may consider the dynamic provisioning of potential losses in case of an abrupt change in financial conditions. Standard measures to prevent capital flight can also be used—for example, imposing limits on the ratios of loan to value and/or debt service to income.[30]

If the options described here are difficult to implement or insufficient, then imposing temporary restrictions on capital inflows could be considered.

5.3. Multilateral surveillance

For the reasons already mentioned, the impact of capital flows is not limited to the current account. It therefore makes sense to strengthen the oversight of these imbalances in the financial account. This monitoring should be paired with the establishment of international financing risk indicators at the IMF or the BIS.

Better, deeper, standardized, and coordinated international prudential supervision of financial institutions should also help to slow any influx of "hot money" and to contain the effects of its reversal. One possibility is to build on the discussions and work underpinning the 2010 Basel III agreements and the decisions of the Financial Stability Board.

These recommendations are summarized in our final proposal.

Proposal 6: Extend the IMF mandate to the financial account and enhance cooperation in financial regulation.

5.4. Effectiveness of capital controls

Capital controls come in many forms, and their effectiveness is difficult to evaluate. In particular, effectiveness depends on the administrative capacity to implement the controls—and to prevent markets from circumventing them over time—as well as on the initial degree of openness of the financial account. There is little evidence that capital controls are effective in reducing aggregated capital inflows. However, it does appear that, during periods of massive capital inflows, countries that have implemented strong restrictions on their financial account have managed to reduce the amount of capital inflows.[31] Several studies also demonstrate the ability of capital controls to alter

[30] One can also envisage the establishment of prudential measures to protect consumers. For example, a country might seek to limit opportunities of its citizens to borrow in foreign currency for the purpose of acquiring real estate.

[31] See Cardarelli, Eleckdag, and Kose (2007).

the composition of flows (by lengthening their maturity) and to permit greater monetary policy autonomy.[32]

Capital controls are sometimes substituted for prudential instruments. The former may be more effective than the latter if a significant portion of capital inflows is not intermediated by the banking sector.

5.5. External adjustment problems[33]

Having discussed capital flow bonanzas in the short term, we now turn to the problem of adjustment in the medium term.

Current account deficits may be caused by economic fundamentals. For instance, a low saving rate may be justified by strong growth prospects or by terms of trade that temporarily play against the country in question. Similarly, high returns on capital may justify a high investment rate. Current account deficits may also be rooted in local economic distortions: irresponsible fiscal policy, weak financial regulation, and the like.

Current account surpluses, too, may be caused by economic fundamentals. For example, an aging population may justify a high saving rate. Similarly, low yields on capital can justify a low investment rate. Current account surpluses may be justified when there are positive externalities associated with the development of a tradable sector, leading to a temporary strategy of export-led growth. Current account surpluses may also be rooted in local economic distortions: limited or deficient social protection infrastructures, poor governance of local firms, inefficient domestic financial sector that limits investment opportunities, and so forth.

It is also important to bear in mind the fundamental asymmetry between deficits and surpluses. Market discipline acts as a stabilizing force and corrects deficits, but this restoring force has no counterpart for the case of a surplus.

Therefore, large and persistent deficits or surpluses of the current account may have various causes. If the deviations reflect fundamental economic forces, then there is no reason to implement policies to reduce them (except in the particular circumstances explained later). If they reflect countrywide economic distortions, then the best policy is to correct those distortions. Doing so does not, in principle, require any international coordination. However, distortions may originate at the international level, as when current account surpluses originate in the ineffective self-insurance through

[32] See Ostry et al. (2010) for an excellent summary.

[33] We especially thank Olivier Blanchard for very useful discussions on this topic.

accumulation of reserves (see Sections 2 and 3). The solution is then to implement our proposals in Section 4.

These remarks suggest several further considerations. On the one hand, it is difficult to justify any a priori restriction on the size of deficits or surpluses. On the other hand, it can sometimes be difficult to distinguish between fundamental causes and temporary distortions. More importantly, in the absence of clear externalities, each country must manage its own current account; it is therefore problematic to devise a role for monitoring or multilateral coordination.

Under what circumstances are there externalities that warrant a coordinated solution at the international level? We can identify at least four cases: systemic externalities, liquidity traps and weak aggregate demand, distortion of international competition, and problems of adjustment within a monetary union. We shall develop the first two.

Just as a large or highly interconnected bank can generate systemic risk, a large country—or a country that plays a key role in the global intermediation process—can cause systemic externalities by allowing the formation of significant external imbalances. To the extent that these externalities are not taken into account by the country in question, they warrant an internationally coordinated solution. Here we touch on the issue of financial stability, already discussed at length in previous sections of this paper. Our proposals to ensure the financial stability of the international monetary system remain relevant in this context.[34]

In normal times, the current account surpluses and deficits of any given country do not affect other economies. In a world where countries are using inflation targets, for example, interest rates and exchange rates adjust for production to meet its potential. However, if other countries' interest rates cannot adjust—as in the case of a liquidity trap—then the current account surplus of a country leads to a shortfall in aggregate demand and hence to a shortfall in the production levels of other countries. This is especially true if those countries cannot use fiscal policy to stimulate demand, and the result is a negative externality for the rest of the world. Here an appreciation of the real exchange rate of the surplus country, when combined with an increase in its domestic demand, would allow for an increase in global demand and production. A liquidity trap

[34] Our *indicator for international financing risk* is useful in this situation, too. The gross positions (external balances of countries) are crucial. It is therefore particularly important to have good data on the external balances of the countries at the macroeconomic level and on the balance sheet of financial intermediaries, especially for large countries and for countries that specialize in financial intermediation. When a problem is detected, national regulators should be alerted.

therefore justifies more coordination of economic policies, both monetary and fiscal, among countries.

The temporary coordination of policies should be accomplished through negotiations. Indeed, it is difficult to quantify a priori the adjustment efforts to which the countries concerned would need to agree. Although the answer is easy when surpluses are rooted in economic distortions, which can be targeted for elimination, it is much harder when surpluses reflect fundamental economic forces. So even when there are externalities and when a monitoring and multilateral policy is justified, simple limits on the current account do not seem appropriate.

5.6. Gradual structural opening of the financial account of emerging countries to increase the world supply of reserve assets

As explained in previous sections, it is desirable for the supply of reserve assets to increase globally. We have remarked on several occasions that the development and opening of local financial markets in emerging countries is desirable. Here we have in mind the *structural opening of the capital account.* Hence there is no contradiction with the measures, discussed previously, involving temporary capital controls.

Moreover, the gradual and targeted opening of the Chinese financial account would be desirable because it would guarantee convertibility of the yuan. Observe that recent measures (e.g., the "Supplementary Memorandum of Cooperation on the Expansion of the Trade RMB Settlement Scheme", dated July 2010) are likely to increase the circulation of RMB outside China's borders. Charles Li, chairman of the Hong Kong Stock Exchange and counsel for internationalization of the RMB, predicts that it will become a settlement currency in international trade within five to ten years.[35] The development of a bond market denominated in yuan will also be a sine qua non for the Yuan reaching a more international stature, thereby contributing to the international monetary system's stability while transferring to China some of the privileges of international currencies.

[35] http://www.hkex.com.hk/eng/newsconsul/speech/2010/sp100920.htm.

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Appendix: **Foreign Exchange Reserves Source (IMF COFER data)**

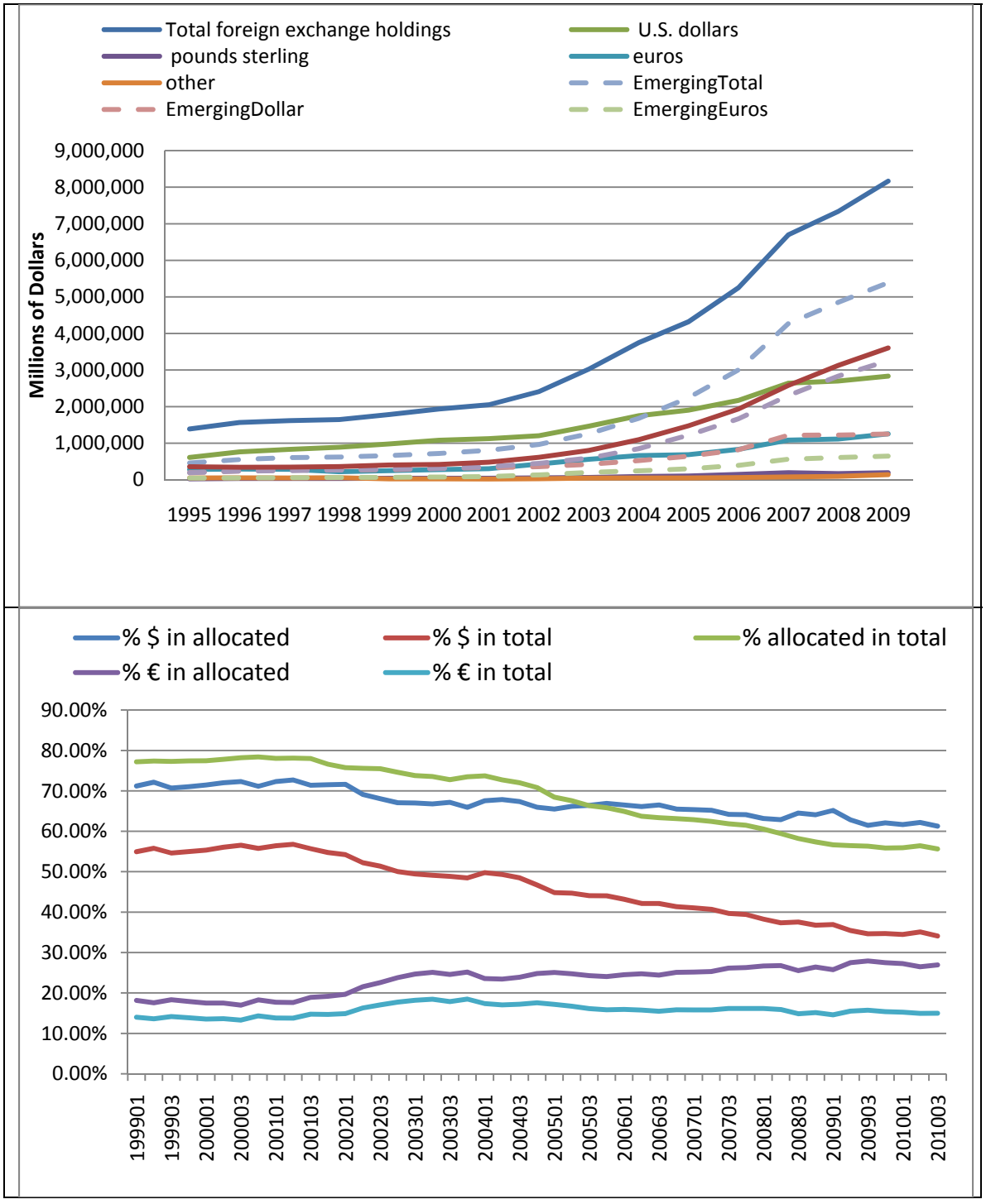

Figure A-1. Values of reserves at current exchange rates (the dashed lines correspond to holdings in emerging markets).

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