It is now widely accepted that the broad outlines of the current international monetary system are as we described them almost two years ago and labeled “the Revived Bretton Woods system.” This system’s main features are

— the emergence of a globally important group of economies that manage their currencies vis-à-vis the dollar to support export-driven growth
— the United States as center and reserve currency country, providing financial intermediation services for foreign, and particularly Asian, saving through its national balance sheet, and willing to accept large current account imbalances
— a group of poorer economies implementing export-led development policies and exporting large amounts of capital to richer economies, mostly the United States
—unusually low and even falling short- and long-term real interest rates as a result of this glut of mobile global savings, and
—a group of industrial and emerging economies with floating exchange rates, whose currencies are under incessant pressure to appreciate.

Not agreed and under vigorous discussion is how long this system can last. Will it be a meteoric flash with a spectacular end soon to come? Or will it last for the reasonably foreseeable future? We package these questions here in an analogous question: Is the Revived Bretton Woods system at the point in its development where the original Bretton Woods was in 1958 or 1968 or 1971?

In a series of publications we have provided a fundamental underpinning for why we believe the system will last—that the situation today is more like 1958. We argue that the gains to the players from continuing their actions outweigh the costs that many have argued will arise in an endgame asset price shift or in unexploited benefits of portfolio diversification. Rather than characterize the situation with geopolitically charged rhetoric like “balance of financial terror,” we think it more valid to think in the familiar economic terms of “mutually beneficial gains from trade,” such as might exist between any borrower and lender or between any purveyor of goods and its customer.

Here we further develop our argument in the form of three notes addressing particular issues that have cropped up in critiques of the Revived Bretton Woods view. These notes both respond to the critiques and continue to expand our ideas. The first note explains how we think about what is driving capital flows to the United States and keeping interest rates low. We view the fact of unusually low long-term real interest rates for this stage of the business cycle as a direct challenge to those who, exaggerating the importance of rumors about central bank reserve management practices, claim that the end is near.

The second note seeks to provide some information about the experience of those emerging economies with chronic current account surpluses since the breakdown of the first Bretton Woods system. A very large empirical literature evaluates the experience of emerging economies that have run chronic deficits, and the costs and frequency of associated financial crises. But we are not aware of any similar evaluations of the durability and stability of those foreign exchange regimes that have resulted in unusual sequences of current account
surpluses and accumulations of international reserves. The widespread view that the surplus regimes at the core of the Revived Bretton Woods system will come to a quick and costly end has likely been inferred in part from the recent experience of debtor emerging economies. Our interpretation of the experience of these surplus regimes is that they have been and may well remain durable and immune from financial crises.

The third note addresses an issue that has been raised frequently in criticisms of our comparing the current system to the Bretton Woods system, namely, that the United States is running large current account deficits now, but it was not then. Of course, many aspects of the current system are different from what they were in the heyday of Bretton Woods: Konrad Adenauer is no longer chancellor of Germany, Charles de Gaulle is dead, the United States no longer guarantees gold convertibility, and there is now a serious pretender to reserve currency status. Our first reaction was that this difference was as superficial as these others, and not at the heart of the comparison we wanted to draw.

But the United States did have a major balance of payments deficit during the Bretton Woods era, which was the proximate driver of the deterioration of the system. So we relate the U.S. balance of payments deficits under Bretton Woods to the U.S. current account deficits under the Revived Bretton Woods to show that there is a close analogy. This is something more than an exercise in the history of economic ideas, because it plays into our view that collateral is the key to opening sizable gross cross-border trade in assets in a system that is short on trust.

[a] Real Interest Rates Say It Is 1958

Why is the real interest rate in the United States so low and falling today, in the growth phase of the U.S. and global business cycles, even as the U.S. current account deficit reaches record levels? At the end of June 2002, about when the euro began its recent appreciation, realized ten-year real annual interest rates on U.S. Treasury securities were 3.70 percent on nominal notes and 3.07 percent on inflation-protected securities. The corresponding numbers at the end of December 2003 were 2.35 percent and 1.95 percent, respectively. One year later the respective numbers were 1.17 percent and 1.63 percent, and
as we write in mid-May 2005, they are 1.02 percent and 1.65 percent. This fall in rates has come in a period when the media swirls daily with stories about foreigners losing confidence, foreign exchange reserve managers diversifying portfolios, and imminent collapse as everyone tries to be the first out the door. If all this is true, the bond and credit markets have not noticed.

Three broad realities underpin our view of this global phenomenon, all of which we expect to continue into the foreseeable future:

**Reality 1:** About fifteen years ago, hundreds of millions of underemployed workers joined the world’s market economies. They had no capital to speak of, but they had a desire to work in industry and to get rich. One might expect that such an increase in the global supply of labor would drive real interest rates up, but these workers came with an enormously high saving rate and lived under the yoke of a dead financial system, which had served them in the past as a capital destroyer, as it does to this day. They lacked modern technology and management. Theirs was a communist society that was and is problematic geopolitically, which might, in turn, make their access to cross-border credit problematic. This created a profound global disequilibrium for the industrial world, equal in magnitude to the global unemployment problem of the Great Depression although much more concentrated geographically. The industrial world's economic system has to resolve this fundamental imbalance over the course of time by absorbing these workers. To focus today on trade imbalances when in fact there is an enormous labor market imbalance is to make the same mistake that economists and policymakers made in the 1930s.

**Reality 2:** The emerging economies that have developed most successfully are those that export capital on net. Joshua Aizenman, Brian Pinto, and Artur Radziwill demonstrate, in a sample of forty-seven developing countries from 1981 to 2001, that the net exporters of domestic savings among them had significantly higher growth rates. They conclude that “a rise in the self-financing ratio [the stock of tangible capital supported only by past national saving, divided by the actual stock of capital] from 1 to 1.1 is associated with an increase in the growth rate from 2.8% to 4.4%. Further, reducing the self-financing ratio from 1 to 0.9 is associated with a drop in the growth rate from 2.8% to 2.2%.” These estimates control for differences in institutional quality as well as trade and financial openness. They clearly
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contradict the usual assumption that developing countries have been successful in using net foreign saving to augment capital formation and economic growth. We argue below that their results are consistent with the idea that net exports of saving from poor countries support two-way trade in private financial assets that improves the quality and productivity of domestic capital formation.

Reality 3: The United States has a large and growing current account deficit, funded at this moment by the foreign private and official sectors at low and falling real interest rates. In recent years the official sector has taken up a large share of this deficit.

Let us focus on reality 3 for a moment. We like to think about the United States’ external deficit problem in a simple loanable funds flow framework. After netting U.S. public and private investment demand from U.S. saving, the United States has a demand for saving from the rest of the world that is downward sloping when plotted against the real interest rate, as in figure 1: the lower the real interest rate that it faces, the less the United States wants to save and the more it wants to invest. Given a real interest rate, then, we can read off the U.S. current account deficit. Meanwhile there is an upward-sloping supply of saving coming from the foreign private sector (we introduce foreign official flows below), perhaps from asset managers looking only at Sharp ratios and benchmarks, or perhaps from foreign industrial corporations interested in return on capital. The higher the real interest rate available in the United States, the more of this private foreign saving flows in. The intersection of these two curves determines the global real interest rate, the U.S. current account deficit, and the rest of the world's current account surplus.

[figure 1 about here]

A looser fiscal policy might shift the demand for foreign saving upward as in figure 2. This would bring in more foreign saving or, equivalently, increase the current account deficit. And it would cause the real interest rate to rise, as in the Reagan-era deficits of the early 1980s. Some of this may be going on today, but it is clearly not dominant. Since 2002, marketable U.S. debt has increased by more than one third while nominal and real interest rates have declined (table 1). Moreover, relative to those of other industrial countries, the U.S. budget deficit is not unusually large (figure 3); it is hard to see why this factor alone would increase the U.S. current account deficit relative to the deficits or surpluses of other
industrial countries, especially given the much more rapid GDP growth rate (real and nominal) in the United States.

Instead consider figure 4, which adds a vertical official sector supply curve, reflecting the fact that policymakers have objectives other than a narrow risk-return calculus localized to this small portion of national saving. Their development goals require the export of domestic saving, and they will accept whatever interest rate the market determines. Adding, horizontally, this new public sector supply of foreign saving to the private sector supply shifts total supply rightward and brings down the interest rate that clears this global market for savings.

So, if a falling U.S. real interest rate is observed alongside a rising U.S. current account deficit, it can only mean that official capital is being pushed into the United States and private capital is being pushed out, but by a smaller amount than the official capital coming in. On net, capital is not being pulled in by U.S. demand shifts. This is the combination of facts that shows us that the United States is passive and that the foreign official sector is the active player in global imbalances.

This means that the typical denunciation of U.S. "profligacy" is worse than useless for understanding the situation: it is actually misleading. Usually, this rhetoric includes a reference to the role of the U.S. fiscal deficit in reducing net U.S. saving, but a larger fiscal deficit should increase the interest rate. Whatever the size of this effect, it has clearly been more than overcome by the effects of foreign official capital pushing in.

One often hears that private saving flows to the United States are falling because of increased risks, stemming perhaps from the worsening U.S. international investment position. This would show up as a shift of the private supply curve in figures 1, 2, and 4 upward and to the left, and it would put further upward pressure on real interest rates. But this is exactly the opposite of what we observe. Rather, the evidence is far more consistent with a downward slide along a given private supply curve after the public sector supply is added. To be sure, foreign private saving is financing far less of the U.S. current account deficit than it did, say,
five years ago. But the reason is that private investors are being driven out by official sector flows willing to replace them at much lower interest rates.

One should beware of making too much of a rising or falling fraction of official sector finance in any given quarter or year. A steadily growing flow from the foreign official sector to the United States year in and year out is not necessary to maintain the system. Official flows are necessary only when the foreign central bank must intervene to keep its currency undervalued. As in a target zone exchange rate regime, when the private sector is confident that the regime is durable and will be sustained by future interventions as the need arises, private inflows are sufficient to provide the deficit financing.

So far, so good. But it means that today’s low real interest rate is a momentary flow effect that will evaporate should official sector lending to the United States dry up. If this were to happen, the picture would snap back from figure 3 to figure 1, and interest rates would jump. If this is what the market expects, we should today see low short-term real interest rates and much higher long-term rates. But we do not see this. Long-term real rates are low—hence the conundrum that we are studying now. Implicit in the real yield curve is that the equilibrium of figure 3 should last a long time.

It follows that even a hint that Asian governments might reduce their flow demand for dollar assets will generate an immediate jump in the ten-year rate in the United States. Indeed, many observers doubt that foreign official interests in funding the U.S. current account deficit are sustainable.

[b]Back to Reality 1

The stakes are high indeed. Why should Asian authorities remain willing to increase their claims against the United States? To answer this, we have to focus on the strategy that Asia (notably China) has chosen to solve the development and unemployment problems that are part of reality 1.

The problem for China is to mobilize its existing enormous domestic saving to create a growing, internationally competitive capital stock that can rapidly employ hundreds of millions of workers in productive activity. A serious constraint is the lack of a domestic financial system capable of channeling this saving into productive capital, technology, and management skills.
The solution, perhaps stumbled upon inadvertently, has been to engage in export-led growth, thereby providing an immediate global quality check on the goods produced. This avoids falling off the cliff of another Great Leap Forward. To get export markets open, part of the policy has been to offer a large incentive to potential industrial exporters, both domestic and foreign-based, in the form of low dollar wages and the expectation that wages will rise only slowly toward world levels. Slowly rising dollar wages could be associated with a gradual nominal revaluation of the renminbi or a slightly higher rate of inflation than in China’s trading partners. For example, a 3 to 5 percent revaluation of the renminbi later this year and the adoption of a carefully controlled float of the exchange rate would not signal the end or even a material change in the development strategy we have described.5

The typical problem in emerging economies is how not to offer too high an industrial wage relative to wages elsewhere in the economy: too-rapid industrialization could drive industrial wages sharply above agricultural wages, deterring investment in industry and triggering a flood of migration to the cities. By keeping wages low and relatively uniform, an initially low but rising currency helps both to induce resource transfers to industry and to restrain migration to a rate consistent with capital formation in the industrial sector.6

Foreign direct investors have been encouraged because they bring the discipline of international financial intermediation. Additional benefits include technology transfer and the proven political clout to keep export markets open. The importance of direct investment in keeping U.S. export markets open has been questioned on a variety of grounds. Eswar Prasad and Shang-jin Wei argue that most foreign direct investment into China comes from outside the United States and is not likely a significant factor in keeping U.S. markets open to Chinese exports.7 Leaving aside the inherent difficulty in determining the nationality of direct investors, we would point out that Asian direct investors in China also have an enviable record in penetrating U.S. markets and in dealing with the threat of U.S. protection. It seems likely to us that the building political pressure in the United States to do something about the bilateral trade deficit with China would be more effective if U.S. and other multinational corporations were not active in direct investment in China.

We are more than willing, however, to base our forecast of the durability of the system on the lasting inability of domestic credit markets in emerging economies to efficiently intermediate domestic saving. The difficulty in reforming financial markets in
these economies, and the frequency and costs associated with crises in economies that have not been successfully developed, are in our view the primary lesson provided by the failures of development in Latin America.

But why does the need for international financial intermediation (two-way trade in financial assets) create saving-investment imbalances and a flood of net capital exports in the first place? After all, an export-based development policy need not imply a net export of capital. All that is needed is export growth, and this can just as well be balanced by import growth as not.

In general, the successful emerging economies have not needed net foreign saving; such inflows are generally small and unreliable relative to domestic saving (reality 2). Nevertheless, other things equal, even a small addition of net foreign saving should contribute to investment and growth in poor countries. A positive argument in favor of net exports of saving requires that some other important ingredient to growth not be available in equal measure.

Our hypothesis is that net exports of domestic saving are necessary to earn the collateral required for efficient international intermediation of domestic saving. Asian emerging economies do not need net foreign saving, but they do need efficient financial intermediation. We have emphasized foreign direct investment and other types of international financial intermediation because we are not optimistic about the rapid development of domestic credit markets. That is, residents of these countries can avoid these markets by placing some of their assets offshore. These will return if international investors are protected from political risk—especially important when private capital is flowing to and from a geopolitically problematic country in large amounts. The government can relax this credit constraint by keeping its balance sheet very strong versus the rest of the world, that is, by building net reserves.

The government's net reserves then provide protection for private international financial intermediation against various geopolitical risks. In effect, the emerging economy’s government promises to stay on the sidelines by becoming a net creditor to the rest of the world. Note that a government cannot borrow this credibility; it has to earn it by placing goods and services in the rest of the world on net. And placing more goods and services in the rest of the world than one is taking in means a current account surplus.
Imagine that foreign direct investment flows are matched by official sector reserve growth in the balance of payments accounts and that the current account is balanced. Then the capital account is balanced in terms of both net and gross flows. But the country sending the foreign direct investment is taking an unbalanced risk position, effectively buying equity and borrowing in fixed-interest securities. Usually, in private markets, this requires some collateral from the lesser credit. The way an emerging economy delivers collateral is by running a current account surplus. The faster the gross positions in the capital account grow, the faster must the current account imbalance grow to support the unbalanced risk positions. We believe that this view of current account surpluses as collateral provides a first explanation of the connection between net and gross capital flows, currently a noteworthy lacuna in models of international finance, which ignore gross trade in assets.

**Other Asia and Japan**

A reasonable objection to our argument is that it does not fit the more developed countries in Asia, especially Japan, that have been the most eager buyers of U.S. assets. In fact, it is useful to consider China and Japan as spanning the problems facing Asia. Both Japan and China have an employment problem, but in Japan it is the result of a very long cyclical downturn, whereas in China it is a long-term development problem. Both governments look to export growth as a solution to this problem, and both have a long history of managing the exchange rate.

For quite different reasons, both countries have been able to sterilize very large reserve accumulations. In deflationary Asian countries, notably Japan, it is difficult to understand why there might be some limit on the ability or motivation of the authorities to create yen in stemming an attack on the currency. With interest rates at zero, it is costless to create as much yen cash as is demanded, whereas dollar reserves produce a positive yield. Normally, a limit on foreign exchange acquisition is reached when the resulting monetary expansion causes excessive overheating and inflation. But such an expansion is still not in sight for Japan and would not, in any case, be the appropriate monetary policy.

The lessons of attacks on weak currencies and fixed exchange rate regimes seem to be the ones being applied by the global private financial sector here. The authorities in such
regimes face a limit on reserves or credit or the amount of pain they are willing to put the economy through, and so each attack on the currency is simultaneously a ratcheting up of the probability that the currency will indeed collapse. Some observers seem to be holding a case study of a typical speculative attack against a mirror and thinking that private capital inflows likewise ratchet up the pain in Japan. Yet quite the opposite is true in deflationary Japan. Japan has ceased its massive intervention since the first quarter of 2004, and the yen has actually depreciated somewhat against the dollar. Our expectation is that the authorities will return to the market if private flows to the United States again decline and the yen again appreciates, especially if it is tested in another attack.

In China financial repression has allowed the authorities to place domestic assets generated by sterilization without much increasing domestic interest rates, and it has been very successful in containing inflation. The People’s Bank of China currently places three-year domestic currency debt in the banks at an annual interest rate of about 3 percent and is experiencing positive carry on its foreign exchange. Other emerging economies in Asia with relatively open capital markets have followed a middle course of trying to stay competitive with China but allowing some appreciation of their currencies against the dollar, although still with heavy currency management and accumulation of reserves. The success and durability of these efforts are a matter of intense debate, but we doubt there is much to be gained from continuing the debate at the theoretical level. We turn to the empirical debate in the next section.

How Do Episodes of Reserve Accumulation End?

In a series of papers, we have argued the case for a meaningful distinction between countries that allow private international investment decisions to determine important macroeconomic variables such as the real exchange rate and the current account balance, and countries for which government investment decisions determine these magnitudes. We have referred to these as “capital account countries” and “trade account countries,” respectively.

Trade account countries repress private financial flows and overwhelm with official flows those that slip through the repression. Capital account countries, in contrast, do not block cross-border flows or significantly intervene in foreign exchange markets. It is often
assumed that the conventional analytical framework developed to understand the behavior of capital account countries applies also to trade account countries, because capital and foreign exchange controls are mostly ineffective. In our view this is entirely an unresolved empirical issue.

The opinion that the U.S. current account deficit is unsustainable flows from a conviction that private international investors will be unwilling to continue to accumulate net claims on the United States. In this view, moreover, either the official capital flows that have partly financed the U.S. current account deficit will be overwhelmed by private sector flows, or governments will come to their senses in time to avoid a crisis. The usual dark warning is that the longer it takes the official sector to realize the inevitable truth, the harsher will be the consequences. The phase diagrams of the speculative attack models dance in our collective heads.

We fully agree with half of this prediction. Two years ago we predicted that private investors would become more reluctant to finance the U.S. current account deficit as official sector capital flowed in.\textsuperscript{10} We also predicted the very large appreciation of the euro and other currencies whose trade in foreign exchange markets is dominated by private capital flows. This was not unusual in itself. But we also argued that governments of a group of what we called “trade account countries” (countries where repression of private financial flows determine the real exchange rate and the current account balance) had good reasons to continue to invest in the United States for an extended period and that this would keep U.S. interest rates low, contrary to then-prevailing opinion.\textsuperscript{11} The length of this period is derived from an optimal rate of absorption of those countries’ unemployed labor. In our view of the real forces behind this system, this suggests a decade at least.

So it is important to understand why nonresidents are supplying net saving to the United States at very low expected yields and why this may or may not continue. To us, it is irrelevant to the overall picture whether the net foreign investment is in Treasury securities, agency securities, private fixed-income securities, equity, or something else. It is irrelevant whether private or official foreigners take larger or smaller shares of the foreign investment in the United States in any given year. It is mostly irrelevant how the spreads across different classes of financial instruments in the United States might be affected. This is not a discussion of investment strategy or asset allocation; it is entirely directional.
Historical Evidence

One way to begin to evaluate the durability of the Revived Bretton Woods system and the likely consequences of its demise is to study the experience of economies that have had unusually long sequences of current account surpluses and accumulations of official reserves. Doubts about the durability of the system have generally centered on the ability and willingness of surplus economies to maintain an undervalued currency for an extended period. Does historical experience suggest that periods of reserve accumulation are followed by speculative attacks that generate a real appreciation (through either inflation or a nominal appreciation), losses on dollar reserves, and painful recessions as resources are transferred from traded goods industries?

The experience of emerging economies with chronic current account surpluses since the breakdown of the original Bretton Woods system in 1971 has not attracted much attention, perhaps because until recently they have been quantitatively unimportant. An alternative possibility is that observers assume that such regimes cannot last for long and will end badly, because of the evidence provided by emerging economies with chronic deficits. Assumptions are necessary because past empirical work on crises and current account reversals has considered only episodes identified by large depreciations or swings in current accounts from deficit to surplus.12

The theoretical symmetry between speculative attacks on undervalued currencies and those on overvalued currencies is well known.13 In an attack on a strong currency, anticipated capital gains generate private capital inflows when speculators believe the regime can be overwhelmed. Intervention to limit nominal appreciation takes either of two forms, both with unfavorable side effects: an increase in the monetary base, which raises the domestic price level, or sterilization, which increases reserve assets and the government’s domestic currency liabilities. The regime can appear to be stable for a time, but the government’s tolerance for inflation or reserve accumulation is limited, and a speculative attack will bring the regime to an end.

Data Methods: Identifying Precedents
To identify historical precedents for today’s surplus economies, we first identify sequences of reserve accumulation that might provide a typical pattern for emerging economies that accumulate net reserves for an extended period. We then examine the behavior of other variables in the years during and after the accumulation sequence.

For a sample of 115 developing and industrial economies, we examine yearly data from 1970 to 2004. We first identify sequences of consecutive years in which the economy experienced current account surpluses on average and the government increased its net foreign asset position. For surplus economies the change in the government’s net foreign asset position is usually dominated by changes in international reserve assets, but our measure of net reserve accumulation also includes changes in government debt and other official sector capital flows. We are interested in the consolidated government contribution to financing the change in national net foreign assets or its mirror image the current account balance. To further restrict attention to episodes in which the government was an important participant in international financial markets, we exclude episodes during which the government generated less that 25 percent of the change in national net foreign assets.

The typical experience of surplus economies during the three years before the end of a sequence of net reserve accumulations and the three years that followed is summarized in figure 5. Definitions and data sources are reported in appendix A, and detailed data for all accumulation episodes in appendix B.

During periods of reserve accumulation, several regularities stand out. First, with very few exceptions, the current account begins in surplus, and the surplus increases during the period of net reserve accumulation. The average increase in the surplus was 0.73 percent of GDP in year $t-3$, 0.47 percent in $t-2$, and 0.18 percent in $t-1$, the final year of net reserve accumulation.

In $t-0$, the first year following the sequence of reserve accumulation, the current account surplus declines by an average of 2.06 percent of GDP. This certainly suggests that some important shock has occurred. Moreover, the shock typically persists, with little further change in the current account balance in the two years that follow.

In the final three years of net reserve accumulation, the currency typically appreciates in real terms each year; the average cumulative increase (we define the real exchange rate
such that an increase represents an appreciation) is about 3 percent. The behavior of the exchange rate before the official sector leaves the market is not surprising and is fully consistent with the conjecture that the growing current account surplus, appreciation of the currency, and reserve accumulation reflect a growing fundamental disequilibrium in the real exchange rate and the current account. This sequence is supposed to end with a jump (appreciation) in the real exchange rate and a gradual decline in the current account balance. Instead, in the average case, the government retreats from the market, the currency \textit{depreciates} in real terms in the following year by 1.2 percent,\footnote{The depreciation continues for two more years. The real exchange rate ends more than 3 percent below its level five years earlier, and the government enjoys a substantial capital \textit{gain} on its reserve accumulation.} and the depreciation continues for two more years. The real exchange rate ends more than 3 percent below its level five years earlier, and the government enjoys a substantial capital \textit{gain} on its reserve accumulation.

The behavior of the macroeconomic variables when the government stops accumulating net reserves clearly does not fit with the standard model of a speculative attack on a strong currency. With the government out of the market, there is a “sudden start” of private capital inflows, as the model predicts. But these inflows are associated with a persistent real depreciation of the currency, not an appreciation. Economic growth is above trend during the reserve accumulation episode and generally moderates thereafter. In most cases growth remains positive and recovers in a year or two.

A variety of shocks to the world economy could account for these empirical regularities. For example, a decline in foreign demand for the country’s exports could explain the swing in the current account and the decline in growth. The deterioration in the national net foreign asset position is consistent with a decline in the real exchange rate. Indeed, such a decline may create the expected yield differentials necessary for the sudden start in capital inflows. The deterioration of the national net foreign asset position would be consistent with a real depreciation.

Another possibility is that intended or unintended financial liberalization allows residents to diversify away from domestic assets toward international assets. For example, if China suddenly opened its capital markets, residents’ desire to diversify into foreign currency assets would suggest a depreciation of the renminbi rather than the appreciation currently expected. In this context it would be fully rational for the authorities to build a stock of dollars now in anticipation of private demand when financial markets are liberalized.
Moreover, it makes no sense to allow the renminbi to appreciate now only to depreciate sharply later.

**[b]**China, Japan, and Korea

Seven economies accounted for two thirds of worldwide international reserve holdings at the end of 2004 and for three quarters of the $600 billion growth in international reserve assets in that year. Three economies—Japan, China (excluding Hong Kong), and Korea—held 45 percent of the global total and acquired 60 percent of the 2004 increase. The general sequence of current account imbalances, reserve gains, growth, and real exchange rate changes described above holds even more clearly for this group of economies. Several are in the midst of a stretch of reserve accumulation today and have experienced two or three similar episodes in the past. All seven have in the past experienced unusually long episodes of net reserve accumulation relative to our complete sample: the champion to date is Singapore with its twenty-seven-year run from 1974 through 2000.

It seems particularly relevant, in evaluating how the current episode of reserve accumulation might end, to look at the previous experiences of these seven economies. In this section we review the recent experience of the “big three.” For each we present charts comparing, for each reserve accumulation episode, current account deficits and net reserve accumulation on the left-hand side, and economic growth and the real effective exchange rate on the right-hand side. Appendix C provides similar figures for the other four economies: Hong Kong, India, Singapore, and Russia.

**Japan** has experienced three extended episodes of net reserve accumulation in the post-Bretton Woods era: a three-year sequence from 1986 to 1988, a five-year sequence from 1992 to 1996, and a six-year sequence that began in 1999 and continued through 2004 (figure 6). What might the first two episodes suggest for the current episode in Japan? We look first at the current account. In each episode the current account surplus (in billions of dollars) is growing before the net reserve accumulation begins. The surplus moderates during the accumulation, then declines in the year before and the year in which the accumulation ends. In the first episode reserve accumulation accounted for about 28 percent of the current account surplus during the period of reserve growth, and in the second about 26 percent.
In the present episode the current account surplus has continued to grow. Reserve accumulation absorbed about half of the surplus through 2004. Considering just these data, one might expect a moderation in the rate of reserve accumulation going forward, but not an end to the sequence of net reserve gains.

In the two previous episodes, the real effective exchange rate and the growth rate behaved as described above for the typical experience. The exchange rate rose before and during the reserve accumulation but then fell sharply for two or three years. In the first episode the real exchange rate fell in the year following the end of the accumulation and in 1986, the year the authorities withdrew from the foreign exchange market. As is typical for the larger sample, in both episodes the GDP growth rate rose during the accumulation sequence and then turned down, for three years in the first episode and two years in the second.

During the recent episode both the real exchange rate and the growth rate have departed from the norm. Growth increased in the first year of the recent episode, and the real effective exchange rate rose as would be expected, but growth collapsed in 2001 and 2002, and the real exchange rate fell. Since then there has been a sharp recovery in output and a small rise in the real exchange rate.

If history is a reliable guide, reserve accumulation in this episode will moderate relative to the current account surplus but will continue until there is a significant decline in the surplus. Meanwhile the real exchange rate will continue to rise, but at a moderate rate, and output growth will continue to improve slowly. When the current account deteriorates, reserve accumulation will end and the real value of the yen will fall.

*China* has the longest continuing sequence of net reserve accumulation in our sample. From 1990 to 2001 small current account surpluses were roughly matched by reserve accumulation, with little participation by the domestic private sector in international financial markets (figure 7). Since then the current account surplus has grown rapidly, and reserve accumulation has consistently been about double the surplus, as large net inflows of direct investment have been matched by reserve accumulation. Clearly, the reserve buildup since 2002 is unusual by historical measures. We have not seen a sequence of private capital inflows financing reserve accumulation on anything like this scale before.
Nor, as the right-hand panel shows, have we yet seen any of the predicted precursors of a successful speculative attack. The real exchange rate fell until 1999, when the nominal rate was fixed. Since then the rate has moved with the dollar, falling by about 4 percent from 1999 through 2003. Recall that this is a real effective rate, so that the standard model would predict a gradual erosion of the authorities’ ability to control inflation. We have seen no evidence of this to date.

Finally, high growth rates during the sequence of current account surpluses are clearly a feature of this history. As in the case of Japan, our reading of history is that the reserve accumulation will continue until the current account surplus turns around for other reasons. In China’s case an interruption of direct investment inflows or liberalization of capital outflows might generate a real depreciation and an end to the sequence of reserve accumulations.

*Korea* experienced one sequence of net reserve accumulations that meets our criteria from 1986 to 1989, and a second episode started in 1998 and continues today (figure 8). During the earlier episode, reserve accumulations roughly matched an increasing current account surplus and came to an end when the surplus declined. The real exchange rate rose in the final two years of the episode and declined the year following and for the next two years. In the familiar pattern, growth slowed in the final year of accumulation but then rebounded for the next two years.

The episode that started in 1998 is not unusual. Reserve accumulation has approximately matched a U-shaped sequence of current account surpluses, and the real exchange rate has risen.

**Summary of Findings**

To conclude, we have looked at a large body of data to evaluate the relevance of the standard model for understanding developments in emerging economies with chronic current account surpluses since 1970. We find almost no support for the standard model, which predicts an eventual speculative attack on a strong currency. Episodes of net reserve accumulation coincide with growing current account surpluses. Reserve accumulations end
when the current account surplus declines or (as often happens) swings all the way into deficit. Most important, the real exchange rate weakens at the end of accumulation episodes, and there is generally a small downturn in economic activity. Such a sequence is consistent with a variety of real and financial shocks to the surplus economy. But a real depreciation following the authorities’ decision to stop accumulating reserves is not consistent with a speculative capital inflow or a successful speculative attack. Recall that, in the standard model, the regime ends with a burst of inflation or a forced nominal appreciation of the currency, either of which would be associated with a real appreciation. We do observe “sudden starts” of private capital inflows to finance a current account deficit, but these are associated with a falling real value for the currency, presumably to generate increases in expected yields that draw private capital into the economy.

Let us reemphasize what we did not find in the data. We did not find sequences of reserve accumulation followed by revaluations that generated capital losses for the government.\textsuperscript{15} We did not find sequences of reserve accumulation followed by recessions generated by a real appreciation of the currency. This history suggests to us that the contemporary pattern of current account surpluses can continue in these economies until there is a major negative shock to demand for their exports. A cyclical downturn in the United States might be a likely candidate.

\[a\]Nothing Lasts Forever

The historical record we have presented suggests that most current account surplus regimes have not been terminated by speculative attacks. If this interpretation is correct, there is no obvious constraint on the ability of existing ones to continue to finance a current account deficit in the center country. A common theme in international finance is that repressed systems do not last forever. We agree they last for no more than twenty years and probably less, but the important point is that they are effective for substantial periods.

Of course, what countries can do tells us nothing about what they will want to accomplish. They could listen to the eminent advice and join the Washington consensus and the international finance textbooks by importing capital and developing internally. Our Revived Bretton Woods argument suggests that they will want to do just the opposite. That
is, the governments of trade account countries will want to lend to the rest of the world and, in particular, to the center country. And they will counter efforts by the domestic private sector to export capital, through controls and sterilized intervention. An important part of our story is that the real exchange rate distortion will decline over time and vanish at the end of the adjustment period. So the big speculative incentive is front-loaded, and the beginning of a reserve accumulation episode is precisely the time in an emerging economy’s history when financial repression is most likely to be effective. An important constraint on capital inflows into China is the underdeveloped and bankrupt domestic financial market. As the industrial sector grows and that sector lobbies for a better domestic financial system, the whole fabric of financial repression will unravel. But this takes time.

In our framework the Chinese government is not accumulating reserves because of a mindless infatuation with a fixed nominal exchange rate. It is instead using a real undervaluation of its currency to limit urban migration and to subsidize rapid industrialization and absorption of unemployed labor. So, at the end of the process, the government anticipates holding a stock of dollar reserves that may or may not generate a capital loss. Clearly, if, as is typical, the renminbi depreciates in real terms, there is no capital loss in the endgame. In any case the government anticipates having by that time a physical capital stock that is larger and more productive than today’s and a labor force that is employed and paying taxes. The one is the prerequisite for the other. The government’s portfolio includes the domestic capital stock as well as foreign exchange reserves; the value of that portfolio should not be maximized locally over its individual subcomponents.


The financial press and several widely quoted experts have argued that our comparison of the current international monetary system to the Bretton Woods system is problematic. In particular, they point out that the United States did not finance a large and persistent current account deficit under Bretton Woods, and indeed the mere forecast of such a deficit in the late 1960s was enough to bring the system to a painful end. In addition, unlike in the original Bretton Woods system, there is now a viable alternative reserve currency, the
euro, and there are no formal arrangements to prevent reserve diversification. We argue below that this is a misreading of the nature of the system then and now and of the forces that brought the Bretton Woods system to an end.

**The Old-Time Religion: Balance of Payments Deficits Are Not Current Account Deficits**

During the Bretton Woods years, the United States did not run large current account deficits, the measure of external imbalance that most draws our attention today. But, in the reckoning of the day, it did run large and persistent balance of payments deficits. The definition of an external deficit that was natural to economists and policymakers at the time seems today to have been forgotten or to be treated as a curious and outmoded accounting convention. Almost all the old-timers focused on a *liquidity* definition of the balance of payments, which Ragnar Nurkse explained as follows:

A country with a deficit in its balance of payments can cover the deficit either by an outflow of gold or an inflow of foreign short-term funds…. These funds are equivalent to a loan by foreigners and should be regarded as a draft on the recipient countries stock of international reserves…. The foreign short term funds are a liability, can be withdrawn at any moment, and must be treated as a negative gold reserve.¹⁶

Notice that this definition implicitly adds elements of the capital account, namely, the balance of trade in longer-term assets, to the current account in order to define a payments imbalance. It emphasizes strictly net flows of gold and short-term claims, that is, liquidity, in defining the balance of payments. Two generations of students of international economics have been kept in the dark about this concept or, at most, trained to think of it as an odd creation of the old-timers, mentally straitjacketed by the completely controlled economies of their day. Yet there it is in the literature: they harped continually about the growing U.S. balance of payments deficits. For instance, in his valedictory on the old international monetary system, French President Charles de Gaulle said

…. But in addition, the fact that a large number of countries accept, out of principle, dollars in the same way as gold to compensate, when appropriate, any deficits that arise to their
advantage from the American balance of payments, leads the United States to become voluntarily indebted to foreign countries.... instead of paying them totally in gold, the value of which is real, that you can only possess if you have earned it and that you cannot transfer to others without risk and without sacrifice....

The United States, for want of having necessarily to pay in gold, at least totally, for their negative balances of payment in accordance with the old rules, that required countries to take the required steps, sometimes rigorously, to remedy their imbalance, is suffering year after year from a deficit balance. No less because the total of their commercial exchanges is to their disadvantage. Quite the opposite! Their material exports always exceed their imports. But that is also the case for dollars, exports of which are always in excess of imports. In other words, capital sums are being built up in America, by means of what should really be called inflation, which, in the form of dollar loans granted to countries or to private individuals, are being exported. As, in the United States itself, the increase in currency circulation that results from this makes investments within the country less remunerative, there is an increasing trend there to invest abroad. This leads, for certain countries, to a sort of expropriation of some of their companies....

But circumstances are such today that we can even wonder how far the problem would go if the countries that hold dollars wanted, sooner or later, to change them into gold? Although such a general movement would never take place, it is still the fact that there is an imbalance that is, to a certain extent, fundamental.17

The old fundamentalists said there was a balance of payments problem. The modern secularists say there was not, because the current account was in surplus. So what brought about this change? A change in definition.

[b]The Modern Secular View: Yes, They Are

The intertemporal maximization model of the international monetary system found in most modern textbooks assumes that the system is based entirely on trust and freely flowing capital. Private international capital transactions dominate and therefore undo official interference. Such transactions are based on the assumption that debtors willingly repay creditors, and those who suffer capital losses willingly repay those who enjoy capital gains without the imposition of infrastructure to secure this result. Observed net and gross capital
transfers are interpreted as private intertemporal trade in goods and services. Boiled down to this dimension, goods and services should flow, on net, from high-income, slow-growing economies to low-income, fast-growing economies so that consumption can be smoothed over time. This flow imbalance can be sustained for a long time and reach high levels because it can be repaid later with surpluses that come from rapid growth. Trust is all that is needed.

That this theory generates more puzzles than insights is problematic but has not hindered its dominance. For example, an inconvenient parallel literature on sovereign debt has difficulty concluding that anyone should repay international debt, yet we somehow reconcile ourselves to this contradiction in two basic traditions in international finance.

[**b**] _Which Is More Realistic, Collateral or Trust?_

A unifying conceptual basis for both the original and our Revived Bretton Woods system is the idea that the international monetary system was and is based on collateral, not on trust. Nurkse and his contemporaries believed the international monetary system depended on countries’ willingness and ability to deliver gold on demand. A country’s ability to deliver gold could be instantly reduced by calling its short-term credits. It follows that the liquidity balance was the natural measure of the change in the position of governments, including the government of the center country.

It is our contention that the current system also runs on collateral, not on trust. International net saving transfers are too small (except to the United States) because no one trusts a net debtor (the Feldstein-Horioka puzzle). Gross two-way trade in assets is too small because no one trusts a potential loser (the home bias puzzle).

In the original Bretton Woods system, the United States was able to provide intermediation services to the world because it posted a stock of collateral in the only form that was acceptable at that time, that is, gold.¹⁸ Nurkse was right that the ability of the United States and other countries to participate in international markets was limited by the stock and distribution of gold. A similar implication of our view of collateral in the Revived Bretton Woods system is that a country that wants to participate in private international intermediation has to post collateral. In 1949 the United States had, as it were, the only triple-
A credit rating in the system, and so it could hold its own collateral. As de Gaulle pointed out, however, this was no longer the case in 1965, when liquid claims on its collateral were substantial.

The key idea in our analysis of the current system is that “earned” U.S. dollar reserve assets have replaced gold as the ultimate reserve asset. The only collateral “asset” that everyone trusts are goods already delivered to the United States by other countries. These goods come to the United States via U.S. current account deficits. Everyone trusts the United States to keep these goods or, what is the same thing, to “default” on U.S. official liabilities to selected foreign governments if those governments steal the private assets of U.S. residents or others, especially in the context of a geopolitical bump.

In this sort of default, the Treasury does not cease paying on its own obligations owned by the problematic foreign government. In practice, it has in the past frozen assets, converting them from liquid to completely illiquid claims, placed service payments into blocked accounts, forced long-term rollovers at Treasury bill rates, and redefined the ultimate claimants and recipients of these payments in legal cases, which may emanate from ex post legislation.

Moreover, as in Nurkse’s explanation above, a country cannot usefully borrow reserves. It would then have nothing to lose, since it could simply default on its liability. In our view reserves and other official or even private foreign-held assets are collateral only if they have been earned by net exports of goods and services. If they are not so earned, they are by definition borrowed. If borrowed, there are no already-delivered goods for the United States to keep, and hence no collateral.

Critics of the collateral approach argue that the U.S. Treasury would never damage its reputation by defaulting on an official reserve liability. We have two reactions. First, the Treasury has frequently done so in the past. Several such actions are described below, along with a more detailed history of a recent case. Second, we argue that transferring collateral to the rightful owner in circumstances envisioned in the collateral relationship preserves the reputation of the U.S. government both as a debtor and as an impartial and reliable enforcer of collateral arrangements. In delivering its liability to the injured party, the United States is not defaulting on its obligations. It is honoring both its promise to pay and its promise to pay the rightful owner of its obligation. The identity of the rightful owner is conditioned by the
terms of the collateral arrangement. Both reputations contribute to the demand for U.S.
international reserves. But an important implication of our approach is that the second of the
dual roles, that of enforcer of collateral arrangements, is the only unique function of an
international reserve currency.

In a private collateral arrangement, the rights and obligations of the participants are
clear and explicit. The rights and obligations of governments in the collateral arrangement we
have described are implicit and necessarily less clear. For example, the event that would
trigger transfer of ownership of U.S. official liabilities is not defined, as it would be in a
private collateral arrangement. But historical precedents exist. The United States has
transferred ownership following major geopolitical incidents such as wars, invasions,
revolutions, hostage takings, and nationalizations of foreign investment. That there is
uncertainty about what set of events would trigger transfer of collateral does not mean that
there are no such events or that private investors do not value the protection offered by
collateral in those circumstances.

There is also uncertainty concerning what set of creditors to a country would actually
benefit from collateral arrangements. But even a random distribution among creditors would
be a significant disincentive for a sovereign on the international periphery considering
whether to seize assets, provided it had enough collateral at risk. Uncertainty about what
events will trigger transfer of collateral and uncertainty about the distribution of the transfer
make governments’ collateral less powerful than private collateral. Our conclusion is that
more of it is needed to support a given scale of financial intermediation.

Ricardo Caballero and A. Krishnamurthy have similarly argued that international
collateral is necessary to support private financial intermediation within advanced and
emerging economies. They also emphasize that an important market failure in emerging
economies is the inability to produce assets that can be used as collateral, making it necessary
to import such assets. Caballero elsewhere relates this to the private financing of the U.S.
current account deficit as follows: “There is an enormous demand for saving instruments in
the world, and the US is the most efficient producer of such instruments. No other place
combines the volume from new opportunities and ability to generate trustworthy saving
instruments from each unit of physical investment put on the ground.” An important aspect
of their analysis is that financial crises can reduce the supply of collateral assets in emerging
economies, and that this might constitute the real costs of such crises. Moreover, even developed financial markets can lose their ability to produce safe assets following a severe financial crisis like that which has plagued Japan in recent years.

We are just beginning to explore the economic significance of private and official holdings of international collateral and how the two might interact. Is private collateral a substitute for official holdings of safe assets? Is official collateral necessary for the credibility of cross-border private collateral arrangements? Our framework is based on the idea that official collateral is required because, when trouble comes, private international credit arrangements are enforced, if at all, by governments. There is, of course, ample room for clarification and improvement of our understanding of these mechanisms. But two things seem to us clear. The United States is a source of safe assets that cannot be produced locally in most of the rest of the world. And, since borrowed collateral is an oxymoron, most of the rest of the world has to earn these assets by delivering goods to the United States.

Could Europe, offering the euro as an alternative reserve currency, replace the United States as the preferred custodian of collateral? Clearly this is possible. As many observers have recently pointed out, the European Union already provides euro-denominated government debt that is a credible promise to pay. Moreover, some diversification from dollars to euros might make sense in terms of a narrow risk-return calculus. But our conjecture is that the dollar will remain the dominant reserve currency as long as the European Union is less willing or less able than the United States to enforce collateral arrangements. Since the European Union has no track record in this regard, it seems unlikely that the euro will soon challenge the position of the dollar in the international monetary system. For this to change would require markets to come to expect that some European governments would be willing to accept large current account deficits and to block the movement of euro reserves as a way of punishing a country (possibly an aggressive one) that expropriates foreign assets. In our view both expectations are unlikely. At this point in history, substituting euros for dollars places collateral out of the reach of creditors and therefore considerably reduces its usefulness.

Our approach is based on the view that there is little trust between key countries in the international monetary system. In such a system, everyone sees tremendous benefits from international financial intermediation, but no one can afford the risk of letting another
country owe them substantial amounts of goods. The best risk is the central reserve country. Put another way, without trust, the stock of net financial indebtedness must always be less than the stock of collateral that can be seized. In domestic financial markets the stock of real capital that can be pledged as collateral is large relative to credit balances. Although collateral is a universal feature of domestic credit relationships, it is seldom a binding constraint, at least in the aggregate. In international finance just the opposite is the case. Huge stocks of national wealth exist but are useless in creating incentives for repayment, because mass default is often generated by government via the domestic legal system.

**[b] Some Evidence on the Durability of Reserve Currency Status**

The International Emergency Economic Powers Act of 1977 (IEEPA, which supplanted the Trading with the Enemy Act of 1917) empowers the president of the United States to freeze foreign-owned assets under U.S. control. The IEEPA authorizes the use of sanctions when the president sees an “unusual and extraordinary threat” to the "national security, foreign policy, or economy" of the United States and declares a national emergency. The word “emergency” allows the window to be slammed shut if, for example, a foreign country threatens to launch a financial attack by withdrawing funds or to pull out a substantial amount of funds out in order to prevent their seizure. As described by the U.S. Information Agency, a freeze on foreign-owned assets can be applied selectively to a particular country, or to a group of countries, in time of war or in response to a national emergency.

The procedure can be used to serve three purposes:

--to deny authorities in blocked countries access to assets that might be used against the US
--to protect the true owners of the assets from illegal attempts to seize their property
--to create a pool of assets for possible use in settling US claims against blocked countries, or for use as a bargaining chip in negotiating an eventual return to normal relations.
During World War II, assets owned by Germany, Japan, and Italy were blocked and eventually used in settling war claims against them. Similarly, assets of Hungary, Romania, Latvia, Lithuania, Estonia, Bulgaria, and Czechoslovakia were blocked after these countries fell under Soviet domination. Asset blockings were subsequently imposed against North Korea and China in 1950, Cuba in 1963, North Vietnam in 1964, Rhodesia (now Zimbabwe) in 1965, Kampuchea (Cambodia) in 1975, Iran in 1979, Libya in 1986, Panama in 1988, the Federal Republic of Yugoslavia (Serbia and Montenegro) in 1992, and Afghanistan in 1999. In 1990 the United States blocked $30 billion in assets belonging to Iraq and Kuwait. In 1979 it blocked $12 billion of Iran’s assets, including $5 billion in offshore branches of U.S. banks; part of this was used to pay off syndicated loans by U.S. banks to Iran, and $1.4 billion was sent to the Bank of England to cover claims in the United Kingdom. Another $1 billion was held against awards from the Iran-U.S. claims tribunal.24

These asset freezes have occurred under a variety of circumstances. Some of the asset blockings were aimed at adversaries in a declared or undeclared war (Germany, Japan, Italy, China, North Korea, and Iraq). Some were aimed at friendly countries that had been occupied, with the aim of preserving the assets pending the restoration of a government recognized by the United States (Latvia, Lithuania, Estonia, and Kuwait). Some countries saw their assets blocked when they opposed the United States geopolitically or became hostile without war breaking out (Cuba, Iran). Some freezes were implemented as part of a global imposition of sanctions (F.R. Yugoslavia, Rhodesia). The differences in circumstances notwithstanding, this history shows that the center country can repeatedly “default” on official liabilities and still remain the only important provider of reserves.

[a]Conclusion

The international monetary system must create collateral in order to support international capital transactions. In the industrial countries, the lack of such collateral might account for the relatively small net and gross capital flows among them. Collateral is expensive, and the benefits of trade in financial assets among similar countries are probably not great, even though the legal and expropriation risks are relatively small. For emerging
economies, in contrast, the benefits of trade in financial assets are very large. The irony here is that, to accumulate collateral (or “net reserves” to the more traditional among our readers), the emerging economy must export national saving. This is bad from the modern secularist perspective, but it is orthodoxy in the old-time religion. The benefits of two-way trade in financial assets are potentially enormous for countries that have high saving rates but waste the resources thus generated when they are channeled through inept domestic financial systems. These countries need to run the modern version of a liquidity surplus.

Some observers have taken a too-legalistic interpretation of our definition of international collateral. We do not argue that any set of private investors in an emerging economy would benefit or would expect to benefit from the collection of collateral by the United States, and in the case of China we have in mind much more the sort of expropriation that might result from a geopolitical clash. Nevertheless, both U.S. and non-U.S. private (portfolio and direct) investors know that an emerging economy that is an international creditor has something to lose from confiscation of its investments abroad. It seems clear to us that European direct investors in Argentina, for example, would have fared much better in recent years if the government of Argentina had owned net assets in the United States. In a general sense our argument is that the government of an emerging economy needs a strong incentive to stay out of the way of private international financial intermediation. Building a positive net international asset position seems to us the obvious way for it to create that incentive. The real potential for globalization of international finance lies in governments of emerging economies posting collateral in the United States to support private two-way trade in financial assets. The current general move in emerging economies, in both Asia and Latin America, toward reducing sovereign debt and building international reserves may be based on an implicit understanding of how the system really works.
APPENDIX A

Data Sources and Methodological Notes

[a]Episodes of Official Asset Accumulation

We define an episode as a period of three or more years where

— the official sector increases its stock of international assets, and
— on average the official sector entirely or partly finances the current account.

The second part of the definition is equivalent to the country running current account surpluses during the episode. As described above, the second requirement binds only on average; it is possible to find one or more observations where the country runs current account deficits, although in the data this appears very rarely.

[a]Net Official Assets

Net official assets are defined as the sum of the following items in the “general government” and “monetary authority” accounts in the balance of payments (all on a net basis): capital transfers, portfolio investment assets (equity and debt, the latter including bonds, notes, and money market instruments), financial derivatives, other investment (trade credits, loans, currency and deposits), and reserve assets.

For the following countries, partial quarterly estimations have been calculated for 2004: Japan, Pakistan, Russia, and Ukraine (two-quarter estimations); Denmark, Indonesia, and Korea (three-quarter estimations).
Current account data were obtained from the International Financial Statistics (IFS) of the International Monetary Fund and from the International Institute of Finance (IIF) dataset. All forecasts for 2005 and 2006 come from the IIF dataset. The current account data are expressed as a flow variable in millions of dollars from the end of one fiscal period to the beginning of the next.

GDP growth data were obtained from the World Bank’s World Development Indicators and the IIF dataset. All forecasts for 2005 and 2006 come from the IIF dataset.

The commonly used definition of the real effective exchange rate is

$$\text{REER} = \Pi_i [(e/e_i)(P/P_i)]^{w_i}$$

where $e$ is the exchange rate of the subject currency against the dollar (in dollars per subject currency unit), in index form; $e_i$ is the exchange rate of currency $i$ against the dollar (in dollars per currency unit), in index form; $w_i$ is the weight attached to currency $i$; $P$ is the consumer price index (CPI) of the subject country; and $P_i$ is the consumer price index of country $i$. REER data were retrieved from the IFS, IIF, and Organization for Economic Cooperation and Development datasets. Data are reported as index values, where an increase indicates an appreciation of the local currency.

Coverage
The list of countries in the sample is available from the authors. The initial sample of 164 countries was reduced to 115 because of unavailability of data.

APPENDIX B

Data for All Reserve Accumulation Episodes in the Sample
APPENDIX C

Reserve Accumulation Episodes in Hong Kong, India, Russia, and Singapore
We are grateful to Daniel Riera-Crichton for his able and diligent research assistance in producing the empirical results of this paper.

1 Eichengreen (2004), in contrast, seems to favor 1968, that is, to allow the system a few years more to run, whereas Frankel (2005) favors 1971. Roubini and Setser (2004) call for something even more immediate and apocalyptic, yet they acknowledge that the day of reckoning may be as long as two years off.


3 Aizenman, Pinto, and Radziwill (2004).

4 Aizenman, Pinto, and Radziwill (2004, p. 000).

5 In Dooley, Garber, and Folkerts-Landau (2004b), we treat the initial stock of labor as an exhaustible resource. In that context it is optimal for the government to absorb labor more rapidly at the beginning of the regime. It follows that dollar wages are initially set at a low level but rise over time to the world wage when the last worker is absorbed. See Salant (1976) for a more general discussion.

6 We thank Vincent Reinhart for this insight.

7 Prasad and Wei (2005).

8 This in contradiction to the continual alarmist statements from Goldstein and Lardy (2004), among others.

9

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11 The logic was that an increasingly indebted United States, with an interest rate effectively underwritten by the trade account countries, would attract less private funding from other (capital account) countries. Smaller net capital flows meant smaller net current account flows, which would be accomplished through a weaker dollar.

12 Frankel and Rose (1996); Razin and Milesi-Ferretti (1998).

13 Grilli (1986).

14 At the end of the original Bretton Woods system, Germany experienced a three-year episode of reserve accumulation and currency appreciation followed by depreciation in 1974. In this case, however, the cumulative appreciation was larger than the depreciation in the following and subsequent two years. The usual assumption that reserve accumulation ends with large capital losses on reserves is probably influenced by this episode.
Calculations of such book losses have become a central arithmetical exercise among those issuing dire warnings and calling for an end to the system. See, for example, Roubini and Setser (2004) and Eichengreen (2004b).

Nurkse (1945, p. 000).


The United States did sit on its own gold reserve, so there was some trust even in this arrangement. It also sat on a large chunk of everyone else’s gold.

That is why Argentina’s reserves are not collateral, but rather loans from the International Monetary Fund. To seize them would be to seize the IMF’s capital.


Caballero (2005).


U.S. Information Agency, “Freeze of Iraq, Kuwait Assets Has Many Precedents.”