

Will the Bretton Woods 2 Regime Unravel Soon? The Risk of a Hard Landing in 2005-2006

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Introduction

The defining feature of the global economy right now is the \$660 billion US current account deficit. The world's largest economy – and the world's preeminent military and geo-strategic power – is also the world's largest debtor. The current account surpluses of most other regions of the world are the mirror image of the US deficit. The US absorbs at least 80% of the savings that the rest of the world does not invest at home. Barring an economic slump in the US or a major fall in the dollar, the US current account deficit looks set to expand significantly in 2005 and 2006.

The defining feature of the current international financial and monetary system is that it finances the United States' enormous external deficit – and the associated fiscal deficit -- at low interest rates. The world's central banks, not private investors, provide the bulk of the financing the United States needs to sustain its deficits. The total increase of in dollar reserves reported by the BIS, not US data, provides the best indicator of total “official” support for the US.¹ In 2003, the world's central banks added \$440 billion of dollar reserves and, but for a \$45 billion transfer from the People's Bank of China to China's state banks to recapitalize them, the total would have been closer to \$485 billion. Central banks therefore financed 90% of the United States' \$530 billion current account deficit.² We won't know the exact figures on 2004 central bank dollar reserve accumulation until June 2005, but all available information suggest that the world's central banks did not let the US down. Expect at least another \$465 billion in financing from the increase in dollar reserves this year, and an overall foreign reserves increase of \$700 billion. If that estimate proves correct, central bank financing will cover around 70% of the 2004 US current account deficit. The increase in central banks' holdings of U.S. Treasuries has been large enough to finance almost all of the structural deterioration in the US fiscal deficit since 2001.

Michael Dooley, David Folkerts-Landau and Peter Garber, in a series of influential papers,³ have argued that the nations of the Pacific have constituted a new Bretton Woods system. In the original Bretton Woods system, Europe and Japan tied their currencies to the dollar; today the industrialized – and rapidly industrializing – Asian economies formally or informally tie their currencies to the dollar. Dooley, Folkerts-Landau and Garber, argue that this system of fixed and heavily managed exchange rates is fundamentally stable, and the intervention required to prevent Asian currencies from appreciating will continue to provide the bulk of the financing the US needs to run ongoing current account deficits. For countries on the periphery, the benefits of stable, weak exchange rates exceed the costs of reserve accumulation. China relies on rapid export-led growth to absorb surplus labor of hundreds of millions of low-skill poor workers from its vast agricultural sector into the modern, industrial and traded sector.

¹ Higgins and Klitgaard (2004) first made this point and estimated the gap between US-based and BIS-based figures on US dollar foreign reserves accumulation by world central banks.

² Since the transfer of \$45 b of Chinese reserves to their insolvent state banks is effectively a diversion of official foreign reserves, the effective financing of the US current account by foreign central banks in 2003 amounted to 88% of the US current account deficit.

³ See Dooley, Folkerts-Landau and Garber (2003, 2004a,b,c,d,e).

Continued reserve accumulation by Asian – and other – central banks, in turn, allows the US to continue to rely on domestic demand to drive its growth, and to run the resulting large current account deficits.⁴ Indeed, the external deficits financed through a new renminbi-dollar standard are far larger than any deficits associated with the original gold-dollar standard or the original Bretton Woods system.

Initially, Garber, Dooley and Folkerts-Landau suggested the new system of fixed and quasi-fixed exchange rates would last a generation, until China's agricultural labor surplus was absorbed in a new urban industrial sector. More recently, Peter Garber backed off a bit, but he still maintained that the new Bretton Woods system would last another eight years. Michael Mussa has suggested it will not last another four years. We believe it may have difficulty lasting for another two years.

This paper argues that the current renminbi-dollar standard is not stable: the scale of the financing required to sustain US current account deficits is increasing faster than the willingness of the world's central banks to continue to build up their dollar reserves. In the first section of the paper, we highlight the fundamental reasons why the Bretton Woods 2 international monetary system is unstable. In the second section, we argue that there is a meaningful risk the Bretton Woods 2 system will unravel before the end of 2006.

Sources of instability include:

- The intrinsic tension between the United States' growing need for financing to cover its current account and fiscal deficits and the large losses that those lending to the US in dollars are almost certain to incur as part of the adjustment needed to reduce the US trade deficit.
- The significant internal dislocations in the US associated with rising trade deficits, along with distortions in the allocation of US investment stemming from the combination of cheap central bank financing and an overvalued US dollar. The expansion of the trade deficit associated with current renminbi-dollar peg is politically unfeasible: Social peace in China comes at the expense of political peace in the US. The interest rate subsidy provided by central banks' purchases of dollar assets facilitates the expansion of US consumption and employment in interest-sensitive sectors. But it also discourages investment in the production of tradeables⁵, and thus implies that the adjustment ultimately required to bring the US trade deficit down will be more painful.
- The significant burden financing the United States imposes on Asian governments and the risks it poses to the stability of Asia's domestic financial system.
 - Asian central banks – and especially the People's Bank of China - are bearing a disproportionate share of the "burden" of supporting a profligate United States: Asian reserve accumulation far exceeds Asia's (large) current account surplus. Asian central banks effectively intermediate

⁴ Stephen Roach has argued that the world runs on two engines, with the US providing growth in world demand, and China growth in world supply. See Roach (2004).

⁵ See the discussion by David Hale, Financial Times, January 26, 2005.

between the world's demand for Asian assets and the United States' need for external financing.

- The enormous reserve growth required to sustain the Bretton Woods 2 system is hard to fully sterilize, particularly in China. The resulting increase in China's money supply will lead to a resumption of domestic inflation, in addition to fueling a lending boom and asset bubble that will add to China's already significant domestic financial weakness.
- Central bank balance sheets are increasingly exposed to large losses from their holdings of dollars. These losses are likely to be very large – a 33% renminbi appreciation currently implies a capital loss equal to 10% of China's GDP. More importantly, the longer the end of the Bretton Woods 2 system is postponed, the larger the losses. China's capital loss could easily exceed 20% of its GDP by 2008.
- The European Central Bank (ECB) will reduce pressure on Asian central banks by building up its dollar reserves through large-scale intervention. Politics matter: France and Germany are not willing to bankroll President's Bush's foreign and domestic policy choices. Moreover, the ECB lacks an institutional mandate to intermediate between European savings and America's need for financing on an "Asian" scale. Rather than joining Asia governments in financing the US, the European governments are likely to join with the US to demand exchange rate adjustment in Asia – and barring such adjustment; a new burst of protectionism is more likely than sustained intervention.
- The institutional infrastructure behind the "Bretton Woods 2" system is too weak to support the pace of dollar reserve accumulation required to sustain the system. The country providing the system's anchor currency – the US – is unfettered by any institutional commitment to protect the value of the world's dollar reserves: it is formally free to pursue policies that increase its demand for reserve financing. Yet, as Barry Eichengreen⁶ has emphasized, the institutions to limit the risk that a central bank will opt out of the dollar-financing cartel are weak – far weaker than the institutions that buttressed the dollar-standard standard in the original Bretton Woods system. Many Asian economies do not even formally peg to the dollar and are under no requirement to continue to build up their dollar reserves. Oil exporters are already defecting, increasing the pressure on China (and a few others) to accelerate the pace of their dollar reserve accumulation.

The easiest prediction is always that current trends will continue: the world's central banks will continue to add \$450-500 billion to their dollar reserves every year, and in the process, provide most of the financing needed for the US to continue to run large current account deficits. Imbalances can last so long as they are financed. So long as private investors holding dollar-denominated assets expect the US current account deficit will be financed, they seem willing to hold on to their existing dollar claims, though perhaps not to add to their exposure as fast as the world's central banks.

But assuming that massive reserve accumulation will continue requires overlooking growing signs that this system is under stress. The "periphery" of the dollar-financing

⁶ See Eichengreen (2004).

cartel at the heart of Bretton Woods 2 system – the smaller central banks now adding to their dollar reserves – have strong incentives to reduce their pace of reserve accumulation, if not to trade out of their existing stock of dollar reserves. But this just shifts more of the financing burden onto China, and other core members of the dollar-financing cartel. China’s annual reserve accumulation is growing, and if nothing changes, the exceptional pace of China’s reserve accumulation in Q4:2004 (\$100 billion in the quarter, i.e. at a \$400 billion annual rate) could become the new norm. China’s current boom should not obscure the fact that the maintenance of the Bretton Woods system requires China to accept both dangerous levels of domestic monetary growth that put its future economic health at greater risk and large capital losses on its dollar reserves. The costs to China of supporting the current system are not static. Rather than looking back at 2003-2004 as the beginning of a new system that provided sustained financing for ongoing US current account deficits, 2003-2004, and perhaps 2005, are likely to be remembered as years when unsustainably high growth in the world’s dollar reserves temporarily allowed the US to finance enormous current account and fiscal deficits at an artificially low cost.

If the US does not take policy steps to reduce its need for external financing before it exhausts the world’s central banks willingness to keep adding to their dollar reserves – and if the rest of the world does not take steps to reduce its dependence on an unsustainable expansion in US domestic demand to support its own growth -- the risk of a hard landing for the US and global economy will grow. The basic outlines of a hard landing are easy to envision: a sharp fall in the value of the US dollar, a rapid increase in US long-term interest rates and a sharp fall in the price of a range of risk assets including equities and housing. The asset price adjustment would lead to a severe slowdown in the US, and the fall in US imports associated with the US slowdown and the dollar’s fall would lead to a global severe economic slowdown, if not an outright recession.

1. Structural Vulnerabilities of the Bretton Woods 2 regime

1.1 The United States’ growing financing need

1.1.1. Foreign financing of US current account deficits is driven by foreign central banks’ intervention

The US is on track to record a 2004 trade deficit of roughly \$620 billion (5.3% of GDP), and a current account deficit of \$660-670 billion (5.7% of GDP). No more than \$45 billion of the overall \$120 billion increase in the trade deficit can be traced to the surge in oil prices. Non-oil import prices increased by 3.8% in 2004, but that only explains a portion of the roughly 15% y/y increase in the dollar value of non-oil imports.

The world’s central banks almost certainly financed a large part of this deficit, just as they financed the lion’s share of the 2003 deficit. Asian reserve accumulation in 2004 exceeded Asian reserve accumulation in 2003, despite an unfavorable commodity price shock. Central bank reserve accumulation probably totaled \$700 billion. Valuation

changes explain only \$80 billion or so of the global increase in reserves. Central banks likely added around \$465 billion to their stock of dollar assets, putting roughly 75% of their \$620 billion in new reserves in dollars.⁷

\$ billion						
	2000	2001	2002	2003	2004 YTD	2004 (f)
Central bank financing – US data	43	28	114	249	263	322
Change in BIS dollar reserves ⁸	51	83	185	486		465

These inflows are needed not just to fund the US current account deficit, but also to cover net outflows of both FDI and portfolio equity from the US. US direct investment abroad/ purchases of foreign stocks exceeded foreign direct investment in the US/ foreign purchases of US stocks in 2003, and almost certainly in 2004 as well.

\$ billion					
	2000	2001	2002	2003	2004 (f)
Current account deficit	-413	-385	-474	-531	-670
Portfolio equity (net)	93	13	38	-63	-70
FDI (net)	162	25	-62	-134	-80
Total financing need net of equity	158	347	498	728	820

(Source: Bureau of Economic Analysis)

Obviously, the scale of the financial flows needed to finance any given current account deficit would fall if net FDI outflows stopped, or foreigners could develop more interest in US equities. But given the scale of the expected increase in the US current account deficit, it is hard to see how the United States' need to place debt abroad does not continue to grow, barring a major shock.

1.1.2. Bretton Woods 2 and the financing of US fiscal deficits.

There is a close connection between the Bretton Woods 2 system and the US fiscal deficit in two senses. First, the very rapid deterioration in the US budget deficit between 2000 and 2003 led the current account deficit to widen despite an enormous fall in private investment, as a 2.4% of GDP surplus turned into a 3.5% of GDP deficit. National savings fell more rapidly than private investment. The fact that the current account

⁷ A \$465 dollars/ \$235 billion other currencies split (including valuation gains) would keep the share of dollars and other currencies in central bank's reserve portfolio roughly constant. All of Japan's reserve accumulation went in to dollars, and the emerging Asian dollar block added to its reserves more rapidly than most Eastern European "euro" block countries. Consequently, the overall distribution of new reserve purchases tilted toward dollars. This distribution still implies that non-Japan Asia probably stepped up its purchases of euro reserves at the margin. Euro reserve accumulation was very low in 2003, as about 90% of all new reserves were invested in dollars.

⁸ BIS (2004), BEA and author's own estimates. \$45 billion in reserves transferred from the People's Bank of China to two state owned Chinese banks have been added to the BIS' estimates of 2003 dollar reserve accumulation.

deficit did not fall in the recession set the stage for the expansion of private investment associated with a recovery to widen the deficit further, particularly since the deterioration of the US fiscal deficit during the recession was largely structural, not cyclical – credible forecasts imply that the fiscal deficit will remain above 3.5% of GDP going forward⁹ if the Bush Administration’s tax cuts are made permanent.¹⁰

Second, central bank inflows have limited the impact of large deficits on the Treasury market, and helped to keep US interest rates low. Low interest rates, in turn, increase the value of a wide range of assets – including housing – and thus encourage Americans to borrow against their existing stock of assets, and to otherwise let asset price appreciation substitute for savings. Consequently, as Stephen Roach has emphasized, central bank demand for US financial assets has contributed to the recent fall in the US private savings rate.

The impact of central bank buying on the Treasury market is not really in doubt. Because of foreign demand – mostly foreign central bank demand -- the stock of treasuries held by US private investors has stayed constant since 2001 even though the overall stock of US debt has increased dramatically. Overall holdings of Treasuries by US private investors remain lower than they were in 1996.

\$ Billion.

	Marketable Treasuries	Held by Fed	Held by State and local governments	Held abroad	O/w Recorded holdings of foreign central banks	Held privately in the US
1996	3472	391	161	1047		1996
2000	3021	512	146	1021	609	1342
2001	3016	552	193	1063	619	1208
2002	3262	629	198	1254	763	1180
2003	3655	667	210	1539	934	1239
2004 (q3)	3856	700	232	1805	1115	1118
2004 (f)	3983	718	232	1870	1159	1163

(Source: Bond Market Association)

Foreign central banks’ actual holdings of Treasury bonds no doubt exceed their recorded holdings: Treasuries purchased by foreign broker dealers on behalf of central bank clients are counted as “private” sales. This is one reason why there is a significant gap between the increase in dollar reserves the world’s central banks report to the BIS and the increase in central bank claims on the US registered in the BEA data. This gap was particularly

⁹ Gale and Orszag, 2004.

¹⁰ The behavior of the US current account does not support the “Ricardian Equivalence” view of fiscal policy. A 5.5% of GDP worsening of the fiscal account between 2000 and 2004 did not lead to any significant improvement in private saving, a first order evidence against Ricardian equivalence.

wide in 2003: Dollar reserves increased by \$441 billion while the US data system only registered central bank inflows of \$251 (in this context, it makes sense to exclude the \$45 billion the PBOC transferred to two Chinese state banks from the global reserve total, as the \$45 billion would be considered a “private” holding of US assets). Japan’s heavy end of the year intervention is one reason for the discrepancy, since dollars purchased at the end of the year were initially kept in deposit in Japan’s banking system.¹¹ But even subtracting out the roughly \$63 billion in reserve increase explained away by Japan’s growing bank accounts, the \$378 billion increase in dollar reserve increases still exceeded the \$251 billion in recorded central bank inflows.

\$ Billion.

	Increase in dollar reserves	Increase in recorded central bank holdings of Treasuries
2002	185	144
2003	442	171
2004 (f)	465	331
2002-2004	1092	646

(Sources: BIS, Treasury, and author’s own estimates)

Foreign central holdings are probably somewhere in between recorded central bank holdings and overall foreign holdings.¹²

1.1.3. Impact of foreign central bank intervention on US long term interest rates.

Developing a clean test of the impact of central bank demand on interest rates is hard, and estimates of the impact vary substantially. Goldman Sachs (2004) has presented an analysis suggesting that central banks intervention is narrowing Treasury yields by only 40bps; Sack (2004) provides a similar estimate.¹³ Truman (2005) notes that sustained intervention from central banks is similar to a sustained reduction in the fiscal deficit: his ballpark estimate suggests a \$300 billion in central bank intervention might have a 75 bp impact. Research from Federal Reserve suggests a 50 to 100 bps impact (see Bernanke, Reinhart and Sack (2004)); PIMCO’s Bill Gross puts it at closer to 100 bps, and Morgan Stanley’s Stephen Roach puts it at between 100 and 150 bps.

¹¹ Over the course of 2004, the government of Japan ran down its dollar deposits to purchase Treasury bonds.

¹² See UBS (2005) for an attempt to track hidden central bank participation in the Treasury market by assuming that a fraction of private purchases from certain jurisdictions (London, Singapore) represent activity from the world’s central banks. Moreover, some private purchases reflect expectations of central bank intervention: Japanese insurance companies and pension funds are more willing to buy Treasuries and get the spread pickup over JGBs because of expectations the MOF will prevent the dollar from falling too far. We will discuss this point in more detail in section 2.

¹³ Dooley, Folkerts-Landau and Garber also agree that this Asian financing has sharply reduced the US long term interest rates but they do not provide an estimate of the size of such an effect.

While estimating the effect of central banks intervention on US long rates is difficult, there is good reason to suspect that the impact of central bank purchases much larger than the 40bps static effect estimated in some studies. Specifically:

- The role of central banks in financing the US budget deficit is much larger than some studies consider, since actual central bank purchases exceed recorded central bank purchases. Since 2000, all of the net new supply of Treasuries has been purchased by non-residents, and about 80 to 90% of the new supply by foreign central banks.¹⁴
- Most of the data points used to estimate the impact of central bank demand for Treasuries come from the 1990s, when central dollar reserves accumulation rarely exceeded \$100 billion (and recorded inflows into Treasuries were even smaller), short-term US rates were much higher than now, the US fiscal deficit was falling, and the debt to GDP ratio was declining. Controlling for all these other variables is hard. Moreover, the impact of central bank demand may not be linear, and there are very few data points to draw on to estimate the impact of current levels of reserve accumulation. These studies consequently may underestimate the impact of \$400 billion plus of dollar reserve accumulation and \$300 billion plus of central bank Treasury accumulation.
- Reduced intervention by Asian central banks would affect the dollar, US growth and US inflation and thus indirectly impact many of the other variables that determine Treasury yields. The fall in the US dollar associated with reduced intervention would tend to increase net exports and GDP and would tend to increase the US inflation rate; both effects would tend to raise yields. These general equilibrium effects could add another 100bps to the estimated impact of direct central bank purchases of Treasuries.
- Many private investors abroad are buying US dollar assets and US Treasuries based on expectations that their central bank's management of the exchange rate will limit the risk of holding dollar assets (see our discussion of this point in section 2). If such central banks were to stop intervening and let their currencies move sharply, the private investors' willingness to finance the US would be reduced. Doubts about central banks commitment to manage their exchange rate would not just influence new purchases of dollar assets; it would also influence non-residents' willingness to continue to hold their existing portfolio of Treasury bonds. Foreign private investors account for a relatively small fraction the (net) marginal demand for Treasuries right now. But any shift in expectations that led private investors abroad to alter their overall portfolio composition clearly could have a significant impact on yields.

¹⁴ See <http://www.ustreas.gov/offices/domestic-finance/debt-management/qrc/2005/2005-q1-charts.pdf>. 53% of US marketable Treasuries not held by the Federal Reserve ("privately held" Treasuries in the Treasury data set) are now held by non-residents, and 29% are held by foreign official institutions at the NY Fed (the TIC data captures some of the Treasuries that foreign official institutions hold outside the New York Federal Reserve, so it does not match this data set perfectly). However, as Higgins and Klitgaard (2004) and others have noted, official US data significantly underestimate foreign central bank holdings. Consequently, the share of US Treasuries held by foreign central banks may be as high as 40%.

- Central bank demand made it easier for the US Treasury to shorten the maturity of the US debt stock, and thus to reduce relative supply of long term US Treasuries. By eliminating the 30 year bond and supplying very little of the 10 year bond, the US reduced the share of ten year and longer Treasuries in the overall marketable stock from 40% in 2001 to 31% at the end of fiscal 2004. The overall stock of marketable treasuries went up by \$931 billion in FY 2002-04, but the stock of ten-year notes and longer-term bonds went up only by \$35 billion. Had the share of longer term Treasuries in stock stayed constant, the increase would have been closer to \$365 billion. Central banks clearly are not just buying short-dated bills and two and three year Treasury notes: US data indicates that they have been important participants in the five and ten year note auctions. Consequently, the stock of ten-year notes in private US hands has presumably gone down over the past few years despite the large increase in the overall Treasury stock. Treasuries of different maturities are a close substitutes, but the relative scarcity of the ten-year note and other longer dated Treasuries could nonetheless have had an impact on its yield.

Consequently, the 40bp Goldman estimate seriously understates the effects of the Asian intervention on the market. Considering the size of recent central bank purchases, the indirect impact of central bank intervention on private demand for Treasuries, the interaction between central bank reserve accumulation and Treasury debt management policy and the effects of Asian reserve accumulation on inflation and growth (general equilibrium effects), we would bet the overall impact would be closer to 200bps.

The Impact of foreign demand on the Treasury market¹⁵

	Increase in supply of Treasury notes	Net central bank purchases of notes	As % of new note issuance	Increase in supply of marketable Treasuries	Net foreign purchases of Treasuries	As % of net new issuance of marketable Treasuries	Average maturity of new Treasury issuance
	\$ billion	\$ billion		\$ billion	\$ billion		
2001	-183.5	2.7	--	-19.1	-24.9	--	4.8 years
2002	156.8	115.0	73%	234.4	198.5	85%	2.1 years
2003	326.7	149.4	46%	366.5	289.6	79%	2.3 years
2004	289.4	205	71%	344.6	390	113%	2.9 years

(f)

(Sources: Treasury Bulletin, the Treasury quarterly refinancing documentation and the TIC)

1.1.4. The unsustainability of the US external imbalance.

¹⁵ Treasury bills are short-term Treasury obligations of less than a year that are sold at a discount to face. Treasury notes are coupon paying Treasuries with a maturity of between 2 and 10 years. Treasury bonds have a maturity of longer than ten years. The US Treasury, however, no longer issues long-term bonds. The Treasury TIC data provides a breakdown between foreign central bank purchases of bills and notes, but it does not provide a breakdown between overall foreign holdings of bills and notes.

The core contradiction in the current international monetary order is simple. The US is currently financing itself by selling low-yielding dollar debt¹⁶, which offers foreign investors little protection against a future fall in the dollar. Yet the United States' large trade deficit and rapidly rising external debt to GDP ratio imply that a large future fall in the dollar will be needed to reduce the US trade deficit to more sustainable levels. The longer foreign investors finance the US on current terms – particularly investors from countries whose currencies have yet to fall at all against the dollar – the larger their likely capital losses on their dollar assets.

Our previous work (Roubini and Setser (2004)) has shown that the external debt of the US is on an unsustainable path.¹⁷ One common proxy for external debt sustainability is a stable external debt to GDP ratio. The current US debt to GDP ratio (a bit under 30% of GDP) is not all that high – at least in comparison with some emerging economies and a few of the smaller Anglophone countries. But the US external debt to exports ratio is already quite high, and the US debt to GDP ratio is rising rapidly. If the US trade deficit continues to deteriorate, though at a slower pace than in 2004, the US net external debt to GDP ratio will approach 50% by 2008.¹⁸ Moreover, growing claims on the US imply – as Alan Greenspan has noted – that foreign portfolios will hold a higher concentration of US assets. To limit the concentration of their portfolios in US assets, foreigners presumably would need to cut back on their net financing of the US.

Consequently, it is reasonable to think that the US will need to move toward a trade and transfers balance that stabilizes its debt to GDP ratio, or at least a trade and transfers balance that significantly slows the pace of US external debt accumulation. If so, the needed adjustment could be quite large.¹⁹ If the real interest rate on US external debt

¹⁶ For more on the link between low real interest rates and recent US growth, see Stephen Roach, Morgan Stanley Global Economic Forum, January 3, 2005 and February 7, 2005.

¹⁷ A number of other authors have recently expressed serious concerns about the sustainability of the current U.S. fiscal policy, current account deficits and external debt accumulation. They include Rubin, Orszag and Sinai (2004), Summers (2004a, b), Rogoff (2003, 2004), Obstfeld and Rogoff (2004), Godley et al. (2004), Roach (2004a, b), Wolf (2004a, b) Mussa (2004), Truman (2004), Mann (2004) and IMF (2004a, 2004b). For different views from the Fed, see Kohn (2003), Greenspan (2003) and Gramlich (2004); but the Fed views have recently changed as the minutes of the June 29th-30th FOMC meeting suggest (<http://www.federalreserve.gov/fomc/minutes/20040630.htm>). See also Greenspan (2004) and Geithner (2005) for the recent renewed concern by the Fed about the US current account sustainability. See also the recent volume of papers edited by Bergsten and Williamson (2004). For earlier studies of the determinants and sustainability of the U.S. current account deficit, see Godley (1995, 1999), Mann (1999, 2003), Obstfeld and Rogoff (2000) and Freund (2000). See also the materials in Roubini's Global Macro site section on the U.S. current account sustainability: http://www.stern.nyu.edu/globalmacro/cur_policy/cad.html.

¹⁸ Our work – Roubini and Setser (2004) – as well as that of others (for example Mann (2004) suggest that the US trade and current account deficit will worsen over the next few years, barring a sharp fiscal adjustment in the US and a further fall of the value of the US dollar. Greenspan (2005) has argued instead, that the US trade balance will narrow in the near future. This view is predicated on the expectation of a meaningful US fiscal adjustment and on the likely sharper rise in import prices: firms in Europe and other countries whose currencies have appreciated relative to the US dollar have now squeezed their profit margins and will thus not be able to absorb further dollar weakening without increasing the dollar price of the goods they export to the US. This increase in import prices would improve the US trade balance.

¹⁹ The trade and transfers balance consistent with a stable debt to GDP ratio is a function of the gap between the real interest rate paid on the country's external debt. Here the nominal interest rate is defined

matches the real growth rate, stabilizing the external debt to GDP ratio requires bringing the balance on trade and transfers (the primary external balance) to zero. That implies an adjustment, over time, of 5.8% of US GDP. The size of the needed adjustment would not fall by much even if the US retains a significant real interest - real growth rate differential: if the differential is 2% and net debt rises to 50%, the “sustainable” trade and transfers deficit is 1% of GDP rather than zero percent of GDP.

It is important to emphasize that stabilizing the external debt to GDP ratio does not require eliminating the US current account deficit – but it does require substantially reducing the trade and transfers deficit. Even if the US trade and transfers balance is zero, net interest payments on the United States external debt imply a substantial current account deficit.²⁰ Put differently, reducing the current account deficit from 6% of GDP to a sustainable level of around 3% of GDP requires reducing the trade and transfers balance by far more than 3% of GDP, particularly if the adjustment is gradual and the US external debt to GDP ratio stabilizes at a level well above its current level.

Bringing about that kind of adjustment requires some combination of stronger growth in world demand, slower growth in overall US demand, and changes in the real exchange rate. Economic theory suggests that reducing the trade deficit requires *expenditure switching* from the change in relative prices associated with a nominal and real currency depreciation and *expenditure reduction* to reduce the growth in domestic demand below the growth in national income.

The deterioration of the US trade deficit even after the dollar started to fall significantly in 2003 can be explained in part by the continued large US fiscal deficit. So long as the US fiscal deficit remains large and US private savings remains low, real depreciation in the dollar will lead to a reduction in the trade imbalance only if there is a fall in private consumption (increase in private savings) or a fall in private investment from higher real interest rates. In 2004, the fiscal deficit stayed constant as a share of GDP, but real interest rates remained low and private savings fell and private investment rose. Consequently, the private savings-investment gap grew, and the overall current account deficit continued to widen.²¹

as net investment income payments in the current account/ net international investment position, and the real rate is the nominal rate paid on external debt – the GDP deflator. The real rate on US external debt was quite negative in 2004. The US earned more on its external assets than it paid on its external debt despite having more liabilities and assets, and US inflation was not trivial. Over time, the real interest rate on US external debt is likely to become positive, and the real interest rate - real growth differential in the US is likely to move toward zero.

²⁰ If the US debt to GDP ratio rises to 50% -- something that is likely in any gradual adjustment scenario, and the nominal interest rate on US external debt is 5%, the US current account deficit would be 2.5% of GDP even in the absence of a trade and transfers balance.

²¹ High oil prices also contributed to the expansion of the current account deficit, particularly since the Federal Reserve viewed the oil price hike as a tax increase, and thus let higher oil prices substitute for higher interest rates. Oil import volumes continued to grow at a strong pace despite the price rise. The J curve impact from the fall in the dollar has been small to date. Non-oil import prices increased by less than 4% in 2004; most of the increase in imports comes from continued strong growth in import volumes.

These fiscal deficits are likely to persist. Both Goldman Sachs (2005) and Gale and Orszag (2004) estimate that the United States is likely to maintain a consolidated budget deficit of over 3.5% of GDP over the next few years. The policy priorities of the Bush Administration – notably making the tax cuts permanent and tax reform to limit the incidence of the alternative minimum tax – imply, according to the CBO, budget deficits of \$600 billion (4% of GDP) in 2009, and \$865 billion in 2014 (4.5-4.6%) of GDP so long as discretionary spending grows at the rate of nominal GDP.²² Such a fiscal policy trajectory implies large – and almost certainly disruptive – moves in the private savings-investment imbalance will be required to reduce the current account deficit to under 3% of GDP.²³

The 15% fall in the broad trade weighted dollar that has occurred to date is unlikely on its own to bring about the needed fall in private consumption on its own. There is no evidence that the dollar's fall to date has done anything more than slow (somewhat) the expansion of the US trade deficit: the dollar's fall in 2003 helped 2004 exports, but the impact of strong export growth was overwhelmed by strong import growth from growing domestic expenditure. It is important to remember that the dollar was exceptionally strong in early 2002 and some fall in the dollar was needed simply to avoid a complete blow out of deficit once US growth resumed. Even at its current level of around 95, the broad dollar remains stronger than it was from 1990 to 1997 (the dollar ranged from 85 to 92 during this period) and even with the dollar at around 90, the US trade deficit tended to deteriorate slightly over time during the mid 1990s. An additional fall of 20% or more in the broad dollar could easily be needed to bring about the necessary external adjustment.²⁴

²² Spending would be a around 20.5-21% of GDP, taking into account rising interest expenses, while tax revenues would remain in the 16.5%-17% of GDP range in 2009; after 2009, rising “mandatory spending” and interest spending leads the deficit to expand further. The consolidated budget dramatically overstates the financial health of the US government. In 2004, Social security lent the rest of the government \$154 billion. Without that financing, the budget deficit would have been roughly \$566 billion (4.9% of GDP), not \$412 billion. Non social security revenues (11.3% of GDP) only covered 70% of the government's 2004 spending (16.25% of GDP). Since social security is expected to take in more than it spends until 2019, any social security “reform” that diverts payroll tax revenue without reducing current spending would widen the consolidated deficit.

²³ Garber claims that global imbalances are not caused by “US fiscal profligacy”. He presumably views the latest US fiscal deficit as driven by a transitory increase in military (and homeland security) spending related to the wars against terrorism, Afghanistan, Iraq and the need to prepare to confront other rogue states. History and a tax smoothing approach to fiscal policy (see evidence in Ahmed (1987)) suggests that, during a transitory war, it is optimal to run fiscal deficits that lead to current account deficits. In this view, the US is borrowing from abroad to provide the global public good of “international security”. But this argument does not make much sense. First, the current war against terrorism and various “rogue states” may last a generation and a tax smoothing model implies such semi-permanent spending should be financed by an increase in tax rates. Second, most of the worsening of the US fiscal deficit has not been driven by an increase in defense and homeland security spending but rather by a structural fall in revenues. Third, a tax smoothing model suggest that, during a transitory increase in spending, tax rates should remain constant (smoothed) not sharply reduced as they have been in 2001.

²⁴ The standard rule of thumb is that after lags, a 10% move in the broad dollar leads to a \$100 billion (or around 1% of GDP) improvement in the trade deficit. If that rule holds, cutting the trade and transfers deficit from 5.8% of GDP to 1% of GDP would require a 50% fall in the broad dollar over time. More adjustment would be needed against currencies that have not moved to date against the dollar, and less adjustment against currencies that already have moved. However the adjustment process is probably not

1. 2. Strains in the US. Dislocations and distortions associated with rising imports, misaligned relative prices and artificially low interest rates

1.2.1 Dislocations

The continuation of the Bretton Woods 2 regime implies that US imports from Asia will continue to grow more rapidly than the US economy. This will lead resources to flow out of import-competing sectors, and typically flow into sectors that are favored by the low interest rates. The associated job losses and related economic dislocation will add to the protectionist pressures already being generated by the weak recovery in overall employment and broader weakness of employment in the U.S. manufacturing sector.²⁵ As Fred Bergsten has emphasized, the U.S. politically cannot allow its manufacturing base to decline as sharply as a sustained Bretton Woods 2 system would imply, particularly since Chinese production is moving up the value-added chain.²⁶ Right now, Chinese production is challenging US production not just in sectors that have long benefited from protection (textiles) but also in a range of new sectors, such as furniture and auto parts.

US imports from China are increasing at an extraordinary 25% y/y clip. Normally, such rapid export growth could not be sustained, but with investment in China surging, and now about 45% of GDP, it is clear that China's production capacity is expanding at a very rapid rate. Consequently, maintaining the current renminbi-peg likely implies continued very rapid growth in US imports of Chinese made goods. 25% y/y growth over the next four years would lead imports to China to double as share of US GDP double, rising from 1.6% of US GDP, or nearly \$200 billion, to 3.3% by 2008 -- far more than the increase of 0.6% of GDP increase of the past four years. Put differently, even if oil stays at \$48-49 a barrel and oil import volumes continue to increase at 5% a year, continuation of current rates of import growth imply US imports from China would be two times as large as US petroleum imports in 2008.

While from 2001 to 2003, rising imports from China were offset by reduced imports from other Asian economies, in 2004, imports non-China Asia grew strongly even as imports from China surged. Increasingly, imports from China are not just displacing other Asian production. If the trend of 2004 continues, overall imports from the Pacific Rim would rise from their current 4.2% of GDP to 6.0%. That implies significant shifts in the

linear: a 10% fall in the dollar may produce a less than 1% improvement in the trade balance, while a 40% fall in the broad dollar may produce a change of more than 4%. Between 1985 and 1987, a roughly 30% fall in the dollar (which went from 128 to around 100) brought the trade deficit down from around 3% of GDP to about 1.4% of GDP in 1990; in comparison, the current move in the dollar has been relatively modest.

²⁵ See Baily and Lawrence (2004) for a study of the impact of trade on US jobs in 2000-2003. While they find that trade does not account for the major part of the jobs losses in manufacturing in this period, they find some significant evidence of an effect of the slow growth of US exports on the employment in the manufacturing sector; the job losses due to low U.S. exports are estimated to be as high as 1.4 million.

²⁶ As Goldstein (2004) notes, a number of bills have been introduced in Congress that would impose a broad import levy on Chinese imports if China does not revalue its exchange rate.

composition of US employment – shifts that will be as large in many ways at the shifts that accompanied the 2001-2002 recession.

Resisting political pressure for protectionism will be particularly difficult if the dislocations stem occur in the context of an overall economic relationship distorted by a significantly undervalued exchange rate.²⁷ It will be difficult to separate those dislocations that are the inevitable consequence of growing integration, and those that simply reflect exchange rate misalignments.

The resulting expansion of China's exports to the US implies that China – and East Asia more generally -- will become over more dependent on the US as a source of demand. Exports to US alone already account for about 12% of China's GDP (up from 9% in 2000). By 2008, if 25% y/y growth is sustained, exports to the US will account for about 20% of China's GDP – an extraordinary degree of dependence for a large, continental economy. Even if the Chinese exports rely heavily on imported components, and consequently the value-added in China is only 20 cents on a dollar's exports, China would directly rely on the US for about 4% of its GDP, and indirectly for much more.

1.2.2 Distortions

As we discussed previously, the enormous accumulation of dollar reserves required to maintain the Bretton Woods 2 system has kept US Treasury interest rates lower than they otherwise would have been, and contributed to the broader rally in all dollar denominated bond markets. Low nominal and real US interest rates, in turn, certainly supported interest sensitive sectors of the US economy, and thus overall US employment. Given the current structure of the US economy, job gains in sectors favored by artificially low interest rates probably exceed job losses in sectors hurt by Asian competition – or in sectors that would be able to export more with more realistic exchange rates in Asia. But like any subsidy, an interest rate subsidy also distorts a range of decisions.

Stephen Roach has emphasized how low interest rates have discouraged personal savings rate, as low interest rates have pushed up in housing prices and allowed Americans to borrow against the rising values of their homes to support their current consumption. The distortion though is much broader: low interest rates should encourage corporate investment (though recently firms have generally preferred to rebuild their balance sheets; corporate savings are high), but so long as low interest rates are the byproduct of central bank intervention to maintain undervalued currencies, they hardly encourage investment in the tradeable goods sector. Consequently, central bank intervention encourages over-investment in sectors like housing and under-investment in the production of tradable goods. Yet over time, the US will almost certainly need to increase

²⁷ Such protectionist pressure may induce China to restrain its exports to avoid US formal protectionist actions. For example, as the Multi-Fiber Agreement expired at the end of 2004, the loud reaction of US producers and workers in the textile and apparel industry already induced China to introduce controls on its export of some types of apparel in spite of the expiration of the MFA. Such “voluntary” export restrictions are likely to increase, as they did in 1980s during the surge of Japanese car exports to the US, as disguised forms of trade protection.

the share of its capital stock devoted to the production of tradables to bring its trade deficit down and regain external debt sustainability. Eventually, many of the resources now flowing out of the tradeables sector will have to flow back into tradeables production.²⁸

1.3 Strains in Asia: Domestic financial bubbles and rising taxpayer losses from weak central bank balance sheets

1.3.1 Asia bears a disproportionate share of the burden of financing the US.

Since emerging Asia's overall reserve accumulation in 2003 and 2004 exceeded its current account surplus, emerging Asia is not just "saving" its trade surplus in reserves, it is also "banking" ongoing capital inflows. By using ongoing capital inflows to finance higher reserves accumulation, East Asian central banks in effect intermediate between the world's demand for Asian assets and the United States' need for financing. European and Middle Eastern investors get financial claims on East Asia. The central banks of emerging Asian economies get financial claims on the United States.

The following page contains a chart showing our rough estimate of the global current account balance. It draws on the IMF's data, and follows the IMF's categorization of countries. Consequently, China is lumped together with a set of much smaller emerging Asian economies (The emerging Asia four includes China, Thailand, Malaysia and the Philippines), even if it has more natural economic ties with three of the four Asian NICs (Korea, Hong Kong and Taiwan). Three points stand out: first, the global current account only balances if the entire world's current account surplus is, one way or another, lent back to the US; second, Asia received about \$200 billion in net capital inflows from the rest of the world, allowing it to accumulate over \$530 billion in reserves rather than the \$310 billion possible with its own current account surplus; and third, oil exporters' now account for more of the global current account surplus than Europe.

²⁸ See Hale (2005).

\$ billion. Data from the IMF and author's own estimates

2004 Global current account	Current account	Reserve increase	Net private capital flows
Deficit countries/ regions	-696.1		
USA	-660		
Australia	-32		
NZ	-4.1		
Surplus countries/ regions	697.6		
Asia	313.2	535.6	222.4
o/w Asia -Japan	153.8	358.9	205.1
Japan	159.4	176.7	17.3
NICs	85	96.7	11.7
Asian -4	61	230.6	169.6
o/w China	38.5	202.1	163.6
Rest of Asia	7.8	31.6	23.8
o/w India	3.4	31.3	27.9
Oil exporters	194.9	73.2	-121.7
Middle East	128.5	45.4	-83.1
CIS	66.4	27.8	-38.6
o/w Russia	61.6	43.8	-17.8
Canada	28.2		
Europe	84.7		
Euro zone	72.2		
UK	-43.3		
Nordics	64.9		
Switzerland	36.2		
Israel and Cyprus	-1.1		
Eastern Europe	-44.2	9.4	53.6
Africa and Latin America	11.8	35.6	23.8
Africa	2.8	22.9	20.1
Latin America	9	12.7	3.7
Global residual	64.8		
Global deficit	-783.6		
US as % of world	84.23%		

Asian central banks consequently are doing more than just providing vendor financing to support export-led development paradigm. They are also intermediating a decent of the rest of world's savings. This process of financial intermediation is mostly clearly observed in China, the emerging Asian economy that is attracting the most external capital. Capital inflows – not ongoing trade surpluses – financed about 75% of the PBOC's reserve accumulation in 2003 and 2004. Such inflows leave foreign investors with renminbi assets whose value will go up should the renminbi appreciate, while the PBOC of China is left with a loss on its dollar assets. The PBOC, in effect, intermediates between the world's demand for Chinese assets and the United States' need for external financing.

China's Balance of Payments

\$ billion				
	2002	2003 ²⁹	2004 (updated forecast)	2005 (f)
Current account surplus	35	46	50	60
FDI inflows	47	47	60	80
Other capital inflows	-7	69	80	100
Valuation gains			10	0
Reserve accumulation	76	162	200	240
Gross reserves (including gold)	295	457 (32% of GDP)	610 (38% of GDP)	850 (48% of GDP)
GDP	1270	1412	1593	1763
Current account surplus as a % of GDP	2.7%	3.3%	3.1%	3.4%
Reserve accumulation as a % of GDP	5.9%	11.5%	11.6%	13.6%

(Source: IMF Article IV, Chart "Sources of Reserve Accumulation" and authors' own estimates)

1.3.2 Impact on domestic financial systems in China and Asia.

Growing reserves – barring offsetting actions by the central bank – imply an expansion of the money supply and can fuel the excessive credit creation that gives rise to bad lending. Central banks can try to sterilize their growing reserves, in effect selling government bonds to mop up the increased money supply associated with reserve growth. Higgins and Klitgaard (2004) found that only about ½ of China's 2000-2003 reserve increase was sterilized; since reserves increased by a bit over 9% of China's GDP over that time frame,

²⁹ The 2003 data includes the \$45 billion in reserves transferred to two Chinese state banks. However, the 2004 "stock" data has not been adjusted to reflect this transfer. To make the flow and the stock numbers consistent, so that the change in the stocks equals new 2004 flows, roughly \$45 billion needs to be added to the 2004 stock number, raising the reserve total to \$655 billion (41% of GDP).

the monetary base increased by over 5% of GDP. In 2004, China's reserves increased by over \$200 billion, or 13% of GDP. China seems to have issued only \$70 billion in sterilization bonds (Data from Dow Jones) – meaning that much of the increase in reserves translated into an increase in the money supply. Looking forward, continued reserve accumulation in excess of 10% of China's GDP implies an increasing inability to sterilize such interventions, and very rapid monetary growth.

Moreover, China's peg to the dollar constraints its ability to increase interest rates to reign in credit growth: higher domestic interest rates would only strengthen incentives for money to flow into China and attempt to bypass the controls on capital inflows. The combination of low real interest rates and rapid expansion of the money base is fundamentally dangerous: it has contributed to extremely rapid credit growth. Administrative controls reduced 2004 credit growth below its 2003 level, yet, as Goldstein and Lardy (2004) note, "the increase in domestic currency credit extended in 2004 will almost certainly be the second highest ever. It will take additional years of moderating credit growth to get investment down to a sustainable level."

Concerns about the capacity of China's banks to manage such rapid credit expansion are increased by the poor existing state of China's financial system. The current stock of non-performing loans in the financial system is officially estimated to be 40% of GDP, and could well be between 60% and 70% of GDP. State banks continued to lend for a long time to state enterprises, including unprofitable ones: Ever-greening – extending new loans to allow a debtor to make payments on unprofitable old loans – remains common. These losses will have to be recognized at some point. However, those losses will only grow if rapid monetary growth leads to rapid growth in bank lending, speculation on real estate, continued asset bubbles, excessive real investment and new bad loans. In the last Chinese credit boom in the early 1990s, roughly 40% of all new loans eventually went bad (Goldstein, 2004).

China's exchange rate is undervalued, not overvalued, and China is running current account surpluses, not deficits. But otherwise China looks like East Asia before the 1997 crisis where very high levels of investment, fueled in part by large-scale capital inflows, fed a credit/asset bubble and a real investment surge. In the end, the overall level of investment was higher than could be invested productively, and the allocation of this high level of investment was distorted.

1.3.3 Real appreciation in China and Asia: if it does not occur through a nominal appreciation, it will occur via higher inflation.

Real appreciation can occur in the absence of any nominal appreciation if China's domestic prices rise more rapidly than world prices. Consequently, domestic Chinese inflation fueled by the only partially sterilized reserve accumulation and the resulting liquidity creation can be considered part of a necessary process of external adjustment. However, inflation in China and deflation in the US are more costly way of bringing about a real exchange rate adjustment than a change in the nominal renminbi dollar exchange rate. In early 2004, China tried to slow the investment bubble with draconian

controls on bank lending, but the blanket freeze on bank lending introduced severe distortions and had to be phased out – and now it seems that the investment bubble in China has continued unabated. Official statistics indicate that the pace of inflation moderated at the end of 2004, but such statistics may understate actual inflation. There remains a risk that inflation will rise by too much, as in the early 1990s, and reigning in inflation will require a sharp slowdown in growth as in the mid 1990s.³⁰ While some³¹ argue that China has already achieved a successful soft landing with still high growth and low inflation, many indicators and analyses suggest otherwise.³²

Many other countries – Japan excepted – have avoided large increases in domestic liquidity by sterilizing a large fraction of their reserve accumulation (Higgins and Klitgaard, 2004). However, there are limits to the capacity of central banks to sterilize persistent reserve growth in the range of 5 to 10% of GDP. Moreover, sterilization only increases the size of the currency mismatch between a central bank's stock of domestic currency sterilization bonds and its foreign currency reserves, and thus its exposure to large capital losses in the event of a currency revaluation.

1.3.4. Impact on central bank balance sheets.

The world's central banks hold roughly \$2.5 trillion of their \$3.8 trillion reserves in dollars. The major Asian central banks hold \$2.4 trillion in reserves, and probably around \$1.8 trillion in dollars (roughly half the US NIIP). Asian central banks – particularly Asian central banks that have resisted letting their currencies appreciate at all against the dollar since 2002 and thus have not participated in the dollar's past adjustment - cannot avoid taking capital losses on their existing holdings of dollar reserves. The only question is when they will incur the unavoidable losses, and to a lesser degree, how large those losses will be.

³⁰ Official measures in China claim that the inflation rate is low and not raising. But there are good reasons to be skeptical of these official figures: some prices are controlled; official measure do not properly measure the imputed value of owner occupied housing with housing prices being sharply up in China; there are reasons to be skeptical of any official estimate of macro conditions and indicators.

³¹ Goldstein and Lardy (2005), Financial Times (2005).

³² See for example, Economist (2005) and Xie (2005). Xie interestingly argues that the overheating will cause inflation in the short-run and deflation once the hard landing occurs: “The Chinese economy remains overheated 17 months after the first tightening move. Both the production and investment data suggest that the economy is still growing substantially above trend. Overheating in China is not about inflation, which occurs due to overinvestment (overinvestment eventually leads to deflation – the more inflation occurs today, the more deflation will occur tomorrow). Overheating in China is about excessive investment based on unrealistic expectation of future profits. When everyone is increasing investment, it creates inflationary pressure in the short term and boosts profits for those businesses that supply materials for investment. The higher profitability due to inflation validates the optimism and encourages more investment. The process ends either when interest rates rise to keep inflation down or when capacity growth outstrips investment demand. Excess capacity is already a serious challenge in automobiles, steel, chemicals and electronics. The continuing optimism over the property market is the last remaining prop sustaining investment enthusiasm. If left unchecked, I think the excess capacity situation will continue to worsen, causing deflation and another wave of bad debts. Easy monetary policy leads to inflation today, but deflation tomorrow.”

These losses cannot be easily dismissed as mere paper losses. To the extent that central banks have to sterilize their reserve accumulation, their dollar assets are offset by local currency liabilities that have to be paid. Central banks can always be recapitalized by taxpayers, but the new government bonds given to the central bank to make up for exchange rate losses have to be serviced out of the government's budget. That is a real cost. If a 30% (average) appreciation is needed across a range of Asian currencies to reduce the US current account balance, the resulting losses on Asia's existing stock of \$1.8 trillion in dollar reserves would total \$600 billion.³³

This cost can best be illustrated by looking at the People's Bank of China. The renminbi has not participated in the world's appreciation against the dollar since early 2002. Moreover, to maintain its peg to the dollar, the PBOC had been building up its dollar assets. At the end of 2004, the PBOC had \$610 billion in reserves. Analysts estimate that roughly 75% of the PBOC's reserves are in dollars – down from say 80% in 2003. That implies that China holds roughly \$455 billion in dollar assets and \$155 billion in euros and other currencies. The potential losses on those \$455 billion in dollar reserves (28% of China's GDP) are large: a 33% depreciation in the renminbi/dollar would generate losses of \$150 billion, roughly 10% of China's GDP.

This is just an estimate. We do not know the currency composition of China's reserves. Our estimates assume that China is slowly increasing the relative share of euro-denominated assets in its reserves portfolio, and it bought a higher share of euros in 2004 than in the past. Our currency breakdown is consistent the following rough model of the PBOC's external balance sheet.

\$ billion						
	End 03	Valuation gains	End 2004, no new intervention	Interest Income (reinvested)	New purchases	End 2004 total
Dollar reserves	320		320	15	120	455
Euro, pound, swiss franc and yen reserves	90	10	100	5	50	155
Total	410	10	420	20	170	610

(Authors' own estimates)

1.3.5. Just a total return swap?

Garber, Folkerts-Landau and Dooley (2004 c) have argued that the reserve accumulation of China and other emerging markets can be thought of as the collateral being held

³³ As Higgins and Klitgaard (2004) note, reserve holdings of some Asian economies are so large that the losses for some central banks from even small move in their exchange rate a significant: a 10% appreciation of the Singapore dollar might reduce the local currency value of Singapore's reserves by 10% of GDP; a 10% move in the Taiwanese dollar would generate local currency losses of 8% of Taiwan's GDP.

against the stock of foreign FDI in China and other countries. In this total return swap, foreign investors get an equity return from China, and China gets the return on Treasuries. According to this argument, China must both “bank” the FDI inflow in reserves to reassure foreign investors, and run current account surpluses to add to its “collateral” as the value of existing FDI in China increases. More broadly, Garber, Folkerts-Landau and Dooley argue that China effectively relies on foreigners to intermediate a significant fraction of China’s savings. According to their argument, ongoing private capital outflows from China are “intermediated” offshore, and in effect finance FDI inflows. Foreign intermediation transforms domestic Chinese savings into efficient foreign investment in China. As the value of foreign investment in China grows over time, China has to run current account surpluses and build up its “earned” dollar reserves to provide collateral for the world to hold against the risk that China may expropriate foreign direct investment.

There is one major problem with the “offshore” intermediation argument: it doesn’t work after the end of 2002. In 2003 and 2004, there was no net flow of private capital out of China available to fund inward investment into China. The flow of funds went in the other direction. China is not “importing” financial intermediation – exporting savings that are then reinvested back in China as FDI. Rather, China is exporting financial intermediation – attracting the world’s savings and then reinvesting those savings in dollar assets through the PBOC’s balance sheet.³⁴

The total return swap argument rests on a second questionable assumption, that international reserves provide foreign investors meaningful protection against the capital losses on foreign direct investments possibly deriving from financial crises or debtor governments’ policy actions. Reserves benefit from substantial de facto immunity, and are not an asset that either foreign equity investors or foreign lenders can seize in the event of capital losses on their foreign investments caused by a financial crisis - or even in a sovereign default.

Consider the example of Argentina. After its currency peg collapsed, Argentina appropriately changed the terms of most domestic contracts. Contracts letting utilities – often foreign-owned – index their Argentine prices to the dollar were appropriately pesified, given that domestic agents would have been unable to pay their foreign currency indexed tariffs after the currency sharply fell. Argentina had over \$10 billion in reserves at the time, and now holds more. However, quite appropriately, foreign equity investors have not been able to establish a legal claim on Argentina’s reserves. China’s large stock of reserves may protect foreign investors from the risk that the renminbi will depreciate, but are unlikely to protect against contractual changes.

³⁴ Goldstein and Lardy (2005) argue that the actual data on FDI inflows and China’s capital stock fails to support the total return swap argument. Among other arguments, Goldstein and Lardy note that most foreign direct investment in China comes from other Asian economies, not the US. It is not clear how dollar reserves held in the Federal Reserve Bank of New York act protect a Taiwanese or Korean investor better than reserve balances in their respective national central banks, particularly given the difficulties establishing a legal claim on reserves.

A more parsimonious explanation is that China's reserve accumulation is a byproduct of the subsidy offered to foreign investment by an undervalued exchange rate, not a necessary protection against the risk of expropriation. Unfortunately for China, it is hard just to subsidize foreign direct investment. China controls its capital account, but it is clear that many investors are finding ways around China's controls. Everyone likes a one-way bet.

More generally, the argument of foreign reserve accumulation as a collateral for the risks of capital losses on foreign direct investment does not work for many countries where such "expropriation" risk is minimal and where net inward FDI stocks are small. For example, Japan and Korea have large and fast growing reserves but little inward FDI and little political risk of policy actions that would trigger sharp losses on such FDI.

1.4 Europe won't join the Asian dollar-financing cartel

Dooley, Garber and Folkerts-Landau (2004e) argue that the European Central Bank (ECB) will eventually join the Japanese MOF (through the BOJ) and emerging Asian central banks as a key source of funding for the United States. Otherwise, all pressure for dollar adjustment will spill over onto the dollar-euro, and an overly appreciated euro will dampen European growth – and protectionist pressure inside Europe would build. Remember that the renminbi has depreciated nearly 40% against the euro since 2002. Europe would intervene not to provide massive support for its export sector, but rather to play defense – to avoid the risk that euro appreciation would undercut European exports and thus a key source of support for the eurozone economy (and the German economy in particular).

However, it is unlikely that Europe will opt to join Asia in providing large amounts of reserve financing to the US. The ECB is no doubt willing to intervene on a small scale to try to send a signal to the market should the Euro overshoot on the upside – but that is a far cry from the massive intervention and large scale reserve accumulation that would be needed to shift some of the burden of financing the United States' large current account deficit from the governments of Asia to the governments of Europe. The hurdles to using the ECB's balance sheet to provide large amounts of financing to the United States are enormous.

- The ECB is not institutionally set up to act as intermediary. In Japan, the Ministry of Finance has issued bonds to fund its exchange rate intervention, and the Bank of Japan simply acts in the market on behalf of the MOF. The BOJ may manage Japan's portfolio of dollar securities, but the risk of currency losses is ultimately born by the MOF. Europe has not worked out who would issue the euro bonds required to finance large-scale dollar purchases, or who would assume the resulting currency risk. Remember, the PBOC and the BOJ have both accumulated more than \$350 billion in reserves over the past two years – not a small sum. Europe would have to agree in advance how to distribute any prospective losses from similar large-scale intervention among its constituent

- parts. It is far easier for a unitary actor to take on large-scale currency risk than a multi-state hybrid.
- The ECB's own conservative nature. The ECB currently is resisting the classic response to a strong currency – cutting rates to provide monetary stimulus to eurozone demand. Imagine how its governing body would respond to the idea of trying to affect the euro/dollar parity through massive intervention in the foreign currency market. The ECB would be acutely aware of the fact that they were providing financing to allow the US to sustain large deficits, not providing financing to support an adjustment process.
 - The ECB's intervention, if it were to occur, would likely be sterilized. Prospects for unsterilized intervention by the ECB are dim so long as the ECB remains concerned about inflation being above its target. While there is debate on the effects of sterilized intervention most evidence suggest that its impact is limited. Sterilized intervention typically is less likely to work if it is not concerted (i.e. the US does not join in), and when intervention is used to lean against the wind rather than to reinforce an existing move in the market. Intervention on Japan's massive scale is a different beast altogether – if a central bank provides enough financing through its intervention to cover between a quarter and a third of the US current account deficit, it is bound to have an impact. So long as the ECB is unwilling to intervene on a comparable scale, the ECB has to consider the risk that sterilized intervention may fail.

Finally, politics matters. Chirac and Schroeder have no particular sympathy for President George W. Bush and his foreign policies, and do not particularly want to raise money in Europe to lend to the US to help finance the spending associated with current American foreign policy. The defense alliance between the US and Europe today is far weaker than it was in the 1960s – and in the 1960s, de Gaulle's France was unwilling to finance the United States by holding dollars rather than gold – and in the process financing President Johnson's policy of Vietnam (guns) and the Great Society (butter).³⁵ Rather, de Gaulle railed against the United States exorbitant privilege, and famously converted French dollars to gold while West Germany kept its reserves in dollars. Some things have changed since the 1960s, but some things have not. France and Germany are sure to criticize the United States economic management and complain that the euro is taking an undue share of the burden of dollar adjustment. But they are unlikely to be willing to take on another burden – the burden of financing the US – to reduce the burden an appreciating euro places on Europe's export sector.

1.5 The institutional infrastructure of Bretton Woods two is too weak to sustain cooperation.

1.5.1. There are no constraints on the anchor currency.

³⁵ The French were particularly concerned that the dollars held by the central bank were financing the American takeover of European companies. Growing dollar balances in European central banks represented the capital outflow from the US (and inflow to Europe) associated with foreign investment by American companies, not the financing associated with large current account deficits.

The original Bretton Woods system required the US to maintain the dollar's parity to gold. This, in principle, protected the long-term value of the rest of the world's dollar reserves. Bretton Woods two provides the United States with access to far more financing from dollar reserve accumulation than was ever available in the initial Bretton system, but fails to impose any limits on US policy.

The capacity to finance large US fiscal deficits by selling Treasuries to foreign central banks reduces market constraints on large fiscal deficits, yet Bretton Woods 2 fails to impose any offsetting institutional constraints to limit future US deficits. Unfortunately, an unconstrained anchor is a potentially irresponsible anchor. Current US policy is guns, butter and tax cuts. The war in Iraq requires lots of guns, a prescription drug benefit for seniors is certainly a form of butter – as is a policy of borrowing to fund private accounts while paying all current Social Security benefits.

1.5.2. Bretton Woods two lacks institutions to discourage free riding and facilitate agreement on how to share the burden of financing the US.

The original Bretton Woods system rested on a formal commitment by all parties to maintain fixed (but adjustable) parities to the dollar. While many countries do now peg to the dollar, and others informally intervene to prevent their currencies from appreciating against the dollar, no comparable commitment underpins the current international monetary system.

Moreover, as Barry Eichengreen (2004) and others have emphasized, the US was only able to sustain the dollar-gold parity in the 1960s because the world's major central banks – at the time the key players were mostly European central banks – agreed not to trade their dollar reserves for gold. After 1965, the official dollar reserves exceeded US holdings of gold at the established gold-dollar parity (US gold holdings fell from \$20 billion to \$10 billion during the course of the 1960s). There was an obvious collective action problem. Any individual central bank would be better off if it converted its dollars to gold before the US devalued relative to gold, or closed the “gold window.” But if all central banks sought to convert their dollars into gold, the dollar-gold parity would breakdown.

The original Bretton Woods system lasted for several years after foreign claims on US gold reserves exceeded US gold holdings because the central banks holding the gold were also US allies: the Bretton Woods system was embedded inside the military alliances that linked the US to Europe and Japan. Institutions like the OECD and the G-10 that allowed the US, Europe and Japan to maintain an ongoing dialogue and these deep, but informal, ties were bolstered by the 1961 gold pool (which shifted some of the costs of intervening in the private London gold market to European central banks) and the 1968 “Gentleman's agreement” (European central banks agreed not to convert their “inherited” dollar balances into gold; they were free to convert any new dollar inflows into gold).

Central banks today are overweight dollar assets by any measure, and consequently are exposed to large falls in the dollar. Russia and Thailand already have indicated their

desire to reduce the percentage of dollars in their reserve portfolio. Thailand announced its intent to cut its dollar holdings from 80% to 50% of its reserves and other central banks are rumored to be seeking a 50/50 split in their reserve assets. Here too there is a collective action problem. Every central bank would be better off if it reduced its dollar holdings or, at a minimum, reduced the pace of its dollar reserve accumulation. But if all central banks did so, their actions would have a major impact on relative price of dollars/and euros. Indeed, a major central bank could not be a large net seller of dollars without putting enormous pressure on currency rates.

Maintaining the current Bretton Woods two system requires that the key Asian central banks – along with a few other big players – do more than just hold onto to their existing stock of dollar reserves. They have to add to their aggregate dollar reserves to provide the ongoing financing the US needs. The collective action problem can be redefined in this context: not adding to your dollar reserves is a form of defection, as it shifts the burden of providing cheap dollar financing to the US onto the balance sheet of other central banks. Avoiding future strains likely requires institutions to facilitate cooperation – including institutions to assure the central banks at the core of the Bretton Woods system that other central banks are not taking advantage of China’s reserve accumulation to, for example, cut back on their own dollar holdings. Yet there is no obvious analogue to the institutional structures that helped buttress the original Bretton Woods system.

2. When will the vulnerabilities of the Bretton Woods 2 system emerge and the regime unravel?

Proponents of the Bretton Woods 2 regime argue that it can last for eight years (Garber, 2004), if not a generation. We believe that the weaknesses of this regimes will emerge much sooner, and that there is a meaningful risk the system will unravel in the next couple of years (2005 or 2006). This section examines potential triggers, both domestic and international, for the demise of the BW2 regime – a demise that is likely to be associated with a hard landing of the US dollar, a sharp increase in US long-term interest rates and an ensuing US and global economic slowdown. These include:

- Congress makes the Bush Administration’s tax cuts permanent but balks at deep cuts in FY 2006 discretionary spending – or the bond market starts to recognize that it is impossible to substantially reduce the deficit simply by limiting growth in non-defense discretionary spending.
- The Bush Administration proposes and Congress passes a costly scheme for partial privatization of Social Security. Doubters are won over by smaller benefit cuts and larger private accounts, leading the markets to anticipate sharply higher consolidated budget deficits after 2009 and a surge in the supply of Treasuries.
- The monthly trade data continues to belie hopes – most recently expressed by Federal Reserve Chairman Greenspan -- that the lagged impact of the dollar’s fall in 2002 and 2003 has been sufficient to at least moderate the expansion of the US trade deficits. Oil stays relatively high, and non-oil import volumes continue to

- grow rapidly, pushing the monthly trade deficit toward \$65 billion (\$780 billion annualized) and the current account deficit toward \$850 billion.
- China allows modest renminbi appreciation as part of a move toward a basket peg, and market participants stop betting on further appreciation – or China keeps its current peg and finds a way to tighten its controls on capital inflows. Either step would reduce China’s reserve accumulation, and its ability to finance the US current account deficit.
 - Oil exporters invest their oil windfall in euro assets, and European investors, in aggregate, lose their willingness to use this capital inflow to finance the purchase of US assets (Europeans have been major purchasers of US corporate debt).
 - Signs that other central banks are joining those in Russia and Thailand in significantly reducing the proportion of their reserves held in dollars. The ECB fails to intervene aggressively and to supply the euros that central banks want in exchange for their dollars.
 - US and European protectionist pressures spook currency and capital markets.
 - Spreads in the US fixed income market blow out, whether because the Fed tightens US short rates more than the markets expect or something else catalyzes the end of the long bull market for bonds. Rising long-term Treasury rates and the widening of all fixed income risk spreads result in large capital losses for foreign investors holding long-duration US securities. Existing investors in US seek to rebalance their portfolios to reduce their exposure to further interest rate rises/ spread widening, generating additional pressures.

Foreign central banks are key actors in this story, since they have provided 75-85% of the financing of the US current account in the last two years and in the process provided 80-90% of the financing for the US fiscal deficits. Foreign private investors are unlikely to provide the financing the US needs at current prices if the world’s central banks start to pull back significantly. Indeed, there is a risk that the market impact of any sharp pull back by central banks could be compounded if foreign private investors others with dollar exposure – or US investors with interest rate risk – take steps to protect themselves. After all, in aggregate, private investors hold a larger share (75-80%) of the United States gross external liabilities than central banks (20-25%), though central banks have been increasing their share rapidly. The overall impact could be brutal: US long-term interest rates might rise above 6% (if not higher) and the dollar could fall substantially.

Our dominant view is that growing signs of strain will emerge in the course of 2005. Signs of strain is not quite the same as a collapse: key actors may hobble through 2005 torn between their desire to protect themselves from the risk that Bretton Woods 2 will come to an unpleasant end and their innate conservatism. Many intermediate steps have not been tried. China is likely to try to make small adjustments in the peg before it accepts a larger revaluation, let alone a managed float. Should the euro’s rise resume, small-scale ECB intervention may succeed at signaling to the market – at least for a while – that the euro has risen (the dollar has fallen) as far as can be expected. Market participants may be reluctant to challenge the Japanese MOF and risk being overwhelmed by the resumption of large- scale Japanese intervention.

We also suspect that these half steps will not work for long. A small revaluation of the renminbi won't end expectations that the renminbi will appreciate more. Capital inflows will continue, fueling faster reserve accumulation than the PBOC would like. In the end, we doubt the world's central banks will not prove willing to add another \$1 trillion to holdings of dollar reserves to provide the financing the US needs to allow the US current account deficit to continue to expand, and, without continued inflows from the world's central banks, we doubt sufficient private financing will be available for the US to sustain its current trajectory through the end of 2006.

Of course, a significant change in US fiscal policy, exchange rate adjustment in Asia, additional steps to encourage Asian demand and lower Europe interest rates could lay the ground work for a soft rather than hard landing. But global coordination to step up global demand growth even as the US takes step to reign in US domestic demand growth is intrinsically hard, and it only makes sense for others to take steps to reduce their savings if the US embraces significant changes in fiscal policy to reduce its need to borrow from abroad. This requires more than freezing domestic discretionary spending: it requires reversing unsustainable tax cuts to bring US government revenues in line with government spending. Absent preemptive policy changes to ward off a crisis, unsustainable policies will continue until the Bretton Woods system unravels, adding to the size of the underlying imbalances and to the risk of a hard landing.

2.1 Growing US demand for external financing

The monthly US trade deficit reached \$60 billion in November of 2004, a monthly rate that, if sustained, implies a \$720 billion trade deficit in 2005. If non-oil imports continue to rise at the current pace – or if oil (light sweet crude/ West Texas intermediate) stays higher than its 2004 average of \$41-- the 2005 trade deficit could well be larger. Given likely net transfers of \$70 billion and the expected shift in the income balance from a small surplus to a small (\$10-\$20 billion) deficit, a current account deficit of \$800 billion (6.4% of GDP) is not unlikely. The recent deceleration of US export growth suggests that the risk of a larger deficit exceed the risks of a smaller deficit.

High financing need scenario

The scenarios we developed in our previous paper (Roubini and Setser (2004)) suggest that the current account deficit could reach 7.1% of GDP (\$900 billion) in 2006 and 8.6% of GDP (\$1150 billion) by 2008 barring significant further adjustment. Sustaining Bretton Woods 2 therefore implies \$ 1700 billion in net financing through 2006 and \$4000 billion through 2008. The US need for gross debt financing needs would be higher if negative net equity flows (FDI and portfolio equity) continue. US net external debt would rise from \$3.3 trillion at the end of 2004 to \$5 trillion in 2006 in 2006, and \$7.35 trillion in 2008.

\$ billion							
	2002	2003	2004 (e)	2005	2006	2007	2008
Current account deficit	-474	-531	-670	-790	-920	-1070	-1150
Net FDI flows	-62	-134	-70	-50	-50	-50	-50
Net portfolio equity	38	-63	-80	-100	-100	-50	-50
Gross US borrowing need	498	728	820	940	1070	1170	1250
NIIP	2,550	2,650	3,330	4,120	5,040	6,110	7,360

Low financing need scenario.

Even if the lagged impact of the fall in the dollar and the Administration's new found commitment to limit spending combine to stabilize the trade deficit at 5.1% of GDP (v. 5.3% of GDP in 2004), the United States ongoing need for financing remains quite large – and US net external debt still rises to \$6.8 trillion by 2008. Small forecasting errors will not change the basic dynamics so long as the US trade deficit remains large.

\$ billion							
	2002	2003	2004 (e)	2005	2006	2007	2008
Current account deficit	-474	-531	-670	-735	-820	-920	-1020
Net FDI flows	-62	-134	-70	0	0	0	0
Net portfolio equity	38	-63	-80	-50	0	0	0
Gross US borrowing need	498	728	820	785	820	920	1030
NIIP	2,550	2,650	3,330	4,065	4,885	5,805	6,825

The ongoing release of data confirming large monthly trade deficits itself is a risk to the continued availability of financing. A bad trade number, or an unexpected dip in foreign purchases of US long-term securities (the TIC data) could drive the dollar lower, and, more importantly, drive US interest rates higher. Market concerns about the

sustainability of the US current account deficits pushed the dollar down sharply in the fourth quarter, at least against some key currencies, and forced many other countries to intervene to avoid currency appreciation. Structural concerns about the sustainability of the US current account will remain throughout 2005, regardless of short term dollar rallies.

2.2. The FY 2005 US fiscal deficit and the FY 2006 budget

The United States' external creditors are exposed to both dollar risk and Treasury interest rate risk – and consequently have a particularly strong reason to care about the future course of US fiscal policy. A smaller budget deficit would both reduce the risk that long-term Treasury rates would need to sharply increase (and bond prices fall) to attract the financial flows and, by increasing national savings, would tend to decrease the scale of the moves in the dollar and US interest rates needed to reduce the current account deficit. Conversely, a larger budget deficit likely would put pressure on long-term US interest rates and, by contributing to an expanding US current account deficit, also put pressure on the dollar.

The Bush Administration is no longer willing to argue that “deficits do not matter:” it has indicated its “strong dollar” policy will be buttressed by a budget that will severely crimp domestic discretionary spending.³⁶ Its commitment to do more than talk about the need to reduce the deficit over time, however, can be questioned. The Administration has not vetoed a domestic spending bill, has shown no willingness to consider raising taxes should the deficit continue to widen, and the latest Administration forecasts suggest that the consolidated FY 2005 deficit (\$427 billion) will exceed the FY 2004 deficit (\$412 billion), despite relatively stronger revenue growth from rising corporate income tax receipts.³⁷

The precise outlook for 2006 depends on whether the Congress makes the tax cuts permanent, and whether Congress accepts the Administration's proposed cuts in non-defense discretionary spending. However, it is unrealistic to think cutting non-defense discretionary spending alone will enable the Administration to meet its (not terribly demanding) deficit target. If Congress makes the tax cuts permanent³⁸, tax revenues are

³⁶ The fiscal 2004 deficit was estimated to be close to \$500 billion when the Administration promised to cut the deficit in half. The Administration has determined that its pledge to cut the deficit in half is based on this estimate, not the actual FY 2004 deficit (\$412 billion) – so it has promised to cut the deficit to \$250 billion or so by FY 2009.

³⁷ Bush's tax cuts have reduced the federal government's revenues from 20% of GDP in 01 to a bit above 16% of GDP, even as spending rose from 18.5% of GDP to almost 20% of GDP (CBO data). The 2004 budget deficit would have been even larger if the average interest rate on marketable debt had not fallen from 6% to 3.5%, reducing the federal government's (net) debt servicing costs from 2.1% to 1.4% of GDP even as debt held by the public rose from 35% to 41% of GDP.

³⁸ Tax cuts on dividends, capital gains and estate taxes are set to expire in 2008, and the income tax cuts will be phased out by 2010. By 2015, the revenue costs of making all these tax cuts permanent will be equal to \$424 billion per year (including the cost of servicing the additional debt). Any fix to the AMT will further reduce projected revenues, since the AMT is projected to affect a growing number of taxpayers – and, in effect, to limit many taxpayers ability to benefit in full from the Administration's other tax cuts;

likely to remain in the 16.5%-17% of GDP range (11.5%-12% of GDP if the Social Security payroll tax is left out). Since interest expenditure is likely to rise by about 0.5% of GDP to 2.0% of GDP by FY 2009, bringing the deficit down to 2.0% of GDP by FY 2009 therefore requires that non-interest spending fall from about 19% of GDP in FY 2005 to 17% of GDP. If spending on Social Security, Medicare, defense and homeland security are off the table, the spending cuts will have to come out of the 3.6% of GDP now being spent on non-defense, non-homeland security domestic discretionary spending. Squeezing this small portion of spending by more than 50% in real terms is utterly unrealistic. It is much more likely that the fiscal deficit will increase from last year's 3.6% of GDP to a figure closer to 4.0% of GDP by 2009. Consequently, there is a significant risk that expectations of a significant medium term fiscal consolidation will not be met, even if Congress rejects the Administration's proposals to partially privatize Social Security.

The priority the Bush Administration is placing on the partial privatization of Social Security constitutes an additional source of risk. Most proposals finance the introduction of private accounts with new borrowing, not by cutting near-term Social Security benefits. Consequently, the additional deficits associated with introducing private accounts are potentially quite significant.

The Bush Administration is seeking to limit the risks that its proposed new borrowing could spook the bond market by waiting until FY 2009 to create private accounts, and then by phasing in the new private accounts. Its current proposal would allow workers to divert up to 4 percentage points of the 12.4% payroll tax into private accounts, up to an annual cap. That annual cap is initially set at \$1000, but it would rise over time. The initial impact is likely to be limited to around 2% of payroll (16% of current social security revenue, or about 0.8% of GDP), which would increase the fiscal deficit by \$115 billion the first year such accounts. , and their impact rises over time. By 2014, the introduction of private accounts could add \$240 billion to the annual deficit (including the additional interest on the debt issued before 2014 to finance the partial privatization of social security). If spending rises in line with nominal GDP, the CBO forecasts a deficit of around \$950 billion (around 4.8% of GDP) in 2015, so even a relatively low cost social security reform option could push the expected 2015 fiscal deficit out to about \$1,100 billion (or 5.5% of GDP).³⁹

The Administration maintains that the deficits associated with Social Security reform should not matter because long-run savings will offset near-term deficits. It therefore

costs of fixing the AMT alone would be equal to \$70 billion per year by 2015. The reform of the AMT will likely be rolled into a broader tax reform proposal.

³⁹ Of course, given the Administration's desire to control spending, a more realistic scenario is one where discretionary spending grows less than nominal GDP but more than inflation. Moderate and fiscally conservative Republican senators may not agree to make all the tax cuts permanent, and the AMT may be only partially fixed. Improvements in national security conditions may reduce the cost of national defense and homeland security to figures below those in the CBO baseline. While it is a matter of guesswork to estimate what these different scenarios would mean, a realistic assessment of the likely legislative decisions suggests that the fiscal deficit would be certainly above 4.0% of GDP (\$745 billion) in 2014 and, most likely, closer to 5% of GDP (\$931 billion).

exempts any deficits associated with its Social Security reform from its “commitment” to reduce the FY 2009 deficit to \$250 billion. The markets are not likely to be as generous, and could well start to price in the anticipated new Treasury issuance as soon as the proposal is passed. The upfront deficits associated with the Administration’s proposed reform are large – Furman and Greenstein (2005) estimate \$4.9 trillion in new borrowing in the first twenty years – while the projected cash flow savings only occur in the distant future, and depend on the willingness of future Congresses to implement proposed benefit reductions. Furman and Greenstein (2005) estimate that the Bush Administration’s most recent proposal would increase the US debt to GDP ratio by about 25% of GDP, and that the proposed savings – if they materialize – would not lead to meaningful reductions in the outstanding stock of bond associated with the reform until 2060.

2.3. Maturity shortening has increased US vulnerability to sudden shift in US interest rates

The average maturity of US government bonds has sharply fallen in the last few years. The average maturity of new issuance fell from 90 months in 1999 to about 25 months by the end of 2002, before rising slightly to 33.4 months in December 2004. As a result, the average maturity of the total stock of debt has fallen from about 70 months in 2000 to only 54.3 in December 2004. The average maturity of current treasury issuance is currently much lower than in was in the 1970s, 1980s and 1990s. The Treasury clearly has tried to profit from the sharp fall in short-term rates relative to long-term rates in 2001-2003, and in the process has tried to keep the US fiscal deficit below what it otherwise would have been. Of course, there is no free lunch here: long rates reflect expectations of future movements in short rates. Over time, the US interest bill is likely to increase sharply.

Since the average maturity of US public debt is now less than 5 years, the US has to roll over hundreds of billions of government bonds ever year: \$500 billion in 2005, \$800 billion by 2009 and closer to a trillion by 2014. With a \$435 billion FY 2005 fiscal deficit, the US government’s total borrowing need could approach one trillion dollars – and that need will rise over time.

Conventional wisdom holds that the risks that the US will not be able to rollover its short-term debt is very limited, since the market for Treasuries is the largest, deepest and most liquid market in the world. At some interest rate, foreign investors – or domestic investors – would be willing to lend dollars to the US Treasury. In the worst cases scenario, of course, the US could always print dollars to pay off investors unwilling to rolling over their maturing Treasuries.

Foreign central banks hold most of the outstanding stock of short-dated Treasuries,⁴⁰ and they are unlikely to want to precipitate an outright crisis. Foreign central banks could try to reduce their treasury holdings without selling in the secondary market by not rolling over their debt as it comes to maturity, but realistically, though, any effort by foreign central banks to reduce their aggregate holdings would put pressure on the market price of all Treasuries, both short and long-term. It is not clear that the overall impact of not rolling over maturing Treasuries, on a large scale, would be much different than the market impact of a major central bank starting to sell its existing stock.

The greater risk, as we have discussed earlier, is that foreign central banks will reduce the rate at which they add US Treasuries to their reserve portfolios. That too would tend to push up interest rates, as higher Treasury rates would be required to induce private American and foreign investors to buy the new Treasury supply now purchased by foreign central banks. The “balance of financial terror” hinges on the willingness of foreign central banks to add to their Treasury portfolios to protect the value of their existing Treasuries.

This is why the shortening of the maturity of the stock of Treasuries carries real risks even in the absence of an outright rollover crisis. Because the US has not locked in its long-term borrowing costs with long-term debt, it runs the risk that it will have to pay significantly more just to convince its existing creditors to rollover their exposure – pushing up the US deficit. Any adverse market dynamics will feed back swiftly into higher interest payments, larger deficits and a bigger need for financing – and higher deficits in turn could increase concerns about the United States long-term fiscal sustainability and lead to still higher rates.⁴¹

2.4. Potential Financing Shocks

⁴⁰ See <http://www.ustreas.gov/offices/domestic-finance/debt-management/qrc/2004/2004-q4-charts.pdf>. Foreign investors now hold 53% of all marketable US Treasury securities not held by the Federal Reserve, and foreign central banks hold at least 29% of the outstanding stock (as we discussed earlier, foreign central banks real holdings of Treasuries almost certainly substantially exceed their recorded holdings). Their holdings – particularly the holdings of the Japanese authorities – tend to be concentrated at the front end of the yield curve.

⁴¹ Brad DeLong (2004) argues that a refinancing crisis could be avoided if the Federal reserve were to take the highly unorthodox step of intervening to support the price of US long-term bonds. However, in a true meltdown, it is not even clear that this would be effective. Assume that domestic and foreign residents are dumping US Treasuries (both short and long) not because they want to hold dollars cash, but rather because they want to flee a plunging dollar. Since the US does not have enough reserve to prevent the dollar from sharply falling, then the question is whether bond market intervention to keep treasury yields low is a substitute to foreign exchange intervention to stop the free fall of the dollar. The answer is no. First, intervening in the bond market is an act of policy desperation; it undermines confidence. Second, buying large quantities of long-term bonds would dramatically increase the monetary base in the US. Third, in a situation in which investors are trying to flee US assets, such increase in liquidity puts massive further pressure on the US dollar and further fueling flight from the bond market. While the probability of an rollover crisis that leads to spike in interest rates is small, bond market intervention to try to limit the impact of the withdrawal of foreign credit on the US economy would not be either helpful or desirable. For more on these rollover risk scenarios, see: <http://www.roubiniglobal.com/archives/2004/12/liquidityrollover.html>.

As we have discussed, the US likely to need at least \$800 billion in external financing the US in 2005, and even if the US trade deficit stabilizes at around 5% of GDP, a slightly larger amount in subsequent years. Extending such financing to the United States in dollars carries real risks, given the size of the US deficit: should the dollar fall by say 25% against the currencies of the countries providing the US with financing, the United States' creditors would take \$200 billion capital loss.

Will such financing be available? The answer certainly depends in large part on the actions of foreign central banks – the biggest current source of external financing for the US. But barring a major increase in central banks' dollar reserve accumulation, it also depends on the actions of private creditors. If central banks increase their dollar reserves by \$400 billion in 2005 and 2006 – a very substantial increase by historical standards⁴² – they would provide a much lower percentage of the financing of the US current accounts than in 2003-2004. The world's private creditors must not only hold onto to their existing claims on the US, they must add to them.

\$ billion	2002	2003	2004 (e)	2005 (f)	2006 (f)
Increase in reserves	351	696 ⁴³	690	600	600
O/w Asia	328	465	532	450	450
O/w Japan	64	202	178	90	90
O/w China	74	162	202	240	240
O/w other emerging Asia	190	101	152	120	120
Increase in dollar reserves	185	486	465	400	400
Increase in euro/other reserves	74	62	165	200	200
Valuation gain (implicit)	92	103	60		
US current account deficit	-474	-531	-670	-790	-920
% financed by increase in dollar reserve increase	39%	92%	69%	51%	43%
US financing need (net of FDI)	-536	-665	-760	-840	-970
% financed by increase in dollar reserve	35%	73%	61%	47%	41%
Reserves	2378	3029	3720	4320	4920
Dollar reserves	1607	2093	2558	2958	3358
Non-dollar reserves	772	937	1162	1362	1562

(Sources: US Bureau of Economic Analysis, the BIS and the authors' own calculations)

2.4.1 Will foreign central banks continue to provide at least \$400 billion a year in net financing to the US?

In order to provide the US with even \$400 billion in net financing in 2005 (less than they provided in 2003 and 2004), the world's central banks cannot – in aggregate – diversify

⁴² See Higgins and Klitgaard (2004). Before 2002, the annual increase in dollar reserves ranged from 50 to 150 billion.

⁴³ Including the \$45 billion transferred from the People's Bank of China to two state owned Chinese banks.

away from the US dollar. They must both hold onto their existing stock of dollar assets, and, should they add \$600 billion to their reserves, invest 2/3s of their additional reserve accumulation in the US. An individual central bank can try to diversify out of dollars, but the world's central banks, taken as a whole, cannot diversify their reserve holdings without radically undermining the Bretton Woods 2 architecture.

2.4.2. Free riding by oil exporters?

The surge in oil prices over the course of 2004 – a surge that has been sustained so far in 2005 – has dramatically increased oil-exporters share of the world's current account surplus. The large US current account deficit could be sustained most easily if the oil exporters current account surplus was recycled back into US dollar assets.

Our earlier analysis of the global current account showed that a relatively small fraction of the oil exporter's current account surplus shows up in reserve accumulation. This does not, per se, mean that they are not financing the US. Private investors in oil exporting countries – and pseudo private investors like the Saudi princes and other Arab sheiks – could be building up the dollar assets in their personal portfolios. But that seems somewhat unlikely: the petro-sheiks in the Gulf in particular have good reasons to fear keeping too large a share of their personal wealth in the US. Moreover, one key oil exporter – Russia – has publicly indicated that it wants to rebalance its reserve portfolio to hold more euros and fewer dollars. Russia reserves grew by \$45 billion in 2004, so it probably added to both its euro and its dollar reserves. But by adding more euros and fewer dollars, it provided less financing to the US – and forced someone else to take the risk of holding dollar assets.

Oil exporters are likely to be among the first to reduce their dollar reserve accumulation for one simple reason: they do not compete directly with China, and thus worry less about letting their currency appreciate against the dollar/ renminbi.

2.4.3. Free riding by smaller Asian central banks?

There are already signs that many smaller Asian central banks would like to reduce the pace of their dollar reserve accumulation.⁴⁴ The Bank of Thailand [claims to have reduced][has indicated its intent to cut] the share of dollars in its reserve portfolio from 80% to 50%. If it made that adjustment in 2004, the Bank of Thailand's dollar reserves would have fallen from \$33 billion at the end of 2003 to \$24 billion at the end of 2004. Other smaller central banks, including the Bank Negara Malaysia and the Monetary Authority of Singapore, are rumored to be interested in reducing the relative size of their dollar portfolio. The world's central banks only put 12% of their new reserves into euro and other alternatives to the dollar in 2003; our baseline central bank reserve accumulation data assumes that ratio rose to 25% in 2004.

Smaller central banks can diversify their reserves more easily than the People's Bank of China or the Bank of Japan. Some might be able to sell their dollar reserves and acquire

⁴⁴ See Pesek (2004).

euro and yen assets without having too much impact on the euro-dollar and dollar-yen cross rates, and so long as they don't move the euro-dollar, they would not put too much pressure on their country's cross rate with the US dollar.

However, the scope for diversification by the "smaller" Asian central banks should not be exaggerated. The Bank of Korea, the Central Bank of China (Taiwan) and the Hong Kong Monetary Authority together hold over \$500 billion in reserves, almost as many reserves as mainland China. Singapore, Malaysia, Thailand and India collectively hold at least \$350 billion in reserves, over half the Chinese total. If the mid-sized central banks tried to scale back their dollar purchases significantly at the same time, they would likely have an impact on the market, both their bilateral rates relative to the US dollar and the cross rate of the US dollar relative to the euro and the yen. In 2004, emerging Asian central banks other than the People's Bank of China added something like \$150 billion to their reserves, so even if these central banks increased the share of euros in their portfolios, they were still adding to their stock of dollar reserves and their potential losses should their currencies eventually appreciate against the dollar.

2.5. Will China continue to bear the burden of anchoring the system?

There is little doubt that China, more than Japan, anchors Asia's dollar block. China's reserves have increased almost as much as Japan's over the past two years – and, unlike Japan, China maintains a currency peg and therefore continues to intervene in the foreign currency market. Moreover, China's peg to the dollar constrains the options available to other East Asian economies that compete against China: So long as China is willing to retain its dollar peg and accumulate dollar reserves rapidly, other countries have an incentive to intervene to prevent their currency from appreciating against both the dollar and the renminbi.

2.5.1. China's costs and benefits

The usual argument is that China will not defect from Bretton Woods two system because the renminbi-dollar peg serves its interests well. If a weak renminbi can guarantee a 8% to 10% growth rate for China for a generation, the output gains from a stronger economy will overshadow any losses on China's dollar reserves. Moreover, an enormous number of well-connected Chinese businessmen have invested heavily in the export sector, and thus have a direct interest in sustaining the current peg.

While these arguments have an element of truth, they do not demonstrate that China is willing to bear any burden and pay any price to sustain the current international monetary order. There are growing signs that China is uncomfortable with its current pace of reserves accumulation. The PBOC is doing far more than just taking China's current account surplus and lending that back to the US. Around 75% of China's reserve accumulation over the past two years has been financed by capital inflows, not China's current account surplus. The PBOC effectively selling renminbi to a range of foreign investors at 8.28 for dollars (and euros), and then uses those dollars to buy low yielding dollar and euro assets. Foreign investors ("speculators") get the upside of the renminbi-

dollar or renminbi-euro, China's central bank gets the downside. Concerns about its future losses – along with difficulties sterilizing large scale inflows – no doubt explain why the PBOC is trying to encourage private capital outflows and to make its restrictions on capital inflows more effective.

The PBOC – particularly if it sterilizes the resulting inflow by selling renminbi debt – cannot be entirely indifferent to the scale of capital losses that would result from the renminbi's eventual appreciation. Nor can the PBOC afford to be entirely indifferent to the policy choices that the United States makes, since they will affect China's long-term return on its investment in the US government debt market. The potential scale of China's losses on its dollar reserves are already stunning – and more importantly, China's expected loss will continue to grow rapidly so long as China resists a significant real appreciation.

China's reserves increased (excluding valuation gains) by about \$80 billion in the fourth quarter of 2004. Even if the pace of China's reserve accumulation slows to say \$60 billion a quarter in 2005, its total reserves would increase by \$240 billion.⁴⁵ If \$50 billion a quarter is invested in dollars, China's dollar reserves would increase by about \$200 billion a year. \$50 billion may be a bit high, but it is consistent with the United States' large need for financing and the reduced unwillingness of Asian central banks to build up their dollar balances, which shifts more of the burden onto China. Consequently, if nothing changes, China's dollar reserves would rise from an estimated \$455 billion to \$855 billion in 2006, and \$1255 by 2008.

China's potential capital loss on its dollar reserves: \$ billion and as a % of GDP

	End 2002	End 2004	End 2006	End 2008
Total reserves	291	610	1030	1470
(excluding gold)	(23%)	(38%)	(53%)	(62%)
Dollar reserves	235	455	855	1255
China's GDP	1270	1593	1943	2359
Expected loss with a 33% nominal renminbi appreciation	78 (6.1%)	152 (9.5%)	285 (14.7%)	418 (17.7%)
Expected loss with a 50% nominal renminbi appreciation	118 (9.3%)	228 (14.3%)	428 (22.0%)	628 (26.6%)

Data from the IMF and author's own calculations. China's stock of reserves would have been \$655 billion at the end of 2004 but for the transfer of \$45 billion to two state banks in 2003.

A 33% nominal (and one assumes real) appreciation of the renminbi is on the high end of current estimates of the needed renminbi appreciation (Goldstein and Lardy recently suggested a 15% appreciation, after earlier suggesting a renminbi appreciation of between 15 and 25%). However, we think a 33% renminbi appreciation probably underestimates the renminbi appreciation needed to restore global balance right now, let alone the size of

⁴⁵ A \$240 billion annual increase in reserves sounds high. However, China's reserves increased by \$162 billion in 2003 (\$45 billion of these reserves were transferred to the state banks) and by \$200 billion in 2004. Moreover, the longer China resists appreciation, the stronger the incentives to bet on a future renminbi revaluation.

the renminbi appreciation that would be needed to restore global balance in two or three years. Rapid increases in Chinese productivity imply that the renminbi should appreciate in real terms over time,⁴⁶ even as the expected deterioration in the United States net international investment position imply that the needed real depreciation in the dollar is increasing.

- The fall in the dollar has led the renminbi to depreciate on broad trade-weighted terms by about 8% since early 2002, even as the rapid increase in Chinese productivity as labor is transferred from the rural sector to the modern sector and as China's capital stock expands implies a trend real appreciation over time.
- A 33% appreciation is smaller the 45-50% appreciation in the euro since 2002 (the euro started at around .85-.90 cents, it now trades for around \$1.30 cents). Consequently, an appreciation by the renminbi against the dollar and a constant euro-dollar implies a significant nominal depreciation of the renminbi against the euro since 2002.
- China's \$32 billion (2.0% of GDP) 2004 trade surplus came in the midst of an enormous investment boom⁴⁷, and against the headwinds created by high global commodity prices (a negative terms of trade shock). Goldstein estimates that China's cyclically adjusted trade surplus is closer to 5% of GDP. Remember, that the US trade and current account deficit grew in the midst of the US investment boom in the late 1990s, as did the Thai trade and current account deficit in the mid 1990s.
- As Martin Wolf (2004c) has noted, an orderly global adjustment likely will require trade deficits in emerging Asia to offset the shrinking US trade deficit, with emerging Asia absorbing the surplus savings of Japan and perhaps Europe. In a sense, this means returning to the pattern of global capital flows and associated current account surpluses typical of the mid-1990s, before the Asian crisis. Given China's capacity to attract sustained inflows of foreign direct investment of roughly \$50-60 billion a year (around 3% of Chinese GDP), there is a strong case that China should, in equilibrium be running a trade deficit.
- Benassy-Quere, Duran-Vigneron, Lahreche-Revil and Mignon (2004) have argued that the renminbi is currently undervalued by 45%.
- If, over time, the US trade and transfers deficit needs to fall by over \$500 billion, and the 1% fall in the broad dollar/ \$10 billion fall in the trade deficit rule of thumb holds, a 50% depreciation of the renminbi from say its 2002 level would be consistent with the overall fall in all currencies needed to generate US balance of payments sustainability.

⁴⁶ With 75% of China's \$610 billion in foreign reserves likely to be in US dollar assets, even a very modest 15% appreciation of the renminbi would imply a capital loss of about \$70 billion for China, or more than 4% of China's GDP.

⁴⁷ Goldstein and Lardy (2004) estimate capital investment rose to 45% of GDP in 2004; rates under 40% are the norm – and the last time investment surged to comparable levels (43-44%, in 1992) it fell back sharply. 45% is exceptionally high, even by East Asian standards: Taiwan's capital investment to GDP ratio never stayed above 30% for three consecutive years during its most rapid growth, and Korea's capital investment ratio never rose above 40% during its most rapid phase of growth.

Domestic considerations may also lead China to abandon Bretton Woods 2. China raised the nominal renminbi rates slightly in October 2004 and domestic inflation appears to have moderated a bit, so real interest rates probably are not as negative as they were earlier in the year (Goldstein and Lardy, 2004). But real interest rates in China remain quite low and the inflation rate may be higher than officially estimated.. Raising renminbi interest rates would be the classic response to concerns about domestic overheating and excessive credit expansion. Yet any increase in renminbi rates would strengthen incentives for hot money – both foreign and domestic – to flow into China.

China needs a tighter monetary policy than the US, but so long as it pegs to the dollar and its capital controls leak, its monetary independence is limited. Moreover, China's central bank has effectively admitted that China cannot sterilize a \$200 billion plus annual reserve inflow. Continued rapid and only partially sterilized reserve growth implies rapid monetary growth and rapid credit expansion – with all the typical resulting ills: run up of real estate prices, over-building in some coastal cities, and, one suspects, over-investment in export sectors.

China's Communist leaders are the ultimate conservatives; they are cautious and no doubt reluctant to change a policy – the renminbi-dollar peg -- that has worked well to date. They are likely to try incremental steps designed to slow the pace of reserves accumulation, to make it easier to regain control over China's monetary base and to reduce the burden growing dollar reserves place on China's balance sheet. Stricter controls on inflows, more opportunities for Chinese citizens to move their savings abroad and small changes in the peg – probably too small to change the fundamental dynamics – are more likely than dramatic moves. China is clearly contemplating moving to a basket peg – though moving to a basket at the current parities would not accomplish much. Such half steps may offer a temporary respite, but they are unlikely to provide an enduring fix. So long as China's exchange rate remains undervalued, the basic incentive to move funds into China – whether for real investment or speculation – will remain in place.

But if these various steps do slow China's reserve accumulation pace, the Bretton Woods 2 system could well come under strain. China is such an important creditor of the United States that any significant reduction in the pace of China's dollar accumulation could well make the financing of the US current account significantly more difficult. Consider one fact: in 2004, the over \$80 billion in hot money inflows into China might have financed as much as 10% of the US current account deficit, depending on the share of these funds China invested in dollar reserves. If China succeeds at curbing "hot money" inflows, investors who now want to accumulate Chinese assets rather than US dollar assets will then be "forced" to hold the surplus dollars stemming from the US current account deficit. Some will prefer not to hold dollar assets and will bid up demand for other reserve currencies – or perhaps invest in countries like India or Brazil. Moreover, any move by China to reduce its the pace of its dollar reserve accumulation could be amplified by defensive moves by other central banks and by private investors. Even modest moves by China could trigger a significant shift in a range of portfolios.

2.6 Will the Japan's Ministry of Finance (MOF) resume large-scale intervention, to support the Bretton Woods two system?

About \$200 billion of the \$485 billion in reserve financing that the US obtained in 2003 came from Japan. Japan's share fell a bit in 2004, as its reserve accumulation slipped to \$170 billion, but it remained significant. However, all of Japan's reserve accumulation occurred at the beginning of 2004. Obviously, it would be far easier for the world's central banks to continue to provide the US with \$400 billion plus in reserve financing if the Japanese – and specifically the MOF resumed large-scale intervention.⁴⁸

Many expect the MOF to intervene to defend the 100 yen to the dollar rate. Private Japanese investors are willing to take on the dollar risk required to get the additional spread on dollar assets in part because of expectations that the MOF will step in the market to prevent a large rise in the yen's value. The Japanese MOF no doubt hopes that the threat of its intervention will be enough to defend the yen. The Japanese government probably thinks that it already has enough dollars, and would rather have other actors take on the risks associated with holding dollar assets. The capital losses on the dollars the Japanese purchased at the end of 2003 and in early 2004 from the yen's fall at the end of 2004 are not trivial.

At the end of the day, it seems unlikely that Japan will stop financing the US altogether. If private Japanese investors are unwilling to finance the US, the MOF and the BOJ will step in and resume their intervention. It is reasonable to assume that Japan's dollar accumulation – both public and private – will continue to match its current account surplus. However, this alone won't be enough to sustain the Bretton Woods two system if other central banks cut back on their dollar reserve accumulation.

In 2003, Japanese reserve accumulation -- \$200 billion – far exceeded Japan's current account surplus. Japan could only provide the United States with so much financing because Japan itself was attracting large net capital inflows. In 2004, reserve accumulation (\$176 billion) still exceeded Japan's current account surplus (estimated at \$160 billion), but by a far smaller margin. Net inflows of private capital into Japan fell. With US interest rates rising and with strong expectations among Japanese investors that the MOF/ BOJ will not let the yen rise too much/ the dollar fall too far, private Japanese investors will presumably assume a larger role in the recycling of Japan's current account surplus into dollar assets – but unless large amounts of private capital flow into the country, Japan will no longer be able to “overfinance” the US.

Japan may not break the Bretton Woods 2 system – Japanese investors are likely to continue to increase their dollar holdings - but it is unlikely to attract the capital inflows required to allow the Japanese to step up the pace of their intervention and to save the system either. In 2005 and 2006, Japan is likely to provide less financing for the US, in relation to its current account surplus, than it did in 2003 and 2004. This underscores a

⁴⁸ Japan's Ministry of Finance has sold large quantities of yen bonds to raise finance a large intervention fund. The Bank of Japan typically acts in the market on the behalf of the Ministry of Finance, and the Ministry of Finance assumes the risk of capital losses from moves in the dollar/ yen.

more general point: Asia's capacity to continue to finance the US at its current clip hinges on continued private capital inflows into Asia, whether to Japan, to China or to other emerging Asian economies.

2.7. Will Europe sell euros to provide the US with a very large loan?

ECB's intervention would provide by far the easiest way for central banks on the periphery of Bretton Woods system to reduce their dollar exposure. Sustained ECB intervention would allow official investors to sell their dollar assets and buy Euros without moving the market. This would be only a stock adjustment that reshuffled the ownership of the existing stock of dollar assets held by foreigners. On a flow basis, ongoing US current account deficits require that the world – and recently the world's central banks – increase their holdings of dollar assets. To finance the US, the ECB would have to increase its dollar reserves more than Asian central banks and others looking to reduce their dollar exposure reduced their dollar reserves.

To date, though, the ECB has shown little interest in cutting European interest rates to reduce pressure on the Euro, let alone intervene in the foreign exchange market. And, barring any radical institutional innovations, the ECB is not structured to intervene on a massive, Japanese or Chinese scale. As discussed earlier, that could require agreement among the member countries of the Eurozone on who would issue the euro bonds required to finance such intervention, and how any potential losses would be apportioned. Even if a sharp appreciation of the euro against the dollar were to lead to some intervention, the amounts would be limited – and, in all probability, sterilized.

Limited intervention would only work if ECB intervention succeeds at signaling the end of the euro's rise, and therefore effectively sets a floor under the dollar. That might make a range of dollar assets attractive to European investors. This no doubt is the ECB's preferred scenario. But it is worth noting that such a strategy only works if private outflows from the euro zone exceed any official inflows from central banks looking for diversification.

2.8. Private financing decisions on central bank financing: a new form of moral hazard.

The willingness of private investors to finance the US twin deficits – or perhaps their unwillingness to bet against the US -- is not unrelated to the willingness of their central banks to continue to provide a significant amount of the financing that the United States needs. As long as private investors – particularly private investors in countries that are intervening aggressively in the foreign exchange market -- expect central banks to continue to intervene and successfully prevent the dollar from falling, private investors do not have to worry about capital losses from exchange rate moves. A formal peg, if credible, completely eliminates the risk of such losses. Even in the absence of a formal peg, large-scale central bank intervention can limit the risk of investing in US dollar assets. Capital losses are limited if a currency – say the Yen – is not going to be allowed

to go above 100, or even if private investors expect that the yen will not be allowed to rise over 80 in the long-term, making investments in dollar-denominated securities that yield more than yen-denominated securities attractive.

Central banks' intervention to prevent appreciation creates a form of moral hazard: the central banks actions are expected to limit downside of investing in the dollar, while private investors would get the full upside. On the other hand, if private investors start to worry that their central banks will start to dump US assets, they would want to dump first. Indeed, if private investors simply anticipate that central banks will be less willing to accumulate new dollar assets on the scale needed to prevent dollar depreciation, some private investors may also reduce their dollar purchases and thus add to the stampede out of dollar assets.

There is indeed evidence that Japan's signals that it will not allow the yen to appreciate too much, possibly below 100 yen per dollar, has induced private investors in Japan to accumulate US dollar asset in a carry trade financed by the lower Japanese rates. Such carry trade – exploiting the differential between low Japanese rates and higher US rates – make sense only if the BoJ is expected to credibly hold the dam and prevent a yen appreciation beyond 100.

But it is not obvious that Japan will prevent all yen appreciation from occurring. With the Japanese economy showing signs of a more solid and sustainable recovery than in early 2004, Japan may be able to manage a yen appreciation towards the level of 90 or so. Such appreciation would be modestly deflationary, but the impact of yen appreciation could be offset if BoJ expanded the Japanese money supply – via either open market operations or continued but reduced forex intervention. While yen appreciation is part of the broader adjustment needed to reduce the US current account deficit, in the short-run, it risks leading Japanese private investors to scale back their purchases of dollar assets. Thus it could contribute the financing pressures on the US.

2.9 Asset diversification by US residents

Any reluctance on the part of US residents to hold the bulk of their financial assets in the US (and in US dollars), would increase the size of the gross financial inflows from abroad the US needs to maintain the large net flows its current account deficit requires. Consequently, the fate of the Bretton Woods system hinges on the portfolio decision of US residents as well as the portfolio decisions of foreign investors. Just as expectations of a future fall in the dollar should reduce foreigners willingness to finance US deficits (at current interest rates), expectations that will the dollar will fall create incentives for US residents to reduce their holdings of US assets.

Recent monthly TIC data showed that US residents have become significant purchasers of foreign securities – gross purchases exceeded \$15 billion in both October and November. This can be put a bit differently: since the end of 2002, private US investors have bought more foreign securities than US treasuries. The stock of treasuries in private

American hands has stayed roughly constant over the past two years, while US residents purchased about \$60 billion in foreign securities in 2003 and another \$70 billion in the first 11 months of 2004. If the Q4 2004 up tick in US purchases of foreign securities is sustained, total outflows could reach \$180 in 2005. This kind of would significantly increase the gross capital inflows the US would need to sustain a \$800 billion current account deficit.

2.10 Mitigating factors that may delay the hard landing.

What are the potential mitigating factors that may postpone the reckoning day to 2006 or even later?

- The key players in this strategic game have not tried the obvious half steps: the Europeans have not tried limited intervention to see if it works and whether it stops the appreciation of the Euro, Japan may resume (limited) intervention and hope that limited intervention will revise market memories of its massive intervention and help set a floor on the dollar/ yen, China has not tried a basket peg that would imply a limited revaluation of its currency. The major players have a range of options that they are likely to try before they completely abandon Bretton Woods 2.
- The US Congress may pass a budget that limits discretionary spending – though the scope for sustained improvement in the deficit by cutting non-defense discretionary spending is limited. The Congress may balk at making the Administration's tax cuts permanent, or reject the Administration's plan to partially privatize Social Security, limiting the expected increase in marketable Treasury bonds.
- In October 2004, the US passed a law that allows US multinationals to repatriate profits earned before 2003 and held in foreign subsidiaries at a 5.25% tax rate. To qualify, the funds have to be repatriated before the end of 2005 and used in ways that stimulate job creation and the US economy. While it is not known with certainty how much funds will be repatriated thanks to this provision, some estimates are quite high – up to \$300 billion. Selling off your existing external assets to pay for current imports is one way to fund the currency account deficit, as John Taylor (2004) has noted. However, the impact of the tax holiday should not be overstated. Repatriation flows will only support the dollar if corporations repatriate profits currently held not just abroad, but profits currently invested in foreign currency denominated assets.⁴⁹ That requires selling a foreign asset to buy a domestic asset, and generates a net capital inflow. Firms also have to weigh the tax advantage of repatriating funds held in a foreign currency against the possible gains from further depreciation of the US dollar. This may not, for example, be the best time to repatriate funds from China! Also, money may be

⁴⁹ Dollars held offshore in say the Caribbean or Ireland or Luxembourg for tax reasons are often already invested in US assets. Bringing the dollars onshore per se is just a paper transaction: it doesn't generate any net flow. To finance the current account deficit, a foreigner would have to agree to accept the offshore dollar (and the associated claim on the US) as a form of payment.

- repatriated for tax reasons and then hedged and/or resented abroad through other transactions. Recent estimates suggest the repatriation of foreign currency denominated assets could provide \$100 billion in new inflows, or about one eighth of the overall flows the US needs, and perhaps push the dollar up by 5%.⁵⁰
- The sharp fall of the US dollar relative to the euro and a few other currencies (British pound, Canadian and Australian dollar, etc. and, to a lesser measure, the yen) implies that US assets are now much cheaper than they were in 2002 when the US dollar reached its peak. If the dollar were not expected to depreciate further relative to these currencies, the incentive to buy US assets could be significant. This could lead to a resurgence of private financial inflows to the US. The crucial caveat here is that US dollar denominated assets are only attractive if the dollar is not expected to fall further. European investors have to consider the risk that Asian countries may maintain their semi-pegs relative to the US dollar and, in 2005 – as in 2002-2004 – most of the downward pressure on the dollar – deriving from the current account deficit will go towards the countries and regions that truly let the currency float: the euro, the pound, the Swiss franc, the Canadian dollar and the like.
 - The fall in the dollar – and the risk of further falls in the dollar – creates an incentive for firms now producing in Europe/Canada for the US market to relocate production to the US. Such real “hedging” strategies are different from the “buy when on sale” strategy. While “fire sale” inflows hinge on the assumption that the dollar’s fall is over, “hedging” FDI inflows are designed in part to protect against the risk of further falls in the dollar – though some may be motivated by a fear that the dollar’s recent fall will just be sustained.
 - The US current account deficit could start to improve in 2005, whether from a fall in oil prices or the lagged impact of the fall in the dollar in 2002-2004 (After J-curve delays have worked their effects, the fall in the dollar should lead to an improvement in the current account – or at least a reduced rate of deterioration). Still, there are limits. Our baseline estimate of 2005 trade deficit is \$720 billion (with an associated current account deficit of around \$800), and this estimate basically assumes that the trade deficit remains close to its Q4 2004 level, not major additional deterioration. Even an extremely large and unlikely 15% improvement in the trade deficit (relative to our baseline) would produce a trade deficit of \$610 billion, and a current account deficit of \$690 billion – a bit worse than the 2004 deficit. A certain amount of deterioration is wired in unless the trade deficit falls sharply from its q4 2004 levels.
 - Growth differentials and interest rate differentials may lead to private capital flows to the US, and even some short-term strengthening relative to the euro and the yen, as seems to have happened in January 2005.
 - Oil prices could sharply fall, reducing the US import bill. Sweet light crude averaged about \$41 a barrel in 2004. A \$10 a barrel increase in the benchmark oil price would increase the 2005 US oil import bill by about \$50 billion, and a \$10 a barrel fall would reduce the US oil import bill by about \$50 billion – i.e. each \$1 a

⁵⁰ Roberts and Hughes, Financial Times, 31 January 2005.

barrel change in the annual average oil prices changes the US oil import bill by about \$5 billion.

Even if a combination of factors – China revalues its exchange rate but by only a small amount, so its reserves continue to grow rapidly, Japan resumes intervention though on a smaller scale, some European firms decide to source more of their production in the US (leading FDI inflows to pick up, and at least ending net outflows of FDI), and the tax holiday generates substantial net flows – combined to provide the US with \$800 billion in net new financing in 2005, we suspect that another \$800 billion plus would not be on offer in 2006. The ongoing deterioration in the US external balance is too large, and the risk of large exchange rate moves to halt the rapid deterioration in the net US external debt position too great, for deficits of such magnitude to be financed comfortably at current US dollar interest rates.

Meeting the United States massive need for financing over the next few years would require a significant increase in the US assets foreigners hold in their portfolios, and a particularly large increase in the dollars held on the balance sheets of certain key central banks. The relentless pressure created by the United States need to attract \$200 billion a quarter in net financing – and perhaps larger gross flows to cover US portfolio diversification – will not go away, barring a significant additional adjustment in the dollar or US asset prices (or a sudden slowdown in US consumer spending). As in the second and third quarter of 2004, there may be periods of calm -- but the same underlying structural factors that led to a sharp weakening of the dollar in q4 2004 will remain in place. Attracting over \$2 billion in net inflows every day of the year – and a lot more every business day – can sometimes be something of a long hard slog.

3. Conclusions

Our core premise is simple: at current interest rates, US dollar assets do not compensate foreign investors fully for the risk of future dollar depreciation – particularly for investors located in countries whose currencies have not fallen significantly against the dollar since 2002. Consequently, financing the US is more a burden than an opportunity. That is why such a large share of the financing for the US current account deficit (and the US fiscal deficit) has come from central banks, not private investors.

Clearly, the US is also attracting some private capital inflows as well, whether from investor expectations that central banks will limit exchange rate risk, making the yield pickup offered on dollar assets (relative to some currencies) attractive or the continued perception – one unlikely to be ratified -- that United States dollar offers a stable store of long-term value for international investors. However, we doubt that private investors would be willing to extend financing on the scale needed to replace a significant chunk of the \$450 billion plus that foreign central banks – led by the Bank of Japan (acting for Japan's Ministry of Finance) and the People's Bank of China -- have provided in 2003 and 2004.

Consequently, the continued stability of the current Bretton Woods 2 regime depends on the willingness of the world's central banks to continue to add to their existing portfolio of dollar reserves at a rapid clip. It therefore hinges on finding a "fair" distribution of the burden of financing of the US current account among the major central banks, or, if not a fair burden, at least a politically acceptable burden. The current bargain relies on China in particular to overfinance the US -- that is to provide far more financing to the US than required by its share of the world's current account surplus. Private investors in regions with current account surpluses often prefer to invest in China rather than the US. With the US alone accounting for the lion's share of the world's current account deficit, this flow of private capital is only consistent with global equilibrium so long as China -- and specifically its central bank -- uses these capital inflows to build up its dollar reserves.

The system is stable only so long as China and other countries (such as Japan) now bearing a disproportionate share of the burden are willing to continue accept the costs of large reserve accumulation. The pattern of reserve accumulation in Q4:2004 may provide a glimpse into the future: the end of Japan's large scale intervention -- and Europe's willingness to let the Euro fall rather than intervene (though not without complaint) transferred the burden of financing the US onto emerging Asia, and to a lesser extent, the major oil exporters. With \$200 billion in reserve accumulation in Q4 2004 from the major emerging economies alone, the central banks of the world's emerging economies added to their overall reserves at an \$800 billion annual clip -- and added to their dollar reserves at annual rate of close to \$600 billion (assuming a 75%/25% split between dollar and euro/ other reserve assets). China's reserves increased by over \$90 billion, non-China emerging Asia's reserves increased by over \$70 billion, and Russia's reserves increased more than \$25 billion.

That kind of reserve accumulation almost certainly puts too much of the burden of financing the US onto a small number of central banks to be sustainable for long. The domestic financial markets of most emerging economies are not large enough to make continued sterilization of such large reserve accumulation a realistic option. Recent rumblings from the world's central banks suggest that many would like to reduce the pace of their dollar reserve accumulation below the \$450 billion average pace typical of 2003 and 2004. The People's Bank of China's interest in encouraging Chinese residents to increase their holdings of dollars suggests that China's central bank is tiring of "over financing" the US, and taking the downside risk associated with providing foreign investors renminbi assets.

Yet the Bretton Woods 2 system can only survive so long as someone is willing to step up and add \$800 billion annually to their portfolio of dollar assets at something like current exchange and interest rates. If China -- or another emerging Asian economies now overfinancing the US -- reduces its dollar reserve accumulation, the current system risks degenerating into a disorderly Nash bargaining game where every player is trying to free ride on every other player and to avoid being stuck with a growing pile of dollar assets. Any gap between the US need for financing and availability of financing will eventually be closed, but the process is likely to be unpleasant. Indeed, the dollar might have to fall to the point where the world's pain to prompts the world's central banks to

step back into the market and provide the US the financing it needs during its adjustment process.

The original Bretton Woods system can be considered part of the international architecture of the Western Alliance during the cold war. It provided the framework that governed economic relations among the major countries of Western Europe, the United States, and the United States' Asian allies – particularly its Asian allies on China's periphery (Japan, South Korea, Taiwan).

Some have suggested that the Bretton Woods 2 system is the monetary component of the international order than is emerging to fight the global war on terror.⁵¹ Bretton Woods 2 finances the budget deficits associated with fighting the global war on terror. It therefore provides a politically acceptable formula for sharing the burden of fighting the global war on terrorism.

However, the analogy between the original Bretton Woods system and the Cold War and Bretton Woods 2 and the war on terror does not work. First, the US did not finance the Cold War by placing large amounts of debt abroad, running large sustained fiscal deficits and ongoing current account deficits. US current account was in surplus in the 1950s – and remained in surplus throughout the 1960s. Second, the ties that bind the US to Japan, China, emerging Asia, Russia and others now financing the US today are far weaker than the ties that bound the US and Europe during the early stages of the cold war. China, lest we forget, is far from a democracy, and Chinese and American interests often diverge. China, for example, is quite willing to do business with Iran and with other states that have the resources needed to meet China's growing demand. Third, current Chinese financing of the US is not analogous to Europe financing US in Vietnam, or even the foreign funds that helped finance the Reagan defense buildup in the early 1980s. In the 1980s, private foreign money flooded the US because US interest rates were high, something that is obviously not the case now.

Rather than viewing the influx of dollar reserve financing as a politically acceptable way of sharing the burden of financing the global war on terrorism – and expecting this financing to continue so long as the United States needs to finance the costs associated with the global war – it is probably better to view the influx of dollar reserve financing as a way of limiting the global pain associated with the collapse of the equity market driven US investment bubble that drove the global economy in the late 1990s. The Federal Reserve responded aggressively to the sharp falls in US equity markets, and the Bush Administration added a massive fiscal stimulus to the Fed's monetary stimulus: as Ken Rogoff (2003) has noted, the US recovery was the best recovery money could buy. Sharp cuts in US interest rates naturally would tend to reduce the dollar's value but many foreign central banks were unwilling to let their currencies fall against the dollar, and intervened massively. This intervention magnified the impact of the US monetary and fiscal stimulus on domestic US demand even as it limited the impact of US monetary stimulus on US net exports: a seemingly unlimited credit line from the world's central banks funded the expansion of the US fiscal deficit, preventing the growing stock of

⁵¹ After the Bush inaugural speech, perhaps the global war on terror and tyranny.

Treasuries from crowding out private investment – or from reducing the funds available to finance consumer lending, home equity lines and the like.

The bursting of the US equity bubble is now part of the past, yet US dependence on foreign central banks' financing remains as large as ever. A cooperative grand bargain where the US promises fiscal adjustment in exchange for an Asian currency appreciation and looser monetary policy in Europe offers the best chance for unwinding of the US external imbalance without a sharp deceleration of US and global growth. However, such a bargain looks increasingly unlikely. If the US refuses to take meaningful steps to reduce its fiscal deficit and its need to draw on global savings to offset its own low private savings rate, Asian central banks are likely to tire of bearing most of the burden of financing the US twin deficits on their own. After all, the longer they finance a US that refuses to adjust, the larger their real and financial costs down the line. Japan cannot hold the fort alone, and neither Europe, the major oil exporters or other countries at the periphery of the Bretton Woods 2 system will prove willing to take up the burden that emerging Asia no longer wants for long. China may be willing to add \$240 billion, or even \$300 billion, to its reserves for another year. We doubt it will be willing to do so for two more years. Market financing alone is not enough to cover a \$800 billion plus US current account deficit: without tacit agreement among the world's central banks on how distribute the growing burden of meeting the United States increasing need for external financing, the United States' current consumption driven growth model will run into limits.

Consequently, the risk a disorderly unraveling of the Bretton Woods 2 system -- a sharp correction of the US dollar and of the US bond market, a surge in US long-term interest rates, a sharp fall in the price of a wide variety of risky assets (such a equities, housing, high-yield bonds, and emerging market sovereign debt) – are growing. Such an unraveling could result in a sharp economic slowdown in the US. It will force countries that now depend on US demand growth for their growth to adjust as well. But if the financing for the US is not available, global adjustment is unavoidable.

References

- Abaroa, Patricia (2004). The International Investment Position of the United States at Year-end 2003. Survey of Current Business, July 2004.
- Ahmed, S. (1987) A government spending, the balance of trade and the terms of trade in British history, Journal of Monetary Economics, 20, 195-220.
- Anderson, J (2004). The Asian Liquidity Primer. UBS Asian Economic Perspectives. 29 March.
- Bank of International Settlements (2004) [BIS Annual Report](#) Chapter 5 “Foreign Exchange Markets”.
- Benassy-Quere, Duran-Vigneron, Lahreche-Revil and Mignon (2004)...
- Berner, R. (2004). Upside Risks for U.S. Current Account. Morgan Stanley Global Economic Forum, October 1.
- Blanchard, O., F. Giavazzi, and F. Sa (2005) [The U.S. Current Account and the Dollar](#) MIT, January.
- Borga, Maria and Daniel Yorgason (2004). Direct Investment Positions for 2003: Country and Industry Detail. Survey of Current Business, July 2004.
- Cooper, Richard (2004) “America's current account deficit is not only sustainable, it is perfectly logical given the world's hunger for investment returns and dollar reserves,” Financial Times, November 1st.
- Freund, C. (2000) [Current Account Adjustment in Industrialized Countries](#) International Finance Discussion Papers. Federal Reserve Board, December.
- Dooley, M., D. Folkerts-Landau and P. Garber (2003) [An Essay on the Revived Bretton Woods System](#) NBER Working Paper No. 9971, September.
- Dooley, M., D. Folkerts-Landau and P. Garber (2004a) [The Revived Bretton Woods System: The Effects of Periphery Intervention and Reserve Management on Interest Rates & Exchange Rates in Center Countries](#) NBER Working Paper No. 10332, March.
- Dooley, M., D. Folkerts-Landau and P. Garber (2004b) [Direct Investment, Rising Real Wages and the Absorption of Excess Labor in the Periphery](#) NBER Working Paper No. 10626, July.

- Dooley, M., D. Folkerts-Landau and P. Garber (2004c) [The US Current Account Deficit and Economic Development: Collateral for a Total Return Swap](#) NBER WP. No. 10727, September (<http://www.nber.org/papers/w10727>).
- Dooley, M., D. Folkerts-Landau and P. Garber (2004d), February (<http://www.frbsf.org/economics/conferences/0502/TheCosmic.pdf>)
- Dooley, M., D. Folkerts-Landau and P. Garber (2004e) [The Revived Bretton Woods System: Alive and Well](#) Deutsche Bank, December (<http://www.frbsf.org/economics/conferences/0502/BrettonWoods.pdf>).
- Economist (2005) [China's Economy: A reheated economy](#) January 25, 2005 (http://economist.com/agenda/displayStory.cfm?story_id=3597367)
- Eichengreen, B. (2004) [Global Imbalances and the Lessons of Bretton Woods](#) NBER Working Paper No. 10497, May.
- Furman, J and Robert Greenstein. (2005) [Overview of the Issues Raised by the Administration's Social Security Plan](#). Center for Budget and Policy Priorities. February.
- Garber, P. (2004) "Comment" in C. Fred Bergsten and John Williamson, editors, [Dollar Adjustment: How far? Against what?](#) Institute for International Economics.
- Geithner, T. (2005) [Key Challenges in Risk Management](#) Speech at the RMA/Risk Business KRI's Global Operational Risk Forum.
- Godley, W. (1999) Notes on the U.S. and Balance of Payments Deficit, Strategic Analysis, Interim Report, The Jerome Levy Economics Institute of Bard College.
- Godley, W. (1995) A Critical Imbalance in U.S. Trade: The U.S. Balance of Payments, International Indebtedness, and Economic Policy, Public Policy Brief, The Jerome Levy Economics Institute of Bard College.
- Godley, W. A. Izurieta and G. Zezza (2004) [Prospects and Policies for the US Economy: Why next exports must be the motor for US growth](#) CERF, University of Cambridge, July.
- Goldstein, M (2004). Adjusting China's Exchange Rate Policies. Institute for International Economics, May.
- Goldstein, M and N. Lardy (2004) "What Kind of Landing for the Chinese Economy?," Policy Briefs in International Economics, No.PB04-7, Institute for International

- Economics, Washington: DC, November (<http://www.iie.com/publications/pb/pb04-7.pdf>).
- Gourinchas, P.O. and H.Rey (2004) [International Financial Adjustment](#), Princeton University, March.
- Gramlich, E.M. [Budget and trade deficits - linked, both worrisome in the long run, but not twins](#) Remarks at the Euromoney Bond Investors Congress, London, February.
- Greenspan, A. (2003) [Remarks at the 21st Annual Monetary Conference](#) Cato Institute, Washington, D.C. November.
- Greenspan, A. (2004) “Euro in Wider Circles” Remarks at the European Banking Congress 2004, Frankfurt, Germany November 19, 2004.
- Greenspan, A. (2005) Remarks on the *Current account* at Advancing Enterprise 2005 Conference, London, England February 4, 2005.
- Higgins, M. and T. Klitgaard (2004) [Reserve Accumulation: Implications for Global Capital Flows and Financial Markets](#) Current Issues in Economics and Finance, Vol.10. No. 10, September/October, Federal Reserve Bank of New York.
- International Monetary Fund (2004a) World Economic Outlook, Chapter 1, April, Washington D.C.
- International Monetary Fund (2004b) [U.S. Fiscal Policies and Priorities for Long-Run Sustainability](#) M. Mühleisen and C. Towe (editors) January, Washington D.C.
- Kim, S. and N. Roubini (2004) Twin Deficits or Twin Divergence? Fiscal Policy, The Current Account and the Real Exchange Rate in the U.S., unpublished, New York University, June 2004. (<http://www.stern.nyu.edu/globalmacro/fiscalus5.doc>)
- Kohn, D. L. (2004) [The United States in the World Economy](#) Remarks at the Federal Reserve Bank of Atlanta's Public Policy Dinner, Atlanta, Georgia January 7.
- Magnus, G. (2004). Imbalances, Illusions and Investment Prospects. UBS Investment Research, London. 13 October.
- Mann, C. (1999) [Is the U.S. Trade Deficit Sustainable?](#) Institute for International Economics, Washington, DC, September.
- Mann, C. (2003) [The US Current Account, New Economy Services, and Implications for Sustainability](#) , Institute for International Economics, Washington, DC, August.

- Mann, C. (2004) [Managing Exchange Rates: Achievement of Global Re-balancing or Evidence of Global Co-dependency?](#) Business Economics, July 2004.
- McKinnon, R. (2003) [The World Dollar Standard and Globalization, New Rules for the Game](#) August, Stanford University.
- McKinnon, R. I. (2004) “Government Deficits and The Deindustrialization of America,” The Economists' Voice, Vol. 1. No.3. December (<http://www.bepress.com/ev/vol1/iss3/art1/>).
- McKinnon, R. I. (2005) “Exchange Rates, Wages and International Adjustment: Japan and China versus the United States,” Stanford University, February 2005 (<http://www.frbsf.org/economics/conferences/0502/InternationalAdjustment2.pdf>).
- McKinnon, R. and G. Schnabl (2004) [The Return to Soft Dollar Pegging in East Asia? Mitigating Conflicted Virtue](#) July, forthcoming in *International Finance*.
- Mendoza, E. and C. Arellano (2002) [Credit Frictions and 'Sudden Stops' in Small Open Economies: An Equilibrium Business Cycle Framework for Emerging Markets Crises](#) NBER Working Paper No. 8880, April.
- Mussa, M. (2004) “Policies to Sustain Global Growth While Reducing External Imbalances,” unpublished draft, August.
- Obstfeld. M. and K. Rogoff (2000) “Perspectives on OECD Economic Integration: Implications for US Current Account Adjustment,” in Federal Reserve Bank of Kansas City, Global Economic Integration: Opportunities and Challenges, March, pp. 169-208.
- Obstfeld. M. and K. Rogoff (2004) [The Unsustainable US Current Account Position Revisited](#) , NBER Working Paper No. 10869, November.
- Peterson, P. (2004) *Running on Empty: How the Democratic and Republican Parties are Bankrupting Our Future and What Americans Can Do About It*, New York, Farrar Straus and Giroux.
- Posen, Adam (2004) [Avoiding a Currency War](#) The International Economy, Summer 2004.
- Prophet, William D, Daniel Katzive, Steve Antczak (2005) “Foreign Flows: What in the World is Going On?” UBS Investment Research, January 31.

- Roach, S. (2004a) [Twin Deficits at the Flashpoint?](#) Morgan Stanley Dean Witter Global Economic Forum August 16, 2004.
- Roach, S. (2004b) [The Funding of America](#) Morgan Stanley Dean Witter Global Economic Forum August 23, 2004.
- Roach, S. (2005). Morgan Stanley Dean Witter Global Economic Forum January 3, 2005.
- Razin and Milesi Ferretti (1998) [Current Account Reversals and Currency Crises: Empirical Regularities](#) NBER Working Paper No.6620, June.
- Rogoff K. (2003) The Debtor's Empire, Washington Post, October 20.
- Rogoff, K. (2004) [Bush Throws a Party](#) Foreign Policy, March/April.
- Roubini, N. and B. Setser “The US as a Net Debtor: The Sustainability of the US External Imbalances,” NYU, August 2004, revised: November 2004 (<http://www.stern.nyu.edu/globalmacro/Roubini-Setser-US-External-Imbalances.pdf>).
- Rubin, R. E., Peter R. Orszag, and Allen Sinai (2004) [Sustained Budget Deficits: Longer-Run U.S. Economic Performance and the Risk of Financial and Fiscal Disarray](#) by Brookings Institution, January.
- Summers, L. H. (2004) [The United States and the Global Adjustment Process](#) , speech at the Institute for International Economics, March.
- Summers, L.H. (2004b) The U.S. Current Account Deficit and the Global Economy, Per Jacobsson Lecture, September (<http://www.perjacobsson.org/2004/100304.pdf>).
- Tille, C. (2004) The Impact of Exchange Rate Movements on U.S. Foreign Debt *Federal Reserve Bank of New York Current Issues in Economics and Finance*, vol. 9, number 1, January 2003
- Truman, E. M (2004) The US Current Account Deficit and the Euro Area, prepared for “The ECB and Its Watchers VI” Conference Frankfurt, Germany, July 2.
- Truman, E.M (2005) A Revived Bretton Woods System? Implications for Europe and the United States, prepared for “The Revived Bretton Woods System: A New Paradigm for Asian Development” Conference San Francisco, February 4.
- U.S. Treasury (2003) *Report on U.S. holdings of foreign securities as of December 31, 2001* (Office of the Under Secretary, International Affairs, Department of Treasury, Securities Reports Division, Federal Reserve Bank of New York, Division of

International Finance, Board of Governors of the Federal Reserve System), May 2003.

U.S. Treasury (2004) [U.S. Treasury - Treasury International Capital \(TIC\) System](#)

Wolf, M. (2004a) [Martin Wolf: America is now on the comfortable path to ruin](#) Financial Times, August 18.

Wolf, M. (2004b) [Why the US current account deficit is a cause for concern](#) Financial Times, August 25.

Wolf, M. (2004c) "Asia could solve America's debt trap," Financial Times December 23. (http://www.stern.nyu.edu/globalmacro/cur_policy/http%3A//news.ft.com/cms/s/64ce59f6-538a-11d9-b6e4-00000e2511c8.html&resource=ftprem).

Xie, A. "China: Searching for a Soft Landing" Morgan Stanley Dean Witter Global Economic Forum, February 1, 2005.

