

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Michael Dooley
Senior Adviser

David Folkerts-Landau
Managing Director,
Global Head of Research

Peter Garber
Global Strategist

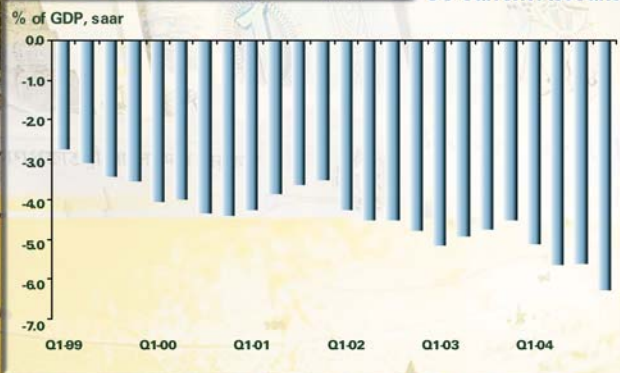
October 27, 2005

10-year TIPS Yield

10-year TIPS Yield



US Current Account



US Current Account

All prices are those current at the end of the previous trading session unless otherwise indicated. Deutsche Bank does and seeks to do business with companies covered in its research reports. Thus, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Independent, third-party research (IR) on certain companies covered by DBS's research is available to customers of DBS in the United States at no cost. Customers can access this IR at <http://equities.research.db.com>, or call 1-877-208-6300 to request that a copy of the IR be sent to them.

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Table of Contents

Introduction	4
1. An Essay on the Revived Bretton Woods System	7
2. The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates and Exchange Rates in Center Countries	17
3. Direct Investment, Rising Real Wages and the Absorption of Excess Labor in the Periphery	27
4. Living with Bretton Woods II	41
5. The US Current Account Deficit and Economic Development: Collateral for a Total Return Swap	55
6. The Revived Bretton Woods: Alive and Well	65
7. Savings Gluts, Deficits, and Interest Rates: The Missing Link to Europe ..	71
8. How Do Episodes of Reserve Accumulation End?	83
9. That Old Time Religion: It's Good Enough for Me	101
10. Are Official Capital Flows Important?	111
References	131

INTRODUCTION

In June, 2003, we published the first of a series of notes that developed our views of the key features of the global financial and monetary system and its future direction. Taken together this series has come to be known as the "Bretton Woods II" view, a reference to parallels with the post-war, fixed rate system. This analysis has had an important effect on financial market views and, more surprising to us, has also had a strong impact on academic and official sector debate. Because of a steady client demand for the entire series, we have decided to publish these notes in a collected form in this volume.

When we first wrote on the nature of the global system in 2003, the general view was that the global current account imbalances were driven by US savings behavior. The problem would therefore have to be solved by sharp dollar depreciation. Also, interest rates would have to rise, both to implement a secular shrinkage of US demand and to control the rapid growth phase of the business cycle. Asian countries were thought to be tangential to this central problem: their growing surpluses and reserve holdings were believed to be excessively cautious hangovers from an effort to build precautionary reserves after the Asia crisis. To the extent that China's currency policy was discussed, it was to warn China that its economy might overheat rather than to warn about the global macroeconomic effects of Asian development strategies.

We argued in 2003 and early 2004 that due to the nature of the de facto global system nominal and especially real interest rates would remain unusually low at any given phase of the business cycle. Our view was that the huge underemployment and tremendous savings in China/Asia were the driving forces of the global system and that the US was essentially a passive center country, willing to take up these low cost savings. As its development strategy, China/Asia would continue to pump out savings and therefore cheap goods to the rest of the world. This would keep real interest rates and inflation low in the long term while at the same time financing the US current account deficit. The dollar would indeed depreciate but only against the currencies of those countries that chose to float their currencies, in particular the euro. This would cause regions with problematic economies, such as Euroland, to stagnate even more.

We also argued that the effect of the system was to neutralize somewhat the forces of protectionism that always arise in industrial countries when a poorer country tries to develop via industrial exports. This would happen through allowing rich country industrial capital access to the cheap labor in the developing country's export sector, thereby splitting the usual protectionist political coalitions.

At the time they were published, these notes provided a strong explanation and fit for the then current state of the global economy and for many of the anomalies that existed. More than that, they provided a strong contrarian forecast on global and regional interest rates, exchange rates, inflation rates, economic growth, and global imbalances. Also at the time of publication, these forecasts on asset prices and duration of the system were many sigmas away from the conventional analysis and forecasts, so they took more than their share of attention and criticism.

That the forecasts have been on target for the last two and a half years may be a matter of good analysis or good fortune. But it has, in the nature of things, led to a more general acceptance of the view in the financial markets, to the extent that clients now just want to hear the risk scenarios around this central view. This is much less true of the academic and official sector discourse, where even after several years we are still often on the defensive against a strongly held orthodoxy that the system will collapse very soon if not yesterday. Unusually for financial industry research, these research notes have made their way onto the reading lists of most university courses on international macroeconomics; but they are surrounded by articles by renowned academics pointing out their "fatal" flaws.

Whatever the judgment that hindsight will deliver on these academic disputes, it is clear that the global monetary system that we have described has some legs to it. So rather than fight old battles over the probability of collapse, we think it is time to analyze seriously the dynamics and evolution of the system given that its basic parameters will last for some time.

The conclusions we draw from this framework include:

- Real interest rates in the US and Euroland remain low relative to historical experience but converge slowly toward normal rates.
- There is a substantial *immediate* appreciation of the euro against the dollar.
- The dollar and the euro gradually depreciate relative to the renminbi but, after the initial euro appreciation vs. the dollar, *remain constant relative to each other*.

And then:

- More rapid expected growth in Europe would *depreciate* the euro relative to the dollar.
- More rapid expected growth in the US, or more investment demand following a Katrina, would tend to *depreciate* the dollar relative to the euro.
- Shifts in currency composition of Asian reserves from dollars to euros would have little or *no lasting effect* on dollar/euro.
- High oil prices and high consumption by oil exporters would generate a slower rate of dollar depreciation against the renminbi and higher interest rates in the US and Euroland. The dollar/euro rate could go either way.
- A decision by Asian governments to manage their exchange rates relative to a dollar/euro basket would reduce the volatility of the dollar/euro exchange rate but have no necessary directional effect on the dollar/euro rate.
- In real terms, the dollar will eventually have to depreciate relative to the renminbi. But most of the adjustment in the US trade account will come as US absorption responds to increases in real interest rates.

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Chapter 1

AN ESSAY ON THE REVIVED
BRETTON WOODS SYSTEM

An Essay on the Revived Bretton Woods System*

Abstract

The economic emergence of a fixed exchange rate periphery in Asia has reestablished the United States as the center country in the Bretton Woods international monetary system. We argue that the normal evolution of the international monetary system involves the emergence of a periphery for which the development strategy is export-led growth supported by undervalued exchange rates, capital controls and official capital outflows in the form of accumulation of reserve asset claims on the center country. The success of this strategy in fostering economic growth allows the periphery to graduate to the center. Financial liberalization, in turn, requires floating exchange rates among the center countries. But there is a line of countries waiting to follow the Europe of the 1950s/60s and Asia today sufficient to keep the system intact for the foreseeable future.

Let me be more positive: if I had an agreement with my tailor that whatever money I pay him returns to me the very same day as a loan, I would have no objection at all to ordering more suits from him.

Jacques Rueff (1965)

In this paper we explore the idea that the global system that has evolved and grown since the advent of Bretton Woods has maintained a single dynamic structure. In the Bretton Woods system of the 1950s, the US was the center region with essentially uncontrolled capital and goods markets. Europe and Japan, whose capital had been destroyed by the war, constituted the emerging periphery. The periphery countries chose a development strategy of undervalued currencies, controls on capital flows and trade, reserve accumulation, and the use of the center region as a financial intermediary that lent credibility to their own financial systems. In turn, the US lent long term to the periphery, generally through FDI.

Once the capital of these zones had been rebuilt and their institutions restored, the periphery graduated to the center. It had no further need for the fixed rate, controlled development strategy, especially when it perceived that the US, in performing its financial intermediation service, was reaping a large transfer payment. For an insightful and entertaining example of the French and US views see Rueff and Hirsch (1965).

Then and now the debate focused on the *willingness* of the periphery to accumulate claims on the center country. Triffin, for example, argued that the US could provide reserves for a growing world economy "but only if European governments and central banks were willing to abandon to the political, monetary, and banking authorities of the United States their

* The original version of this paper was distributed to clients as "Dollars and Deficits: Where Do We Go from Here?" Deutsche Bank Global Markets Research, June 16, 2003. We added the Bretton Woods comparison in "An Essay on the Revived Bretton Woods System," Deutsche Bank Global Markets Research, September, 2003. The version published here is the somewhat expanded "An Essay on the Revived Bretton Woods System," NBER Working Paper, w9971, September 2003.

sovereignty over the management and use of reserves It is hard to see how they could be willing to underwrite blindly in this fashion future deficits of the United States irrespective of their amounts and of the multiple and variegated causes of their emergence and continuance." p.14.

More recent analysis of fixed rate systems, notably Helpman (1981) and Giovannini (1989), sets out the intertemporal restrictions on the center country and provides a good understanding of the welfare implications of rules of the game for adjustment and eventual repayment of debt. We are interested in a very asymmetric version of a fixed rate system in which, for some time period, periphery countries are willing to underwrite future deficits of the United States. Moreover, we do not think they do so blindly. McKinnon and Schnabl (2003) provide several arguments that would support a fixed rate regime for Asian countries. We emphasize the idea that it has been a successful development strategy to subordinate the objective of maximizing the value of reserve assets in order to subsidize and build a domestic capital stock capable of competing in international markets. This is not a first best strategy. It would be better to have both an internationally competitive capital stock and reserves that were superior investments. But, if a country had to choose one or the other, a competitive capital stock may well be the better choice. It is clear that capital controls are necessary to keep residents of the periphery country from offsetting the government's second best international investment decisions. Nevertheless, with rising real wages in export industries this can be for a considerable interval a successful and politically sustainable development strategy.

When Europe's development strategy shifted toward free markets, financial controls were lifted and the fixed rate system soon collapsed into the floating regime of the 1970s. But in our view the system of freely floating exchange rates and open capital markets was itself only a transition *during which there was no important periphery*. To be more precise, there was no periphery for which a development strategy based on export-led growth was the dominant objective for economic policy.

During this "generalized floating" transition the communist countries were irrelevant to the international monetary system. Most other developing countries, particularly the newly decolonized states, flirted with socialism or systems of import substitution that closed them off from the center. This development strategy was inhospitable to trade and the importation of long-term foreign capital. It fostered a local production of goods that could not compete globally and therefore built an inefficient capital stock that would in the end have little global value. Just as in the communist countries, when these opened to world trade and capital flows, they discovered that their cumulated capital was fit only to be junked. That is, they were in the same real capital-poor position as the post-war European countries.

With the discrediting of the socialist model in the 1980s and then the collapse of communism in 1989-91, a new periphery was melded to the US-Europe-Japan center. These countries were newly willing to open their economies to trade and their capital markets to foreign capital.

These countries all were emerging from decades of being closed systems with decrepit capital stocks, repressed financial systems, and a quality of goods production that was not marketable in the center. The Washington Consensus encouraged them in a development strategy of joining the center directly by throwing open their capital markets immediately.

Others, mainly in Asia, chose the same periphery strategy as immediate post-war Europe and Japan, undervaluing the exchange rate, managing sizable foreign exchange interventions, imposing controls, accumulating reserves, and encouraging export-led growth by sending goods to the competitive center countries.

It is the striking success of this latter group that has today brought the structure of the international monetary system full circle to its essential Bretton Woods era form. The Europe-Japan of the 1950s was already large enough so that in our analyses we did not have a “small country” view of the periphery but rather recognized it as the driving force of the international monetary system. Now the Asian periphery has reached a similar weight: the dynamics of the international monetary system, reserve accumulation, net capital flows, and exchange rate movements are driven by the development of these periphery countries. The emerging markets can no longer be treated as small countries, weightless with respect to the center. At some point, the current Asian periphery will reach a developmental stage when they also will join the center and float. But that point will not be reached for perhaps 10 more years and, most likely, there will be at that time another wave of countries, as India is now doing, ready to graduate to the periphery.

Eichengreen (1995) points out that “one of the more remarkable features of the last hundred years of international monetary experience is the regularity with which one regime (fixed and floating rates) has superseded the other.” He sets out six explanations for this rotating dominance of exchange rate regimes. All are interesting and plausible and contribute to our understanding of the system. Our answer to this puzzle is that the system has not changed but the objectives for important blocs of countries within the system have changed over time. Fixed exchange rates and controlled financial markets work for twenty years and countries that follow this development strategy become an important periphery. These development policies are then overtaken by open financial markets and this, in turn, requires floating exchange rates. The Bretton Woods system does not evolve, it just occasionally reloads a periphery.

Bordo and Flandreau (2003) provide an excellent analysis of the link between financial development and the choice of exchange rate regime in the periphery. They also relate this choice to the debate on original sin, fear of floating and other recent topics related to economic policies in emerging markets. We are more concerned here about the effects of the periphery on the center.

For the most part, the reigning economic analysis of the system proceeds as if the periphery does not exist or is not important enough to affect the economies of the center countries. This is, we believe, a serious omission. To illustrate this point we focus below on the emerging current account deficit in the United States. In our framework, the US is once again the center country and, as such, plays by a different set of rules.

Where is the International Monetary System Driving Us?

The recent weakness of the dollar against the euro seems consistent with the idea that the large and rising expected US current account deficits will become more difficult to finance as the net international investment position of the United States deteriorates. But if investors were becoming reluctant to invest in the US they would have to be rewarded with rising returns. Yet yields and spreads have generally been falling in the US, not rising.

To explain this anomaly it is helpful to step back for a broad look at how the international monetary system has evolved. In general we know that the US current account would have to adjust if the international monetary system consisted of floating currencies and open capital markets. But we do not live in such a world. We have re-entered a Bretton Woods reality and have to relearn and understand the very different adjustment requirements for the center country in such a system.

The view of the world monetary order that we assemble here allows for strong conclusions about where current global supply surpluses will be focused and how various participants will adjust to a very large current account deficit in the center country. It especially allows us to understand what is going on in the emerging markets and Europe, which will face the most difficult macroeconomic challenges.

Trade Account vs. Capital Account Regions

There are now three principal economic and currency zones in the world. Because these are generally concentrated by geographic region, it is tempting to think in terms of East Asia-US-Europe. But to get at a truly global picture, it is more illuminating to characterize the zones functionally: The functional framework we develop includes a trade account region, Asia, a center country, the United States, and a capital account region, Europe, Canada and Latin America.

As a trade account region, exporting to the US is Asia's main concern. Exports mean growth. When their imports do not keep up, the official sectors are happy to buy US securities to finance the shortfall directly, without regard to the risk/return characteristics of the securities. Their appetite for such investments is, for all practical purposes, unlimited because their growth capacity is far from its limit. An alternative is to target imports of capital goods from the United States, which they would do if they came under commercial policy pressure.

In their currency policies members of a trade account region manage their exchange rates. While nominal exchange rates have moved by large amounts following the Asian crisis in 1997 and macro shocks to Japan in recent years, central banks have consistently intervened to limit appreciation of their currencies.

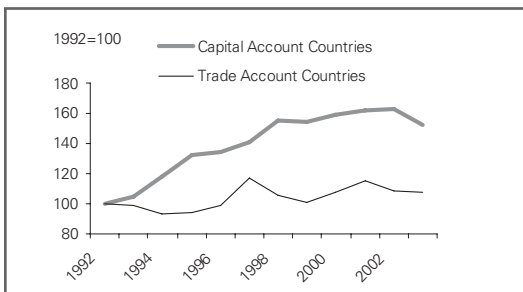
Europe, Canada, Australia, and now most of Latin America form, in contrast, a capital account region. Private investors in this region care about the risk/return of their international investment position and have recently become concerned about their US exposure.

In their currency policies members of a capital account region are floaters. Europe and Canada, for example, float against the USD; and the euro has fluctuated by 30% up and down against the USD since its introduction. Their governments stay out of international capital markets: there has been hardly any change in official reserves in this capital account region in the last decade.

As for the third zone, the US is the center country and intermediary of the system. The US does not try to manage its exchange rate. It does not cumulate official reserves, so its investment motivations make it a capital account country. But its own growth motivations make it a trade account country also. It wants finance for its own growth and foreign savings help finance domestic capital formation. There have been complaints from US industry about the strong dollar, but overall the US has been happy to invest now, consume now, and let investors worry about its deteriorating international investment position.

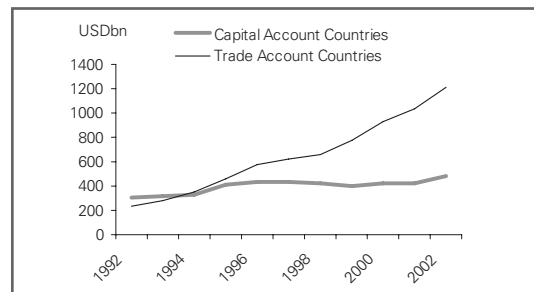
The contrasting behavior of capital and trade account countries is summarized in the charts below. The first panel shows a trade weighted dollar exchange rate for each country group. The capital account countries show a substantial depreciation relative to the dollar from 1992 through the end of 2002, which has been partially reversed in the first half of 2003. Our interpretation of this is that, until recently, private investors in the capital account group pushed the dollar up and helped finance the US current account deficit. The trade account group's dollar rate has been essentially unchanged over the whole period. Private investors in the trade account group were not a factor on net; but, as shown in the second panel, official investors in the trade group helped finance the US current account deficit as reserves increased steadily, reaching about \$1.2 trillion in 2003. Projecting this behavior forward we would expect further strength in the capital account currencies, stability in the trade account currencies and accelerated accumulation of international reserves by the trade account central banks.

Trade Weighted Dollar Exchange Rates



Source: DB Global Markets Research, BEA

International Reserves (USD bn)



Differing Motivations for Financing the US Current Account Deficit

The US current account deficit (now about \$500 bn, 4.7% of GDP) has been financed by official inflows from the trade account region and private inflows from the capital account region. This has been especially so for the last 5 years, with the US current account deficit

surging from \$130 billion in 1997 to \$300 billion in 1999 to \$400 billion in both 2000 and 2001. This US current account growth has been the engine for growth for the rest of the world.

Asian countries in particular (China, Taiwan, HK, Singapore, Japan, Korea, Malaysia) manage their dollar exchange rates; and, as such, they float against the capital account region. Official capital exports finance growth-oriented trade surpluses. Policy is often affected through a system of exchange controls and administrative pricing. Some currencies are explicitly and rigidly fixed (RMB, HKD, MYR); others (JPY, KRW) “float” but still accumulate vast amounts of official reserves in USD.

Since mid-1998, the JPY has moved from 120 to 105 to 135 and now back around 116. This has coincided with increases of Japan’s foreign exchange reserves of \$92 billion in the last year alone (vs. overall capital exports of \$116 billion) and of \$275 billion since 1998. China accumulated reserves of \$56 billion in 2001 and \$74 billion in 2002. Taiwan accumulated reserves of \$16 billion in 2001 and \$40 billion in 2002. These three official sectors alone financed 42% of the \$489 billion US current account deficit in 2002. In Asia as a whole, a single-minded emphasis on export growth has been supported by a virtually unlimited demand for US financial assets in the form of official reserves. The current account surplus of Asia in 2002 was about \$200 billion. The increase in reserves was a bit over \$200 billion.

Europe and, for now, Latin America constitute the bulk of the capital account region. European flows have been driven by private sector calculations for more than ten years. Private Latin American investors are now reversing capital flight, and their currencies have also been appreciating dramatically recently. Improving economic conditions in Latin America have clearly pulled funds into the region and limited capital flight from the region. But the push of funds into Latin America to escape low yields and uncertainty in the US has also been an important factor. As in Europe and Canada private capital flows have pushed currencies up across the board. Brazil and Argentina have already given back some of the improvement in their competitive positions following large depreciations in 2002 and 2003, respectively.

Is This System Sustainable?

In spite of the growing US deficits, this system has been stable and sustainable. The current account structure and asset accumulation have been consistent with the trade account region’s preferences for official investments in the US and, until early this year, the capital account region’s preferences for private financial investments in the US. But as US debts cumulate, US willingness to repay both Asia and Europe comes more naturally onto the radar screen, so the system that was previously stable could run into trouble.

Normally, a private investor would require a much higher return than before to keep capital flowing to the US. This could happen in both of two ways. Yields in the US would have to rise and the dollar would depreciate sharply so that an expected subsequent appreciation would further boost the yield to foreign investors.

But our analysis of behavior of trade account countries suggests that Asia will displace Europe in sending exports to the US and will accept an even larger inflow of US securities. If so, yields in the US will not rise.

We see the start of this now in the form of euro appreciation. But trade account countries will resist appreciation. They will cumulate even more low-yielding US securities. A Europe that lets this happen will see its exports squeezed out and in the extreme may even start selling its claims on the US to be acquired by Asia as the capital account region avoids what it sees as the potential collapse of the system.

As evidence for this combination of European and Asian actions, US yields have generally fallen, stock prices risen, and spreads have contracted. This has happened even in the face of a sharp depreciation in dollar-euro and other capital account region currencies and a sharp rise in the US current account deficit. Asian exchange rates have hardly moved by comparison against the USD.

There is a rising volume of complaints in the US about the unfair trade advantages of Asia's undervalued currencies, aimed primarily at China, but curiously not at Japan whose goods are more directly competitive with manufactured goods in the US. Also, there have been claims that undervalued currencies inevitably lead to over-heating and inflation and so must be self-correcting. However, it will take a long time to get to such a point. For example, in China, M2 growth of 16% is consistent with price stability, and only recently has it risen to 20%, which will lead to inflation of about 5% in two year's time (0.5% right now). As interim measures, there is room to raise bank reserve requirements or domestic interest rates. To head off trade partner commercial policy, there may be a token revaluation of up to 3%, over the course of time, or a redirection of imports to the US. But support of growth is the primary motivation, with above 40% of the population yet to be absorbed from the farming sector. And even if this reserve of labor were gone, India is ready to graduate to the periphery with its vast supply of underemployed workers.

The Trade Account Region Is Underwriting the US in the Long Term

Asia's proclivity to hold US assets does not reflect an irrational affinity for the US. Asia would export anywhere if it could and happily finance any resulting imbalances. But the US is open; Europe is not. Europe could not absorb the flood of goods, given its structural problems and in the face of absorbing Eastern Europe as well. So Asia's exports go to the US, as does its finance—otherwise, a US, if faced with financing difficulties, might similarly tend toward more stringent commercial policy. Asian officials are unlikely to shift toward euro assets because of the depressing effect this would have on trade with the US.

The irony here is that concern of investors in the capital account region about the risk/return in an increasingly indebted US is misplaced. The US is being underwritten by Asia for the foreseeable future.

The result is a bilateral US trade deficit with Asia and a balancing official bilateral capital inflow to the US from Asia. If Europeans and other capital account region countries want to sharply reduce their US assets, the euro and other capital account region currencies will appreciate much more. Then the US, but more probably Asia, will have to run trade surpluses with these countries roughly equal to the desired capital repatriation. With a multilateral current account balance, the extra official financing from Asia, in effect, will finance everyone else.

It is useful to fit other countries, e.g. Mexico, Canada, Australia, Russia, into this three-color map of the world economy. The first three are floaters against the USD, and therefore, for now are in the *capital account* zone. As a result, their currencies will tend to appreciate; and their exports to the US will be displaced by Asia. Russia is and will be an oil exporter.

More generally, emerging markets now have a choice: they can join Asia in the trade account region or Europe in the capital account region. If they follow the Asian model, they will do whatever it takes to limit exchange rate changes relative to the dollar and to keep their currencies undervalued to spur exports. The two tools available are controls and taxes on capital inflows and intervention in the foreign exchange markets to peg an undervalued currency.

Conclusions

If European investors, looking objectively at growing US debt alone, prudentially limit their US positions and demand better risk/return characteristics before supplying more capital to the US, the euro will appreciate dramatically. Local savings will stay in Europe, depressing yields there. Asia will grow even faster as it displaces European goods in the US; Europe will grow even more slowly. Yields in the US will not be forced up even as the US current account deficit grows; the dollar falls against the euro and private capital inflows from Europe and other capital account countries fall off.

Other emerging market countries will have to choose which way to go. In Latin America, those impatient for growth through exports will favor free trade, fixed, undervalued rates with the dollar, intervention and capital controls; in short, the Asian model of development. In contrast, central bankers and the IMF favor floating rates and capital mobility and therefore the capital account region, in short, the European model. As converging countries, emerging market countries in Europe must naturally follow the euro. Emerging markets in Asia are not likely to miss this opportunity to displace their rivals in US markets.

We used to have a view that 1) there was a system (Bretton Woods) that evaporated thirty years ago into no system at all and 2) now a semi-system has emerged anew. But, in fact, the system has been the same throughout, just manifesting itself in different forms because the original emerging markets (Europe and Japan) developed and did not need the center's intermediation any more. There was no one to replace these countries for two decades. But with the collapse of socialism came a new litter of emerging markets, and the background system that is the incubator of such economies has reanimated itself.

So we can anticipate some issues that were familiar 50 years ago returning to center stage of the economics of international finance. Can the center survive with two reserve currencies? As the dollar replaced sterling as the preferred reserve currency, will the euro replace the dollar? How long can trade account countries insulate their domestic financial markets through capital controls? Does the system benefit and entrench the economic and geo-political power of the center country (i.e. the DeGaulle-Rueff view)? Does the center country balance sheet make it a liquidity-providing bank to the periphery, borrowing short term and lending long, and validating domestic banking systems (i.e. the Despres-Kindelberger-Salant (1966) view)? Is the IMF the manager of a fixed rate system after all? Will the SDR ever be more than a currency basket?

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Chapter 2

THE REVIVED BRETTON WOODS SYSTEM

The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates and Exchange Rates in Center Countries*

Abstract

In this paper we explore some implications of the “revived” Bretton Woods system for exchange market intervention and reserve management in periphery countries. Financial policies in these countries are seen as a component of a more general portfolio management policy in which the formation of an efficient domestic capital stock is a key objective. Because intervention in financial markets is an important part of their development strategy, intervention in exchange and financial markets has, and we argue will continue to be, large and persistent enough to generate predictable deviations of exchange rates and relative yields in financial markets from normal cyclical patterns. We argue that management of the currency composition of international reserves by emerging market governments and central banks is unlikely to alter these conclusions.

In a recent paper (Dooley, Folkerts-Landau, and Garber, 2003) we argued that a sensible development policy might involve creating a distortion in the real exchange rate in order to bias domestic investment toward export industries. Sensible here means that the resulting capital stock will be superior to that generated by a badly distorted domestic financial system and other relative price distortions typical of emerging market countries.

In this paper we explore two related implications of this idea for portfolio choices of emerging market governments. The key to understanding such choices is that, for these governments, the domestic capital stock is an important component of the asset portfolio. Thus accumulations of financial assets and liabilities, in particular international reserve assets and domestic currency liabilities, that appear to be suboptimal when viewed in isolation, make sense when viewed as a part of a development strategy based on channeling investment to export industries¹

In the next section we argue that portfolio choices by periphery central banks and governments have two important effects on the center. First reserve accumulations are a quantitatively important source of finance for the center’s current account deficit. It follows that real interest rates in the center are lower than they would otherwise be. Second,

* The paper published here was the version of these concepts that we made available to the academic audience in “The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates and Exchange Rates in Center Countries”, NBER Working Paper w10332, March 2004. We first delivered them to clients as “The Cosmic Risk: An Essay on Global Imbalances and Treasuries,” Deutsche Bank Global Markets Research, February, 2004 and “Asian Reserve Diversification: Does It Threaten the Pegs?” Deutsche Bank Global Markets Research, February, 2004. At the time we issued these papers, the general view was that normal cyclical forces would soon drive up interest rates. Simultaneously, a view was circulating that massive diversification of foreign exchange reserves was imminent and would soon substantially depreciate the dollar. Evidently, nearly two years later, neither of these has happened.

1. See, Feldstein (1999), Greenspan (1999) and Aizenman and Marion (2002) for alternative interpretations and motives for accumulation of international reserves in emerging market countries.

because reserve accumulations are concentrated in short-term US Treasury obligations, yields on Treasuries are depressed relative to other instruments.

We then turn to the likelihood and effects of reserve diversification by periphery countries away from US dollars. Our conclusion is that diversification is inconsistent with a development policy based on export led growth. An attempt to diversify and maintain dollar cross rates would generate an increase in gross reserve assets and the gross domestic assets required to sterilize the reserve increase.

I. Global Imbalances and Treasuries

Accelerating global imbalances are creating an important confrontation between governments and private international investors. This confrontation takes the form of official intervention in foreign exchange and US treasury markets. The clash between investors and governments is driving a menu of market anomalies, from exchange rates, to interest rates, to spreads.

Our usual presumption would be that the private side would win this contest quickly and decisively. The idea that it is profitable to position against central banks is deeply ingrained in the memories of those who lived through the demise of the old Bretton Woods System. But that system did last for twenty years, and we see very strong incentives for governments to commit vast resources to the battle to maintain what we have called the revived Bretton Woods System.

The rapidly increasing domination of the official sector on the buy side of treasury markets is creating a technical factor that is separating benchmark yield curves from standard fundamental analysis. Current one-sided private sector positioning on future yield curve movements based on fundamentals are in fact gigantic risks taken against a phalanx of central banks and finance ministries engaged in a historically unprecedented intervention in foreign exchange and financial markets. These interventions serve the purposes of the foreign official sector, and there is no reason for them to stop in the near term—we believe that the official sector will continue to intervene heavily.

Continued foreign exchange intervention by Asian central banks and governments will have two important effects on financial markets. First, by supplying a substantial fraction of US GDP to US credit markets, real interest rates in general will, we believe, remain below their historical norm perhaps by as much as one per centage point. Since real interest rates in the US have averaged about 2.8% in post war data this is an important affect. Put another way, regardless of what the Federal Reserve needs to do in managing inflationary pressures, a withdrawal of Asian support would require a narrowing of the US current account deficit and long rates would rise.

Continued intervention by official Asia would also tend to depress short treasury rates relative to other short rates because of intense appetite for these securities. Of course, the Federal Reserve can always sell enough treasuries to hit whatever fed funds target it wants. If inflation begins to return, the Federal Reserve would raise the fed funds rate, which would also raise the short treasury rates. Heavy Asian buying of short treasuries may push the bill rate down significantly relative to commercial paper but a wide enough spread would at some point lead to a switch to different securities.

Poised at the rapid growth phase of the US business cycle, the US economy displays massive imbalances in its current and fiscal accounts. A strong recovery would reduce the fiscal imbalance but would make the current account deficit much larger. Conventional analysis suggests that the deficits are inconsistent with low yields compared with euro rates and what still appears to many observers to be an overvalued dollar.

Similarly, any undergraduate macro textbook discussion on the business cycle and the Taylor rule for monetary policy would foresee an eventual rise in short term interest rates to about 5% (3% real growth plus 2% inflation), with similar though lesser rises in long rates. The yield curve might rise even more than usual because of the large supply of marketable paper falling on the market with a 5.5% of GDP on-budget fiscal deficit. Also, the USD would depreciate against undervalued Asia as well as the euro to bring the current account deficit to below a manageable 3% of GDP. The only question seems to be about timing, will this adjustment start mid-year or in the autumn?

Most private sector players have read the textbooks and currently are underweighting both the dollar and duration, counting on the business cycle to grind out the usual result. Others, perplexed by the persistence of low yields in the face of the fundamentals, have thrown in the towel and simply gone back to a neutral position.

But the private sector as a whole can become seriously one-sided in these positions only because of the eruption of the global official sectors as major buyers in the low-risk dollar asset sectors. An array of central banks and finance ministries has emerged to resist, for their own local reasons, the adjustment that the cyclical fundamentals seem to require. These are mainly the Asian central banks and ministries of finance, but the Federal Reserve is also a major buyer with the fed funds rate set for now at 1%. Even the ECB, if it acts to stem the rise of the euro through direct intervention, may join this group. That this is not a concerted or organized intervention in US treasury markets does not diminish its power. It has created both a large fundamental and a very large technical factor that is bolted onto the normal cyclical adjustment with such weight that it can muffle its normal response.

Since the private sector as a whole seems to be taking a one-sided position, there is a vast risk position outstanding against mainly the Asian official sector. A few facts and a little arithmetic highlight the size of the risk:

a. Supply of US Treasuries²

Stock, End-December, 2003

Marketable debt held by "public"	\$3.50 trillion
Less Fed holdings	\$0.66 trillion
<u>Less securities held by Fed for foreign official</u>	<u>\$0.85 trillion</u>
Leaves less than	\$2 trillion in private hands

2. The debt held by the public includes Federal Reserve holdings. It also includes non-marketable debt like savings bonds, special series for state and local governments, and other issues. The Federal Reserve reports Treasury (\$0.85 trillion) and Agency (\$0.21 trillion) securities directly held on behalf of foreign official claimants. The foreign official sector also holds Treasury securities indirectly through bank custodians, which are not captured here. The Asian official sector, which is the source of the growth, holds its treasuries through the Federal Reserve, while some European central banks do not.

New Supply, Fiscal 2004

The CBO estimates a \$631 billion on-budget deficit and a \$154 billion off-budget surplus. So new supply of debt in the hands of the public for fiscal 2004 is about \$477 billion. If the ratio of non-marketable to marketable debt stays constant, the increment in marketable securities would be about \$420 billion.

b. New Official Sector Demand for Treasuries

The Federal Reserve acquired about \$64 billion of Treasuries in 2002 and \$37 billion in 2003. Let's assume it will acquire \$40 billion in 2004, especially if there is no interest rate increase before summer. In Japan, the Ministry of Finance is asking for authorization to sell ¥61 trillion (about \$575 billion) for exchange market intervention in the next year.³

If this is not a bluff and if the buying-in attack on the yen continues, that is a potential \$575 billion of purchases of US treasuries at current exchange rates. Intervention by Japan so far this year through the first week of February has totaled \$78 billion, an annual rate of around \$800 billion. Add intervention from China and the rest of Asia for perhaps \$150 billion more.⁴ Adding up, we find a potential official sector buy-in of some \$750+ billion in the treasury market.

c. Supply vs. Demand

Suppose the buying-in attacks on Asian currencies and the euro continue from the private sector and the potential intervention actually occurs. Suppose also that the Fed continues its expansionary policy. Then the global official sector would absorb the entire new supply of treasuries and reduce the existing stock by \$330 billion, i.e. by just about 17% of the stock.

The global official sector—with its preferences slanted to US treasuries at the short end—would then have engineered a significant shortage of treasuries, rather than the glut that fundamentals would cause us to expect. So we would expect forceful downward pressure on benchmark rates as these official-sector-technical factor hits, enough partly to counterbalance rising credit demand due to the recovery.

A belief that the large buying-in attack on Asian currencies will continue this year and that official Asia will continue the defense is a belief that there will be a supply shortage in the US treasury market. Then the situation to compare to the present is not the run up in rates from 1993 to 1994 as the macro textbook would imply. Rather, it is the supply shortage of the 2000 buybacks, when technical factors persistently drove swap spreads vs. treasuries up by 50

3. The limit for foreign exchange intervention was ¥79 trillion for fiscal 2003. At the end of December 2003, the amount outstanding was about ¥70 trillion. In the fiscal 2004 budget plan, the Ministry of Finance intends to increase the limit to ¥140 trillion, including ¥20 trillion for a 2003 supplementary budget. The plan has to be approved by the Diet within the next few weeks. Note that the earmarking of the amounts seems to indicate an anticipation of yet another ¥20 trillion intervention in the last months of fiscal 2003, added on to the ¥21 trillion of calendar 2003, and a potentially matching ¥41 trillion in fiscal 2004.

4. China increased reserves by \$117 billion in 2003, but this number results after subtracting the \$45 billion in reserves transferred in the recent bank recapitalization. These funds will apparently remain in USD assets. South Korea, Taiwan, and Singapore increased reserves by \$34 billion, \$44 billion, and \$14 billion, respectively. This totals to about \$255 billion. Even allowing for some tinkering with exchange rates, we expect Asian currency interventions on a similar magnitude to maintain the export driven development strategy. Setting aside some allocations for other currencies and securities such as agencies or corporates, we guess about \$150 billion for treasuries for this exercise.

basis points or more. In a low inflation environment with real yields around 2.5%, this would be a significant differential.

Private sector players are now inviting the Asian central banks to be the first to blink and unwind their positions by appreciating their currencies or diversifying their reserves, using the macro textbook as their rhetorical device. Yet, in deflationary Asian countries, notably Japan, it is difficult to understand why external players think there is some limit on the ability or motivation of the authorities to create yen in stemming a buying-in attack on the currency.

With interest rates at zero, it is costless to create as much yen cash as is demanded, while 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 this is still not in sight for Japan, and would, in any case, be the monetary policy that economists have begged for to end their economic stagnation.

The lessons of attacks on fixed exchange, weak currency countries seem to be the ones being applied by the global private financial sector here. For such countries, there is a limit on reserves or credit or the amount of pain they are willing to put the economy through, so more attacks against such currencies are simultaneously a ratcheting up of the probability that the currency will indeed collapse. Speculators against the yen seem to be holding a case study of the peso against a mirror and thinking that the more yen they buy, the more they ratchet up the pain in Japan. Yet quite the opposite is true in deflationary Japan. The more yen the Bank of Japan creates to counter this, the less the economic pain. If the Ministry of Finance wins and the yen depreciates, it even gets a financial gain. We will look at this end-game scenario in a subsequent essay.

What limits yen creation in defense against a strengthening yen? Nothing. The other side of the coin of unlimited yen intervention in FX markets is unlimited buying of US treasuries. An ever greater Ministry of Finance intervention is an ever greater support of US treasuries. That is why this is a fundamental confrontation. Who can stand the most pain from their unbalanced positions this year—the central banks or the private sector? Who is likely to blink first?

If official Asia does blink, we expect two things to happen. First, the Federal Reserve would be more likely to see higher interest rates as necessary to control inflation in the face of a smaller supply of cheap Asian goods and cheap Asian savings. Second, long rates would rise more steeply because of the higher fed funds rate and because treasuries would not be scarce.

If Asia does not blink and inflation stays low, perhaps because of the supply of cheap foreign savings, we expect to see lower short and long interest rates, with short treasuries well below other short rates. Suppose that, in spite of continued Asian intervention, labor market tightness and incipient inflation triggers Fed action anyway. Then the rise in US rates would be less than normal business cycle history would suggest, mitigated by Asian intervention

II. Is Asian Reserve Diversification a Threat to the Dollar Pegs?

Asian central bankers have been incessantly peppered with advice to diversify their foreign exchange reserves.⁵ Early on, such advice was based on the soundest of textbook risk-return optimization concepts, notably to diversify from the predominant USD share. As if this were not enough, in recent months the obvious trend strengthening of the euro and the lack of sufficient yield spread vs. the dollar has intensified such advice. As a last straw, international financial experts, eyeing the huge U.S. imbalances on current and fiscal accounts, are nearly screaming at the Asian central banks to sell off dollar reserves, before they have to absorb what the experts forecast as an ever larger disaster. Even if they may be talking their own book, such advice follows from conventional analysis of international macroeconomics, especially as it has been applied to small emerging market economies in recent years.

It is useful, therefore, to evaluate the likely effects of a rebalancing of these important asset portfolios away from USD and toward the euro or other currencies. The problem is that these official sector investors are much too large now to be price takers in foreign exchange and fixed income markets.⁶ Moreover, changes in the allocation of existing holdings will clearly influence market expectations about future flows of investments by these central banks and governments.

Our bottom line is that any important change in the investment choices across currencies would likely:

- Threaten their USD peg.
- Require an even higher rate of accumulation of total gross reserves in the future.
- Increase pressure on the ECB to intervene to support the USD against the euro.

The first two seem inconsistent with the revealed interests of the Asian governments. So an application of the most basic principles of portfolio management would require a fundamental change in basic macro and development policy. The third cannot be ruled out: it would represent a major shift in ECB policy, but it is now being widely signaled by statements from EU finance ministries and by ECB board members.

Analysis

First, let us note what amounts to an accounting identity. Suppose Asia significantly reallocates existing reserve portfolios away from USD to euros. This is equivalent in impact on private holdings of base currencies and securities to sterilized intervention in support of the euro by either the US or Europe. That is, there is no change in monetary conditions, i.e. monetary base, in any of the three countries due to the reallocation alone. It follows that private investors will have to adjust to the mirror image change in their asset allocation, that

5. See Dooley et al. (1989) for a statistical analysis of the currency composition of international reserves and Eichengreen and Mathieson (1999) for an update of the facts and a discussion of the choice between the dollar and the euro.

6. Eichengreen (2004) argues that smaller emerging market countries might free ride on their larger neighbors by quietly diversifying their reserve portfolios. This is clearly a possibility but we have as yet seen no evidence to suggest this is a serious problem.

is more USD-denominated assets and fewer euro-denominated assets. For private investors to accept this portfolio shift, the USD should weaken against the euro, a result of the standard portfolio balance view.

The less transparent issue is what happens next? Intuition suggests that the dollar should weaken against the Asian currencies while the Euro firms against Asia. Indeed, both standard portfolio theory and historical evidence suggest this is the case. Starting from a mix of Asian currencies, USD, and euros in their portfolios, global private investors are suddenly confronted with fewer euros and more USD. At old exchange rates, they would want to get rid of USD and get more euros. This would tend to bid up the price of Asian currencies and the euro vs. USD, with the euro rising more. The case study on European interventions during the 1970s described in the included box provides the historical color.

The Snake in the Tunnel

The evidence comes from the common practice in the 1970s of European central banks buying and selling dollars to influence their cross exchange rates during the "snake in the tunnel" period. The European cross-currency bilateral rates were supposed to be maintained in a band by the individual central banks, and the whole array was to be maintained in a band against the USD. But interventions to maintain cross rates within the snake were often done with the USD. For example, to support the franc against the DM, the Bank of France would sell USD to buy francs. Private investors, who for the usual portfolio reasons desired a mix of USD and DM but who received only dollars from the Bank of France, would then offer USD for DM. The DM then tended to appreciate against USD. When the DM was pushed to its intervention limit against the dollar the Bundesbank would then buy USD against DM. The net effect was an appreciation of the franc against the DM with both currencies moving up relative to USD. See Michael Dooley "Note on Key Currency Intervention Systems," Board of Governors of the Federal Reserve, IFDP #79 (February, 1976).

The important lesson from the 1970's is that portfolio diversification will have first order implications for exchange market intervention by both the ECB and Asian central banks. If Asian central banks rebalance their portfolios away from dollars, private investors will require a fall in the dollar against the euro and the ECB may be politically forced to stabilize the dollar euro rate. In effect the ECB would play the same roll as the Bundesbank in the 1970s except that there is no formal obligation to limit the euro's appreciation against the dollar. Statements currently coming from European finance ministries and ECB board members indicate the potential for intervention in order to preserve cyclical recovery even without the added pressure of Asian buying of euros.

Perhaps more important, pressure from portfolio diversification on the USD/Asian currency cross rate would generate new intervention by Asian central banks to preserve the current dollar rate. Even if this new intervention is less concentrated in dollars than in the past, it can still eventually stabilize the dollar/Asian currency cross rate. But this implies even more rapid growth of gross reserve assets in Asian central banks and larger gross private capital inflow to these countries.

It is most likely that, in trying to keep the old peg against dollar rate, Asian central banks would invest all the new intervention proceeds in dollars. This would avoid the juggling among the currencies and the large gross acquisition of reserves. It would thereby largely offset the initial portfolio adjustment, leaving only an additional acquisition of euros, the same amount of dollars, and more monetary base to sterilize.

In the end it comes back to the question we explored at length in Dooley, Folkerts-Landau and Garber, 2004. If the dollar peg and export led growth are the dominant policy considerations for Asia, it makes little sense to threaten the peg with a portfolio adjustment that may have solid micro-finance grounds, but undermines the broader policy framework.

Our guess is that even if such a portfolio adjustment is attempted it will be cautious, small and quickly reversed. Even this could initially shake the market badly given the strong weight of opinion that it is only a matter of time before Asian governments abandon their basic policy stance of export led growth. By jarring expectations, it might even trigger a buying-in attack on Asian currencies that would be counter-productive if Asian governments really intend to maintain their pegs to the dollar.

Adoption of a basket peg would certainly allow diversification away from dollars without requiring intervention since the decline of the dollar against the domestic currency would be (depending of weights assigned to different currencies) offset by appreciation against the Euro. This of course does not eliminate the problem faced by central banks and governments that want to underwrite their access to US import markets. If basket pegs are in the works it is more likely to signal a cautious and gradual move away from strict dollar pegs than a move to facilitate reserve diversification.

Conclusions

We are witnessing now a shift in global flows of historic proportions. The unwillingness to accept the inevitable downward slide of the USD, due to a massive labor surplus in much of Asia and cyclical fears in Japan, is leading to intervention flows that are unprecedented. Now even the ECB has begun to publicly express concern about appreciation of the euro. We are experiencing an official sector effort to reverse global private capital flows on a scale that we have never seen, even at the end of Bretton Woods. The emerging institutional arrangement, yet to be formalized, is a reconstitution of the Bretton Woods system that we have discussed in an earlier paper.

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Chapter 3

DIRECT INVESTMENT, RISING REAL WAGES
AND THE ABSORPTION OF EXCESS LABOR
IN THE PERIPHERY

Direct Investment, Rising Real Wages and the Absorption of Excess Labor in the Periphery*

Could the whole (development) problem be solved simply by increasing the growth rate of manufactured exports to MDCs (more developed countries), in substitution for primary products? I shall assume this cannot be done.....Also I think it cannot be done.

W. Arthur Lewis, Nobel Lecture, 1979.

Lewis' pessimistic outlook for industrial development in what we now call emerging markets was based on the view that developed countries allowed access to their markets only during brief periods of prosperity since "they then have many growing industries that can take the people displaced by imports." Otherwise, they act to block access to manufactured imports from cheap labor countries to protect domestic workers. In this paper, we will argue that some emerging markets in Asia have found, perhaps by accident, a way around this fundamental obstacle to industrial and economic development. The solution has created the basic features of the current international monetary system. Along the way to making this argument, we will characterize the exchange rate and other policies designed to eliminate the vast underemployment in Asia as a solution to an exhaustible resource problem. Notably, the welcoming of FDI is a solution to Lewis's conundrum in industrial development. Finally, we will propose a view that the main features of international finance are organized to overcome such inherent protectionism, rather than rather than as a solution to an inter-temporal consumption problem.

International Monetary Systems are Endogenous Solutions

Whatever are the institutions and mechanisms of the international monetary system at any moment, they have emerged as solutions to a key real economic problem of the time.

The Bretton Woods system was a top-down solution to what were perceived as the crucial problems of the depression and World War 2. A deal between the US and UK, its basic features were a compromise between the between the conflicting economic interests of the two parties. The US viewed the competitive devaluations of the 1930s and the subsequent discriminatory trading blocs as detrimental to stability and especially harmful to US trade. A creditor country with intact capital and promising exports, it was interested in currency stability and non-discriminatory, open trading systems. The UK was determined not to

* We first published this characterization of the development strategy now driving the global economy as "A Map to the Revived Bretton Woods End Game: Direct Investment, Rising Real Wages and the Absorption of Excess Labor in the Periphery", Deutsche Bank Global Markets Research, June 2004. The extended version here was published as "Direct Investment, Rising Real Wages and the Absorption of Excess Labor in the Periphery", NBER Working Paper, w10626, July 2004.

sacrifice internal balance to maintain external balance. It wanted currency flexibility. With its huge sterling debt and its unbalance war mobilization, it was interested also in maintaining controls and channeling of trade within the sterling bloc. Finally, it wanted access to official credit in large amounts if it was to maintain fixed rates. The compromise was to have fixed exchange rates but with flexibility within the rules, a gradual lifting of controls, and access to credit as a function of official quotas. This basic outline of the system lasted for the next 25 years.

The current system is also one of fixed exchange rates, the accumulation of dollar reserves, and is based on an effort to keep trade flows open. However, it is an ad hoc, bottom-up system, the sum of independent policy choices across and within countries. But it likewise has emerged to solve the fundamental real economic problem of our time: the emergence of 200 million underemployed workers into the global industrial economy.

Revived Bretton Woods

We have characterized the international monetary system that has evolved to facilitate this development strategy in some periphery countries as a revival of the Bretton Woods system. The revival has been contemporaneous with rapid deterioration of the net international investment position of the United States, and this has raised concerns about the stability of the system.⁷

We have argued that the reluctance of private investors to increase their net claims on the United States has, as conventional analysis suggests, contributed to a depreciation of the dollar against floating currencies, but that this has not even started to force an adjustment of the US international investment position.

The reason is no mystery; governments in Asia are providing the necessary financing. The issue now is how long this can continue. The conventional view is that the Asian governments can fill the gap for only a short interval and, when the wheels fall off, the adjustment costs for the world economy will be very heavy.⁸

The mechanism for the disaster is familiar. Expectations for the large exchange rate change “needed” to “correct” current imbalances generate massive private capital flows to the periphery. Capital controls and financial repression are no match for a determined private sector. If inflows are not sterilized, the monetary base explodes and the “needed” real exchange rate adjustment comes through inflation. Faced with this unpleasant reality central banks give up and revalue nominal exchange rates.

7. The discomfort with the current situation was carefully set out several years ago (Mann, 1999; Obstfeld and Rogoff, 2000). The logic is that although international capital markets were much larger and more resilient than in the past they could not support a US current account deficit of 5% of GDP for long. Moreover, even a mild withdrawal of credit from the US—for example a reduction in financing that required a return to current account balance—would generate a very large and sudden depreciation in the real value of the dollar. The sensitivity of real exchange rates to changes in current accounts is related to the limited integration of goods markets across countries. A related concern then and now is that the low level of private and government savings in the US is generating a perverse flow of world savings to the United States. Summers (2004) has recently argued, for example, that the single engine for world recovery, US growth and US fiscal deficits, is a recipe for disaster both for the US and the rest of the world.

8. See Rogoff (2003). As Rogoff puts it, flying on one engine is easy as compared to landing on one wheel.

The conventional argument is a good description of the final days of the original Bretton Woods system. It is relevant for countries that are ready to graduate to the center. But it ignores the fact that the system lasted for two decades. To be sure, the original Bretton Woods system was not asked to finance a US current account deficit until its closing days, but the periphery did benefit from rapid growth of trade and financed a substantial increase in US direct and long term investments abroad. Moreover, most governments in the periphery did not *decide* that the system was no longer in their interests. They were forced to abandon the regime by private capital flows. The erosion of the effectiveness of capital controls and domestic financial repression that made this possible *followed* the development of international trade and domestic financial markets, and this process took many years.

The current version of the Bretton Woods system presents the periphery with similar policy choices.⁹

We argue below that expansion of the volume of trade in goods and services and the volume of two way trade in financial assets is the backbone of a successful industrialization/development strategy. If the price to be paid for this strategy includes financing a large US current account deficit governments in the periphery will see it in their interest to provide financing even in circumstances where private international investors would not.

The catastrophic losses and abrupt price breaks forecast by the conventional wisdom of international macroeconomics arise from a model of very naïve government behavior. In that model, periphery governments stubbornly maintain a distorted exchange rate until it is overwhelmed by speculative capital flows. In our view a more sensible political economy guides governments in Asia. The objectives are the rapid mobilization of underemployed Asian labor and the accumulation of a capital stock that will remain efficient even after the system ends.

The mechanism that regulates the mobilization is a cross-border transfer to countries like the United States that are willing to restructure their labor markets to accommodate the rapid growth of industrial employment in Asia. Net imbalances like those now observed for the United States may or may not be a byproduct of this system. But such imbalances are only one of the constraints on the system, and for considerable periods of time may not be as binding a constraint as in conventional theories.

What Force Drives the Global System?

China has about 200 million unemployed or underemployed workers to bring into the modern labor force. For political stability, there is a need for 10-12 million net new jobs per year in the urban centers. A growth rate of around 8+% has served to employ about 10 million new workers each year. About 3 million have been in the export sector.¹⁰ If the world can absorb

9. This policy has been criticized as wrongheaded in that FDI should be the source of global finance for a deficit on current account. The principle behind this argument seems to be that the external accounts should be properly balanced as a priority over the internal balance. See Goldstein and Lardy (2003). The alternative argument is that being a net capital exporter seems to work.

10. Exports generate 10% of value added in GDP. The export sector grows twice as fast as the rest of the economy. So 25% of all growth is from the export sector. Because of a lower capital-labor ratio than in the rest of the economy, the export sector accounts for about 30% of employment growth.

politically only the output of an additional 10 million workers per year (3 million in the export sector), then simple arithmetic indicates that this surplus is a force for twenty years more in the global system. If it can absorb the surplus faster, say at a rising absolute rate that will keep the Chinese growth rate constant at 8% until the surplus is eliminated, then straightforward compounding and linearity assumptions indicate that this will drive the global system ever more relentlessly for the next 12 years).

We do not take a stand on how long this force will drive the global system. But twelve to twenty years has defined an *era* for any recent international monetary system.

Political Economy of Export Led Growth

Our analysis of government behavior has some surprising implications. Perhaps the most important is the idea that there is a trade off between objectives for inter-temporal trade, objectives for net international investment positions, and objectives for growth in *gross* trade in goods and financial instruments. In the framework we develop, governments have well defined objectives for export growth and for the pattern of international financial intermediation. Within limits, they are willing to finance net capital flows when net flows are a byproduct of this development strategy. The limits are likely to be much less of a constraint on the international system than is suggested by conventional analysis. Our framework does not, for example, explain the source of the US current account deficit. But it does provide an explanation for the relative willingness of Asian governments to finance that deficit.

Governments care about *gross* trade and capital flows because both generate important externalities that are not captured by private firms and investors. Domestic production of traded goods subjects firms to the discipline of international competition and world prices, a discipline not imposed by distorted domestic markets for goods and services. Domestic capital formation by foreign direct investors financed in international capital markets bypasses distorted domestic financial markets. A sensible development strategy provides strong incentives for foreign direct investors to utilize unemployed domestic labor to produce for export markets. The emerging market is in effect “borrowing” the right relative prices and financial incentives from world markets to guide capital formation during a transition to full participation in the world economy.

But, as Lewis suggested, access to import markets comes at a price. Penetration of markets in industrial countries will generate a protectionist response. We do not argue that imports “cause” unemployment in the importing country, but it is clear to us that industrialization of the periphery requires a fundamental restructuring of the labor force in the center. While this creates tremendous aggregate benefits for both countries, established industries and their workers in the center are displaced. No country has found a workable way to compensate its own losers. So a surplus must be generated *and properly allocated* to provide additional incentives to overcome protection. In short, we believe in gains from trade but also believe that gains from trade are not enough to insure that mutually beneficial trade will automatically occur. Our conjecture is that this distortion alone is sufficient to keep labor in the periphery in domestic zero marginal product activities.

The recent reduction of private capital inflows to the United States and the appreciation of the euro and other floating currencies provide an opportunity for fixed rate emerging markets to replace European exports to the United States without changing the rate at which US labor markets absorbs total imports. Even if governments weigh the same risks of financing net deficits as do private investors, governments also see benefits of accelerating their development strategies. It follows that the US will, other things equal, be able to maintain larger increases in its net international debt over time.

Exhaustible Resources

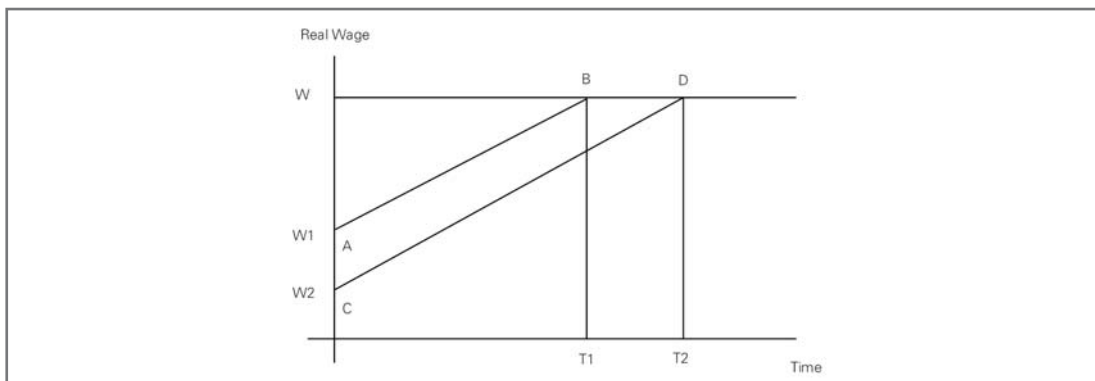
The economics underlying the current international monetary system is best viewed through the lens of an exhaustible resource model. The exhaustible resource is the pool of Asian labor that is underemployed by industrial country standards. Left underemployed, it is politically dangerous and socially costly. Once employed it produces a stream of product marginally valued at the global real wage and contributes to social and political stability. So the government would like to employ labor in the industrial sector as quickly as possible. The government also wants to insure that at the end of the transition period the capital stock should be capable, *when combined with domestic labor paid the world real wage*, of producing goods going forward that are competitive with those produced in other countries. *This is a crucial constraint*: make-work projects or great leaps forward will not do because the history of development has shown repeatedly that this is the way to end-game crisis.

There are two reasons that employment is increasingly costly in the rate of employment growth. First, we make the usual assumption that investment installation costs rise in the rate of investment over time, the usual bottleneck argument. It follows that a more rapid adjustment requires a greater cost of capital per worker.

Second, investors have to make transfers to offset the political power of displaced workers in the importing country. Again, it seems likely that the adjustment costs in the country restructuring its labor market are increasing in the rate of import penetration. Put another way, *a larger piece of the new product stream must be paid to the importing country* the faster is the absorption of the unemployed pool.

In the current global system, benefits are shared with importing countries by initially giving foreign capital access to Asian labor at a low domestic real wage relative to the world real wage. This gives the capitalist excess profits for some time period and provides the resources for the capitalist to utilize to keep home country import markets open. The trick is to set the real wage (real exchange rate) low enough and to adjust it gradually upward to the expected real wage in the rest of the world until the excess labor pool is exhausted, all at a minimum cost.

Chart 1. Real Wages and Adjustment



The optimal strategy for the government is to set the initial wage and the rate of change in the wage in order to employ fully the stock of unemployed labor at a minimum cost.

Consider first the rate of change for the real wage. An additional unit of labor employed provides a nonnegative yield to the government b . A unit of unemployed labor costs government a yield of $-r$. The yield b can be thought of as tax revenue or political support for the government. The yield $-r$ might be transfers to the unemployed or political opposition.

The incentive with which the government sweetens the provision of labor to investors is the present value of the difference between the domestic real wage and the world real wage. Suppose the government kept this present value constant for two consecutive time periods. A constant incentive generates a constant flow of new employment. If the incentive in the first period was set slightly higher than in the second period, less unemployed labor will be carried over into the second period. The carryover is costly so a constant incentive cannot be optimal. The government can get the same increase in employment at a lower cost by frontloading the adjustment.

Since it is in the government's interest to reduce the incentive over time, the present value of the sequence of market wages must be expected to rise. While there are some complicated interactions between marginal costs of extraction and the optimal adjustment path in any real world application, the result that the wage rises monotonically to the equilibrium level is quite general.¹¹

Paths AB and CD in Chart 1 satisfy this rate of change condition. Path AB starts from w_1 , a relatively high initial real wage, and increases at the optimal rate \dot{w} . Path CD begins with w_2 and rises at the same rate. The full solution to the Hotelling (1931) problem requires that the government sets the initial wage so that the initial stock of labor is employed when the domestic wage rises to the world wage. Clearly, a lower initial real wage path CD generates more total employment over the interval from t_0 to T_2 as compared to path AB from t_0 to T_1 . It follows that the integral of employment increases as the initial wage declines and only one initial wage fully employs the initial labor supply.

11. See Devarajan and Fisher (1981)

It also follows that a country with a very large stock of labor to employ will want to set a real exchange rate that appears to be grossly undervalued by conventional measures.¹² Moreover, the adjustment period is determined by the equilibrium adjustment path and, other things equal, is longer the larger the initial stock of labor to be employed. Without government coordination individual workers could not internalize the benefits from rapid capital accumulation and open export markets. They would therefore demand higher wages and live with slower employment growth and a longer adjustment period.

We can summarize this section as follows. The optimal exchange rate and inflation policy are derived from the exhaustible resource problem. For a fixed exchange rate regime only one initial real exchange rate is optimal and only one rate of inflation generates the optimal path for the real wage over time. The length of the adjustment period is determined and at its end the following conditions hold:

- The domestic real wage equals the world real wage in the manufacturing sector.
- The initial pool of surplus labor is employed.
- The capital stock has increased to match the world capital/labor ratio in manufacturing.
- The political costs of adjusting displaced labor and capital in the importing country have been compensated. This co-opts attempts to use commercial policy to freeze out the exports that are vital to the development policy.

An Indeterminacy: Adjust Nominal Wages or Nominal Exchange Rates?

The optimal adjustment path for the real wage allows the authorities to choose a path for the nominal wage rate or the nominal exchange rate but not both independently. In fact Asian authorities use both techniques. For a fixed exchange rate regime, the central bank manages the inflation rate in order to regulate the dollar value of domestic wages and prices. In this case we would expect wage inflation to be above that in the center so that domestic real wages rise over time. The alternative would be to set domestic wage and price inflation at or below that in the center and then allow the nominal exchange rate to appreciate over time but at a controlled rate.

As long as private market participants understand that policy is driven by the objectives set out above—the optimal path for the real wage rate—the *same pattern of real private capital flows and trade account* will be generated by either a fixed or managed float exchange rate arrangement. From the balance-of-payments accounting identity, it follows that *the path of real and nominal official intervention is invariant to whether a fixed rate or managed float regime is chosen*. Those who argue the necessity of switching to a managed appreciation *because of the large accumulation of official reserves* are missing the basic policy problem and its resolution. Moreover, switching from fixed to managed floating, perhaps in the face of political pressure from the center, would not alter the real nature of the transition.

12. It follows that the shadow exchange rate, that is the exchange rate that would prevail if the government set the rate at its optimal level to a point in time but then withdrew from the market, would always be above the optimal exchange rate. In this sense the optimal exchange rate might appear to be undervalued relative to the shadow rate.

The Key Role of Financial Repression

A key to this regime is the ability of the government to repress real wages for an extended period of time. In our framework, this is equivalent to controlling the rate of inflation and the nominal exchange rate. Given a foreign rate of inflation and an international interest rate, this requires that the link between domestic and international interest rates be broken. In our view, China has more than adequate controls on domestic and international financial transactions to make this possible.

- Purchases of international bonds are strictly controlled.
- State owned or controlled banks provide all the claims available for domestic savers.
- The government sets the interest rate on these bank liabilities and rations bank credit to the private sector.
- Growth in the foreign part of the monetary base is determined by the current account surplus plus targeted net direct investment inflows.

In this repressed domestic financial system, growth in domestic credit from the banking system is a residual, that is, the difference between desired money base growth, (determined by the desired rate of inflation), the growth in the demand for money and the growth in the foreign part of the base.

Domestic savings not purchased by the banking system are absorbed by sales of domestic treasury or central bank securities to households and firms. Note that as long as the real interest rate that clears this market is not above the return on US treasury securities or other forms of investing the fx reserves, the government can absorb domestic savings and intermediate into foreign bonds while booking an accounting profit.

The government rations credit to the private sector by forcing the banks to buy government securities through liquidity and reserve requirements and then rations the remaining credit to the private sector at fixed lending rates. This of course sets up strong incentives for private lenders and borrowers to go offshore or to alternative domestic intermediaries. We assume that the government is an effective counterforce to such financial innovation for the requisite amount of time.

Internal Balance

The macro management problem for the government in implementing this policy is daunting but simple enough to set out. In pursuing the employment objective, a distorted real exchange rate will create imbalances in the economy that require an additional policy instrument. As noted above, the bottom line is that the government must be able to manage the domestic real interest rate throughout the adjustment period to keep the domestic economy in balance. The good news is that the problems are large but diminish over time.

To make this argument, assume the economy, aside from the 200 million, is in full employment equilibrium with effective capital controls, no initial net international investment position, and an exchange rate that balances trade. To set the problem in motion, now imagine that 200 million unemployed people appear from the provinces. As discussed above, the path for the real exchange rate that solves the absorption problem involves a sudden real depreciation that is gradually eliminated. The exchange rate path that solves the absorption problem therefore subsidizes exports relative to imports and the trade balance initially moves from balance to surplus.¹³

The initial current account surplus must equal the amount by which domestic (government plus private) savings exceeds domestic absorption. It follows that a rise in the domestic interest rate is needed to reduce absorption relative to savings. But what happens to the interest rate that insures internal balance over time?

During the adjustment period the trade surplus as a share of GDP will decline and may move into deficit as the real exchange rate appreciates and domestic income grows more rapidly than foreign income. A surplus on the service account will appear and grow as net asset accumulation generates net capital income. But the overall current account as a per cent of domestic GDP will fall for any reasonable set of parameters. It follows that the domestic interest rate will fall over time as a smaller share of domestic absorption is crowded out by net transfers abroad. This mitigates the interest differential pressure on capital controls.

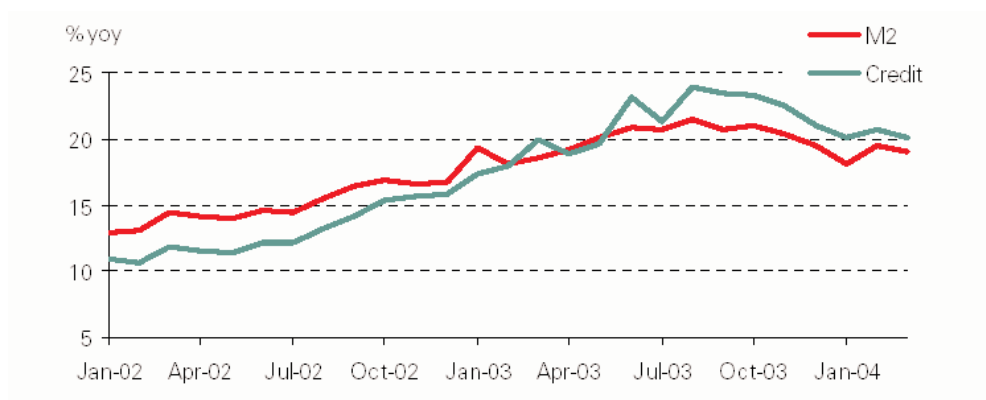
Sterilization and Inflation

The relevant capital flow “problem” in the face of expected revaluation is large private capital inflows. If private capital inflows augment the monetary base and in turn increase domestic inflation, real wage growth will be too rapid; and the transition will be too short to accomplish the government’s objectives. However, if capital inflows are sterilized, and if domestic financial repression allows the government to finance reserve creation by issuing low interest domestic securities, the inflationary impact is eliminated.

This is an empirical issue. Capital controls and financial repression do not last forever but neither does the regime we are describing. We simply observe that to date Asian governments have been very successful in hitting aggressive inflation targets. In the case of China, for example, some observers have suggested that overheating and an inflationary spiral are already underway. In our view, that is more of a prediction than an observation. Time will tell, but we would point out that there are many reasons why inflation may have increased in recent months. In general, a growth rate of 8+% has not generated inflation in China. In our view increases in reserve requirements last year, a form of sterilization, have already reduced the growth in money and credit. Moreover this has been accomplished with no increase in administered interest rates.

13. An important mitigating factor is that adjustments in commercial policy are likely to encourage imports. For example, the initial condition for China is a large gap between the effective exchange rate for imports and exports. In fact, China has not run a large overall trade surplus to date. In part, this probably reflects large declines in tariffs associated with ascension to the WTO.

China: M2 and credit growth



Source: CEIC.

If the capital account is liberalized, expectations of appreciation that are a central feature of the regime discussed below will generate capital inflows. Moreover, market-determined domestic interest rates would make sterilization expensive and so inflation would be the eventual result. But we do not expect opening of the capital account or deregulation of domestic interest rates. It follows that the economic linkages between exchange rate policy and inflation clearly relevant for capital account countries do not now exist, and we do not expect them to materialize for many years.

The Transfer to Foreign Capital

The regime set out so far encourages capital formation in export industries and makes room for this new investment in the domestic market. But it does not suggest that nonresident direct investors are the best placed to do the investing. Recall however that the investor has to expect that the foreign markets for exports remain open and that the political costs of displaced workers in the importing countries must be compensated.

A transparent but unrealistic example will help make the point. Suppose the right to supply capital is allocated by the government through licenses on a project-by-project basis. The gap between the domestic and world real wage would then be captured by selected capitalists.¹⁴ Moreover, the government could lend through domestic balance sheets to the direct investor and finance this by sales of securities to the domestic market. The government can reduce the political costs to foreign governments associated with rapid export growth by allocating some of this capital to foreign investors that are adept at penetrating countries that allow the rapid growth of imports. In the present context, with the US absorbing much of the exports, this allocation would go to those FDI investors who can push goods into the US. This provides an economic rent until the convergence of real wages at T , which is not competed away because entry into foreign direct investment is rationed by the Chinese government.

14. We refer to "foreign investors" and not "foreign direct investors" because in this example they are financed by Chinese saving intermediated through domestic balance sheets.

The foreign investors then become a well-financed and effective lobby to counteract the resistance to the restructuring of the US labor force away from import substitutes.¹⁵ Each time a worker is matched with foreign capital, the direct investor gets a benefit equal to the discounted value of the wage differential plus the normal return to capital. The excess returns are implicitly paid by the Chinese workers accepting the low but rising real wage. Indeed, from the US balance sheet perspective, there is no real export of capital from the US to China. All is financed by directed Chinese savings, both the US current account deficit and the onshore loans to the foreign investor. The US balance sheet taken as a whole simply intermediates between low yielding Chinese deposits and high yielding FDI investments.

But perhaps this method of local intermediation is too transparent and difficult politically. Instead, the government could sell the same domestic security mentioned above but, rather than make a loan to a direct investor, purchase international reserves in the direct investor's home credit market. This acquisition of foreign assets favors the importing country in general rather than just the foreign investor. The foreign investor then has to borrow in the importing country at his own normal cost of funds, and then buy yuan to make the investment. Part of the subsidy to the foreigner is then given to the importing country as a whole, part to the FDI investor in the form of rents from access to low real wage labor. Again, no real capital flows from the US to China—both the US current account deficit and the measured FDI outflow are financed by Chinese savings. Whether it is booked as FDI or investment managed by foreigners is irrelevant.

Politically, this is perhaps better because there is an arms length relationship between the government and the financing of the foreign investor. With this more competitive mechanism we would expect that the surplus generated by access to low wages in China would be absorbed by adjustment costs. In this case direct investors from countries with open import markets might enjoy a competitive advantage over other foreign and domestic investors because they can more effectively mobilize profits to make transfer payments to their fellow residents.

At this point we do not understand well the mechanism that allocates investment in the export sector, its profitability or the distribution of those profits.¹⁶ It is also quite possible that direct investment is restricted and/or the risk that the regime might end prematurely requires excess profits in order to insure entry. The net profitability of direct investment is an important ingredient in the evolution of net international investments positions during the transition. Data on profitability of direct investment in China is anecdotal at best. We can make a reasonable guess about the gap between the real wage and marginal product of labor, but we do not have much information about the distribution of the implied surplus. This is an important topic for further research.

15. We refer to "foreign investors" and not "foreign direct investors" because in this example they are financed by Chinese saving intermediated through domestic balance sheets.

16. See Razin and Sadka (2002) for an interesting discussion of the allocation of rents.

What about the accumulating balance sheet positions?

Headline numbers for reserve accumulation and the US current account deficits seem to suggest that the main end game problem is the accumulated net international investment position of the center and the periphery. But net positions are the difference between two much larger gross assets and liabilities. Just as in the original Bretton Woods System, official intervention, that is, large official capital outflows from the periphery are largely associated with private capital inflows to the periphery. In our view the financial intermediation and the capital gains and losses generated will substantially mitigate problems associated with the net international investment positions generated by export led growth.

At the end of the transition period Asian governments will hold a large stock of US treasury and other securities on which it has earned a relatively low but positive rate of return. It will also have incurred a large stock of liabilities to domestic claimants. But at the end of the game, both of these will carry the same international interest rate. The US will hold a large stock of direct investment which pays the world equity rate going forward but which has paid a much higher rate during the adjustment interval.

It may be instructive to take another look at the end of the original Bretton Woods system with these two points in mind. While a careful historical comparison is beyond our resources at the moment it is clear that the United States did not run large trade deficits leading up to the 1971-73 crisis that ended the regime. The “balance of payments deficit” that observers focused on at the time was the liquidity balance, a concept that put short term capital inflows below the line. As Depres, Kindleberger and Salant (1966) pointed out in their celebrated letter to the *Economist*, this concept of a deficit ignores the legitimate role of financial intermediation in international financial arrangements. To be sure, financial intermediation can lead to instability and crises. But the problem is much more subtle and the “lessons” from countries that have run large and persistent current account deficits may not be of much use in evaluating the new Bretton Woods.

Conclusions

What makes this perpetual motion machine run is, of course, the assumed zero (actually negative) product of the pool of excess labor that we are implicitly associating with the outcome of a market-determined real exchange rate and allocation of domestic and international savings. This provides a free lunch that everyone can share through current Asian policies.

We have done some simulations with plausible rates of accumulation and returns and find that the transition to the new steady state need not imply a large continuing net transfer. So the system ends with a smooth adjustment. The government of China for example would have a more productive capital stock and will have managed to employ 200 million people in world-level wage jobs. The US will own a nice chunk of the Chinese capital stock, and will have made a fine excess return during its accumulation. There are even mutually offsetting cross-border claims against each other that can serve as escrow against confiscation.

During the adjustment period, many dimensions of this development program are distorted in the periphery. But one thing that is not distorted is the knowledge that at the end of the transition capital invested in traded-goods industries will have to compete on an equal basis with capital invested in other countries. We see no practical alternative to imposing this discipline on an emerging market and at the same time accelerating the absorption of a large and politically dangerous pool of labor. The feasibility of maintaining an undervalued exchange rate through monetary policy and controls on domestic and international capital markets for a long time can, of course, be questioned. But this is an empirical question. At the moment we do not see a mechanism in the case of many Asian countries for significant circumvention of their financial arrangements and regulations.

Chapter 4

LIVING WITH BRETTON WOODS II

LIVING WITH BRETTON WOODS II*

Abstract

We examine the dynamics of the BW II system and the behavior of interest rates and exchange rates following a variety of shocks to the international monetary system. Our analysis suggests that real interest rates in the US and Europe will remain low relative to historical experience for an extended period but converge slowly toward normal rates. During this adjustment interval, the US absorbs a disproportionate share of world savings. After a substantial initial appreciation of floating currencies relative to the dollar, the dollar and other floating currencies remain constant relative to each other. An improvement in the investment climate in Europe during the adjustment period would generate an immediate depreciation of the euro relative to the dollar. In real terms, the dollar *and the floating currencies* will eventually have to depreciate relative to the managed currencies. But most of the adjustment in the US trade account will come as US absorption responds to increases in real interest rates.

In this chapter, we set out in detail how we think about the emergence of China and Asia as major players in world capital and foreign exchange markets. Our approach, which has come to be known as Bretton Woods II, provides a coherent explanation for the current structure of interest rates, exchange rates and current account balances and also a contingent playbook for future interest and exchange rate movements.

Conventional analyses are based on the assertion that the Bretton Woods II system cannot hold together for much longer. This may or may not turn out to be correct but it does not offer any guidance to investors if the system does survive for an extended time period, as we believe it will.

For simplicity, our framework divides the world into three regions, emerging Asia, the US, and Euroland.¹⁷

Euroland includes all countries outside the US with open capital markets and market-determined exchange rates. We will use the euro to stand for the currencies of these countries since it is the dominant currency among them and the renminbi to stand in for the currencies of emerging Asia.

The analysis will lean on four assumptions. We believe these assumptions are realistic, and they dramatically simplify the dynamics of a three region analysis:

1. Emerging Asian financial markets are assumed to be poorly integrated with the other two regions because of capital controls and because Asian assets are imperfect substitutes for US and Euroland assets. This allows Asia to manage the dollar-renminbi exchange rate so that the renminbi appreciates in real terms slowly over an adjustment period of many years.

* We published this paper as "Living with Bretton Woods II", Deutsche Bank Global Markets Research, September 20, 2005.
17. Because there is no necessity of geographic contiguity, we have referred to these regions in other chapters from the functional viewpoint as the trade account region, the center country, and the capital account region.

2. The US and Euroland financial markets, in contrast, are assumed to be very well integrated and their respective assets close substitutes, an assumption consistent with a great deal of empirical work. The US and Euroland do not manage the euro-dollar exchange rate.
3. The dominant change in the economic environment that is driving the main features of the world economy is the rapid growth of savings rates and the level of savings in emerging Asia and their exportation to the rest of the world.
4. The US and Euroland differ in their capacities to utilize Asian savings, with the US having a much greater absorptive capacity.

Some of the significant departures of our analysis from the conventional approach that still dominates the official sector and academic conversation include the following:

- 1a. Conventional analysis considers Asian financial markets sufficiently integrated with international markets so that Asian governments will not be able to manage real exchange rates at reasonable costs. Moreover, they will not want to distort real exchange rates for much longer to encourage export led growth.
- 2a. Conventional analysis assumes that US and Euroland financial markets are not well integrated. For this reason, diversification of Asian reserves is thought to have an important effect on the dollar-euro rate. This assumption seems to us inconsistent with substantial evidence that intervention and reserve management by US and Euroland authorities have not had a large or lasting effect on industrial country exchange rates.
- 3a. Conventional analysis usually identifies a fall in the US household savings rate or a rise in the government fiscal deficit rate as the driving force behind the US current account deficit and the global imbalances.
- 4a. Interest rate movements have not been consistent with this assumption—falling instead of rising. To circumvent this contradiction, it is conventionally asserted that interest rates and asset prices are driven by incorrect expectations, a misunderstanding of the dangerous nature of the system, or bubbles.

The interesting results of our analysis following a sudden, long-term rise in exports of Asian savings provide a contingent playbook for future real interest and real exchange rate movements. These results include:

- There is a substantial immediate appreciation of the euro against the dollar.
- Real interest rates in the US and Euroland will remain low relative to historical experience but converge slowly toward world rates as Asian markets become integrated with international markets.
- The dollar and the euro will gradually depreciate relative to the renminbi but, after the initial euro appreciation vs. the dollar, remain constant relative to each other.

- More rapid expected growth in Europe would depreciate the euro relative to the dollar and renminbi and raise interest rates in the US and Europe.
- More rapid expected growth in the US, or more investment demand following Katrina, would tend to depreciate the dollar relative to the euro and renminbi. Because the dollar–renminbi is managed, the dollar would not fall immediately but would begin to depreciate more rapidly. The euro would appreciate immediately against the dollar and then match the dollar’s more rapid rate of depreciation against the renminbi.
- Shifts in currency composition of Asian reserves from dollars to euros would have little or no lasting effect on dollar-euro exchange rates.
- Effective protection in the US and Euroland or a fall in the savings rate in Asia would generate a stronger dollar in the long run. The immediate effect would be less rapid dollar depreciation against the renminbi. The euro could go either way against the dollar.
- High oil prices and high consumption by oil exporters would generate a slower rate of dollar depreciation against the renminbi and higher interest rates in the US and Euroland. The dollar/euro rate could go either way.
- A decision by Asian governments to manage their exchange rates relative to a dollar/euro basket would reduce the volatility of the dollar-euro exchange rate but not its current or long term level.
- In real terms, the dollar will eventually have to depreciate relative to the renminbi. But most of the adjustment in the US trade account will come as US absorption responds to increases in real interest rates. Slow adjustment in the composition of US output toward traded goods over an extended time period will not require unprecedented dollar depreciation.

The Conventional Approach

Current account deficits and surpluses, i.e. exports and imports of savings, have clearly moved well outside historical norms and have therefore attracted a great deal of attention. Let S stand for national savings and I for investment. A current account deficit must be associated with $S < I$ (United States), a current account surplus must be associated with $S > I$ (Asia), a current account balance with $S=I$ (approximately Euroland).¹⁸ It follows that if we could explain why net savings are imported by the US, exported by Asia, and not traded much by Euroland, we would understand the current state of the international monetary system. Moreover, if we could explain how trade in savings will evolve over time we could make meaningful asset price forecasts.

The conventional approach starts with the assumption that the fundamental cause of the US current account deficit has been an exogenous fall in national savings in the US. Two explanations for the change in US behavior are offered. First, the jump in the US fiscal deficit

18. Of course, Euroland, as we have defined it, includes some countries with large surpluses, e.g. Canada, or deficits, e.g. the UK. We will consider the impact of the new oil exporter surpluses as a separate issue.

reduces government savings. Second, bubbles in asset values, for example housing, reduce household savings. (Both are sometimes linked to an even more fundamental moral decline). The US is able to “live beyond its means” (an emotional way to say $S < I$) by pulling in goods from abroad.

The US current account deficit is identically equal to the increase in book value of US net foreign debt, so this pushes US debt into foreign portfolios. This “profligacy,” it is argued, is bound to lead to crisis and ever rising ultimate disaster, the longer it lasts.

A more complete explanation for the US current account deficit would also describe the transmission of the fall in US savings to other regions. In short, why did Asia supply savings and goods to the US, that is, why is $S > I$ in Asia and why did Asia buy US securities? Moreover, why did Euroland do neither?

The standard analysis of the effects of a decline in US savings is straight forward. First, the market reaction to the decline in US savings is a fall in the value of the dollar relative to other currencies. The depreciation of the dollar tends to reduce the US current account deficit below what it would otherwise be, and the cheaper dollar in the medium term will generate a net improvement in trade to help pay the interest on increased US debt.

This basic story has been recently augmented by the idea that foreigners really do not want to lend to the US and will do so only if the dollar is expected to rise in value relative to other currencies. This is sometimes called a home bias in investment preferences, a bias that is quite clear in portfolios in the US and the rest of the world. Home bias implies that the dollar has to go down even more now so that investors can reasonably expect it to rise in the future. The expected appreciation of the dollar increases the expected yield on dollar assets relative to assets denominated in other currencies to overcome the reluctance to lend.

The dollar has declined against the euro and other floating currencies as the conventional approach predicts but not against Asian currencies because governments in Asia intervene in markets to support the dollar and invest the proceeds in US assets. Most experts believe that this artificial tampering with markets cannot last long and will end with a costly speculative attack on the fixed exchange rate arrangements.

The US will then suddenly have to “live within its means” and repay debt. This sudden adjustment will be very costly both in unemployment and large declines in the real value of the dollar as resources are shifted from domestic to traded goods industries. This is certainly a good description of what has happened to other fixed rate systems in recent years. If the US were just like Argentina, the formal story is finished. Economists warn their neighbors, are perplexed by an indifferent financial industry, and wait for the unhappy end. If the model is right, market expectations must be wrong. If it does not end this year, we are even more certain it will end next year and with a bigger bang. These warnings have been forthcoming for almost six years even as the global system soldiers on.

Bretton Woods II

But there are problems with this story, and we have emphasized two. First, if a fall in the US savings rate is driving the system, we should expect US real interest rates to rise. In fact, US rates have fallen and remain so low that they constitute as large a mystery as the very large current account deficit. Second, if the current situation is artificial and cannot last long, this expectation should be apparent in longer term interest rates. But again, the yield curve reflects the expectation that US rates rise very slowly over the next ten years. For, example implied forward rates on 1-year TIPS as of 9/17/2005 rise gradually from 1.07 per cent to 2.35 over ten years. Strongly contradicted by these price data, the adherents of the conventional model assume that investors do not understand the world and will be surprised when the end comes.

In our framework, the fundamental shock to the system is a change in the supply of savings from developing Asia and a suspension of the usual home bias in allocating these savings across world markets. It may not seem all that important to decide whether it was because US savings fell or Asian savings increased to drive the pattern of current accounts we now see. But it is in fact crucial for understanding the system and the direction it will take.

The first obvious departure from the conventional analysis is the observation that Asian real exchange rates are not market determined prices but are heavily and successfully managed by Asian governments. As noted above, the conventional analysis assumes this troublesome fact will soon go away. We argue that this policy behavior will *eventually* go away but is a central feature of Asian development policies and will not dissipate for a long time.¹⁹

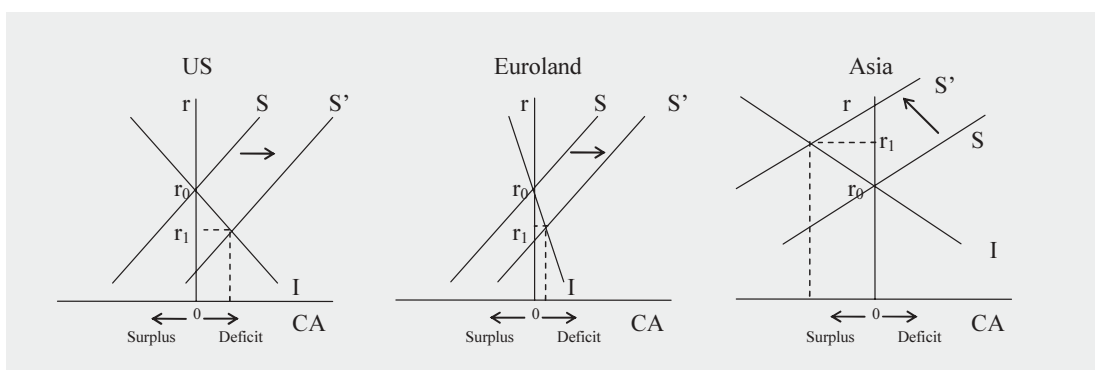
It follows that if the rest of the world is to adjust now to a savings shock emanating from Asia the primary adjustment mechanism will not be changes in Asian real exchange rates.

To manage real exchange rates, Asian governments must intervene in foreign exchange markets. That part of the intervention that is sterilized is in fact intervention in credit markets. Asian finance ministries or central banks sell domestic securities reducing the supply of loanable funds to domestic borrowers and buy foreign securities, thereby increasing the supply of loanable funds in the US and Euroland. The resulting shift in interest differential is possible because of effective capital controls. That is, Asian governments can manage exchange rates and interest rates because their domestic assets are made imperfect substitutes for foreign assets in private portfolios by policy, if not by private preference.

Because Asian exchange rates are managed, adjustment must proceed through current account balances and real interest rates. Recall that to understand current accounts we have to understand savings and investment. The question then is: how are savings and investment changed in the US, Euroland and elsewhere as Asian savings are offered to the rest of the world? In particular, can we understand why real interest rates might fall in both the US and Euroland while current account balances adjust by very different amounts? In our view, this is a very easy case to understand.

19. Our critics sometimes claim that we predict that Asian governments will fix real exchange rates and finance a US current account deficit forever. This, of course, would make no sense. As set out in Chapter 4 the tactic of the development strategy is a controlled rise in dollar wages to world levels at the end of a long adjustment period. We have argued that Bretton Woods II might be replaced by a Bretton Woods III as a new set of periphery countries replace Asian grad-

Figure 1. Current Account and Interest Rates



We can illustrate our approach first with a set of figures focusing on interest rates and current accounts for Asia, the US, and the Euroland and then with another set focusing on net foreign debt positions and exchange rates.

Figure 1 shows real interest rates for the US, Euroland, and Asia on the vertical axes. The horizontal axes are the current accounts for these three regions. The upward sloping curves labeled S are national savings. The curves labeled S' are national savings augmented by imports or exports of savings. The downward sloping curves labeled I are investment. For convenience, we start with balanced current accounts at a common interest rate, but any starting point for the separate economies will do as long as real rates are the same in the US and Euroland.

A policy to divert Asian savings to the US and Euroland reduces the supply of savings available in Asia and shifts the Asian supply curve to the left. A current account surplus is generated and interest rates in Asia rise.

In the US and Euroland, savings supply curves shift to the right as Asian savings push in. The real interest rate in the US and Euroland falls as we move down the investment demand curves. The demand curves are downward sloping because investment increases relative to domestic savings as interest rates fall. Moreover, consumption rises with a fall in interest rates so domestic savings fall as well. The rise in consumption and investment is matched by an inflow of foreign savings and the current account deficit increases. The increase in Asia's current account surplus is matched by the sum of the increases in the current account deficits of the US and Euroland.

In the US, the increase in savings demanded is large because investment and savings are quite sensitive to the rate of interest.²⁰

Euroland sees the same qualitative changes. But investment and the current account deficit increase only slightly because there are few profitable investment opportunities and consumption is not very responsive. The fundamental factor driving the different responses of the US and Euroland current account deficits is the different opportunities to efficiently utilize foreign savings as the interest rate falls in both regions.

20. This means that there are lots of viable projects or confident consumers ready to go with a small improvement in financing costs relative to Euroland.

An important aspect of the adjustment process is the equalization of real rates of return on capital invested in the US and Euroland through private arbitrage. When we turn to exchange rate determination below, we will use the result that real interest rates are equalized by flows of savings. It is clear, however, that expected rates of return on capital in the US and Euroland could be equalized by expected real exchange rate changes in addition to real interest rates. This apparent indeterminacy between real interest rates and expected changes in real exchange rates during the adjustment period is resolved at the end of the period. When the new equilibrium is established there is no reason to predict that the real exchange rate between the euro and the dollar would continue to change over time. Since the capital stocks must have the same expected rate of return looking forward at the end of the adjustment period, it follows that real interest rates must be the same at that time. Arbitrage across time will ensure that any capital put in place in the US and Euroland during the adjustment period that will remain in place in a new steady state must have the same rate of return.

The optimal policy over time for Asian governments is to allow gradual real exchange rate appreciation. This reduces over time their intervention in credit markets and their exports of savings. By the end of the adjustment period real interest rates will have equalized across the three regions.

We now turn to the foreign exchange markets. There are three keys to understanding the three cross exchange rates.

First, for some years, Asian governments can and will manage the real dollar value of their currencies. They can do so because capital controls make Asian domestic assets imperfect substitutes for US and Euroland assets in private portfolios. Their ability to manage their real exchange rate will erode over time as capital controls become less effective and their domestic asset markets are integrated with international capital markets. Their desire to maintain the system will also erode as their surplus labor is absorbed. But they will manage rates as long as they can because undervaluation is an important part of their development strategy.

Second, in the long run, say ten years more or less, the real value of the three currencies will have to adjust to changes in the international investment positions of the three regions generated during the adjustment period. Asia's net asset position will improve while the US and Euroland positions will deteriorate by relatively large and small amounts, respectively.

The relationship between the long run exchange rate and the net foreign debt position of each region is not controversial. As net foreign debt increases, larger trade balance surpluses are needed to service net debt (balance the current account). So a fall in net foreign assets is associated with a depreciation of the real exchange rate. The implication is that the dollar and the euro must depreciate against the renminbi, but the dollar must depreciate by more. Therefore, the dollar must depreciate against the euro.²¹

21. In our view, the amount of the eventual dollar depreciation is often overestimated. Recall that the primary factor driving the increase in the US trade and current account deficit is the relatively strong response of US investment and consumption to a decline in interest rates. Over the adjustment period interest rates will rise, thereby causing an equally strong reverse effect; and this will help reduce the US deficit. The exchange rate adjustment therefore must be consistent with a slow shift in US output toward traded goods.

Third, exchange rates today would normally reflect these long run expectations to some degree. But intervention by Asian governments is sufficient to manage strictly the dollar-renminbi exchange rate. Intervention will not keep the renminbi undervalued forever, but it can extend the adjustment period. As we have argued elsewhere, the optimal path (from China's perspective) for Asian real exchange rates is a gradual appreciation toward their new long run values.

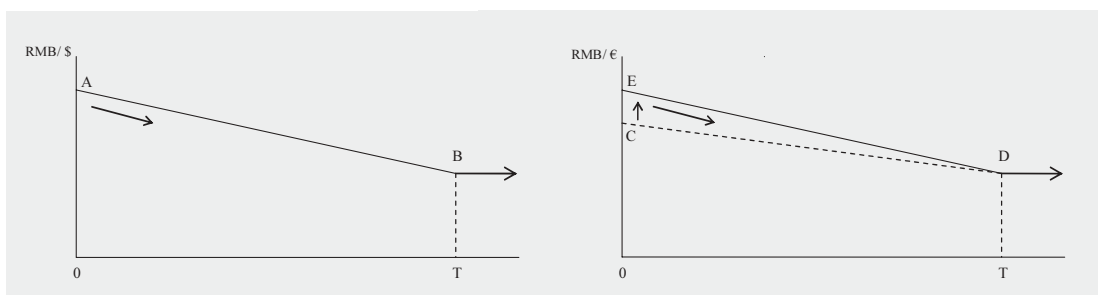
In contrast, the euro cross-rates both today and along the adjustment path are determined by private investors. The relevant context for these portfolio choices is that dollar and euro assets are close substitutes. The key implication is that once the system comes to be understood the euro and the dollar must depreciate at the same rate over time relative to the renminbi. Recall that real interest rates on capital invested in the US and Euroland are equalized by net savings flows. It follows that investors must expect the the euro-dollar exchange rate to remain unchanged. Put another way both currencies must depreciate, and be expected to depreciate, at the same rate against the renminbi.

The result of a shift in Asian savings exports is then an immediate euro appreciation against the dollar and the renminbi followed by a constant dollar/euro rate. This means that there will be immediate, maximal political pressure for relief in a Euroland unable to absorb the shock easily and continuous, though declining, pressure thereafter.

These results are illustrated in Figure 2. Starting from an initial value A of the renminbi-dollar rate in the top panel and C of the renminbi-euro rate in the bottom panel, we can follow the effects of an increase in Asian savings and intervention. The increase in savings and intervention raises interest rates in Asia and lowers interest rates in the US and Euroland. Asia generates a current account surplus matched by deficits in the US and Euroland. This continues until Asian savings and intervention return to normal levels. In Figure 2, this interval is from 0 - T.

The eventual fall in the dollar against the renminbi from A to B is required to generate the trade surplus needed to service the higher level of US debt at time T and after.

Figure 2. Exchange Rates



Without intervention, we would expect an immediate depreciation of the dollar; but this can and will be delayed by intervention.²² Along the adjustment path AB, the dollar is supported by a flow of intervention. Private investors know the dollar will depreciate but nevertheless are willing to hold the stock of dollars, reduced by Asian purchases of US assets.²³ US debt to foreigners is growing more rapidly than it would have if the fall in interest rates had been partially offset by a market determined depreciation of the dollar.

The renminbi-euro rate starts at C and must eventually move to D, a much smaller depreciation. Like the US, Euroland will accumulate debt (or reduce net assets below their previous path) during the adjustment period. But in this case Asian governments are not intervening to manage the exchange rate either at point C or along the adjustment path. The question is then: where will the market set euro exchange rates?

We can make our analysis more realistic and much more transparent by assuming that US and Euroland assets are close substitutes in private portfolios. This is a very important departure from the usual portfolio balance model because it implies that the currency composition of Asian intervention is of secondary importance. If euro and dollar assets are close substitutes in private portfolios, Asian governments could intervene in either dollars or euros to stabilize the dollar value of their currencies. Moreover, diversification of Asian reserves would have little or no lasting effect on the dollar-euro exchange rates, contrary to a key conclusion of the conventional view. This view is consistent with a very large body of empirical evidence that sterilized intervention has no lasting effect on exchange rates among industrial countries.²⁴

The practical importance of this assumption is that the two adjustment paths in Figure 2 must have about the same slope. If they did not, more rapid dollar depreciation against the renminbi, relative to euro depreciation against the renminbi, implies expected depreciation of the dollar against the euro. Since interest rates in the US and Euroland are the same, arbitrage would be profitable. Private investors would immediately bid for euros against dollars and would do so until the euro jumps to E. From this initial appreciation the euro now depreciates against the renminbi at the same rate as the dollar. Note that along this adjustment path the euro remains “overvalued” relative to the dollar and the renminbi throughout the adjustment interval, although the degree of overvaluation shrinks over time.

We can now iterate through the current account analysis. The euro has appreciated against the renminbi and the dollar, so Euroland’s current account deficit, already increased by the fall in interest rates, tends to widen. The dollar is unchanged against the renminbi and has depreciated against the euro so the already increased US current account deficit is reduced. The Asian surplus is increased by the euro’s appreciation. These second round effects on the current account positions of the three regions would not alter our basic story assuming the reactions of absorption to interest rates is very different in the US and Euroland.

22. We could replace time with net debt on the horizontal axis and have a diagram similar to that presented in Blanchard, Giavazzi and Sa (2005). The case we present here is similar to their discussion of intervention following a shift in preferences away from US goods. The interested reader is encouraged to work through their analysis of an imperfect substitutes model. Their analysis assumes that interest rates are unchanged and changes in absorption are assumed to be related to fiscal policies.

23. The portfolio balance equilibrium is based on the idea that residents of all countries prefer home assets but can be moved away from their preferred portfolio by differences in expected yields, that is by interest differentials adjusted for expected changes in exchange rates.

24. We have also explored the effects of diversification under the assumption of imperfect substitution between dollar and euro assets. Our conclusion was that it is not in the interests of Asian governments to diversify. See Chapter 2. The argument presented here suggests that Asian governments can diversify if they choose to do so but that this would have little effect on dollar exchange rates.

Where are we now compared to these pictures?

The discussion above suggests that the dollar should have depreciated against the euro when market participants realized that US imports of savings from Asia would generate a substantial increase in US net investment income payments. But there has been no obvious correspondence between the US current account deficit or the increase in net US international debt and the value of the dollar. The current account deteriorated sharply and net debt began to grow at a historically unprecedented rate in 1996 but the dollar was strong until 2002.

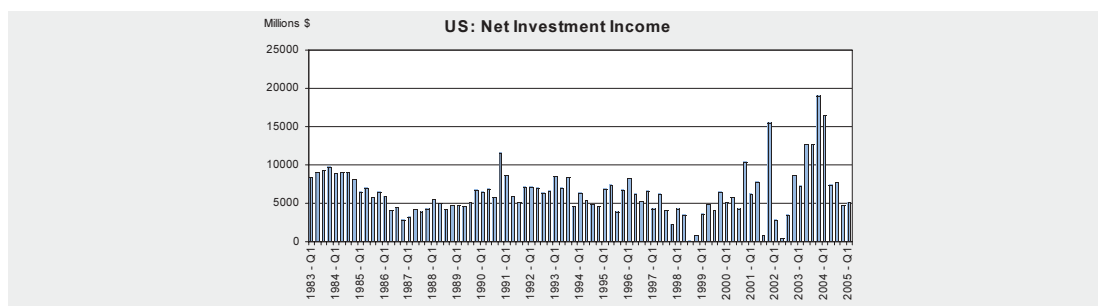
One explanation is found in Table 1, which shows US net investment income payments. As of mid 2004 the US still earned more on its stock of gross financial assets than it paid on its larger stock of gross international debt. Indeed, in the eight most recent quarters Q2/2003-Q1/2005, US net earnings totaled \$86 billion compared to \$47 billion in the previous eight quarters.

The lesson is clear: it is not enough to forecast changes in the US net debt position. We need also to know the stocks of gross international assets and liabilities and rates of return on these stocks. Our framework suggests that over time the growth in net US debt will generate net investment payments in part because we expect net debt to grow and US interest rates to rise over the adjustment period. But we also expect very substantial capital gains on US owned foreign direct investment and this tends to limit the growth in the market value of US net debt and reduces net investment income payments. Expectations of the long run value of net investment income payments require a difficult evaluation of the evolution of net and gross investment positions and rates of return.²⁵

Moreover, it would not be surprising if market participants were uncertain about the longevity of US current account deficits. The conventional story still insists that a speculative attack on Asian currencies that will force a revaluation is long past due. If it had occurred, the path for US debt would have already started to reverse. Moreover, the first analysis that we know of that predicted large and sustained US current account deficits as part of a rational global system was not published until mid-2003.

Perhaps the best way to link the analysis with the experience of the past ten years is to assume that as the US deficit has moved to a historically high level and stayed there for an extended period market participants have placed increased weight on the probability that the very gradual appreciation of Asian currencies requires the substantial near term rise of the euro against the dollar described above. It would not be surprising if this learning process has some way to go. If so, there will be periodic upward pressure on the euro. As the learning curve flattens, the euro should stabilize against the dollar.

US: Net Investment Income



25. See Gourinchas and Rey, August, 2005 for a detailed breakdown of the denomination of US gross foreign assets and liabilities.

The BW II Playbook: How Will Bump Scenarios Move Interest and Exchange Rates?

Of course, changes in many conditions will shift the dollar-euro exchange rates along the adjustment path set out in the previous section. The framework developed above is useful to evaluate changes in the economic environment during the adjustment process, and the peculiar nature of the global system produces some remarkable and unanticipated results.

Bump 1: A Stronger Euroland Outlook

Suppose, for example, that at time t_1 an improved outlook for profits in Euroland generates a positive shift in the demand for investment in Euroland. Figure 1 suggests that Asian savings will be shifted from the US to Euroland for the balance of the adjustment period and that interest rates in both regions will rise.

The effects on exchange rates are illustrated in Figure 3. With more Asian savings going to Euroland and less to the US, at the end of the adjustment period, at T, the euro will be weaker and the dollar stronger than would have been the case. If Asian intervention at t_1 keeps the dollar at F in Figure 3, the euro depreciates sharply at t_1 for two reasons. First, it must now reach level J at T and it must now depreciate more slowly to match the dollar's reduced rate of depreciation.

Bump 2: A Weaker Euroland Outlook

A weaker outlook for Euroland investment would have symmetric effects. In this case there would be a deterioration in the final expected debt position of the US and an improvement in the final debt position of Euroland. This would require a more rapid rate of dollar depreciation against the renminbi and another lurch up for the euro. Interest rates in both regions would fall.

Bump 3. A Stronger US Outlook

Changes in US growth and investment would have similar effects. As US growth increases, so does the expected stock of US debt. The greater long run depreciation would not affect the current level of the dollar/renminbi but would require a more rapid appreciation of the renminbi against the dollar for the balance of the adjustment period.

The euro would appreciate against the renminbi and the dollar for two reasons. First, its long run level would jump up and it would have to appreciate immediately in order to match the dollar's higher expected depreciation rate against the renminbi.

This is illustrated in Figure 4. The expected RMB/\$ at T shifts down from G to B and the expected RMB/€ moves up from D to K. The euro immediately jumps from H to I as again the change in the euro is amplified by arbitrage between dollar and euro assets. Interest rates in both regions would rise.

Bump 4. A Katrina

This is a one-off, increased US demand for foreign savings that will lead to an increased US indebtedness at T. Therefore, Bump 3 analysis applies. The euro appreciates against the dollar.

Bump 5. Protectionism Surges; Oil Exporters Start Consuming Asia's Surplus Savings

It turns out that both of these have the same impacts on interest and exchange rates.

Bump 5a. For example, effective protection against Asian exports in both the US and Euroland would reduce net savings transfers to the US and Euroland from Asia by forcing a reduction in Asia's net trade surplus.

Bump 5b. Similarly, a decline in net Asian savings exported to the US and Euroland would occur if a larger share of US, Euroland, and Asian income is transferred to oil exporters via terms of trade shifts. As the oil exporters start to consume a high fraction of this transfer, fewer excess savings are available to accumulate of US and Euroland debt.

Each of these developments can be analyzed as illustrated in Figure 5.

In these events expected US debt at T is reduced, which reduces the terminal exchange rate from B to G. Euroland debt also falls, which reduces the RMB/€ from D to K. We assume that the new path for the RMB/\$ does not jump up at t_1 , but the rate of dollar depreciation is reduced so that the new path for the RMB/\$ is FG. The RMB/€ must reach K at T and the path from t_1 must have the same slope as FG, that is, the RMB/€ must have the same expected rate of depreciation as the RMB/\$. The conclusion is that the euro can either depreciate or appreciate immediately against the dollar depending on the relative change in debt stocks in response to the new environment. There is no necessary direction of effect for this key exchange rate. Interest rates will rise both in the US and Euroland because of the reduction in available savings.

A useful rule of thumb is that events that change expected US and Euroland debt stocks and real exchange rates in opposite directions generate large and immediate changes in the dollar/euro rate when expectations change. The market rate changes in the same direction as the change in the expected future rates. Events that move both expected debt stocks in the same direction have ambiguous effects on the exchange rate at the point where expectations change.

Bump 6. A Serious Basket Peg

The results discussed above would be altered if Asian authorities ever really do adjust the RMB/\$ rate in reaction to changes in the dollar/euro rate via the adoption of a basket peg. In the absence of new shocks to the equilibrium path, a basket peg would have no effect because the dollar/euro exchange rate is constant during the adjustment period. However, in the face of the other shocks discussed above, a basket peg would tend to reduce the volatility of the dollar euro/exchange rate and would either increase or decrease the average real value of the renminbi depending on the nature of shocks. There is no implication that a move from a straight dollar peg to a basket peg would weaken the dollar.

Figure 3. Exchange Rates

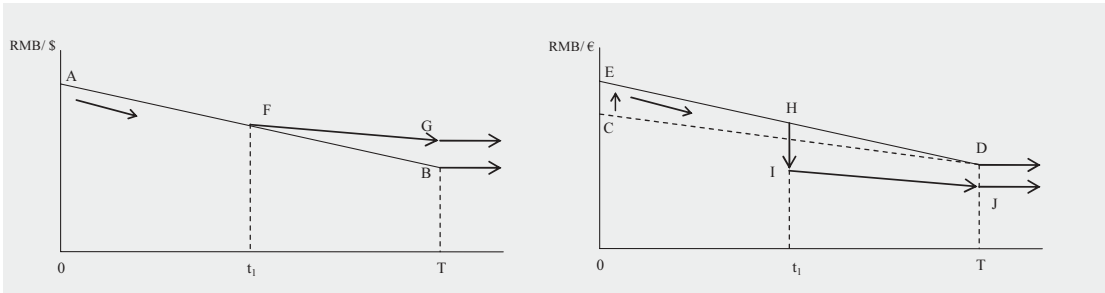


Figure 4. Exchange Rates

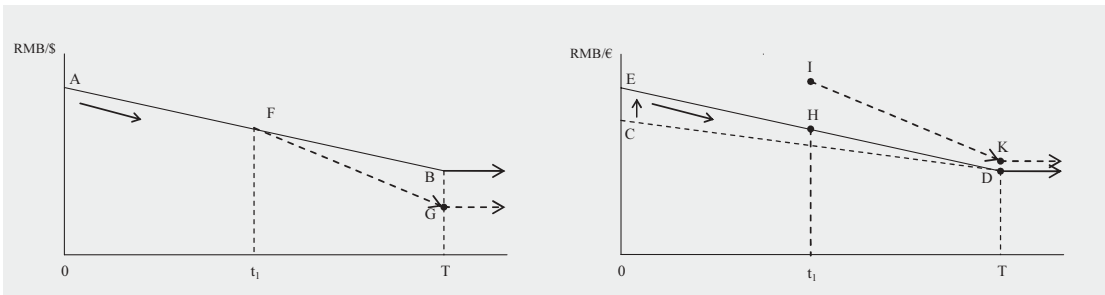
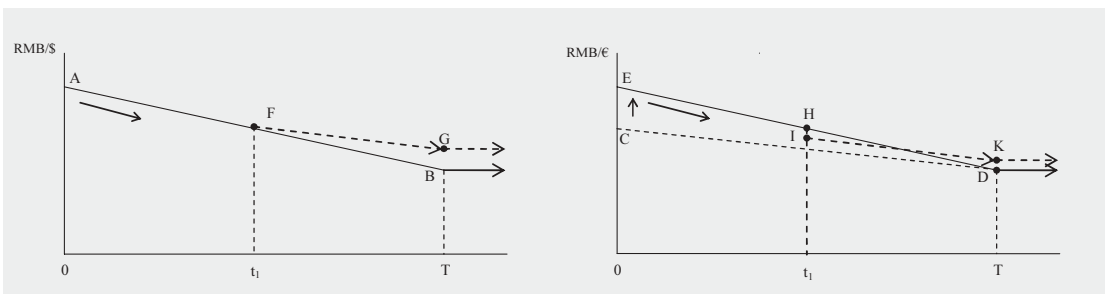


Figure 5. Exchange Rates



Chapter 5

THE US CURRENT ACCOUNT DEFICIT
AND ECONOMIC DEVELOPMENT:
COLLATERAL FOR A TOTAL RETURN SWAP

The US Current Account Deficit and Economic Development: Collateral for a Total Return Swap*

In this Chapter we argue that a chronic US current account deficit is an integral and sustainable feature of a successful international monetary system. The US deficit supplies international collateral to the periphery. International collateral in turn supports two-way trade in financial assets that liberates capital formation in poor countries from inefficient domestic financial markets. The implicit international contract is analogous to a total return swap in domestic financial markets. Using market-determined collateral arrangements from these transactions we compute the collateral requirements consistent with recent foreign direct investment in China. The data are remarkably consistent with such calculations. The analysis helps explain why net capital flows from poor to rich countries and recent evidence that net outflows of capital are associated with relatively high growth rates in emerging markets. It also clarifies the role of the reserve currency in the system.

In previous Chapters we have argued that a revived Bretton Woods system provides an explanation for periphery governments' willingness to finance the US current account deficit. However, we have not argued that a chronic current account deficit for the center country is a logical consequence of the system. In this Chapter we extend the analysis and provide a strong link between a successful international monetary system and net flows of savings from periphery (poor) countries to center (rich) countries, that is, for current account deficits for the center and current account surpluses for the periphery. The link is provided by a new approach to the role of collateral in the international monetary system. The collateral approach to international capital flows ties together literatures on sovereign debt default, development strategies and the international monetary system.

The lack of collateral or the means to collect it has long been recognized as the fundamental distinction between domestic and international debt markets. Models of sovereign debt are based on some enforcement mechanism that is "almost as good" as seizing collateral. The mechanisms include limiting future gains from trade and consumption smoothing or the disruption of output while debt contracts are renegotiated.²⁶ Each of these is equivalent to some immediate forfeiture of collateral triggered by nonpayment of debt. The relatively small value of these collateral equivalents is often assumed to limit net capital flows to poor countries as compared to flows warranted by expected return differentials. Capital formation in poor countries is constrained and economic development delayed.

More recent work on the role of reserves in the international monetary system has emphasized the role of domestic and international collateral during financial crises.²⁷ The basic idea here is that international credit is limited by a quite different measure of collateral,

* We originally published this paper and distributed it to clients as "The US Current Account Deficit: Collateral for a Total Return Swap," Deutsche Bank Global Markets Research, August, 2004. The extended version that we include here was published as "The US Current Account Deficit and Economic Development", NBER Working Paper w10727, September 2004.

26. Eaton and Gersovitz (1981), Bulow and Rogoff (1989), Dooley (2000a).

27. Caballero and Krishnamurthy (2001), Feldstein (1999).

namely, the expected proceeds of future sales of traded goods. Residents of the debtor country can trade this international collateral among themselves as long as domestic collateral is adequate to support such lending. An intriguing result of these models is that accumulation of international reserves by the government does not, in general, increase the real international collateral available to a debtor country and can actually reduce the incentives for private holdings of uncommitted collateral.

In this paper we explore the implications of a new concept and role for collateral in the international monetary system. We assume that international collateral is restricted to the equivalent value of cumulated net goods and services *already delivered to a foreign counterparty*. Already delivered goods are collateral if the official sector in the “center country” holding the goods is willing and able to default on or freeze the net financial liabilities to foreigners who have posted the collateral.²⁸ *An important implication of this definition is that the government and the private sector of a country cannot borrow from private nonresidents in order to accumulate collateral.*²⁹ *The empirical counterpart to our definition of international collateral is net international reserve position of the country posting collateral.*³⁰

We assume that poor countries need collateral to support balanced trade in financial assets with the rest of the world. This assumption reflects the almost universal requirement in domestic credit markets that less credit worthy (poor) counterparties must post collateral with more credit worthy (rich) counterparties to cover potential and actual losses on leveraged positions.

Our model provides a rationale for net savings flows from poor to rich countries (to build collateral) and the recent empirical evidence that such flows are associated with more rapid growth in the poor countries. More rapid growth in our framework is the result of the export of gross savings from distorted domestic credit markets that is then returned to the poor country in more efficient channels of financial intermediation, usually in the form of direct investment. In this respect our framework is similar to Obstfeld (1994). In that model growth results from two-way trade in financial assets that allow relatively high risk and high return investment in poor countries. As argued in that paper, such effects can be a very powerful source of growth. The same mechanism would support our conclusions, although the poor country in our framework has to do more than open its borders to foreign investment, it has also to provide collateral for that foreign investment.

28. The center country does not have to distribute the collateral to private creditors; it is enough that the center country is willing and able to keep the goods already delivered by defaulting on its net liabilities. Of course the center country must be expected to do so only in reaction to a default in the periphery. The system is more efficient if the private creditors expect to be compensated by the center government. It may also be more efficient if the center government can freeze its own liabilities to the foreign government, that is, its international reserve liabilities.

29. We are not aware of other analyses based on this assumption. The existing literature on the demand for international reserves and the role of reserves in preventing crises implicitly assumes that the country is a net debtor (Dooley, 2002). It follows that reserve holding can only affect the liquidity of the government's financial balance sheet. Under some circumstances this can have real effects but, as emphasized by Caballero and Krishnamurthy (2001), the baseline Ricardian result would be that the level of reserves would not affect the equilibrium. Credits from other governments and international organizations might in some circumstances be equivalent to “goods already delivered” and therefore provide collateral in addition to current account surpluses.

30. A less obvious source of collateral would include credit lines to the poor country from other rich governments and international institutions See Dooley (2000b) for an empirical interpretation of financial crises as seizures of collateral.

A striking implication of our argument is that the center or reserve currency country in the system is the country most likely to freeze or otherwise default on its own or its residents' net liabilities to poor countries in reaction to a default in the periphery. Private investors in rich countries have strong incentives to pool the collateral in a center country that has a reliable judicial system and a history of willingness to freeze foreign assets. In the current system the United States seems to us the likely candidate. The US cannot accept the collateral unless it runs a current account deficit. It follows that a structural current account deficit for the United States is an important feature of the system in which large, poor countries are anxious to develop rapidly.

Gross Capital Flows and Growth

The underlying political economy that motivates periphery governments is set out in Dooley, Folkerts-Landau and Garber (2004). The development strategy of fixed exchange rate "trade account" countries requires rapid export growth and large inflows of direct investment in order to absorb rapidly an initial stock of underemployed labor. The primary policy tool is a real exchange rate that is undervalued by conventional measures and accumulation of international reserves. This undervaluation can be quite large depending on the initial stock of labor to be absorbed by the industrial sector.

We have argued that *if* the exchange rate policy that generates the absorption of excess labor at an optimal rate also generates a current account deficit for the center, periphery governments will finance the center's deficit through reserve accumulation rather than sacrifice their development strategy.

It might seem natural to assume that the "undervalued" exchange rate would tend to generate a trade surplus in the periphery and trade deficits in the center. But on closer inspection it is also clear that the expected rate of appreciation of the real exchange rate can be quite small because adjustment may last for decades. Since traded goods are almost as cheap today as they will be tomorrow for the center country, and almost as expensive today as they will be tomorrow in the periphery, there is no reason to believe that an absorption relative to output will be tilted to produce deficits in the center and surpluses in the periphery. Surpluses and deficits cannot be explained by inter-temporal substitution.

Put another way, the development strategy we have set out has strong predictions for patterns and magnitudes of gross international trade in goods and capital markets but, as it stands, has little to say about the pattern of current account imbalances between the center and the periphery. But it is exactly the large net imbalances that have generated the most heat in international policy debates.

In this paper we extend our basic analytical framework in a direction that provides a link between successful development strategies in the periphery and net flows of savings from the periphery to the center. In contrast to the usual assumption that capital "should" flow from capital rich countries to capital poor countries to equalize rates of return, we reach the opposite conclusion.³¹ Our framework suggests that a successful development strategy

31. This is actually more than an assumption. It is the result of the dominant academic theories on net international capital flows. A country that is going to grow rapidly should smooth out consumption by borrowing now as long as the growth is somehow locked in. This last proviso is where the feeling that the dominant model is correct goes off the tracks; if a growing country decides to party too early, the "locked-in" growth does not materialize and its debt does not repaid.

generates net capital flows from poor to rich countries. Net capital inflows to the center provide collateral to center country investors. Without this collateral the development strategy of the periphery is derailed by a lack of international financial intermediation. Indeed, stripped down to basics, this is what it means to be the “center country” or the provider of the “reserve currency”—it is simply the country that is the best depository and manager of collateral.

Gross Capital Flows and Collateral

The basic idea is that financial intermediation by the center that facilitates growth in the periphery also generates asymmetric risks for the center. Such international financial intermediation facilitates periphery growth because it channels domestic savings in the periphery through superior financial markets in the center. A simple example would be the accumulation of direct investment claims by the center matched one for one with the periphery’s accumulation of Treasury securities. Balanced gross capital flows imply a balanced current account, in this case an exchange of equity claims for low-yield fixed income claims.³²

The main point of this paper is that the accounting balance described above does not balance the economic risks faced by participants in international capital markets. We argue below that if current accounts are balanced the periphery’s development strategy generates a net exposure for direct investors that will strangle intermediation and limit growth in the periphery. To relax this constraint, *the periphery must post collateral* and, in fact, must post more collateral the more successful is its development strategy. In our view, *the only effective collateral available to facilitate international intermediation is a net export of goods and services from less creditworthy countries*. It follows in the current environment that the US must be willing to run a current account deficit in order to fulfill its role as the center country in the system.

The Swap Analogy

We find it useful to compare the implicit economic contract between the center and the periphery to a standard derivative contract: a total return swap. A total return swap is a promise by one party to pay the total return (capital gains plus dividends) on the notional amount of an asset such as an equity or equity index for some future interval in exchange for receipt of fixed income on notional principle over the same interval. In a typical private contract, a floating reference interest rate is set by the market at LIBOR adjusted by 20-30 basis points so that the contract initially has about zero market value.³³ The interesting aspect of such contracts for our argument is that the less creditworthy party to the contract is required to post collateral for actual and potential mark to market losses. Failure to provide the collateral terminates the contract, effectively a cancellation of principal on both sides and a taking of collateral to cover at least the current market value.

32. See Garber (1998) for a discussion of the role of derivatives in risk sharing associated with net capital flows.

33. Suppose for example, that an AA bank agrees to pay the total return on \$100 million notional value of a corporate share and will receive Libor plus. It can hedge this by borrowing \$100 million at Libor and buying \$100 million of the corporate shares. This is why the swap starts at zero market value. In practice, there will be some markup on the Libor it receives to provide for its costs, risks, and a profit margin.

The application of this contractual arrangement to the international monetary system is straightforward. The periphery promises to pay the US the total return on US direct equity investment in the periphery. The US promises to pay a fixed interest rate on reserve assets. An important difference between a private total return swap and the international contract is that most of the time in the latter there is no direct contact between the counterparties. It is only in a default situation that the two governments would consolidate their national claims and then net liabilities against claims. But conceptually, the creditworthy (center) country should demand collateral from the less creditworthy (periphery) country on a mark to market basis. Since international default is a fairly common event, private investors have to consider the value of their claims in the event that all foreign gross claims and liabilities are nationalized and they are paid a part of the net result. Clearly, the more negative the net investment position of the US the better is the value of gross claims on the periphery and the more willing would investors be to acquire such claims.

How Much Collateral and in What Form?

There are two additional complications. First, what is the mark to market value of the international contract? Second, how does the periphery post collateral? For the implicit international contract, we have shown elsewhere that there is a subsidy element to the foreign direct investor on initiation of the contract. That is, effectively, the equity leg of the deal is provided at below market value; so the swap starts already in the money. Also, the interest rate on the fixed income leg is determined by the risk free treasury rate. It follows that the initial expected present value of the contract is positive for the US and negative for the periphery. For simplicity, it is not a stretch to assume that the “original sin” of the periphery is that it is born being a credit risk and that the entire expected present value of the swap will have to be matched by collateral, as well as some additional coverage for future valuation risk.

In typical total return swaps, collateral is determined by multiplying potential volatility of the underlying asset over the next ten days by a factor dependent on the credit risk of the counterparty. For example, a more creditworthy counterparty might pay 15% collateral on an asset-based swap whose underlying 10-day volatility is 10%, while a lesser credit might have to deliver 30%. An additional factor might be added to cover foreign exchange risk and country risk for foreign or emerging market underlying assets. Some examples of the range of collateral actually required are: for a total return swap on a highly liquid US equity, a hedge fund (less creditworthy) would be asked for 15%, for the S+P index 10% collateral would be required, for Gazprom in Russia 50% initial margin would be required. Swaps in listed China equities draw a similar haircut.

But this is only the initial collateral required for new investment. If, as seems likely, the total return on direct investment exceeds the return on the fixed interest leg, one hundred per cent of the mark to market gain on private contracts must be collateralized every day. The implication is that, in addition to the collateral required for the new flow of direct investment, the mark to market gain on the stock of direct investment requires additional variation margin.

Collateral and Growth

The mechanical but important implication is that a successful development strategy—where investment pays off with large returns—generates capital gains on direct investment and therefore rapid growth of collateral balances. Recent empirical research suggests that rapid growth in emerging markets is correlated with net lending from those successful economies to the rest of the world. Aizenmann et al. (2004) conclude:

There is no evidence of any growth bonus associated with increasing the financing share of foreign savings. In fact, the evidence suggests the opposite: throughout the 1990s, countries with higher self-financing ratios grew significantly faster than countries with low self-financing ratios. This result persists even after controlling growth for the quality of institutions.³⁴

This empirical result is clearly at odds with the conventional wisdom that net capital inflows to emerging markets are necessary to augment domestic savings and promote rapid growth of the domestic capital stock. The evidence is, however, consistent with our analysis. In effect, net capital outflows are required to support efficient domestic capital formation. What is really at stake in economic development is the quality rather than the quantity of domestic investment.

Table 1. Direct Investment and Collateral, USDbn

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003
Direct Investment	3	11	34	66	99	137	179	220	257	295	332	379	426
50% Collateral Initial Contract	2	4	12	16	17	19	21	21	18	19	19	23	23
100% Collateral Capital Gain	0	1	3	7	10	14	18	22	26	29	33	38	43
Total Stock Collateral	2	7	22	44	71	104	142	185	229	277	329	391	457
Stock of Reserve Assets	22	21	22	53	75	107	143	149	158	168	216	291	408
Cumulated Current Account	13	20	8	15	17	24	61	92	113	134	151	187	233
Private Claims on Nonresidents	1	30	59	82	116	154	219	278	326	385	390	399	397

Source: IIF

We can get a feel for the economic importance of these effects by estimating what collateral would be required by private investors for direct investment in China. Table 1 applies the general concepts developed above to recent data for China. The first row of the table shows annual data for the cumulated flow of foreign direct investment into China from 1991 – 2003. At the end of 2003 the book value of the stock of direct investment was about \$426 billion.

34. Joshua Aizenman, Brian Pinto, and Artur Radziwill, (2004). Similar econometric results are reported in Gourinchas and Jeanne, (2003).

Row 2 shows the new initial collateral that would be required for the flow of direct investment in each year assuming that the aggregate implicit contract carries the 50% collateral required for private total return swaps with China. Row 3 shows the new variation margin required each year for the net capital gain on the stock of direct investment. This assumes that there is 100% collateral required against mark to market gains and that net capital gains each year equal 10% of the book value of direct investment. The implied cumulated stock of collateral is shown in row 4. In 2003 the stock of collateral would be about \$457 billion, an amount slightly larger than the book value of direct investment because of capital gains.

The stock of international reserves is shown in row 5. In 2003 the stock was about \$408 billion, clearly the right order of magnitude if we interpret the government's reserve assets as the primary measure of collateral.

Rows 6 and 7 round out the balance of payments identity. Row 6 shows the cumulated current account surplus over the period. The cumulated balance from 1991-2003 was about \$233 billion, suggesting that net trade in goods and services accounted for about half of the collateral accumulated. Net credits from bilaterals and multilateral institutions and small net inflows from banks account for the remaining net inflows. We assume that such credits require no collateral or less collateral as compared to direct investment.

Direct investment inflows are matched by private capital outflows from China. The cumulative stock of private Chinese claims on nonresidents, \$397 billion in 2003, is shown in row 7. The interesting conclusion is that private direct investment in China has been roughly matched by private Chinese investments in the rest of the world. These are analogous to the two matched legs in a total return swap. We do not know much about the nature of these outflows since they are largely unrecorded in official statistics. The social collateral needed to support this international financial intermediation has been concentrated by accumulation of reserve assets.

Delivering goods and services up front is a crude form of collateral. But there is no credible alternative. Market participants individually could pledge financial assets in the center country, but the only way that the aggregate of the periphery can acquire assets in the US is to run a current account surplus. In an important sense, the goods and services already delivered to the US support the stock of US claims on the periphery; it is the collateral that powers the entire development strategy.

The nature of the social collateral is so obvious it is hard to see. If the center cannot seize goods or assets *after* a default, it has to import the goods and services *before* the default and create a net liability. If the periphery then defaults on its half of the implicit contract, the center can simply default on its gross liability and keep the collateral. *The periphery's current account surplus provides the collateral to support the financial intermediation that is at the heart of Asian development strategies.* The interest paid on the net position is nothing more than the usual risk free interest paid on collateral.

Conclusions

The collateral approach to international capital flows ties together literatures on sovereign debt default, development strategies and the international monetary system. The mechanism of modern large scale development is straightforward. Rapid industrialization in the periphery requires a large inflow of direct investment; and, in turn, a large current account deficit for the center is required to provide the collateral.

Contrary to almost universal opinion, successful economic development is powered by net savings flows from poor to rich countries. The current account imbalances of the rich countries do not pull the periphery by providing global aggregate demand; they push the periphery by securing efficient capital formation. Seemingly balanced shifts within a country's capital account actually drive its current account through a need to collateralize resulting risk imbalances. The US current account deficit is an integral and sustainable result of its role as the center country in the revived Bretton Woods system.

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Chapter 6

THE REVIVED BRETTON WOODS SYSTEM: ALIVE AND WELL

The Revived Bretton Woods System: Alive and Well*

Summary

- The euro, up 50% since mid-2002, is still under inexorable upward pressure.
- The dollar, down 15% overall but only 4% against Asia, remains the dominant reserve currency.
- No large adjustments in US nominal or real interest rates, spreads, or current account deficits have occurred. Rates and spreads have actually declined while the deficit continues to widen.
- Japan is in the wings ready to resume intervention.
- Reserve diversification? No evidence and no incentive.
- Likely development is that the force of gravity pulls Europe into the managed rate system.

Introduction

Eighteen months ago, we forecast that the euro and currencies of other capital account countries would come under massive upward pressure against the dollar and trade account country currencies, as private investors reduced the share of their portfolios placed in dollars. We also suggested that the now "brutal" deflationary consequences of this would eventually force the ECB and other capital account countries to intervene in the markets to support the dollar. At the time, we saw these events as logical implications of incentives generated by the system. We did not argue that policy makers in these countries were predisposed to help finance US deficits. Rather, they would be forced to intervene by the threat of their own continued and worsening economic stagnation.

We also forecast that trade account countries would maintain their dollar pegs or tightly managed dollar exchange rates. The required intervention would, in turn, continue to provide cheap financing for US current account deficits. We did not argue that there would be no adjustment in their exchange rates but that gradual, managed appreciation would be consistent with the development and economic recovery programs in these countries. In particular, gradual appreciation would enhance the competitive position of the Asian dollar bloc relative to rapidly appreciating floating currencies.

We guessed that the US, the center and reserve currency country, would take no policy actions. In US markets, we forecast no adjustment in the US current account position and no rise in interest rates associated with a withdrawal of foreign savings from US credit markets. For sure, US rates would rise on the short end as the Fed tightened during the US recovery,

* We published this note as "The Revived Bretton Woods System: Alive and Well", Deutsche Bank Global Markets Research, December, 2004 as a response to numerous claims at the time that the system was just about to die if not already dead.

but we did not foresee an extra push from the foreign sector. Indeed, the world's pushing of its excess savings into the US was keeping the cost of capital flat in the face of rapid growth.

Given the flurry of recent forecasts/reports of the demise of the dollar, the disappearing dollar, the last days of the dollar, in contrast with our analysis of the system, it seems the right time to evaluate our framework. This is especially timely because the relatively low yields and spreads in the generality of asset prices seem aligned with our view and not the conventional wisdom being expressed in the media.

Has the dollar crashed?

Clearly, the euro has soared, but the USD/EUR cross rate is not the value of the dollar. Since mid-2002 the euro has jumped from \$0.90 to \$1.35, a gain of about 50%. Other floating currencies have also appreciated significantly, though somewhat less. But the dollar value of foreign currencies weighted by US trade has appreciated by about 15% over this interval.

There is no doubt that pressure on the dollar has picked up since October, as the system is being tested once again, and that some Asian governments, particularly Japan, have stayed out of the market. Nevertheless, over this interval foreign exchange reserves have continued to grow, especially in Asia. More importantly, it seems likely to us that the MOF has changed strategy but not its underlying intent to manage the exchange rate through intervention. Rather than feeding speculative portfolios by leaning against the wind, the MOF may be inviting the market out on the limb so that they can saw it off with a large intervention.

China has reaffirmed its reliance on administrative controls for economic policy. They will not likely revalue soon and more generally will not cease their intervention.

An Asian dollar index that was unchanged since mid-2002 through September has appreciated since the beginning of October, but only by about 4%. There has been some mild exchange rate appreciation overall but this is hardly the collapse of the system.

Korea has moved by 10% in November, but it has also resumed very large intervention, with an increase in reserves by \$14.2 billion. Others have allowed smaller rate adjustments and have continued to manage their markets.

Have official reserves been shifted from dollars?

With a prospectively rising euro, it seemed clear to us that there was a substantial incentive for foreign governments to diversify their reserve portfolios when the Euro was at \$0.90. In fact, their *failure* to diversify their positions 18 months ago and their continued pumping of their funds into the dollar were the main reasons we came to doubt that the conventional view of the system was adequate. Reserve managers do not behave like private sector fund managers benchmarked to a risk/return calculus—they have other macro motivations. And that puts them into a high stakes tug-of-war with private sector investors that ranges back and forth across the capital account.

Surely, if they did not diversify at \$0.90, there is much less incentive at \$1.35! Buying euros now invites the embarrassing prospect of losing at the far end of the currency swing. On a more formal level, there is no one fixing the USD/EUR exchange rate. There is no analogy between the current system and the dollar/gold exchange requirement of the original Bretton Woods System. In that part of the system, the US obligation to convert the dollar into gold at a fixed price created inherent instability. But there is now no one way bet because the US is not pegging the value of the euro. In the current system, as the dollar weakens relative to the euro the dollar becomes more, not less, attractive to official and private investors.

The question then shifts to whether much diversification has actually occurred. It is misleading to argue that IMF data on the currency composition of reserves suggests that official holders have significantly sold dollars. As the USD/EUR rate changes, the share of reserves denominated in dollars falls, even if there are no sales of dollars or purchases of euros by reserve managers. This shift occurs automatically through the revaluation of euro denominated reserves. Because reserve holdings are secret, the level and shifts in the currency composition of reserves have long been rich sources of speculation in foreign exchange markets. Nevertheless, the dollar always keeps its hold on being the principal destination for official foreign exchange.

We have discussed elsewhere that diversifying reserves and maintaining a peg are possible at the cost of having to accumulate even more reserves overall. This would have the effect of pumping the same amount of official sector capital into the US as before even in the presence of an attempt at diversification. So US interest rates would be unaffected even if official sector reserve managers started to diversify. So to determine whether there has been any meaningful diversification signaling a waning interest in the dollar, the natural question is:

Has there been any financial or economic adjustment in the US at all?

No effect on long term interest rates: they are flat for the year and down since mid-2002. At end-June 2002, 10-year Treasury real rates were 3.7% on nominal notes and 3.07% on TIPS. The respective numbers in end-December 2003 were 2.35% and 1.95%. The current respective real rates are 0.97% and 1.64%. Long term real rates have fallen in the growth phase of the US cycle! Spreads have not significantly widened and equity markets are up. Where is the unwillingness to finance the ballooning US deficits? Where is the expectation that it will end soon?

Non-oil import prices are falling relative to non-agricultural export prices even in the face of significant nominal appreciation of other currencies. Trade and current account deficits are growing.

Moreover, it is very hard to find any hint of a crisis in the non-price financial data. While the official statistics show that the US is a net debtor to the tune of \$2.5 trillion, the US continues to earn more on its assets abroad than it pays on its liabilities. Net investment income earnings are positive and have actually increased in H1 2004 relative to H1 2003. In part, the official numbers are just wrong. The US has made a whopping capital gain on the dollar value of its foreign liabilities that is not captured in the statistics.

Will Europe join the managed rate system?

We viewed this as a pretty high risk forecast 18 months ago because we thought that Europe would take a lot of pain before overcoming ECB reluctance, but it now has become much more likely. Nearly every week brings new veiled threats of action from the political authorities or statements of anguish from ECB officials. These, along with reports of slowing in Japan, have somewhat reversed the sharp exchange rate movements of November. But Europe cannot afford to absorb even more deflationary pressure. When Japan and the rest of Asia resume massive sales of their currencies in the next market test of the system, the Europeans may be forced to join them in supporting the dollar and the US deficit as the euro floating regime comes to an end.

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Chapter 7

SAVINGS GLUTS, DEFICITS, AND INTEREST RATES: THE MISSING LINK TO EUROPE

Savings Gluts, Deficits, and Interest Rates: The Missing Link to Europe*

Summary

- IMF estimates of the world saving rate have increased very little in recent years. An aggregate **glut of world savings** does **not** seem a plausible reason for low international interest rates.
- Unusual and offsetting changes in savings rates have occurred in three regions: sharp declines in the US and sharp increases for developing Asia and the Middle East.
- **About half of the increase in Asian and Middle Eastern savings has been placed in international reserves.**
- So there has been a **substantial increase in the supply of internationally mobile savings** put into cross-border play via the official sector.
- Even if reserves are mostly placed initially in the US, we would not expect all the savings exported from these high savings regions to remain in the United States, contrary to what we see.
- The only explanation that fits these developments is that the **expected profitability of investment outside the US, particularly in Europe**, has declined dramatically.
- A rise in savings in Developing Asia and the Middle East **and a collapse of expected profits outside the US** seems to us a compelling explanation for the US current account deficit and depressed international interest rates. This is an equilibrium which is unlikely to change in the near future.

Real Interest Rates

Why is the real interest rate so low and falling in the growth phase of the US and global business cycles, even as the current account deficit reaches record levels? At end-June 2002, about when the euro appreciation began, 10-year Treasury real rates were at a realized 3.7% on nominal notes and 3.07 on TIPS. As we write they are 1.80% and 1.69%, respectively. US rates have fallen in a period when the media swirled daily with stories about foreigners losing confidence, foreign exchange reserve managers diversifying portfolios, and imminent collapse as everyone was seeking to be the first out the door. If all this is true, the bond and credit markets have not noticed.

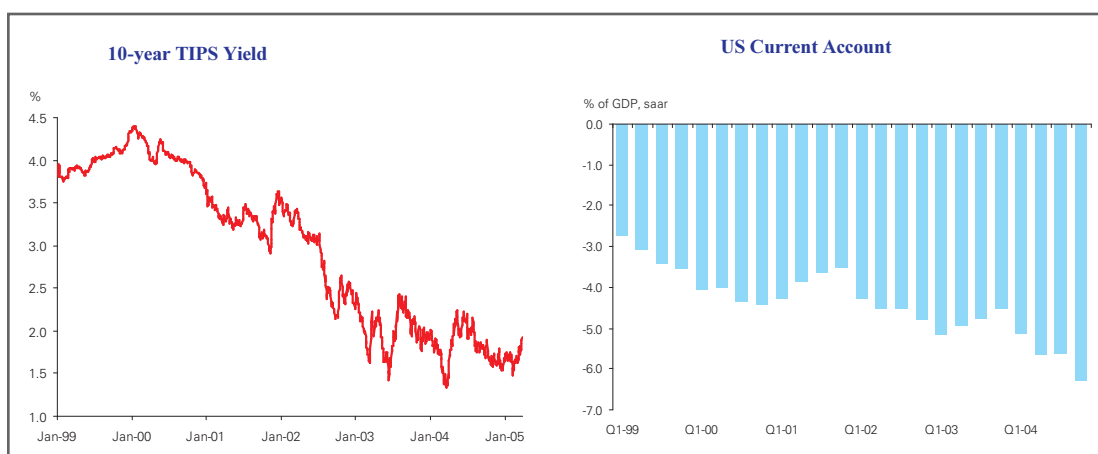
Underpinning our view of this global reality are two basic phenomena that we expect to continue into the foreseeable future. First, about fifteen years ago, hundreds of millions of

* We first published this note for clients as "Savings Gluts, deficits, and Interest Rates: The Missing Link to Europe", Deutsche Bank Global Markets Research, July 5, 2005 and for the academic audience as "Savings Gluts and Interest Rates: The Missing Link to Europe", NBER Working Paper, w11520, August 2005.

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. We might expect that an increase in the supply of labor would drive real interest rates up, but this labor came with an enormous savings rate and a dead financial system that had served them in the past as a capital destroyer, as it does to this day.

This created a profound global disequilibrium for the industrial world, equal in magnitude to the global unemployment problem of the Great Depression although quite geographically concentrated. The industrial world's economic system has to resolve this economic fundamental over the course of time by absorbing these workers. To focus today on trade imbalances when there is an enormous labor market imbalance is the same mistake that economists and policymakers made in the 1930s.

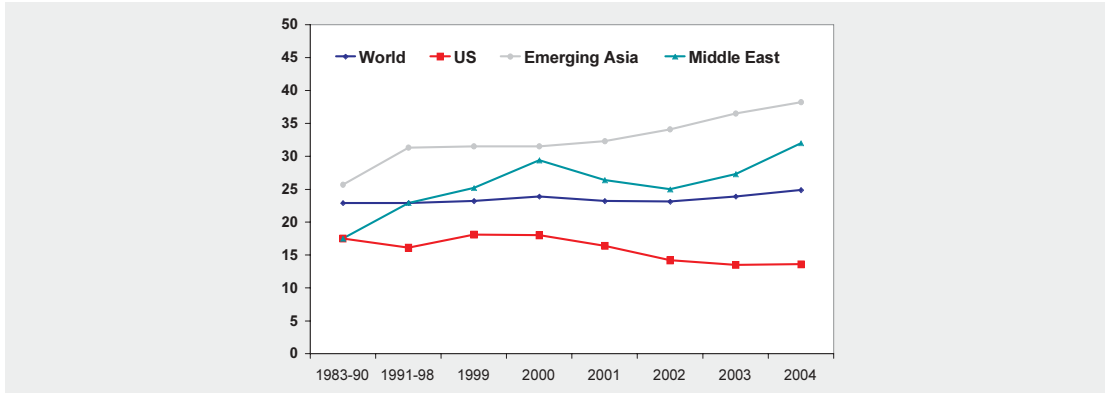
Chart 1. US Real Interest Rate and Current Account Imbalances



Source: Bloomberg, Haver.

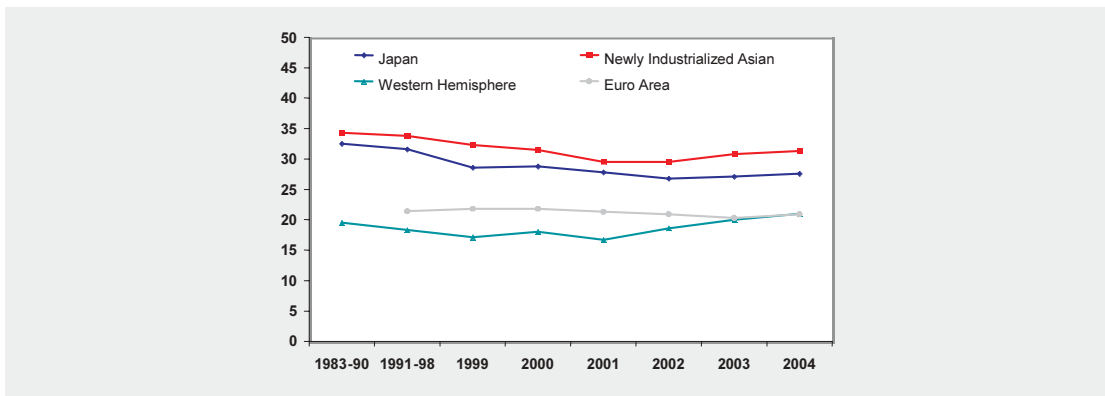
Second, the successful development strategy in developing Asia designed to absorb this stock of labor has generated rapid growth in GDP and savings in that region. As shown in Chart 2, the aggregate savings rate for the world is nearly unchanged; but regional savings rates have changed dramatically in recent years. The combination of rapid growth of countries with high savings rates, particularly China, has increased the savings rates in what the IMF calls developing Asia. Rapid growth in Asia has contributed to high oil prices and savings rates in oil producing developing countries have also increased dramatically.

Chart 2. Saving Rate as Percentage of GDP



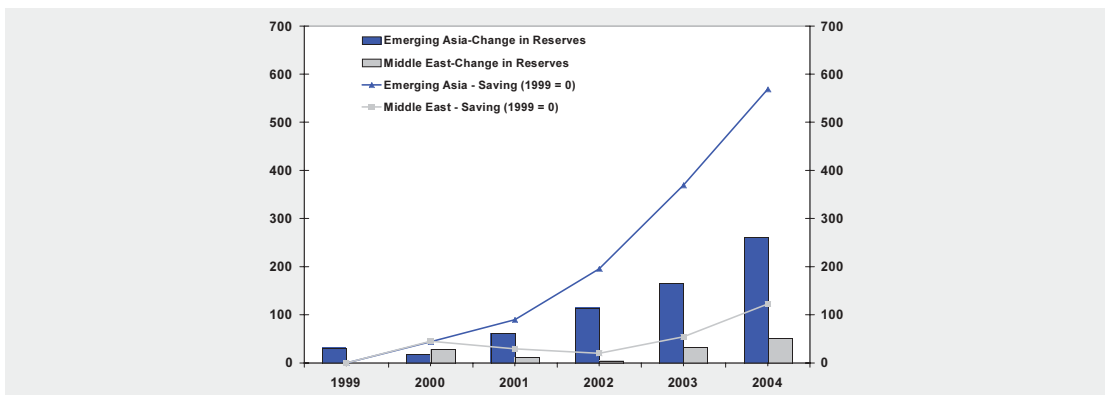
Source: IMF

Chart 3. Saving Rate as Percentage of GDP Source: IMF



Source: IMF

Chart 4. Changes in Savings and Reserves (Billions of U.S. dollars) Source: IMF



Source: IMF

There are two remarkable aspects of this increase in regional savings rates. First, almost all the increase in savings in these regions has been matched by a fall in savings rates in one country, the United States (Chart 2). Other regions including newly industrialized Asian countries, Japan, the Euro area and emerging Western Hemisphere shown in Chart 3 show no trend in savings behavior. Second, as shown in Chart 4 most of the **increase** in the dollar value of savings (relative to the *level* of savings in 1999) for the past five years in emerging Asia and the Middle-East has been placed in international reserves. There is no generalized glut of world savings. But there is a very unusual distribution of world savings across regions, and an unusual share of increased savings has been placed by governments in international markets.

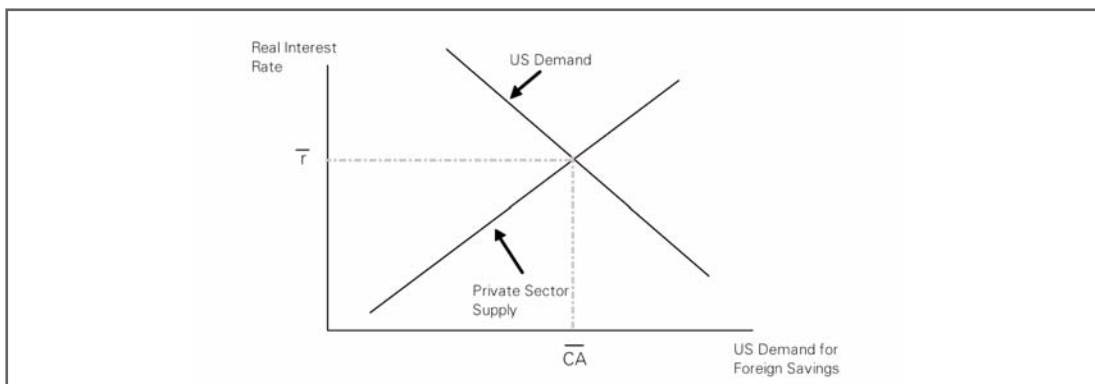
International Savings and US Interest Rates

We would not normally expect all of an increase in savings in one region to end up in the US even if incremental savings were all invested in international reserves and all the reserves were initially invested in the United States. As we point out below, this would tend to depress US interest rates; and these added capital inflows should then be reallocated via the global financial system across other higher return industrial and emerging markets.

For now, to explain what has happened to US interest rates, we assume this does not happen. In the next section, we try to understand why it has not happened.

We like to think about this US-centric problem in a simple loanable funds flow framework. After netting US public and private investment demand from US savings, the US has a demand for savings from the rest of the world that is downward sloping vs. the real interest rate, as in Chart 5. The lower the real interest rate that it faces, the less the US wants to save and the more it wants to invest. If there are many profitable investment projects at the margin a change in the interest rate generates a large change in the demand for international savings. Given a real interest rate, we can read off the US current account deficit. Absent a provision of savings from the foreign official sector, there is an upward sloping supply of foreign savings coming from the private sector, perhaps from asset managers looking only at Sharp ratios and benchmarks or perhaps from foreign corporates interested in return on capital. The higher the real interest rate available in the US, the more foreign savings flow in.

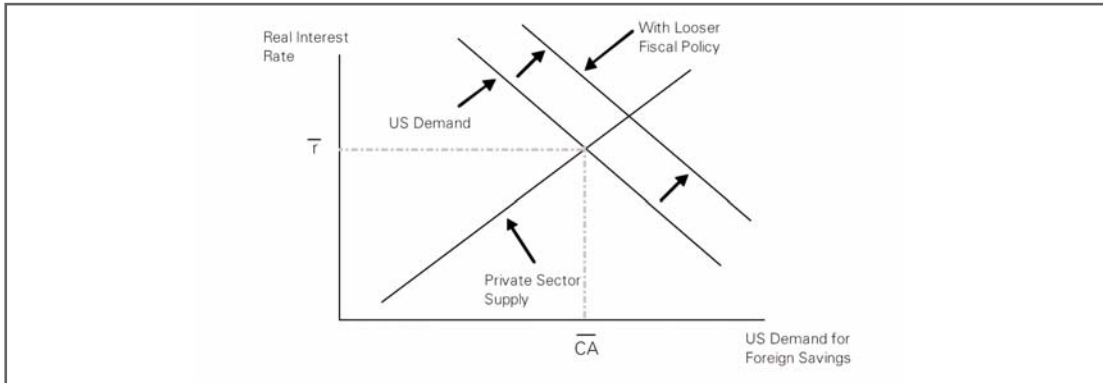
Chart 5. Equilibrium current account and real rate, private supply



The cross of these two curves determines the US real interest rate, the US current account deficit, and the rest of the world's surplus.

A looser fiscal policy might shift the demand for foreign savings upward as in Chart 6. This would bring in more foreign savings 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.

Chart 6. Looser fiscal policy raises real rate and CA deficit

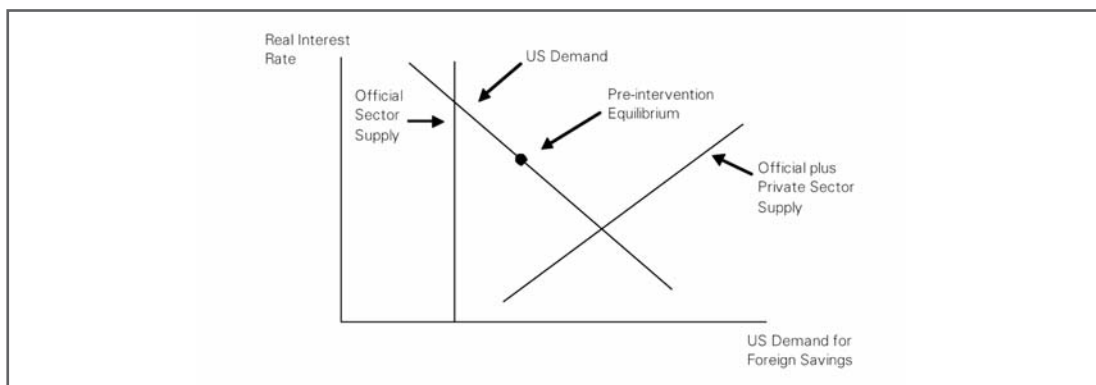


Maybe some of this is going on, but it is clearly not dominant. Since 2002, marketable Treasury debt has increased by about one third while nominal and real interest rates have declined. Moreover, relative to other industrial countries the US budget deficit is not unusually large; and it is hard to see that this factor alone would increase the US current account deficit relative to other industrial countries, especially given the much more rapid real and nominal GDP growth rate in the US.

Performance Comparisons: Euroland, US, Japan, 2004

Instead, consider Chart 7 where we add a vertical foreign official sector supply curve positioned by statesmen who have objectives different from a narrow risk-return calculus localized to this small portion of their national savings. Their development goals require the export of home country savings, and they will accept whatever interest rate the market determines. Adding this new public sector supply of foreign savings to the private sector supply horizontally shifts overall supply rightward and brings down the interest rate that clears this global market for savings.

Chart 7. Push in from official sector lowers real rate, raises CA deficit



So, if we see that the real interest rate falls with a rising current account deficit, it can only mean official capital is being pushed into the US and private capital is being pushed out, but by smaller amounts than the official capital coming in. Overall, capital is not being pulled in by US demand shifts. This is the combination of facts that shows us that the US is passive, and the foreign official sector is the active player in global imbalances.

The typical denunciation of US “profligacy” is rhetoric that is worse than useless: it is misleading. Usually, this rhetoric includes a reference to the role of the US fiscal deficit in reducing net US savings, but that should increase the interest rate. Whatever the size of this effect, it has clearly been more than overcome by the effects of official capital pushing in.

We often hear that private saving flows to the US are falling because of increased risks, stemming perhaps from the worsening international investment position. This would show up as a shifting upward and to the left of the private supply curve in Charts 5, 6, and 7, and put further upward pressure on real interest rates, 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 it is added to the public sector supply. For sure, private savings are financing far less of the US current account deficit than, say, five years ago. But this is because they are being driven out by official sector flows willing to replace them at much lower rates.

One should beware of making too much of rising or falling fractions of official sector finance in any given quarter or year. A steadily growing official sector inflow year-in and year-out to the US is not necessary to maintain the system. Official inflows are necessary only when interventions are required to keep the exchange rate 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 can alone provide the deficit financing.

So far so good. But a low real rate is a momentary flow effect that will evaporate with official sector lending to the US. If official lending were suddenly to dry up, then the picture would snap back from Chart 7 to Chart 5, and interest rates would jump. If this is what is expected, we should 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, the conundrum that we are studying now. Implicit in the real yield curve is that the equilibrium of Chart 7 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 US. Indeed, many observers doubt that foreign official interests in funding the US current account deficit are sustainable.

Why Does the US Get It All?

Why doesn't the fall in US rates described above drive Asian and oil producers savings initially placed in the US right back out of the US via the global financial system to most of the rest of the world where domestic savings rates have not changed? Put another way, we cannot explain depressed real interest rates in Europe, for example, by inflows of international savings because there have been no net savings flows to Europe. The failure of international credit markets to recycle international savings from the US is even more puzzling because falling US real interest rates are associated with large current account deficits and an increase in the US net international debt position. This is generally believed to generate a **decline in risk adjusted return on dollar assets that is even larger than the decline in real US interest rates**.

An expected appreciation of the dollar can make this add up because it increases the expected rate of return on dollar assets relative to assets denominated in euros and other floating currencies. We predicted a sharp decline of the dollar against the euro for this reason (the dollar has to fall now so that it is expected to rise over time) and this does provide a consistent story about why investors are now willing to stay in US dollar investments.

But there is an important piece that has not yet been fit into the puzzle: **to explain these flows the expected rate of return on investment in Europe and the rest of the world must be very low**. The intuition is straight forward. Capital formation in Europe and the rest of the world could be financed at low real interest rates and in currencies that relative to the dollar command a risk premium and are expected to depreciate. This is a rare triple play for firms wanting to finance any reasonable investment opportunity, yet there is no effective demand for international savings outside the United States even on these very attractive terms. The only explanation that fits the facts is that expectations for profitability of new investment outside the United States must be remarkably poor.

In terms of our simple demand and supply for loanable funds framework some of the increase in Asian and oil producers' savings must have been offered to Europe, Latin America and other regions. So far there has been no demand for these savings and asset prices have adjusted accordingly.

Can This Last?

Investment

We will turn to the outlook for Asian savings in the next section. Here we focus on the effects of an improvement in the investment climate outside the United States. Our framework suggests that this would tend to reduce the US current account deficit and raise US and

international interest rates. An increase in global demand reduces the US current account deficit relative to Europe and other regions with floating exchange rates and the need for dollar depreciation against their currencies in the long term. Moreover, expectations of smaller current account deficits in the future for the US and larger deficits for Europe and elsewhere would reduce the risk premium investors would demand for dollar assets and generate an immediate appreciation of the dollar. In a sense this would reestablish a normal response to elevated savings in Asia and the Middle East. That is, excess savings in one region would be spread around the world and relative current account imbalances and exchange rates in the rest of the world would be little changed.

If the improved investment climate was associated with a relaxation of monetary policy outside the US this would also tend to support dollar exchange rates as favorable changes in expected current account positions are reinforced by initial declines in interest rates outside the US. The logic of a more accommodating monetary policies outside the US seem compelling, but we are not at all confident that they will be forthcoming in the near future.

Savings

Will Asian developing countries and oil producers continue to experience high savings rates and to make these savings internationally mobile through reserve accumulation? For oil producers it seems very likely that reserve accumulations will be reversed if oil prices stabilize or fall. In the past these countries have increased investment and decreased domestic savings reasonable quickly following episodes of high oil prices and reserve accumulation. But for developing Asia, particularly China, we have to better understand the strategy chosen to solve development and unemployment problems.

The problem for China is to mobilize its existing enormous domestic savings 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 these savings into productive capital, of proper 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 goods produced. This avoids falling off the cliff of another "Great Leap Forward." To get export markets open, a part of the policy has been to offer a large incentive to potential foreign and domestic industrial exporters 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 gradual revaluation of the nominal exchange rate or a slightly higher rate of inflation as compared to trading partners. For example, a 3-5 per cent revaluation of the renmimbi later this year and the adoption of a carefully controlled float would not signal the end or even a material change in the development strategy we have described.³⁵ Nominal price and wage levels would then rise less rapidly, leaving the path of real wages essentially unchanged.

35. In "A Map to the Revived Bretton Woods End Game," Deutsche Bank Global Research, June 2004, 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.

An initially low but rising currency also helps control the rate of migration from the countryside to urban areas by keeping the relative price of domestic agricultural output high. The typical problem in emerging markets is to avoid offering too high an industrial wage while still inducing resource transfers to industry and restraining migration out of the countryside to a rate consistent with capital formation in the industrial sector.

But why does the need for international financial intermediation (two way trade in financial assets) create savings-investment imbalances and the flood of net capital exports? 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.

In general, the successful emerging market economies have not needed net foreign savings inflows; such inflows are generally small and unreliable relative to domestic savings. In fact, recent academic research suggests that developing countries that do not borrow net from abroad have grown more rapidly than those that do borrow.³⁶ Nevertheless, we would have to agree that other things equal even a small addition of net foreign savings should contribute to investment and growth in poor countries. A positive argument in favor of net exports of savings requires that some other important ingredient to growth is not equal.

Our view is that net exports of domestic savings are necessary for efficient international intermediation of domestic savings. Asian emerging markets do not need net foreign savings 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 rapid development of domestic credit markets. That is, residents of these countries can avoid domestic markets by placing some of their assets off shore. These savings will return if international investors are protected from political risk, especially when private capital is flowing to and from a geopolitically problematic country in large amounts. The government can effect a relaxation of this 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 to private international financial intermediation against various geopolitical risks. In effect, the emerging country'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. Placing goods on net in the rest of the world means a current account surplus.

It seems to us unlikely that China will abandon the strategy that has worked so well in recent years. Moreover, other emerging markets have noticed that export led growth and reserve accumulation has worked while borrowing to grow has not. The recent accumulation of reserves in Latin America in resisting exchange rate appreciation can be understood as an attempt to imitate Asia's success. The very open capital markets in Latin America will make it difficult to control the real exchange rate but there is nothing to stop governments in emerging markets from strengthening their own balance sheets.

36. Joshua Aizenman, Brian Pinto, and Artur Radziwill, "Sources for Financing Domestic Capital - is Foreign Saving a Viable Option for Developing Countries?" NBER Working Paper 10624, July 2004.

Other Asia and Japan

A reasonable objection to the argument set out above is that it does not fit the more developed countries in Asia, especially Japan, that have been among the most eager buyers of US 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, in Japan it is the result of a very long cyclical downturn. 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 have been able to sterilize very large reserve accumulations. In deflationary Asian countries, notably Japan, it is difficult to understand why there is 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, while 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 this is still not in sight for Japan, and would not, in any case, be the appropriate monetary policy.

The lessons of attacks on fixed exchange, weak currency countries seem to be the ones being applied by the global private financial sector here. For such countries, there is a limit on reserves or credit or the amount of pain they are willing to put the economy through, so more attacks against such currencies are 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 ratchet up the pain in Japan. Yet quite the opposite is true in deflationary Japan. Japan has ceased its massive intervention since Q1 2004, and the yen has depreciated somewhat against the dollar. Our expectation is that the authorities will return to the market if private flows to the US again decline and the yen again appreciates, all the more so if it is tested in another attack.

In China, financial repression has allowed authorities to place domestic assets generated by sterilization without much increasing domestic interest rates and has been very successful in containing inflation. The PBOC currently places domestic currency 3-year debt in the banks at a rate of about 3% and is experiencing positive carry on its foreign exchange. Other emerging markets 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 have looked at the experiences of countries that have had persistent current account deficits and reserve accumulation since 1970 and our preliminary assessment is that such countries have not lost control of their domestic price level or been forced to revalue by speculative attacks. We will report these findings in more detail in the near future.

Conclusions

We see today's structure of current account balances and real interest rates as an equilibrium generated by unusual supply of international mobile savings from Asia and some oil exporters, strong investment opportunities in the United States and very weak investment opportunities elsewhere. The supply of mobile savings will probably shrink over time as oil producers adjust to their new wealth. But Asian and other emerging markets are very likely to continue to save and to place their savings in international markets. Substantial increases in international interest rates and a more even distribution of current account deficits across industrial countries will require a strong recovery of investment demand outside the US. At the moment we see little evidence that this is in the cards.

Chapter 8

HOW DO EPISODES OF RESERVE ACCUMULATION END?

How Do Episodes of Reserve Accumulation End?*

This and the following chapter are taken from a paper made up of three notes written by Michael Dooley and Peter Garber for the Brookings Panel in March 2005.³⁷ The introduction to this chapter is the introduction to the original paper and refers to three notes. Most of the content of the first note is discussed in Chapter 7, so only the final two notes are presented in Chapters 8 and 9 of this book.

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 1958.³⁸ 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

* We are grateful to Daniel Riera-Crichton for his able and diligent research assistance in producing the empirical results of this paper.

37. Michael Dooley and Peter Garber, “Is it 1958 or 1968? Three Notes on the Longevity of the revived Bretton Woods System”, BPEA 1:2005, pp. 147-209.

38. 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.

than characterize the situation with geopolitically charged rhetoric like “balance of financial terror;”³⁹ 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.

39. Summers (2004a, 2004b).

How Do Episodes of Reserve Accumulation End?

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.⁴⁰ 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.⁴¹ 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.

40. Dooley, Folkerts-Landau, and Garber (2003).

41. 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 (capitalaccount) countries. Smaller net capital flows meant smaller net current account flows, which would be accomplished through a weaker dollar.

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.⁴²

The theoretical symmetry between speculative attacks on undervalued currencies and those on overvalued currencies is well known.⁴³ 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

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

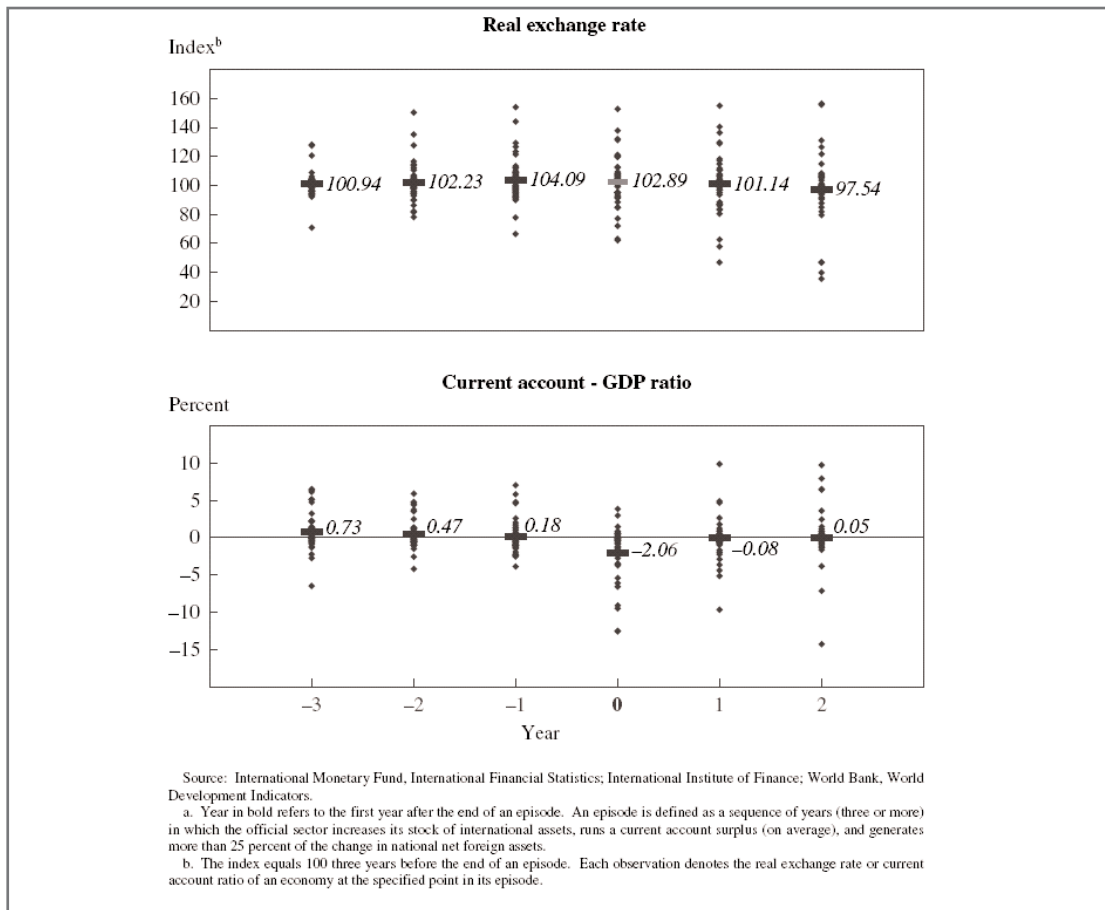
43. Grilli (1986).

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 than 25 per cent 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 C.

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 per cent of GDP in year $t-3$, 0.47 per cent in $t-2$, and 0.18 per cent in $t-1$, the final year of net reserve accumulation.

Figure 5. Real Exchange Rate and Current Account Balances during and after an Episode.



In $t - 0$, the first year following the sequence of reserve accumulation, the current account surplus declines by an average of 2.06 per cent 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 per cent. 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 *depreciates* in real terms in the following year by 1.2 per cent,⁴⁴ and the depreciation continues for two more years. The real exchange rate ends more than 3 per cent below its level five years earlier, and the government enjoys a substantial capital *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 renmimbi 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 renmimbi to appreciate now only to depreciate sharply later.

44. 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.

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 per cent of the global total and acquired 60 per cent 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.

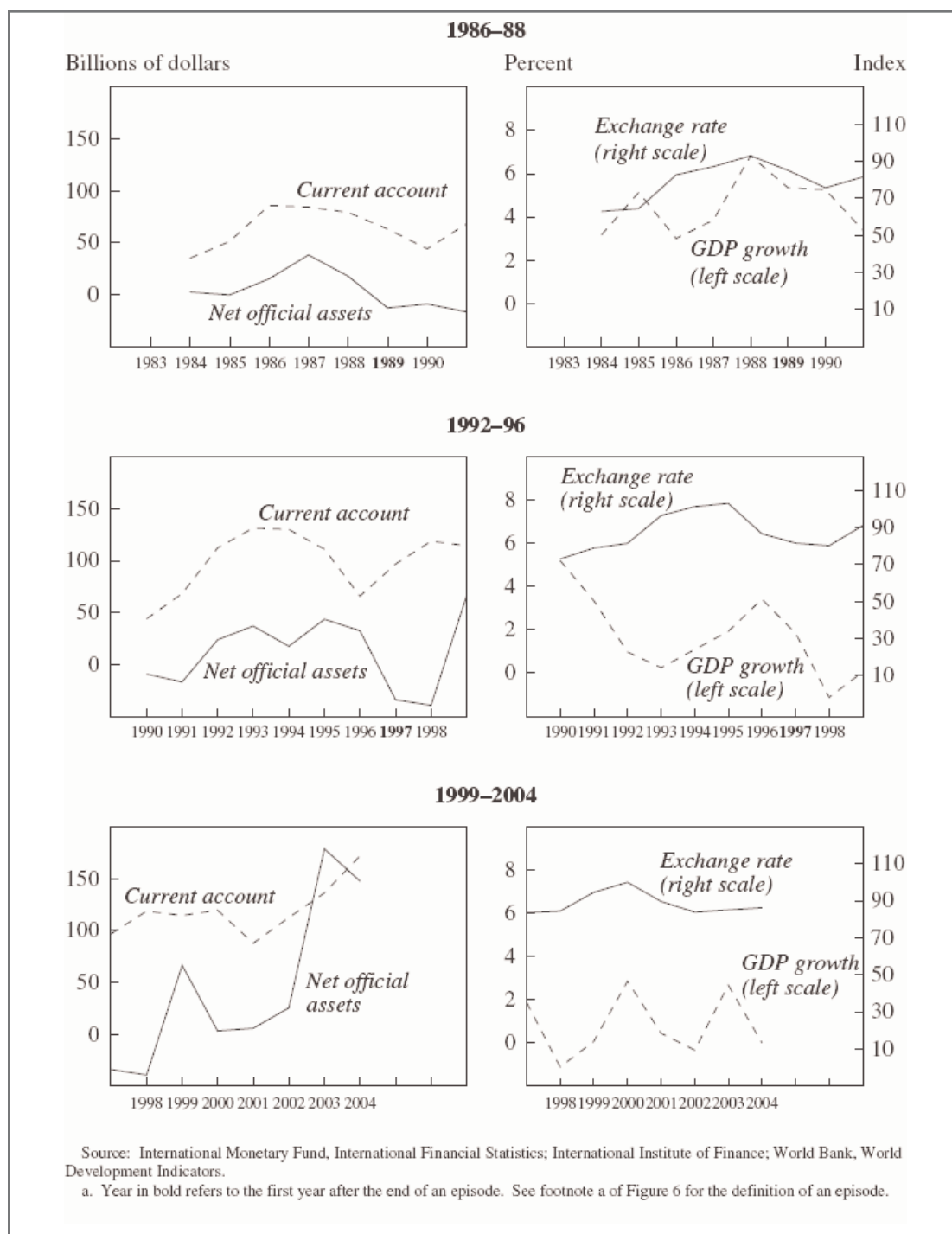
It seems particularly relevant, in evaluating how the current episode of reserve accumulation might end, to look at the previous experiences of these seven economies. In this section we review the recent experience of the “big three.” For each we present charts comparing, for each reserve accumulation 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 B 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 per cent of the current account surplus during the period of reserve growth, and in the second about 26 per cent.

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.

Figure 6. Japan: Current Account Balance, Net Official Assets, Exchange Rates, and GDP Growth in Three Episodes

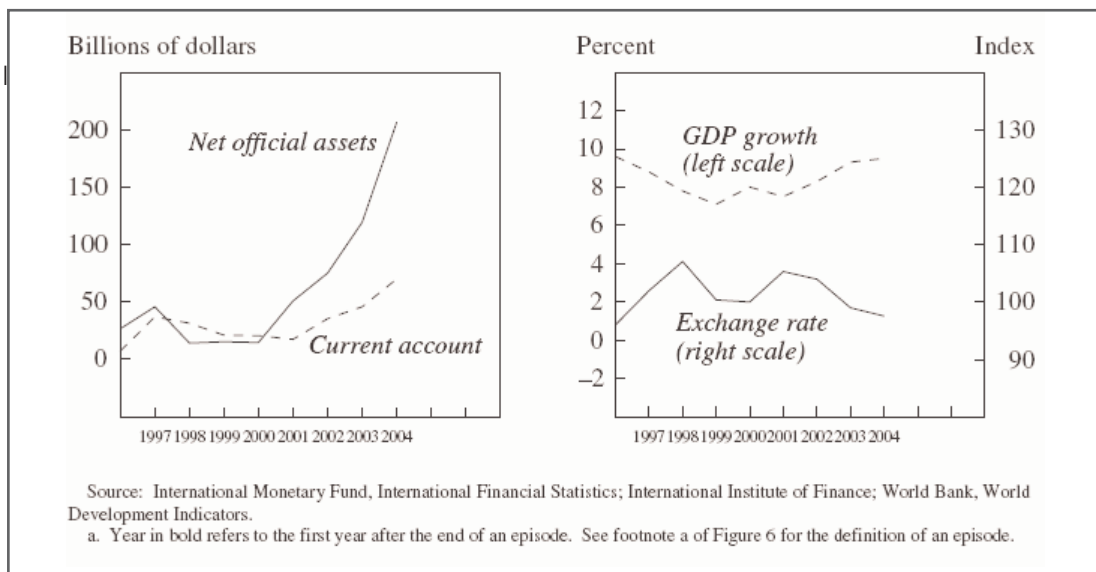


During the recent episode both the real exchange rate and the growth rate have departed from the norm. Growth increased in the first year of the recent episode, and the real effective exchange rate rose as would be expected, but growth collapsed in 2001 and 2002, and the real exchange rate fell. Since 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.

Figure 7. China: Current Account Balance, Net Official Assets, Exchange Rates, and GDP Growth in Three Episodes

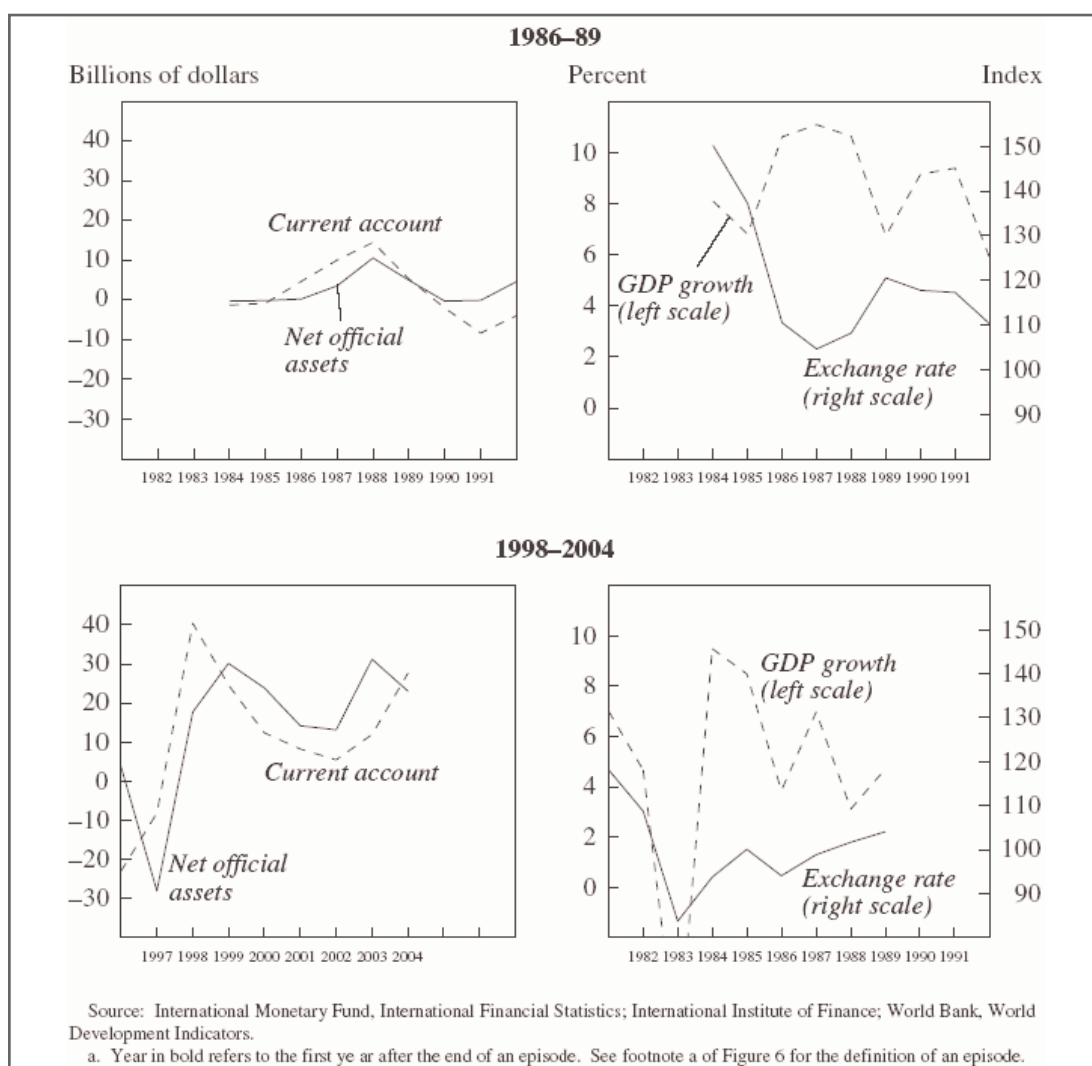


Nor, as the right-hand panel shows, have we yet seen any of the predicted precursors of a successful speculative attack. The real exchange rate fell until 1999, when the nominal rate was fixed. Since then the rate has moved with the dollar, falling by about 4 per cent from 1999 through 2003. Recall that 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.

Figure 8. Korea: Current Account Balance, Net Official Assets, Exchange Rates, and GDP Growth in Three Episodes



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.⁴⁵ 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.

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

45. 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).

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.

APPENDIX A

Data Sources and Methodological Notes

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.

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

Current account data were obtained from the International Financial Statistics (IFS) of the International Monetary Fund and from the International Institute of Finance (IIF) data set. 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

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.

Real Effective Exchange Rates

The commonly used definition of the real effective exchange rate is

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

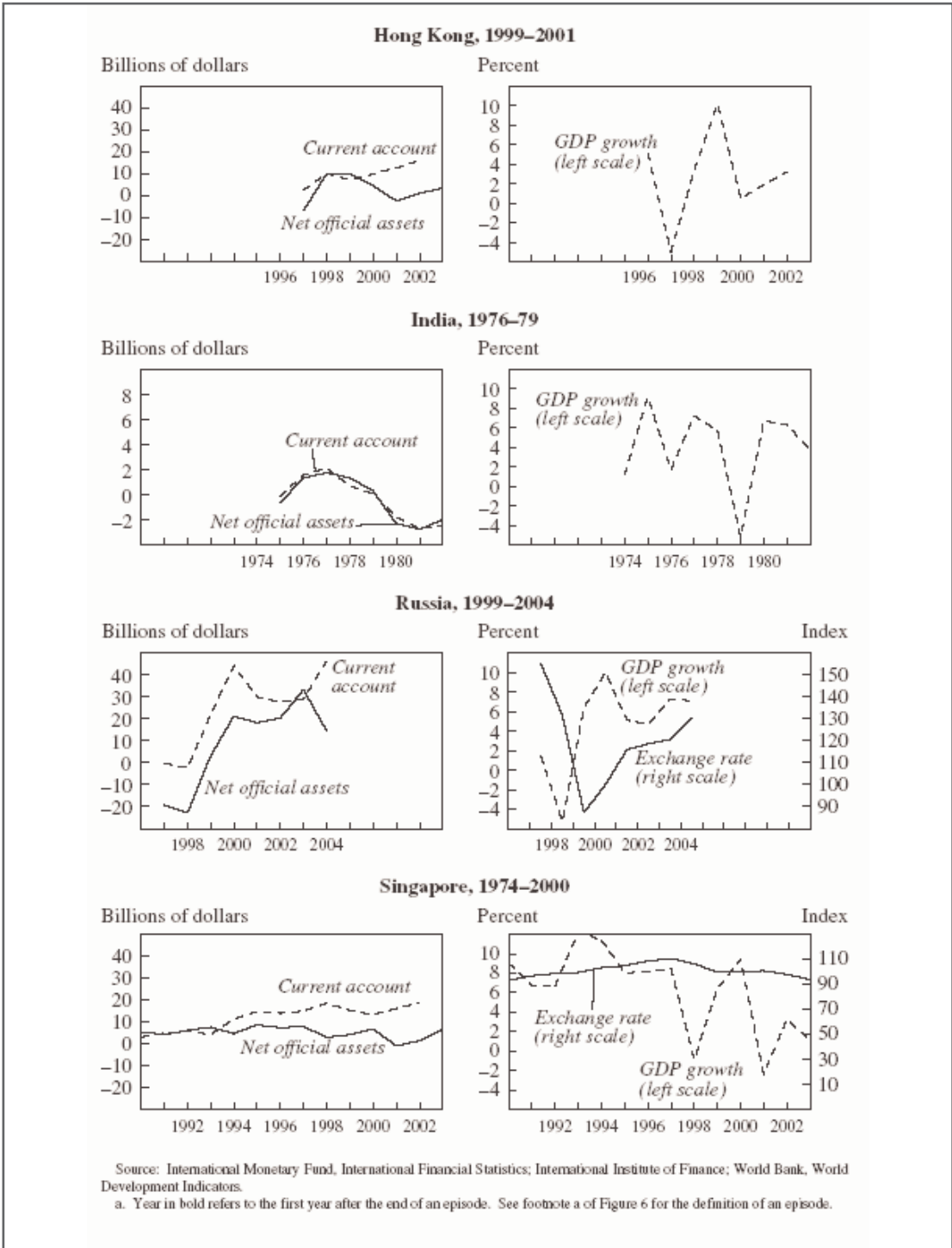
where e is the exchange rate of the subject currency against the dollar (in dollars per subject currency unit), in index form; e_i is the exchange rate of currency i against the dollar (in dollars per currency unit), in index form; w_i is the weight attached to currency i ; P is the consumer price index (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

Accumulation Episodes in Hong Kong, India, Russia and Singapore



APPENDIX C

Real Exchange Rate Changes, Reserves, Current Account Balances and GDP Growth

Episode	Average real depreciation (percent a year)		Cumulative change in reserves (millions of dollars)		Cumulative change in current account balance ^a (millions of dollars)		Years of deficit after episode	Real GDP growth (percent a year)		
	Duration (years)	During episode	First year after episode	During episode	First year after episode	During episode		First year after episode	During episode	Average for three years after episode
Argentina, 1976-79	4	6.7	-23.9	8,810	-2,598	3,120	-4,774	3+	10	-1.5
Bulgaria, 1982-85	4	2	-26.9	1,053	-885	612	-951	2	3	5.1
Canada, 1996-2001	6	-0.2	3.7	19,926	-185	24,902	14,447	0	4.2	2.6
China, 1990-present	15+	-4.5	...	410,674	...	315,476	...	0	9.3	...
Colombia, 1976-80	5	n.a.	4.6	4,287	-21	1,029	-1,961	3+	5.4	6
Colombia, 1989-94	6	2	6.3	4,728	-4	-2,185	-4,527	3+	3.8	4.4
Croatia, 1993-95	3	14.3	0.3	1,652	533	-413	-1,049	3+	1.6	5.1
Denmark, 2001-present	4+	3.3	...	13,537	...	22,033	...	0	1	...
Egypt, 1990-94	5	-2.9	4	15,615	409	-2,937	-1,000	3+	3.6	5.1
Finland, 1997-2002	6	-1.2	4.2	3,261	-508	49,845	9,295	0	3.4	1.9
France, 1977-80	4	2.3	-3.7	11,796	-3,588	7,592	-4,811	3+	2.9	1.8
France, 1983-86	4	1.4	-1.1	10,417	-2,602	-3,646	-4,446	3+	1.7	3.8
Germany, 1971-73	3	4.2	-1.7	18,312	-523	4,627	9,085	0	3	2.3
Germany, 1976-78	3	1.2	-4.3	21,011	-3,590	16,929	-5,387	3+	3.7	1.8
Hong Kong, 1999-2001	3	n.a.	-4.4	24,755	-2,377	27,309	12,596	0	4.7	2.6
Hungary, 1990-92	3	7.9	1.1	2,905	2,575	1,134	-4,262	3+	-6.2	1.3
Hungary, 1995-97	3	1.2	0.5	2,983	791	-3,451	-2,228	3+	2.5	4.7
India, 1976-79	4	n.a.	n.a.	6,578	-624	4,441	-1,785	3+	2.4	5.6
Indonesia, 2002-present	3+	6.4	...	8,245	...	18,676	-500	2	4.1	4.5
Ireland, 1993-95	3	-2.2	-1	4,823	-52	5,063	2,049	0	6.1	9.3
Italy, 1987-89	3	1.4	1.3	25,245	11,623	-22,628	-16,479	3+	3.3	1.4
Japan, 1986-88	3	12.1	-4.4	70,747	-13,058	249,000	63,000	0	4.5	4.6
Japan, 1992-96	5	1.8	1.6	147,110	6,567	551,000	97,000	0	1.5	0.3
Japan, 1999-2004	6+	0.4	...	398,985	...	743,000	...	0	1.4	...
Jordan, 1999-2003	5	-0.3	-0.2	3,411	n.a.	1,984	208	0	3.9	5.2
Korea, 1976-78	3	-13.5	-16.9	3,385	749	-1,383	-4,151	3+	10	3.8
Korea, 1986-89	4	2.9	-3	13,036	-1,208	34,634	-2,003	3+	9.8	8.1
Korea, 1998-present	7+	-0.6	...	122,894	...	130,483	...	0	4.2	...
Malaysia, 1976-80	5	-3	3.7	2,652	-235	130	941	0	8.6	6.4
Malaysia, 1985-93	9	-2.2	0.4	25,398	-3,160	-6,326	-4,521	3+	8.1	9.7
Malaysia, 2001-03	3	-3	-3	14,838	n.a.	27,885	14,400	0	3.3	5.8
Morocco, 1996-2002	7	0.3	0.3	6,782	1,649	2,253	1,593	0	4	3.7
Netherlands, 1970-77	8	1.5	-1.3	3,902	-770	16,476	-904	1	3.6	2
Netherlands, 1992-95	4	2.2	-1.8	11,349	-5,695	63,117	21,502	0	2	3.7
Norway, 1980-85	6	1	1	9,442	-3,211	11,736	-4,551	3+	3.4	1.9
Norway, 1993-97	5	-0.5	-1.7	14,353	-6,384	33,520	6	0	4.6	2.5
Norway, 1999-2003	5	1.7	-4.8	13,393	n.a.	113,812	n.a.	0	1.9	n.a.
Oman, 1989-92	4	-1.4	-6.6	1,302	-1,058	563	-1,190	3+	6.7	4.6
Oman, 1999-2001	3	-1.7	-4.9	3,483	309	5	2	0	4.3	3.2
Pakistan, 2001-present	4+	-0.3	...	10,244	...	9,277	1,640	0	5.3	...
Portugal, 1983-92	8	2.2	-0.4	16,235	-2,848	-14	233	0	4.6	1.1
Romania, 1986-89	4	-2.7	-31.1	1,614	-1,494	9,874	-3,254	3+	-0.8	-9.1
Russia, 1999-2004	6	-0.1	7.2	63,731	n.a.	199,007	40,800	0	6.8	5.2
Saudi Arabia, 1979-82	4	1.6	-3.3	11,432	-1,509	98,912	-16,852	3+	2.5	-5.2
Singapore, 1974-2000	27	-0.3	-2.1	81,135	-861	116,349	16,137	0	7.5	0.7
South Africa, 1989-91	3	2.9	-1	2,030	503	5,734	1,967	0	0.4	0.8
Sweden, 1970-73	4	-0.4	0.2	1,499	-753	2,149	-529	3+	3.4	2.3
Sweden, 1998-2000	3	-2.7	-0.1	5,306	-1,048	29,648	8,531	0	4.2	1.5
Switzerland, 1982-87	6	2.1	-0.3	10,189	-2,382	26,869	8,846	0	1.9	3.7
Ukraine, 1999-present	6+	-4.7	...	5,383	3,092	10,606	...	0	8.3	...
Venezuela, 1979-81	3	11.3	-5.9	7,839	-8,160	9,078	-4,246	1	-1.3	-1.5

Source: International Monetary Fund, International Financial Statistics; International Institute of Finance; DB Global Markets Research

a. A positive number indicates a change in the direction of surplus.

n.a., data not available; ..., not applicable.

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Chapter 9

THAT OLD-TIME RELIGION:
IT'S GOOD ENOUGH FOR ME

That Old-Time Religion: It's Good Enough for Me

Summary

This note addresses an issue that has been raised frequently in criticisms of our comparing the current system to the Bretton Woods system: the US is running large current account deficits now, but it was not then. Of course, many aspects of the current system are different from the heyday of Bretton Woods: Adenauer is no longer Chancellor, de Gaulle is dead, there is no guaranteed US gold convertibility, and there is now a serious pretender to reserve currency status. Our first reaction was that this objection was as superficial as these others, not at the heart of the comparison we wanted to draw.

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

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.⁴⁶

46. Nurkse (1945, p. 3).

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.⁴⁷

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.

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 gain *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

47. Press conference at the Palais de l'Elysee, February 4, 1965.

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.

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.⁴⁸ 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

48. 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.

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.⁴⁹ 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.

49. 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.

Ricardo Caballero and A. Krishnamurthy have similarly argued that international collateral is necessary to support private financial intermediation within advanced and emerging economies.⁵⁰ 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."⁵¹ 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.

50. Caballero and Krishnamurthy (2001, 2003).

51. Caballero (2005).

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.

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.⁵² 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.⁵³

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

52. See the International Emergency Economic Powers Act (IEEAPA), United States Code (www.treas.gov/offices/enforcement/ofac/legal/statutes/ieepa.pdf). Assets frozen under the IEEAPA are administered by the Treasury's Office of Foreign Asset Control (OFAC).

53. U.S. Information Agency, "Freeze of Iraq, Kuwait Assets Has Many Precedents," August 28, 1990 (www.fas.org/news/iraq/1990/900828-152460.htm).

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.⁵⁴

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.

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

54. U.S. Information Agency, "Freeze of Iraq, Kuwait Assets Has Many Precedents."

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.

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

Chapter 10

ARE OFFICIAL CAPITAL FLOWS IMPORTANT?

Are Official Capital Flows Important?

We have argued a 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 those that slip through the repression with official flows. Capital account countries do not block cross-border flows or significantly intervene in foreign exchange markets. It is often assumed that the conventional analytic 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 empirical and still unresolved issue.

It is an important issue because conventional analysis assumes either that private decisions dominate, perhaps following a brief and unsustainable period of official intervention, or that official decision makers will realize their mistake and withdraw from the market. For example, commentary about the inevitable messy end of the US current account imbalance almost uniformly asserts that private decisions will prevail in the context of a costly financial crisis.

The opinion that the US 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. Official capital flows that have financed the US current account deficit will either be overwhelmed by the private sector or governments will come to their senses in time to avoid a crisis. The usual dark warning is the longer it takes the official sector to realize the inevitable truth the harsher will be the consequences. In effect, the phase diagrams of the speculative attack models dance in our collective heads.

Eighteen months ago we predicted that private investors would become more reluctant to finance the US current account deficit as official sector capital flowed in. We also predicted the very large appreciation of the euro and other currencies dominated by private capital flows. This was not unusual in itself. But we also argued that governments of a group of trade account countries had good reasons to continue to invest in the US for an extended time period and that this would keep interest rates low, contrary to then prevailing opinion.⁵⁵ The length of this period is derived from an optimal rate of absorption of unemployed labor. In our view this suggests a decade at least.

So it is important to understand why nonresidents are supplying net savings to the US at very low expected yields and why this may or may not continue. To us, it is irrelevant to the overall picture if the net foreign investment is in Treasury securities, Agencies, private fixed income, equity, or whatever. It is irrelevant if private or official foreigners take larger or

55. The logic was that an increasingly indebted US, with an interest rate effectively underwritten by trade account countries, would attract less private funding from capital account countries. Smaller net capital flow meant smaller net current account flows, which would be accomplished with appreciating exchange rates vs. the USD.

smaller shares of the foreign investments in the US.⁵⁶ It is mostly irrelevant how the spreads of different classes of financial instruments in the US might be affected. So this is not a strategy or asset allocation discussion; it is entirely directional.

Our basic story is that a group of foreign governments will be willing and able to finance the US current account deficit for an extended period. Since it is very likely that private investors in these countries, like private investors elsewhere, will not want to invest in the US at the current rate of return, it is key that their governments “dominate” the private sector for an extended time period. Otherwise, we collapse back to the textbook inter-temporal consumption model of net capital flows, the very one that has failed so miserably for half a decade.

Our forecast is that an increasingly important group of countries do not now and will not for a considerable time period allow private investment decisions to dominate. The meaning of *dominate* is important to our argument. In this note, the objective is to provide some empirical content to this idea. One way to approach this problem is to explore the obverse of official dominance, namely, private sector dominance. This is convenient because private dominance is explicitly or implicitly assumed in all respectable macroeconomic models currently in favor.

In a nutshell, *private dominance* asserts that any financial position taken by the government is undone by the private sector and so has no effect on real outcomes. Private investors understand that they own the government’s balance sheet. So if the government borrows, the private sector saves in order to offset the unwanted debt. A logical extension of this assumption is a Miller-Modigliani theorem for leverage or gross financial positions taken by the government. If the government borrows domestic currency to lend in foreign currency, the private sector does the reverse to neutralize the government’s portfolio decisions. So the details of the split between private sector and public sector of items in the national balance sheet vis a vis foreigners are irrelevant to real activity.

An important feature of this assertion is that it is consistent with *any* observed pattern of net and gross official and private capital flows. Suppose, for example, we observe a large net official capital outflow (an increase in dollar reserves), no private capital flows net or gross and a current account surplus. On the surface, this may seem to be a case where the government’s desire to increase its net foreign assets dominates the national accounts, perhaps because private transactions are constrained by law. But if we assume the private sector always dominates, the implication is that the private sector must have wanted its net foreign asset position (and its net dollar position) to increase and recognized that no private transactions were required because the government saved them the trouble.

Moreover, in the above example the government’s objectives are not obvious. Accumulation of reserves may have been related to its objective for the current account; it may have wanted to accumulate reserves to smooth future exchange rate changes; or it may have set an arbitrary exchange rate, and the reserve accumulation was an accident.

56. For the detailed picture of how market players make money in this system making relative value trades, these issues are quite important of course.

We could as well start from the assumption that the government dominates the private sector. No matter what the private sector does the government simply neutralizes private decisions while implementing its own desired outcome. In the above example we could argue that the private sector's preferences were irrelevant because of capital controls and financial repression and the government accumulated reserves in order to generate a current account surplus. The lesson is that if there are trade account and capital account countries out there we have to be careful in identifying them.

On a slightly deeper level recent advances in research in international economics are based largely on the shift toward modeling financial transactions as intertemporal trade in goods. Buying a bond today is formally equivalent to selling goods today and buying goods later. Selling a bond to a nonresident is equivalent to a current account deficit, other things equal. It is not possible for the private sector and the government to implement independent objectives for the current account. But this approach does not in itself offer any guidance for selecting the right identifying assumption. Clearly we have to look beyond the balance of payments accounts for clues about dominance.

While private or official dominance cannot be established by casual inspection of co-movements of private and official capital flows and the current account, it does seem likely that different patterns of capital flows and current accounts would be associated with these different regimes. In particular, private dominance would suggest that co-movements of the current account and official capital flows would be random. In the next section, we show that these co-movements are not random and that countries that manage nominal exchange rates, limit private capital flows, and have poorly developed domestic credit markets also show official dominance of current account balances

Evidence on Dominance and Co-movement of Capital flows and the Current Account

We start from the balance of payments identity.

$$CA + NP + NO \equiv 0$$

That is, the current account is identically equal to net private plus net official capital flows.

The first question we put to the data for each country is: does one or both categories of capital flows typically "offset" or "finance" or "have the opposite sign from" the observed current account balance? A naïve hypothesis would be that for capital account countries net private capital would typically offset the current account balance, that is, a current account deficit would be associated with a net private capital inflow and a current account surplus with a net private capital outflow. Official capital flows in a capital account country would be small and unrelated to the current account balance.

We create for each year and for each country an index that has a value of 0 if net private and net official flows have the opposite sign *and* the sign of the net private flow is opposite that of the current account. For that observation, the conjecture is that private behavior dominates the change in the national net investment position. This is a pattern we would expect to see

more often in capital account countries. Note that in this case the net private capital flow is larger than the current account balance so that the private sector net capital inflows (outflows) are offsetting both a current account deficit (surplus) and a net official capital outflow (inflow).

The index has a value of 1 for a year in which net private and net official flows have the opposite sign and the sign of the net official flow is opposite that of the current account. For such an observation, the conjecture is that official behavior dominates the change in the national net investment position. This is a pattern we would expect to see more often in trade account countries. In this case the net official capital flow is larger than the current account balance.

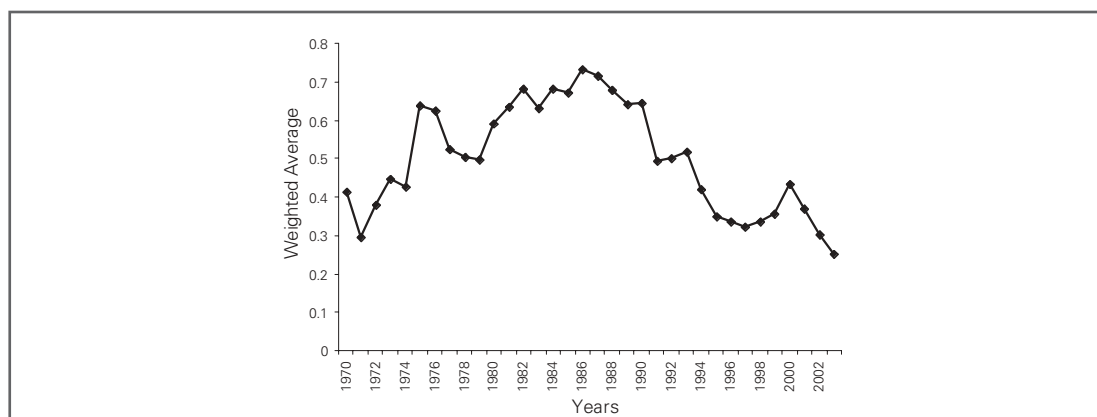
If private and official flows have the same sign, they must both be opposite to that of the current account. In this case, we construct a continuous variable equal to the ratio of net official flows/current account. A value close to one is associated with official dominance; a ratio close to zero is associated with private dominance.

Some facts

For 168 countries, we have constructed a dominance index for each country for annual data for 1970 – 2004, using IFS Balance of Payments data. As discussed below, the index for individual countries and regions varies considerably over the sample period; so we do not want to place much emphasis on this aggregate measure. The simple average for all countries, however, indicates that official capital flows account for about 40% of all net capital flows over the whole time period. It follows that they might be important for the overall functioning of the system.

Chart 4 shows the evolution of the average index for all countries over time.

Chart 1. Global Dominance Index, 1970-2003



Source: DB Global Markets Research

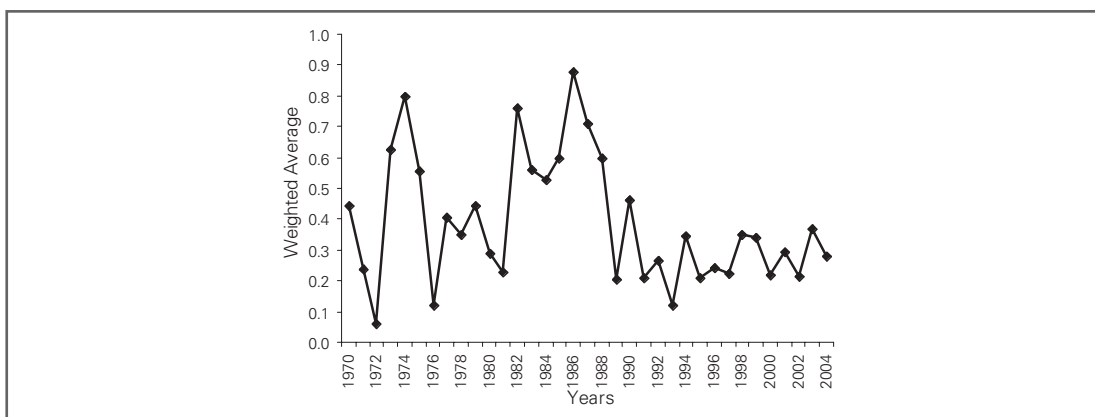
Official net flows accounted for about 60% of all net flows through 1990 but declined since then and to about 25% by 2003. The relatively low relative share of private flows following the 1982 debt crisis and the expansion of private flows after 1990 are familiar features of international capital markets

Of more interest to us is that not all countries shared this experience. While some have embraced an expanded role for private capital flows in recent years, others have not. We turn first to a regional breakdown of this data for evidence that there have been differences in behavior across groups of countries.

Latin America

Latin America is the region most often identified with the embrace of open capital markets—the Washington Consensus—as a development strategy.

Chart 2. Dominance Index Latin America, 1970-2004

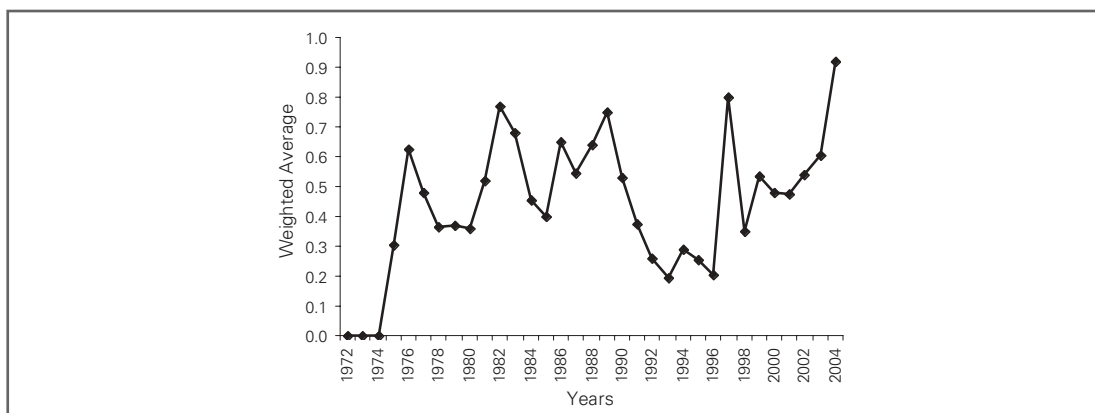


Source: DB Global Markets Research

In Chart 2, the behavior of the dominance index over time is consistent with this characterization of policy in Latin America. Private flows dominate from 1975 to the debt crisis in 1982. During the lost decade official flows dominate; and after 1990, private flows once again account for 70-80% of the action. Since 1990, we would tentatively place Latin America in the group of capital account countries by this criterion.

East Asia

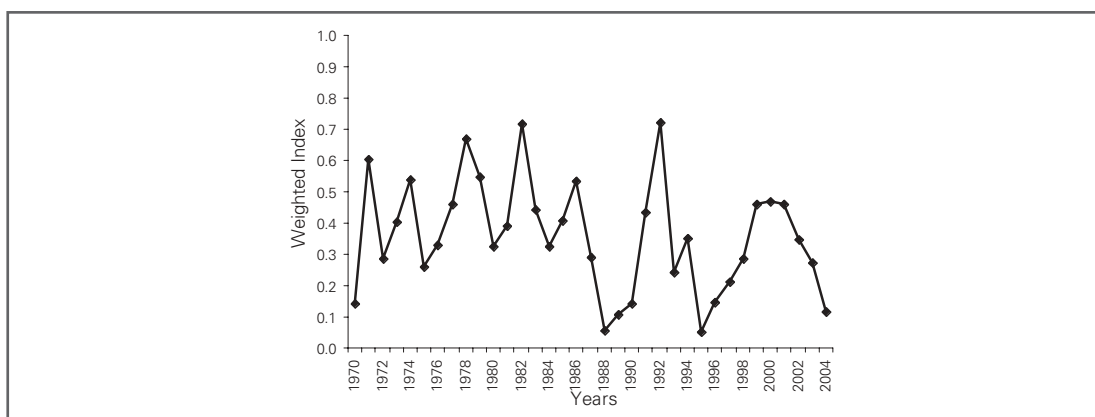
East Asia presents a very different picture. Before 1990, official flows dominate in that they account for more than half of all capital flows. Like Latin America, these countries did start to liberalize after 1991, but they have moved again toward official dominance since 1993. As expected, private flows responded but have leveled off at a lower level.

Chart 3. Dominance Index East Asia, 1970-2004

Source: DB Global Markets Research

Western Europe

In Chart 4, Western Europe shows the expected pattern of private dominance over most of the period. This is evident since the adoption of the common currency and the policy of the ECB is to refrain from active currency management. The general view that the euro is freely floating is certainly reinforced by the decline of the index to about 10% at the end of the period.

Chart 4. Dominance Index Western Europe, 1970-2004

Source: DB Global Markets Research

US

The data for the US are of particular interest in our framework because the US is the center country in our system. US data shown in four five-year averages suggest an experience quite different from those of Europe or the OECD as a whole.⁵⁷

57. We smooth the data in this way for comparability because the regional charts are averaged across countries, which creates smoothing in itself.

The US shows a similar pattern of the emergence of strong private capital flows during the 1980s; but, since 1990 official flows have averaged about 40% of overall flows.

Chart 5. Dominance Index U.S., 1970-2004

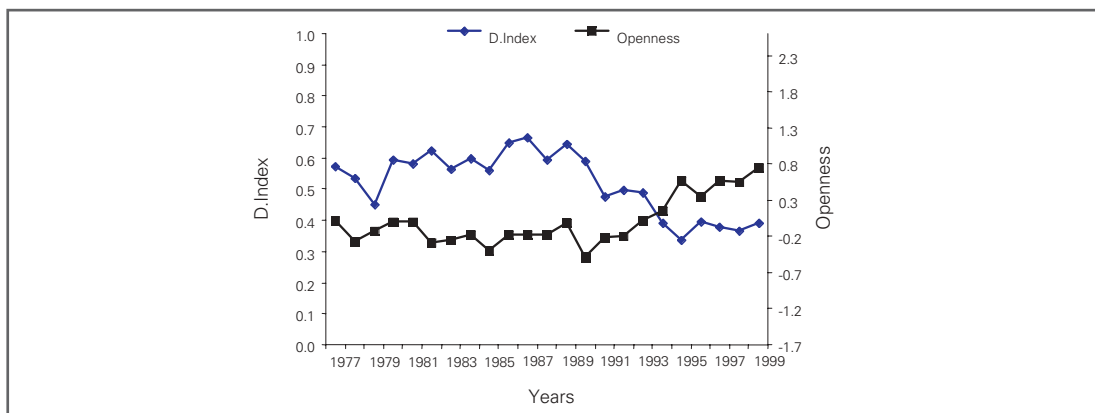


Source: DB Global Markets Research

The US experience is also noteworthy in that while Latin America and Europe have moved decisively toward private dominance the US has not. Clearly the US government has not changed its behavior over this whole period. It has not restricted private capital flows; nor has it initiated meaningful capital transactions. Rather, it is the changes in US government liabilities held by the foreign official sector that provide a substantial contribution to net official flows to the US. This is another way of saying that the US is the center country or, more generally, the nth country. Moreover, official capital flows from other capital account countries in Europe and Latin America are a shrinking part of the world capital market. Nevertheless the US as the primary recipient of capital flows from trade account countries has remained near the middle of the pack in terms of its dominance index over the past 14 years.

Parsing the Sample by Capital Controls

While regional patterns are interesting, they do not provide any clear evidence that some governments systematically dominate the evolution of their national net foreign investment position. In this section, we examine other variables that might clarify the evidence. First, we would expect trade account countries to limit private international capital flows through taxation and regulation. Capital controls indicate the government wants for some reason to limit private capital flows. Here, we consider whether governments that employ such policies also succeed in dominating private flows that manage to get around the controls. **While there have been many empirical evaluations of the effectiveness of capital controls, we are not aware of previous attempts to answer this straightforward question.**

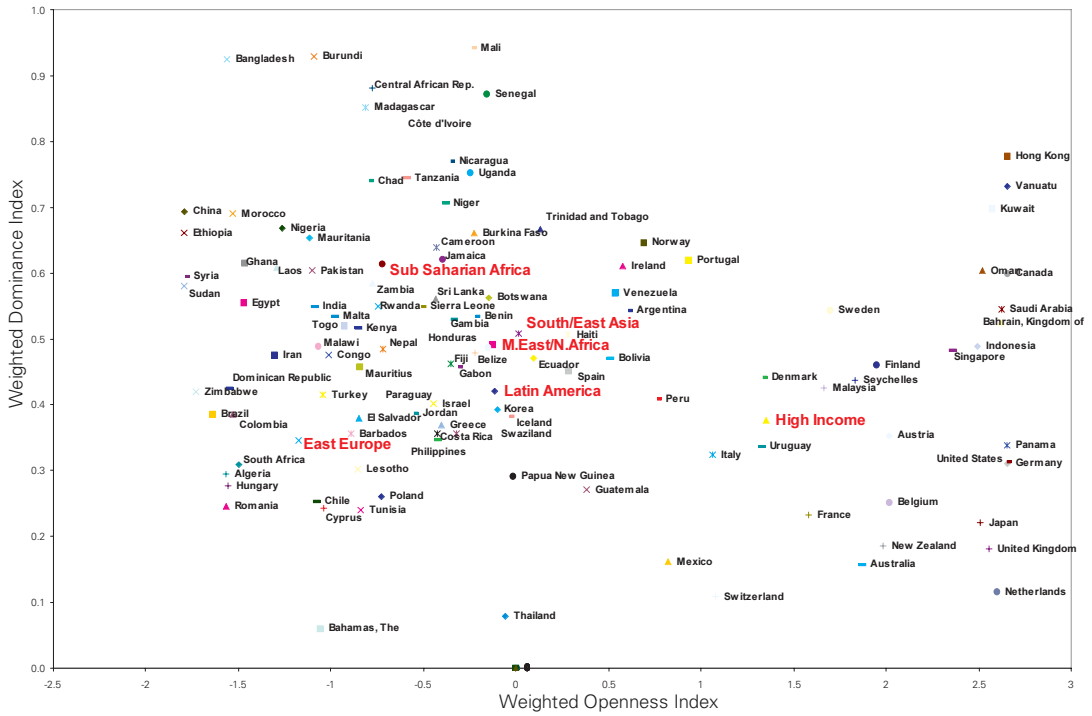
Chart 6. Dominance vs. Openness, All Countries, 1977-1999

Source: DB Global Markets Research

In Chart 6, we compare an openness index series to our previously constructed dominance series. We have data for capital controls from a sub-sample of our overall sample of countries from 1977-1999. The openness index is derived from qualitative measures of capital controls compiled by Chinn and Ito (2002). For the sub-sample of countries, we see a familiar story. Since 1990, capital controls have been reduced (an increase in the openness index), and private capital flows have increased in importance relative to official flows. In the aggregate, the monetary system has moved toward a capital account model, as has generally been assumed.

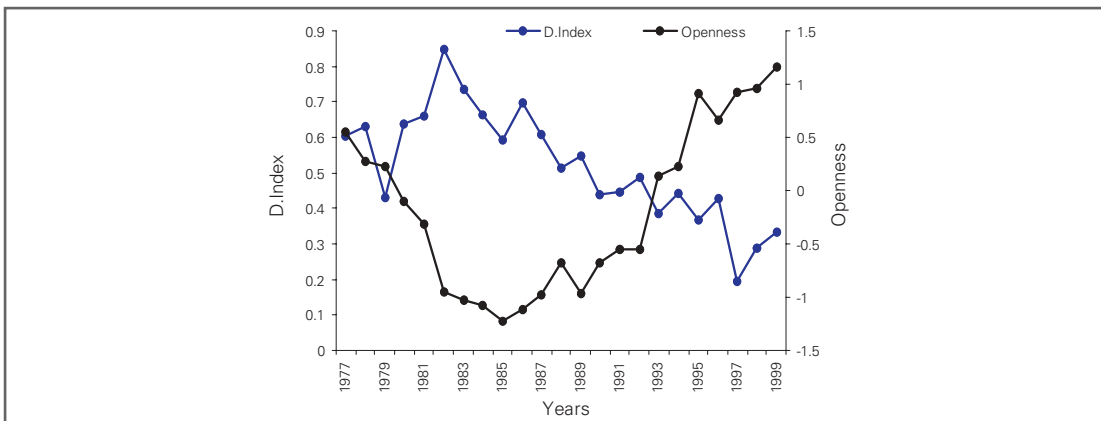
But once again, the aggregate numbers conceal very different developments across groups of countries. In Chart 7, we plot each country's simple average openness over the sample period against its weighted average dominance index. These data provide some indication that the average level of the dominance index is related to the average level of capital controls. The scatter has the expected negative slope with some interesting outliers in the northeast quadrant. In general, small islands and offshore financial centers do not fit the expected pattern.

Chart 7. Global Dominance vs. Openness Index, 1977-1999



Source: DB Global Markets Research

Chart 8. Dominance vs. Openness, Latin America, 1977-1999

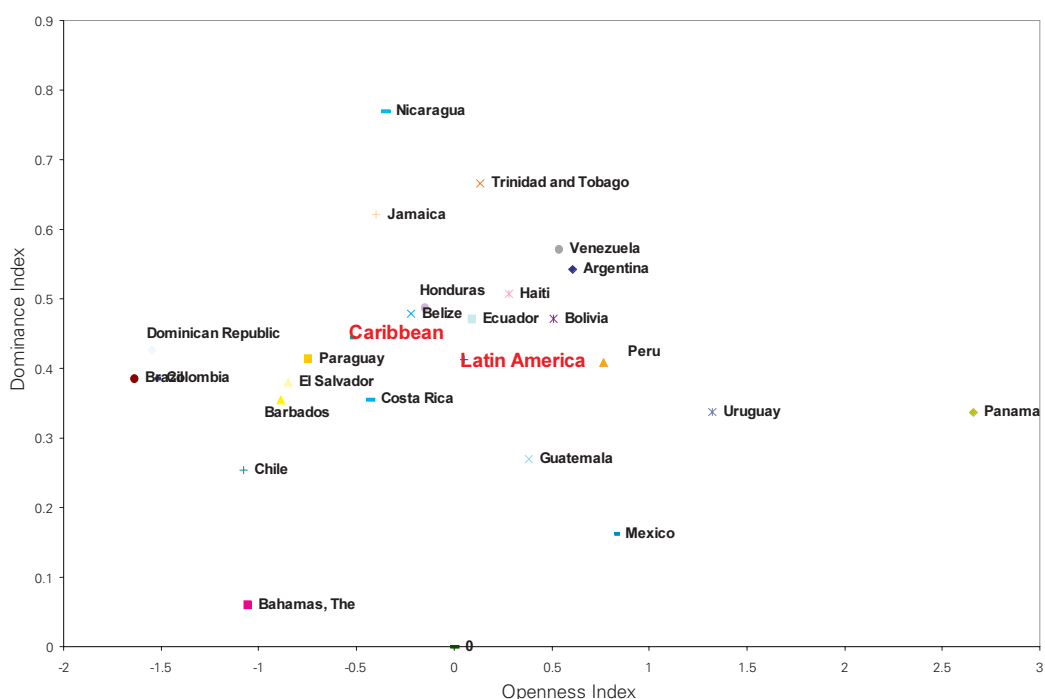


Source: DB Global Markets Research

Chart 8 indicates that since 1985 Latin American countries have opened rapidly, and private flows have increased rapidly as well. Our interpretation is that the dominance index is responding to the realized policy initiative starting in 1985 of dismantling capital controls, which is what we hoped it would do. This is evidence that the capital controls may have been effective: their removal is associated with a very large shift in the relative dominance of private and official capital flows.

Cross country data for Latin America reported in Chart 9 reinforces the view that capital controls are related to official dominance of capital flows.

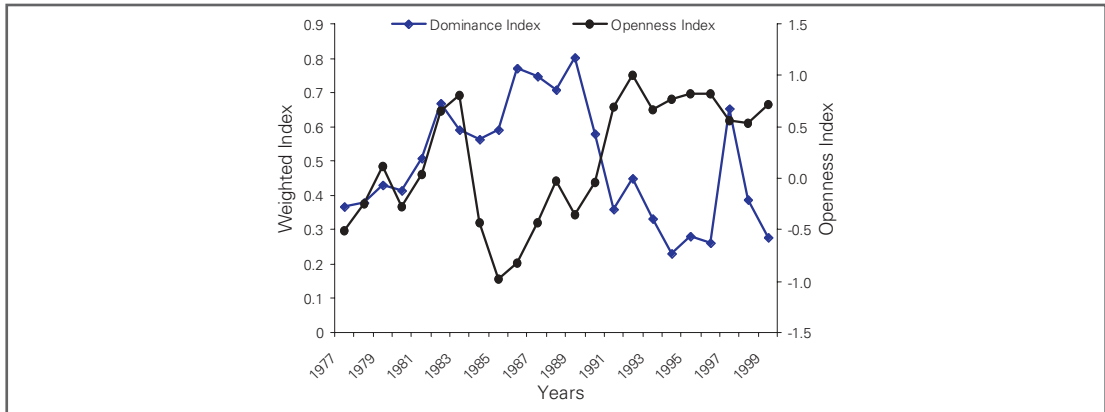
Chart 9. Dominance vs. Openness Index, Latin America and Caribbean, 1977-1999



Source: DB Global Markets Research

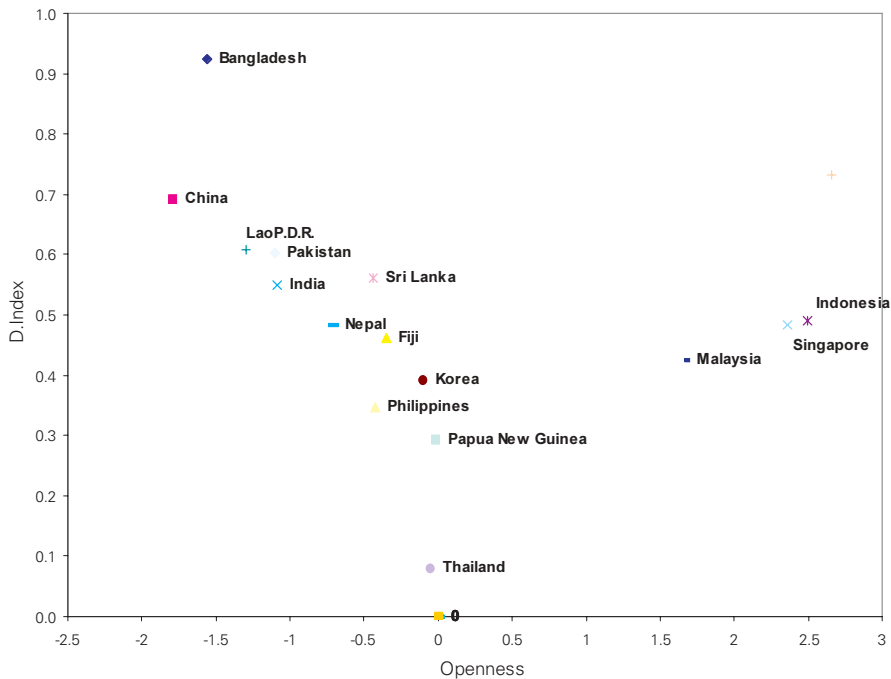
Asia presents a somewhat different image in Chart 10. These countries started to liberalize in 1985 as well, but reached a plateau in 1991 at a lower level than eventually attained in Latin America, and have not moved toward greater openness since 1993. As by now expected, official dominance has increased (see the upward jump in the recent years depicted in Chart 3). The cross section data in chart 11 also show a strong relationship between controls and official dominance of the capital account. As with the Latin American data, we interpret this as evidence that capital controls are effective in Asia.

Chart 10. Dominance vs. Openness, East Asia, 1977-1999



Source: DB Global Markets Research

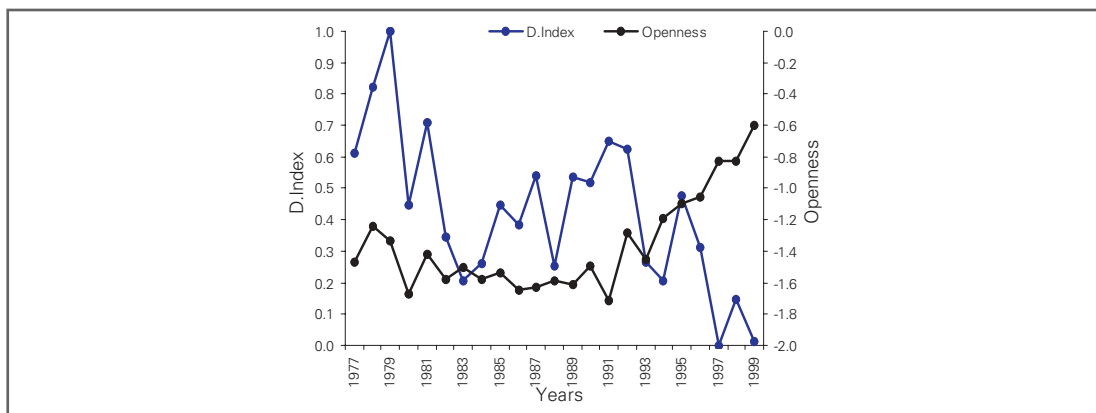
Chart 11. Dominance vs. Openness Index, South/East Asia, 1977-1999



Source: DB Global Markets Research

Results for emerging markets in Eastern Europe in Chart 12 also indicate a negative relationship between openness and official dominance. Since the collapse of communism, the openness index has risen steadily upward, though it is at a substantially lower value than say in Latin America. Coincidentally, official dominance has fallen to near zero. Here, accession to the EU is an important force in the policy of opening capital markets. As in Latin America, private flows have responded very strongly as controls have been relaxed.

Chart 12. Dominance vs. Openness, East Europe, 1977-1999

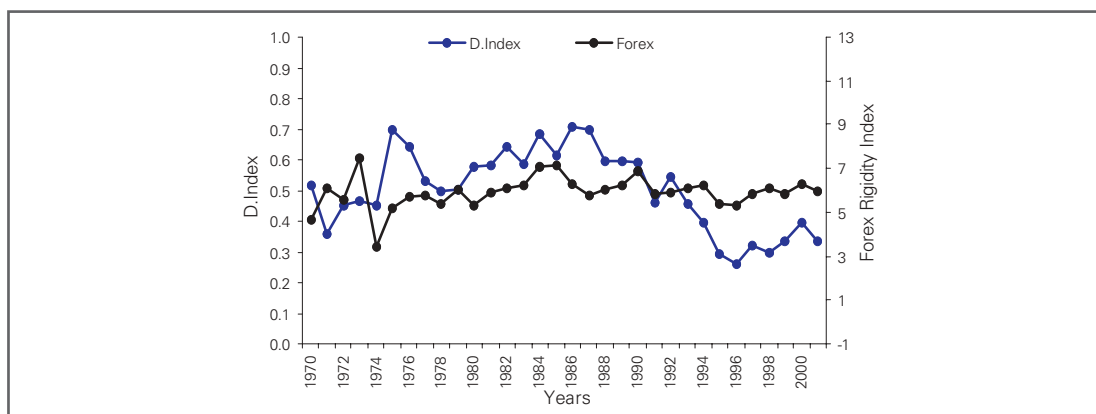


Source: DB Global Markets Research

Parsing by Exchange Rate Regime

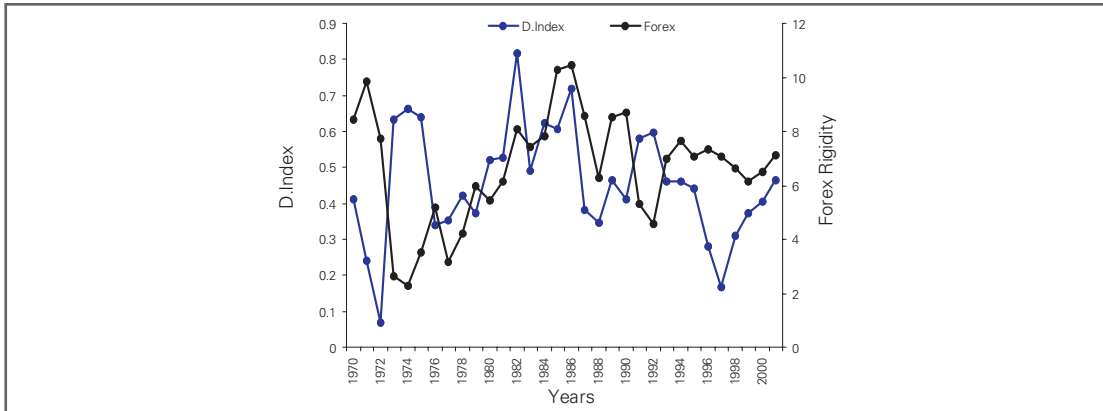
We would expect countries that choose a fixed or highly managed exchange rate arrangement to be dominated by official capital flows. We use the Reinhart and Rogoff index of exchange rate arrangements to measure the nature of the regime. The regime index rises as the exchange rate is less heavily managed. Again, we compare this index to the dominance index in Charts 13 and 14.

Chart 13. Global Dominance vs. Forex Regime



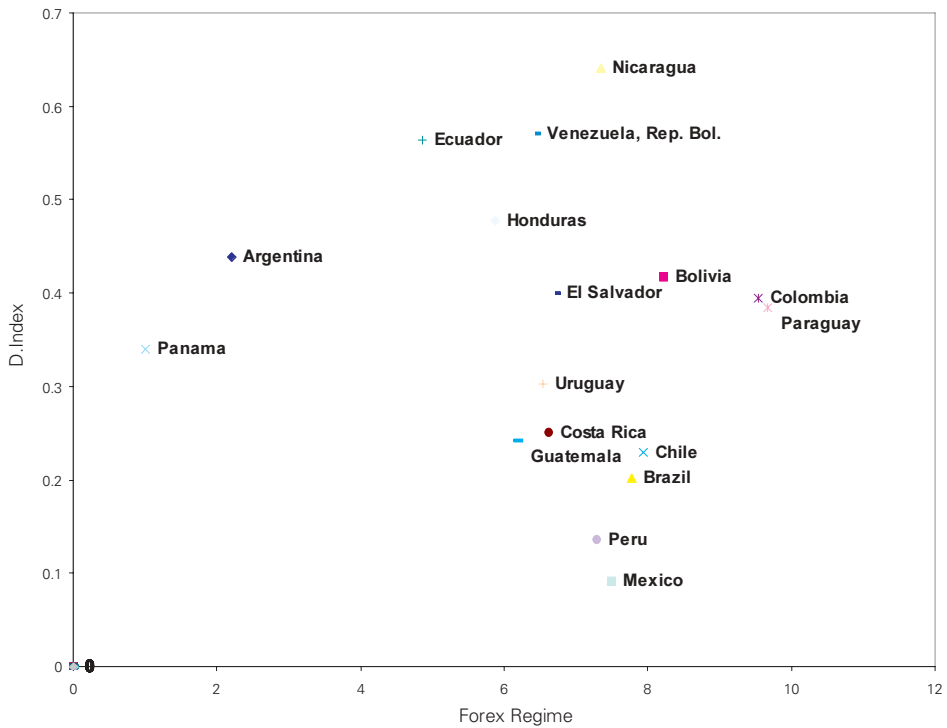
Source: DB Global Markets Research

Chart 15. D. Index vs. Forex Regimes, Latin America, 1970-2001



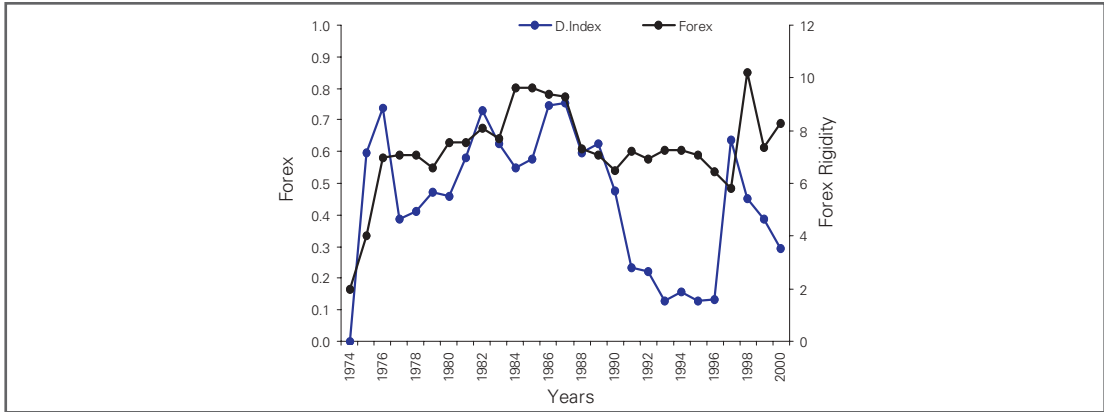
Source: DB Global Markets Research

Chart 16. Dominance vs. Forex Rigidity, Latin America, 1970-2001



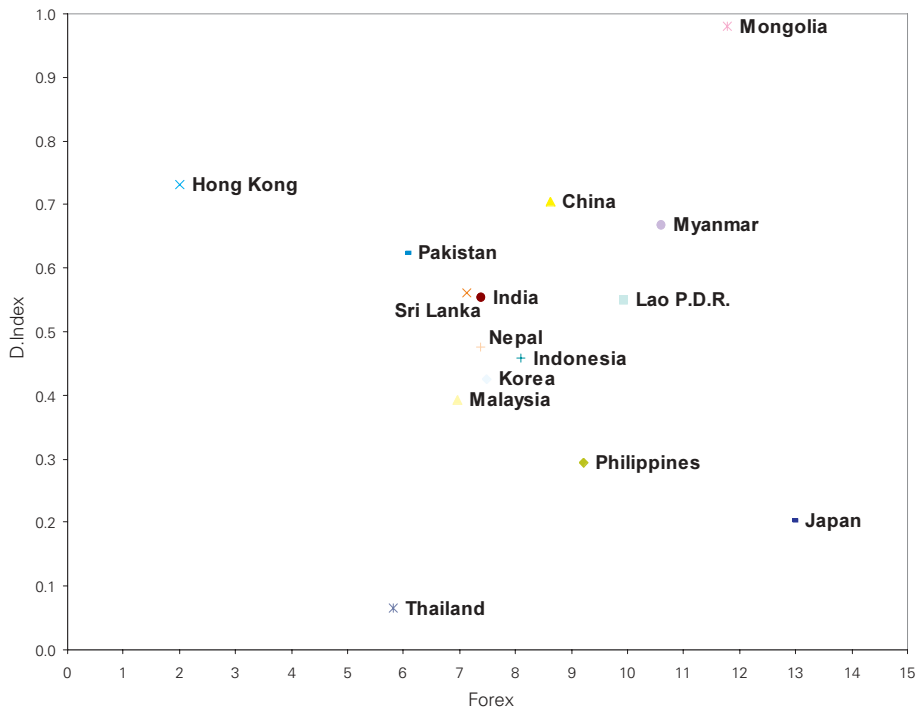
Source: DB Global Markets Research

Chart 17. D.Index vs. Forex Regimes, East Asia, 1970-2001



Source: DB Global Markets Research

Chart 18 Dominance vs. Forex Rigidity, South/East Asia, 1970-2001



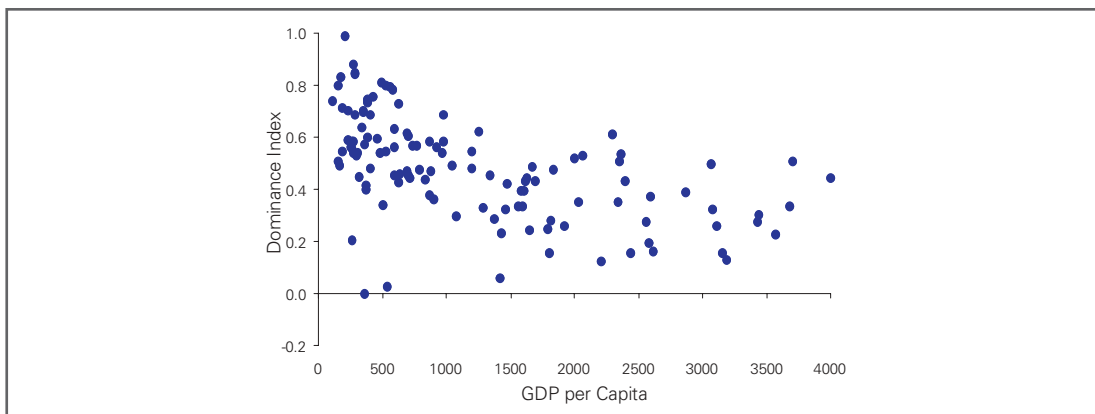
Source: DB Global Markets Research

Asia shows much less variation over time in the exchange rate regime, although a less pronounced move toward flexibility after 1990 does coincide with a decline in official dominance. Perhaps more important, the average level of exchange rate flexibility toward the end of the sample is much lower in Asia as compared to Latin America; and as expected, the level of official dominance is much higher. The cross section results also suggest a clear relationship for Asia

Financial Development

We expect relatively underdeveloped financial markets to be more often dominated by government capital flows. As a crude proxy for financial development, we plot per capita income in a scatter against the dominance index. The cross section evidence for the whole sample tends to support this conjecture.

Chart 19. Dominance Index and Per Capital Income. East Asia, 1970-2003



Source: DB Global Markets Research

Some Regression Analysis

The inferences we drew from the informal presentation of the data above are fully supported by regression analysis. Tables 1-4 show regressions of dominance against openness, per capita GDP, and the exchange regime. Both bivariate and multivariate regressions for the whole sample of countries and for regional groups have the expected signs and are generally statistically significant. The capital control variable and the two different exchange regime measures were quite robust across specifications and country samples. The per capita GDP variable did well in bivariate regressions but generally lost significance when combined with other variables. We also added a net export variable to see if official dominance was associated with net export surpluses. This variable had the expected positive sign but was generally not significant in the multivariate regressions. (We also included country fixed effects throughout, which we do not report here.)

Table 1. All Countries

	All Countries						
	1	2	3	4	5	6	7
GDP per Capita	-0.0094505*** (-0.0027529)					-0.0000304 (-0.0052015)	-0.0088568** (.0030711)
Openness Index		-0.0641918*** (-0.0097004)				-0.0669806*** (-0.0115167)	
Exchange Rate Flexibility 1			-0.006289* -0.0033463			-0.0083437*** (-0.0042667)	-0.0071019 ** (.0033667)
Exchange Rate Flexibility 2				-0.024549* -0.0136911			
Net Exports					.0028183 * (.0013765)	0.0000022 -2.08E-06	
Adj R-squared	0.1564	0.1558	0.162	0.1619	0.1961	0.1672	0.1622
Observations	3664	2262	2675	2675	3961	1739	2590
Countries	166	104	135	135	175	90	130
Root MSE	0.3725	0.3723	0.36804	0.36806	0.37263	0.36805	.36739

Source: BOPS, IFS, WDI, IFF, DB Global Markets Research

Table 2. Latin America

	Latin America				
	1	2	3	4	5
GDP per Capita	-0.1105021*** (-.0422286)				-0.1096546** (.0561379)
Openness Index		-0.083294*** (.0154708)			-0.0582075 *** (.0216569)
Exchange Rate Flexibility 1			.0071092 .0069463		-0.0003559 (.0081115)
Net Exports				.0139995*** (.0048583)	.0003242 (.0076454)
Adj R-squared	0.1	0.1472	0.1149	0.0993	0.2032
Observations	466	388	330	475	274
Countries	17	17	17	17	17
Root MSE	0.38689	.38075	.36955	.38741	.36638

Source: BOPS, IFS, WDI, IFF, DB Global Markets Research

Table 3. East Asia

East Asia					
	1	2	3	4	5
GDP per Capita	-.001524 (.0089653)				-.0041184 (.008942)
Openness Index		-.1540516*** (.036399)			-.1201195*** (.0406399)
Exchange Rate Flexibility 1			.0031933 (.0085967)		.0025144 (.0140458)
Net Exports				.0076711 (.0024377)	.0130443** (.0056127)
Adj R-squared	0.1664	0.2094	0.1911	0.1580	0.1837
Observations	512	291	313	587	222
Countries	25	13	15	26	10
Root MSE	.37	.34715	.35499	.37079	.33906

Source: BOPS, IFS, WDI, IFF, DB Global Markets Research

Table 4. East Europe and Central Asia

East Europe and Central Asia					
	1	2	3	4	5
GDP per Capita	-.1238873*** (.0174324)				-.1144475*** (.0196679)
Openness Index		-.1917211* (.1071872)			.008694 (.0237765)
Exchange Rate Flexibility 1			-.0246115 (.0203257)		
Net Exports				.0197413*** (.0068177)	.0317258* (.0177971)
Adj R-squared	0.2028	0.0411	0.1426	0.1379	0.2661
Observations	328	46	181	370	181
Countries	27	2	24	27	24
Root MSE	.34774	.41143	.37226	.36553	.34441

Source: BOPS, IFS, WDI, IFF, DB Global Markets Research

INTERNATIONAL FINANCIAL STABILITY

Asia, Interest Rates, and the Dollar

References

CERTIFICATION

References

Aizenman, Joshua and Nancy Marion (2002) "The High Demand for International Reserves in the Far East: What is Going on Here?" NBER WP no. 9266 (October).

Aizenman, Joshua, Brian Pinto, and Artur Radziwill (2004) "Sources for Financing Domestic Capital-Is Foreign Saving a Viable Option for Developing Countries?" NBER WP no. 10624 (July).

Alogoskoufis, George, and Richard Portes (1997) "The Euro, the Dollar, and the International Monetary System," in Paul R. Masson, Thomas H. Krueger and Bart G. Turtelboom (eds), *EMU and the International Monetary System*, Washington, D.C.:International Monetary Fund.

Bergsten, C. Fred (1975) *The Dilemmas of the Dollar*. New York University Press.

Bergsten, C. Fred (1997) "The Impact of the Euro on Exchange Rates and International Policy Coordination," in Paul R. Masson, Thomas H. Krueger and Bart G. Turtelboom (eds), *EMU and the International Monetary System*, Washington, D.C.: International Monetary Fund.

Blanchard, Olivier, Francesco Giavazzi, Filipa Sa (2005) "The U.S. Current Account Deficit and the Dollar," NBER Working Paper, no. 11137, February.

Bordo, Michael and Barry Eichengreen (1998) "The Rise and Fall of a Barbarous Relic: The Role of Gold in the International Monetary System," NBER Working Paper no. 6436, March.

Bordo, Michael and Flandreau, Marc (2001) "Core, Periphery, Exchange Rate Regimes and Globalization," NBER Working Paper no. 8584, November.

Bulow, Jeremy and Kenneth Rogoff (1989) "A Constant Recontracting Model of Sovereign Debt," *Journal of Political Economy*, 97, 166-177.

Caballero, Ricardo and A. Krishnamurthy (2001) "International Liquidity Illusion: The Risks of Sterilization," NBER Working Paper no. 8141, February.

Caballero, Ricardo (2004) "The Wrong Call: The Euro Is No Match for the Dollar." Massachusetts Institute of Technology, December.

Caballero, Ricardo (2003) "Excessive Dollar Debt: Financial Development and Underinsurance." *Journal of Finance* 58, no. 2: 867-93.

Chinn, Menzie, and Jeffrey Frankel (2005) "Will the Euro Eventually Surpass the Dollar as Leading International Reserve Currency?" Paper prepared for a National Bureau of Economic Research conference on "G7 Current Account Imbalances: Sustainability and Adjustment," Newport, R.I., June 1-2.

Chinn, Menzie and Hiro Ito (2002), "Capital Account Liberalization, Institutions and Financial Development: Cross Country Evidence," NBER Working Paper no. 8967.

- Despres, Emile, Charles P. Kindleberger, and Walter S. Salant (1966) "The Dollar and World Liquidity: A Minority View." *The Economist* (February 5).
- Dickson, Paul (1978) *The Official Rules*. New York: Delacorte Press.
- Devarajan, Shantayanan and Anthony Fisher (1981) "Hotelling's Economics of Exhaustible Resources: Fifty Years Later," *Journal of Economic Literature*, 19, 65 – 73.
- Dooley, Michael P. (1976) "Note on Key Currency Intervention Systems," Board of Governors of the Federal Reserve, IFDP #79 (February).
- Dooley, Michael, (2000a) "International Financial Architecture and Strategic Default: Can Financial Crises Be Less Painful?" *Carnegie-Rochester Conference Series on Public Policy*, 53, 361-377.
- Dooley, Michael, (2000b) "A Model of Crises in Emerging Markets," *The Economic Journal*, 110, 256-272.
- Dooley, Michael, (2002) "Responses to Volatile Capital Flows: Controls, Asset Liability Management and Architecture," *Journal of Emerging Market Finance*, 1, 99-124.
- Dooley, Michael, J. Saul Lizondo and Donald J. Mathieson (1989), "The Currency Composition of Foreign Exchange Reserves," *IMF Staff Papers* 36, pp.385-434.
- Dooley, Michael, David Folkerts-Landau, Peter Garber (2003a) "Dollars and Deficits: Where Do We Go From Here?," Deutschebank Global Markets Research (June 18).
- Dooley, Michael P., David Folkerts-Landau, and Peter Garber (2003), "An Essay on the Revived Bretton Woods System," Deutschebank Global Markets Research, September 2003. NBER Working Paper no. 9971 (September).
- Dooley, Michael, David Folkerts-Landau, Peter Garber (2004) "The Cosmic Risk: An Essay on Global Imbalances and Treasuries," Deutschebank Global Markets Research, (February). Also in "The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates and Exchange Rates in Center Countries." Working Paper 10332. Cambridge, Mass.: National Bureau of Economic Research (March).
- Michael Dooley, David Folkerts-Landau, and Peter Garber (2004) "Asian Reserve Diversification: Does it Threaten the Pegs?," Global Markets Research, February.
- Michael Dooley, David Folkerts-Landau, and Peter Garber (2004) "A Map to the Revived Bretton Woods End Game: Direct Investment, rising Real Wages and the Absorption of Excess Labor in the Periphery," Global Markets Research, June. Also published as "Direct Investment, Rising Real Wages and the Absorption of Excess Labor in the Periphery," NBER Working Paper 10626, July.
- Michael Dooley, David Folkerts-Landau, and Peter Garber (2004) "The US Current Account Deficit: Collateral for a Total Return Swap," Deutsche Bank Global Markets Research, August. Also in Working Paper 10727. Cambridge, Mass.: National Bureau of Economic Research (September).

Michael Dooley, David Folkerts-Landau, and Peter Garber (2004) *The Revived Bretton Woods: Alive and Well.*, Deutschebank Global Markets Research, December.

Michael Dooley, David Folkerts-Landau, and Peter Garber (2005) "Savings Gluts, Deficits and Interest Rates: The Missing Link to Europe," Deutschebank Global Markets Research, July 5, 2005. Also NBER Working Paper 11520, July.

Michael Dooley, David Folkerts-Landau, and Peter Garber (2005) "Living with Bretton Woods II," Deutschebank Global Markets Research, September 20.

Michael Dooley and Peter Garber (2005) "Is It 1958 or 1968? Three Notes on the Longevity of the Revived Bretton Woods System," *Brookings Papers on Economic Activity*, 1:2005, 147-187.

Dornbusch, Rudiger (1993) "Comment" on Michael Bordo, "The Bretton Woods International Monetary System: A Historical Overview" in Michael Bordo and Barry Eichengreen, eds., *A Retrospective on the Bretton Woods System*, University of Chicago Press.

Dornbusch, Rudiger. 1973. "Devaluation, Money and Nontraded Goods." *American Economic Review* 63, no. 5: 871-80.

Eaton, J. and M. Gersovitz, (1981) "Debt with Potential Repudiation: Theoretical and Empirical Analysis," *Review of Economic Studies*, 48, 289-309.

Eichengreen Barry (1995) "Endogeneity of Exchange Rate Regimes, in Understanding Interdependence: *The Macroeconomics of the Open Economy*, Peter Kenen Ed Princeton University Press 1995, pp.3 - 34.

Eichengreen, Barry (1998), "The Euro as a Reserve Currency," *Journal of the Japanese and International Economies* 12, pp. 483-506.

Eichengreen, Barry (2004), "Global Imbalances and the Lessons of Bretton Woods," mimeo (February), Working Paper 10497. Cambridge, Mass.: National Bureau of Economic Research (May). Forthcoming. "Chinese Currency Controversies." *Asian Economic Papers*.

Eichengreen, Barry and Donald J. Mathieson (1999), "The Currency Composition of Foreign Exchange Reserves: Retrospect and Prospect," Paper prepared for the UNU/WIDER Conference on the Future of the International Monetary and Financial System, Helsinki, 11-12 (November), Working Paper wp/00/131. Washington: International Monetary Fund.

Eichengreen, Barry and Jeffrey Frankel (1996), "The SDR, Reserve Currencies, and the Future of the International Monetary System," in Michael Mussa, James Boughton and Peter Isard (eds), *The Future of the SDR in Light of Changes in the International Financial System*, Washington, D.C.: IMF, pp.337-377.

Eichengreen, Barry, and Charles Wyplosz (1993) "The Unstable EMS." *BPEA*, no. 1: 51-124.

Eichengreen, Barry, and others (1998) "Exit Strategies: Policy Options for Countries Seeking Greater Exchange Rate Flexibility." Occasional Paper 168. Washington: International Monetary Fund (April).

- Feldstein, Martin (1999) "Self-Protection for Emerging Market Economies," NBER Working Paper no. 6907 (January).
- Frankel, Jeffrey (1995). "Still the Lingua Franca: The Exaggerated Death of the Dollar." *Foreign Affairs* 74, no. 4: 9-16.
- Frankel, Jeffrey (2005a) "The Twin Deficits." Notes presented at a meeting of the Bellagio Group, Amsterdam, January 20-21.
- Frankel, Jeffrey (2005b) "On the Renminbi: The Choice between Adjustment under a Fixed Exchange Rate and Adjustment under a Flexible Rate." Working Paper 11274. Cambridge, Mass.: National Bureau of Economic Research (April).
- Frankel, Jeffrey A., and Andrew K. Rose (1996) "Currency Crashes in Emerging Markets: An Empirical Treatment." *Journal of International Economics* 41, no. 3-4: 351-66.
- Garber, Peter, (1998) "Derivatives in International Capital Flows," NBER Working Paper no. 6623, June.
- Giovannini, Alberto (1989) "How Do Fixed-Exchange-Rate Regimes Work? Evidence from the Gold Standard, Bretton Woods and the EMS," in Marcus Miller, Barry Eichengreen, and Richard Portes, eds., *Blueprints for Exchange Rate Management*, New York, Academic Press, pp. 13-41.
- Goldstein, Morris (2004) "Adjusting China's Exchange Rate Policies." Washington: Institute for International Economics, May.
- Goldstein, Morris and Nicholas R. Lardy (2004) "What Kind of Landing for the Chinese Economy?" Policy Briefs in International Economics PB04-7. Washington: Institute for International Economics, November.
- Goldstein, Morris and Nicholas R. Lardy (2005) "China's Role in the Revived Bretton Woods System: A Case of Mistaken Identity." Working Paper 05-2. Washington: Institute for International Economics.
- Goldstein, Morris and Nicholas R. Lardy (2003), "Two-Stage Currency Reform For China" , *Asian Wall Street Journal*, September 12.
- Gourinchas, P. and O. Jeanne, (2003) "Capital Flows, Capital Scarcity and Economic Development," mimeo, December.
- Pierre Olivier Gourinchas and Helene Rey (2005) "From World Banker to World Venture Capitalist: US External Adjustment and the Exorbitant Privilege," NBER Working Paper w11563, August.
- Greenspan, Alan (1999), "Remarks by the Chairman of the Board of Governors of the Federal Reserve System before The World Bank Conference on Recent Trends in Reserve Management," Washington, D.C. (29 April).
- Grenville, Stephen (1999), "Financial Crises and Globalisation," Reserve Bank of Australia, http://www.rba.gov.au/speech/sp_dg_150799.pdf .

Grilli, Vittorio U. (1986) "Buying and Selling Attacks on Fixed Exchange Rate Systems." *Journal of International Economics* 20: 143-56.

Helpman Elhanan, (1981) "An Exploration of the Theory of Exchange Rate Regimes," *Journal of Political Economy*, 89, pp.865-890.

Hotelling, Harold, (1931) "The Economics of Exhaustible Resources," *Journal of Political Economy* 39, 137-175.

Hsieh, Chang-Tai, and Christina D. Romer (2001) "Was the Federal Reserve Fettered? Devaluation Expectations in the 1932 Monetary Expansion." Working Paper 8113. Cambridge, Mass.: National Bureau of Economic Research (February).

Kindelberger, Charles P. (1965) "Balance of Payments Deficits and the International Market for Liquidity," *Princeton Essays in International Finance*, no. 46 May, Princeton University International Finance Section.

Kindelberger, Charles P. (1995) "Dollar Darkness." *The International Economy* (May/June).
McKinnon, Ronald. 1996. *The Rules of the Game: International Money and Exchange Rates*. MIT Press.

Mann, Cathrine (1999). *Is the U.S. Trade Deficit Sustainable*, Washington, DC : Institute for International Economics,

McKinnon, Ronald and Gunther Schnabl (2003a) "A Return to Exchange Rate Stability in East Asia? Mitigating Conflicted Virtue," mimeo, October.

McKinnon, Ronald and Gunther Schnabl (2003b) "The East Asian Dollar Standard, Fear of Floating and Original Sin," mimeo, September.

Mundell, Robert A. (1971) *Monetary Theory*. Pacific Palisades, Calif.: Goodyear.

Nurkse, Ragnar (1945) "Conditions of International Monetary Equilibrium." *Essays in International Economics* 4. International Economics Section, Department of Economics, Princeton University.

Obstfeld, Maurice (1993) "The Adjustment Mechanism." In *A Retrospective on the Bretton Woods System*, edited by Michael D. Bordo and Barry Eichengreen. University of Chicago Press.

Obstfeld M. (1994) "Risk-Taking, Global Diversification and Growth," *American Economic Review*, 84, 1310-1329, December.

Portes, Richard and Helene Rey (1998), "The Emergence of the Euro as an International Currency," NBER Working Paper no. 6424, February.

Prasad, Eswar, and Shang-Jin Wei. (2005) "The Chinese Approach to Capital Inflows: Patterns and Possible Explanations." Working Paper 11306. Cambridge, Mass.: National Bureau of Economic Research, May.

- Razin, Assaf, and Gian Maria Milesi-Ferretti. (1998) "Current Account Reversals and Currency Crises: Empirical Regularities." Working Paper 6620. Cambridge, Mass.: National Bureau of Economic Research, June.
- Razin, Assaf and Efraim Sadka (2002), "Gains from FDI Inflows with Incomplete Information," NBER Working Paper No. w9008, June.
- Reinhart, Carmen M. and Kenneth S. Rogoff (2004), " , MIT Press, vol. 119(1), pages 1-48
- Roger, Scott (1993) "The Management of Foreign Exchange Reserves," BIS Economic Paper no. 38, Basle: BIS (July).
- Rogoff , Kenneth (2003), " *World Economic Outlook* Press Conference, September 18, 2003" in <http://www.imf.org/external/np/tr/2003/tr030918.htm>
- Roubini, Nouriel, and Brad Setser (2004) "The US as a Net Debtor: The Sustainability of the US External Imbalances." Stern School of Business, New York University, and University College, Oxford , November.
- Rueff, Jacques and Fred Hirsch (1965) "The Role and Rule of Gold: An Argument," *Princeton Essays in International Finance*, no 47, Princeton University International Finance Section, June..
- Salant, Stephen W. (1976) "Exhaustible Resources and Industrial Structure: A Nash-Cournot Approach to the World Oil Market." *Journal of Political Economy* 84, no. 5: 1079-93 .
- Smarzynsk, Beata and (2000), "Corruption and Composition of Foreign Direct Investment: Firm-Level Evidence," NBER WP w7969, October.
- Solomon, Robert (1977) *The International Monetary System: An Insider's View, 1945-1976*. Harper and Row.
- Summers, Lawrence (2004a), "The United States and the Global Adjustment Process," Third Annual Stavros S. Niarchos Lecture, Institute for International Economics, March. <http://www.iie.com/publications/papers/summers0304.htm>
- Summers, Lawrence (2004b) "The U.S. Current Account Deficit and the Global Economy." Per Jacobsson Lecture, Washington, October 3.
- Triffin, Robert (1960) *Gold and the Dollar Crisis*. Yale University Press.
- Triffin, Robert (1965) "The Evolution of the International System: Historical Reappraisal and Future Perspective," *Princeton Essays in International Finance*, no 47, Princeton University International Finance Section, June.

Certification

The views expressed in this report accurately reflect the personal views of the undersigned lead analyst. In addition, the undersigned lead analyst has not and will not receive any compensation for providing a specific recommendation or view in this report.

Peter Garber

David Folkerts-Landau
 Managing Director
 Global Head of Research
 London Tel: (44) 20 7545 5502

Stuart Parkinson
 Chief Operating Officer
 London Tel: (44) 20 7545 7303

Fergus Lynch
 Research Relationship Management
 London Tel: (44) 20 7545 8765

Company Research Europe

Guy Ashton
 London Tel: (44) 20 7547 2867

Economics, Rates, EM, FX
 & Commodities

Marcel Cassard
 London Tel: (44) 20 7545 5507

Credit Strategy

Gary Jenkins
 London Tel: (44) 20 7545 2322

Tactical Asset Allocation

James Barty
 London Tel: (44) 20 7545 2089

Principal Locations

Deutsche Bank AG
 London

1 Great Winchester Street
 London EC2N 2DB
 Tel: (44) 20 7545 8000
 Fax: (44) 20 7545 6155

Deutsche Bank AG
 Frankfurt

Grosse Gallusstrasse 10-14
 Frankfurt am Main 60311
 Germany
 Tel: (49) 69 910 00
 Fax: (49) 69 910 34225

Company Research Americas

David Manlowe
 New York Tel: (1) 212 250 8782

Securitisation

Karen Weaver
 New York Tel: (1) 212 250 3125

Equity Strategy

Tim Love
 London Tel: (44) 20 7545 6217

Deutsche Bank AG
 New York

60 Wall Street
 New York, NY 10005
 United States of America
 Tel: (1) 212 250 2500

Deutsche Bank AG
 Boston

225 Franklin Street
 Boston MA 02110
 United States of America
 Tel: (1) 617 217 6100
 Fax: (1) 617 217 6200

Company Research GEMs

Dave Murray
 Hong Kong Tel: (852) 2203 6128

Quantitative Credit

Jean Paul Calamaro
 London Tel: (44) 20 7545 1555

Asia Macro & Strategy

Michael Spencer
 Hong Kong Tel: (852) 2203 8303

Deutsche Bank AG
 Hong Kong

Cheung Kong Center, 2
 Queen's Road Central
 China
 Tel: (852) 2203 8888
 Fax: (852) 2203 7300

Deutsche Bank AG
 Singapore

5 Temasek Boulevard
 Suntec Tower Five
 Singapore 038985
 Tel: (65) 6423 8001
 Fax: (65) 6883 1615

Company Research Japan

Greg Jones / Fumiaki Sato
 Tokyo Tel: (813) 5156 6718
 Tokyo Tel: (813) 5156 6703

CROCI

Pascal Costantini
 London Tel: (44) 20 7545 1576

Equity Strategy Japan

Ryoji Musha
 Tokyo Tel: (813) 5156 6697

Deutsche Bank AG
 Japan

Sanno Park Tower, 2-11-1
 Nagatacho
 Chiyoda-ku, Tokyo 100-6171
 Tel: (81) 3 5156 6701
 Fax: (81) 3 5156 6700

Deutsche Bank AG
 Australia

Deutsche Bank Place, Level 16
 Corner of Hunter & Phillip Streets
 Sydney NSW 2000
 Tel: (61) 2 8258 1234
 Fax: (61) 2 8258 1400

Subscribers to research via email receive their electronic publication on average 1-2 working days earlier than the printed version.

If you would like to receive this or any other product via email please contact your usual Deutsche Bank representative.

Publication Address:

Deutsche Bank Securities Inc.
 60 Wall Street
 New York, NY 10005
 United States of America

Internet:

<http://gmr.db.com>
 Ask your usual contact for a username and password.

The information and opinions in this report were prepared by Deutsche Bank AG or one of its affiliates (collectively "Deutsche Bank"). The information herein is believed by Deutsche Bank to be reliable and has been obtained from public sources believed to be reliable. With the exception of information about Deutsche Bank, Deutsche Bank makes no representation as to the accuracy or completeness of such information.

This published research report may be considered by Deutsche Bank when Deutsche Bank is deciding to buy or sell proprietary positions in the securities mentioned in this report.

For select companies, Deutsche Bank equity research analysts may identify shorter-term opportunities that are consistent or inconsistent with Deutsche Bank's existing, longer-term Buy or Sell recommendations. This information is made available on the SOLAR stock list, which can be found at <http://equities.research.db.com>.

Deutsche Bank may trade for its own account as a result of the short term trading suggestions of analysts and may also engage in securities transactions in a manner inconsistent with this research report and with respect to securities covered by this report, will sell to or buy from customers on a principal basis. Disclosures of conflicts of interest, if any, are discussed at the end of the text of this report or on the Deutsche Bank website at <http://equities.research.db.com>.

Opinions, estimates and projections in this report constitute the current judgement of the author as of the date of this report. They do not necessarily reflect the opinions of Deutsche Bank and are subject to change without notice. Deutsche Bank has no obligation to update, modify or amend this report or to otherwise notify a reader thereof in the event that any matter stated herein, or any opinion, projection, forecast or estimate set forth herein, changes or subsequently becomes inaccurate, except if research on the subject company is withdrawn. Prices and availability of financial instruments also are subject to change without notice. This report is provided for informational purposes only. It is not to be construed as an offer to buy or sell or a solicitation of an offer to buy or sell any financial instruments or to participate in any particular trading strategy in any jurisdiction. The financial instruments discussed in this report may not be suitable for all investors and investors must make their own investment decisions using their own independent advisors as they believe necessary and based upon their specific financial situations and investment objectives. If a financial instrument is denominated in a currency other than an investor's currency, a change in exchange rates may adversely affect the price or value of, or the income derived from, the financial instrument, and such investor effectively assumes currency risk. In addition, income from an investment may fluctuate and the price or value of financial instruments described in this report, either directly or indirectly, may rise or fall. Furthermore, past performance is not necessarily indicative of future results.

Unless governing law provides otherwise, all transactions should be executed through the Deutsche Bank entity in the investor's home jurisdiction. In the U.S. this report is approved and/or distributed by Deutsche Bank Securities Inc., a member of the NYSE, the NASD, NFA and SIPC. In Germany this report is approved and/or communicated by Deutsche Bank AG Frankfurt authorised by Bundesanstalt für Finanzdienstleistungsaufsicht. In the United Kingdom this report is approved and/or communicated by Deutsche Bank AG London, a member of the London Stock Exchange and by the Financial Services Authority; regulated by the Financial Services Authority for the conduct of investment business in the UK. This report is distributed in Hong Kong by Deutsche Bank AG, Hong Kong Branch, in Korea by Deutsche Securities Korea Co. and in Singapore by Deutsche Bank AG, Singapore Branch. In Japan this report is approved and/or distributed by Deutsche Securities Limited, Tokyo Branch. **Additional information relative to securities, other financial products or issuers discussed in this report is available upon request.** This report may not be reproduced, distributed or published by any person for any purpose without Deutsche Bank's prior written consent. Please cite source when quoting.