

ASYMMETRIC INVESTMENT RETURNS AND THE SUSTAINABILITY OF US EXTERNAL IMBALANCES

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ABSTRACT

A little-remarked aspect of the widening of United States trade and current account deficits since the late 1990s has been their limited effect on United States net foreign liabilities and, especially, net income. This has been possible because the United States has enjoyed both higher yields and larger valuation gains on its foreign assets than on its foreign liabilities. The gain from this asymmetry in returns has increased over time as declining 'home bias' has increased the size of gross foreign asset and liability positions. This highlights a major shortcoming in the standard analysis of external sustainability, which assumes symmetric investment returns.

While some of this advantage might be due to transitory factors or measurement error, most of it seems to be explained by structural factors. The United States is a relatively safe investment destination. Its foreign liabilities are mainly in the form of debt, while its assets are mainly equities, which tend to yield higher returns (including valuation gains). If the factors underpinning the United States comparative advantage as a provider of safe, liquid financial assets persist and declining 'home bias' continues apace, then the need for external adjustment might be less than conventional analysis suggests. That said, future outcomes are subject to considerable uncertainty, as an increasingly-leveraged external balance sheet means that the United States is also more exposed to risk.

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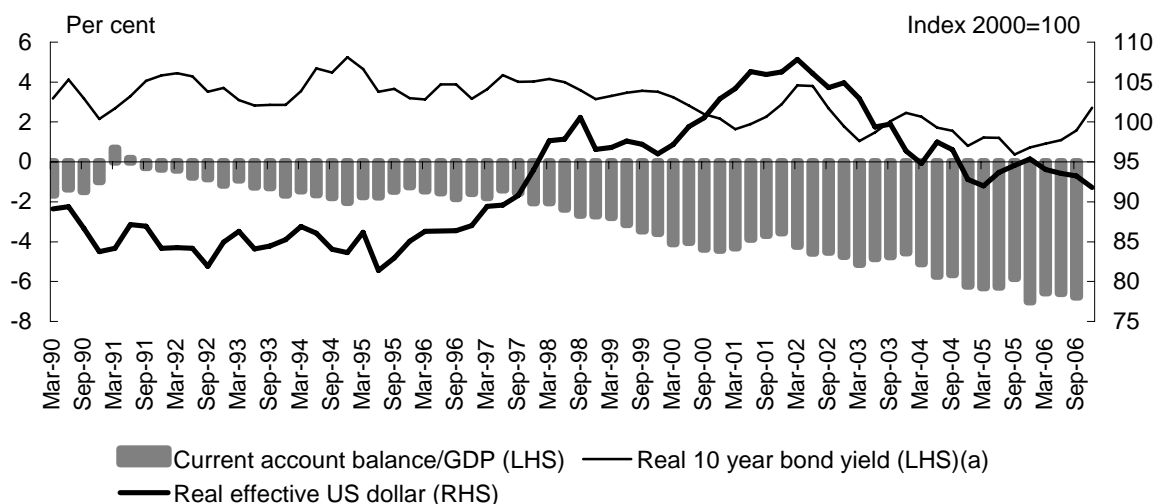
Phil Garton

1. INTRODUCTION

A major puzzle in international macroeconomics in recent years has been the ease with which the United States (US) has financed its widening current account deficit (CAD), notwithstanding a widely-held view that this is unsustainable. Concerns that this might end in a disruptive adjustment, involving a plunge in the US dollar and a rise in US interest rates, have so far proved unfounded. The dollar has steadied after its depreciation through 2002-04 and remains well above early 1990s levels, while real long-term US bond yields have declined since the late 1990s (Chart 1).

The basis of the concern about the US CAD can be outlined as follows. Continued CADs of this size imply a very large increase over time in US net foreign liabilities (NFLs) as a share of GDP. If this share is to be stabilised at a reasonable level, the CAD will need to fall substantially. That would require a large depreciation of the US dollar, especially as the CAD has reflected falling private and public saving in the US rather than a rise in investment. This would impose large currency losses on foreign investors; hence the worry that a shift in expectations might trigger a disorderly adjustment.

Chart 1: US current account, real exchange rate and real bond yield



Source: Bureau of Economic Analysis (BEA), OECD Main Economic Indicators.

(a) Based on CPI inflation through the year.

The benign persistence of the US CAD has generated a lively debate on why this has been possible. Much of this has been concerned with arguments that the primary cause of the CAD has been the ‘push’ of external demand for US assets, rather than the ‘pull’ of declining public and private saving in the US.¹ Whatever their merits as explanations for what has occurred to date, it is not clear that these arguments necessarily remove the central concern about the need for future adjustment and the implied exchange rate losses for foreign investors.

Another strand of the recent literature has drawn attention to the US’ ability to earn consistently higher rates of return (including valuation gains) on its foreign

1 Two widely-discussed variants of this view have been proposed by Bernanke (2005) and Dooley, Folkerts-Landau and Garber (2003). The former attributes the US CAD to a range of factors that have led to a ‘glut’ of saving in excess of investment demands in the rest of the world. The latter emphasise accumulation of US dollar reserves by emerging economies pursuing export-led growth (the ‘revived Bretton Woods system’).

assets than it pays on its liabilities (Cline 2005, Gourinchas and Rey 2005, Lane and Milesi-Feretti 2005, and Kitchen 2006).² This literature highlights the role of external balance sheet composition in explaining differences in rates of return, and of increasing international financial integration in magnifying the effects of such differences.

The purpose of this paper is to assess the extent to which this favorable asymmetry in investment returns might help the US sustain current account and trade deficits, and thereby reduce the need for future adjustment. It adds to the previous literature by more closely examining the sources of the differential and explicitly incorporating it into a framework for analysis of future sustainability. The focus is on the specific issue of sustainability because of its link to the risk of disorderly adjustment. The paper does not address the separate issue of whether external imbalances are optimal. Nor does it attempt to model future outcomes on the basis of underlying determinants.

The paper begins by outlining the standard analytical framework that underpins most assessments of the sustainable CAD for the US. Next it looks at how well this framework fits the past evolution of the US external position, highlighting the role of a favourable asymmetry in investment returns in offsetting the effects of increasing trade deficits. The following sections analyse the factors

2 This advantage is often described as 'exorbitant privilege': a phrase commonly attributed to French President Charles de Gaulle, who complained in the mid-1960s of the advantages to the US arising from the dollar's role as the global reserve currency in the Bretton Woods system. Gourinchas and Rey (2006) suggest that the term should be attributed to Finance Minister Valéry Giscard D'Estaing. This phenomenon is not unique to the US, but also applies to the United Kingdom (Whitaker 2006).

contributing to this return differential and whether they might continue in future. The paper concludes by presenting a modified sustainability framework, which highlights the sensitivity of future external adjustment to the size of the return differential and growth in the gross foreign asset position.

2. THE STANDARD APPROACH TO ANALYSING EXTERNAL SUSTAINABILITY

A country's external position can be regarded as sustainable if it could be expected to satisfy its inter-temporal budget constraint without the need for a significant external adjustment at some future time. The inter-temporal budget constraint requires the economy to generate future primary surpluses equal, in discounted present value terms, to current NFLs.³ In other words, liabilities must ultimately be serviced by a net flow of goods and services to creditors. (This and other sustainability relationships used in this paper are derived in Appendix A.)

It is difficult to assess whether this criterion is likely to be satisfied, so the commonly-used benchmark is that NFLs should be expected to stabilise at a reasonable share of GDP.⁴ The underlying logic is that a continually rising ratio

3 The primary balance is the current account balance less the net income balance. Net income is the balance of receipts and payments of investment income and employee compensation. The latter are relatively small and can be ignored. The US primary deficit is largely the trade deficit (5.8 per cent of GDP in 2005), but also includes a fairly constant deficit on net current transfers (0.7 per cent of GDP in 2005).

4 A more appropriate denominator would be output of tradeable goods and services, given external liabilities cannot be serviced from non-tradeables output. However, reliable data on tradeables output are not available.

of NFLs to GDP implies that the share of output needed to service these liabilities also rises continually. For countries borrowing in their own currency, the concern is not so much outright default, but rather that liabilities will only be serviced by devaluing creditors' claims through depreciation. This suggests the external position can be regarded as unsustainable if it implies the need for significant future depreciation.

A common approach focuses on the relationship between the change in NFLs as a share of GDP, the CAD as a share of GDP and nominal GDP growth (g):

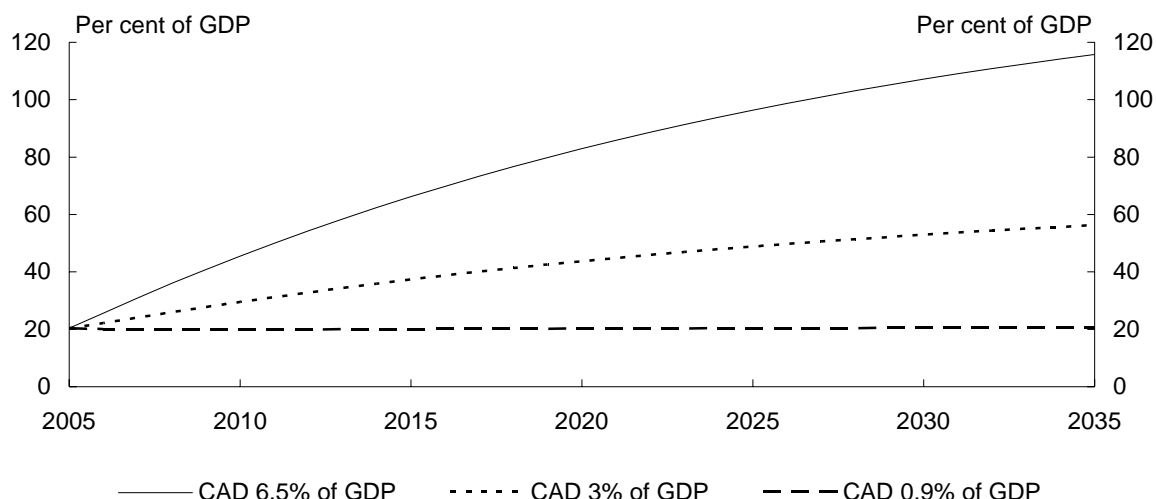
$$(1) \quad NFL_t - NFL_{t-1} = CAD_t - (g_t \times NFL_{t-1})$$

The CAD (per cent of GDP) needed to stabilise NFLs at a given share of GDP over time is given by:

$$(2) \quad CAD = g \times NFL$$

On this basis, Chart 2 shows projected future paths for US NFLs under different CAD assumptions. Projections are based on Congressional Budget Office (2005b) assumptions on nominal GDP growth to 2016, and assume growth continues at the final year rate of 4.5 per cent. A constant CAD to GDP ratio at the current level of around 6½ per cent could see US NFLs exceeding 100 per cent of GDP in around 20 years and eventually stabilising at over 140 per cent of GDP. On the other hand, holding NFLs to their current level of 20 per cent of GDP would require the CAD to fall to below 1 per cent of GDP.

Chart 2: Projected US net foreign liabilities under alternative current account scenarios



While the unchanged CAD scenario is generally considered unlikely to be sustainable, many economists believe it would be feasible for US NFLs to rise to 50-60 per cent of GDP — around levels sustained by economies such as Australia (for example, Mussa 2004 and Edwards 2005). This would require the CAD to fall to below 3 per cent of GDP, a reduction of at least 3½ percentage points. Chart 2 suggests adjustment would need to occur reasonably soon, otherwise the 50-60 per cent of GDP benchmark would be exceeded within a few years.

This estimated reduction in the CAD actually understates the size of the external adjustment. If NFLs were stabilised at a much higher share of GDP than their current level, net income could be expected to shift into significant deficit. The primary deficit would therefore need to fall by more than the CAD. An equivalent condition to equation (1) in terms of the primary balance as a share of GDP is given by:

$$(3) \quad NFL_t - NFL_{t-1} = -PB_t + (r_t - g_t) \times NFL_{t-1}$$

The corresponding stabilisation condition for the NFL to GDP ratio is therefore:

$$(4) \quad PB = (r - g) \times NFL$$

Here r is the average interest/dividend rate applying to foreign liabilities, which has averaged 1.3 percentage points below the rate of nominal GDP growth since 1990. On this basis, stabilising US NFLs at 50-60 per cent of GDP would require the primary deficit to fall to under 1 per cent of GDP, a reduction of at least 5½ per cent of GDP from its current level. This must occur through a fall in the trade deficit: that is, a fall in US demand for traded goods relative to supply.

An adjustment of this size would likely require a large depreciation of the real trade-weighted US dollar. Most estimates suggest that each 1 per cent of GDP adjustment could be expected to require a real depreciation of somewhere between 4 and 10 per cent (for example Obstfeld and Rogoff 2005, Edwards 2005, Blanchard, Giavazzi and Sa 2005 and Mussa 2004). An adjustment of 5½ per cent of GDP implies a depreciation of between 22 and 55 per cent.

Importantly, the need for depreciation would not be reduced by measures to increase US saving, such as a reduction in the fiscal deficit. Higher saving and depreciation are complements, not substitutes. An increase in saving means a fall in US demand for both tradeable and non-tradeable goods and services. Maintaining full employment in this case would require a depreciation to increase the relative US price of foreign-produced tradeables, and thereby shift US spending toward non-tradeables and foreign spending toward US tradeables.

A smaller depreciation may be needed to the extent that adjustment occurs through an increase in US traded goods productivity rather than a reduction in

US demand. But even a large productivity increase may not avoid the need for substantial depreciation (Obstfeld and Rogoff 2005). As the US is a very large economy, higher traded goods production causes an adverse shift in its terms of trade, partly offsetting the gain from this source.⁵

So far we have ignored valuation effects of depreciation. A depreciation of, say, 30 per cent could reduce NFLs by around 10 per cent of GDP and improve net income by 0.5 per cent of GDP.⁶ These valuation effects do not reduce the adjustment ultimately needed as they only cause a once-off reduction in NFLs, which must continue to rise as a share of GDP unless equation (4) is satisfied. Nonetheless, valuation effects can smooth the adjustment process by extending the time period over which adjustment needs to occur (Cavallo and Tille 2006).

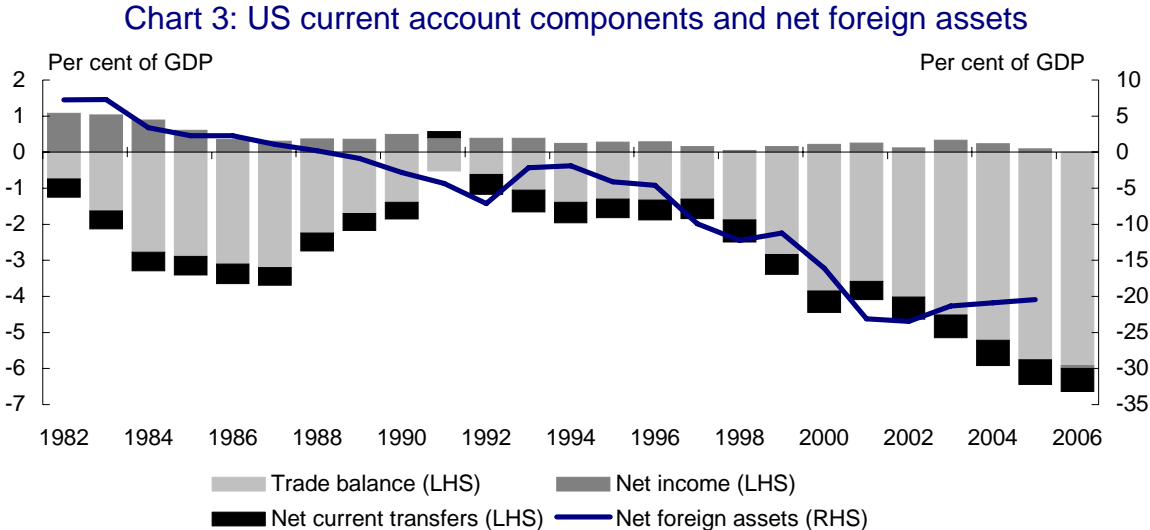
An important caveat to these conclusions is that the framework outlined here assumes a common rate of yield applying to both foreign assets and liabilities and no systematic valuation effects on the NFL position from asset price or exchange rate movements. If these assumptions do not hold then the standard approach may need to be substantially modified. The next section looks at whether these assumptions have held for the US in the past.

5 Higher US productivity in the non-tradeables sector would increase the required depreciation as it raises US consumption of traded goods. Similarly, higher foreign productivity only assists US adjustment if it occurs mainly in non-tradeables production. Higher foreign productivity in tradeables increases the required US adjustment.

6 US Treasury (2005a and 2005b) data indicate that 88 per cent of foreign holdings of US long-term debt securities and 74 per cent of US holdings of foreign long-term debt securities at end-2004 were USD-denominated. If the same shares apply to all debt (while other claims are local currency-denominated) then around 95 per cent of US liabilities and 30 per cent of US assets would be USD-denominated. Cline (2005) estimates that a uniform 1 per cent dollar depreciation improves NFLs by around 0.33 per cent of GDP.

3. HOW HAS THE US EXTERNAL POSITION EVOLVED TO DATE?

Chart 3 shows the US primary deficit increasing from an average of 1.7 per cent of GDP through 1990-1998 to 6.4 per cent in 2005. While the US CAD as a share of GDP is not an outlier in terms of advanced economy experience, the primary deficit is unusually large, particularly for a major economy. For instance, Australia’s CAD of 5.8 per cent of GDP in 2005 was not far below the US CAD, but our primary deficit of 1.9 per cent of GDP was less than one-third as large as the US primary deficit.



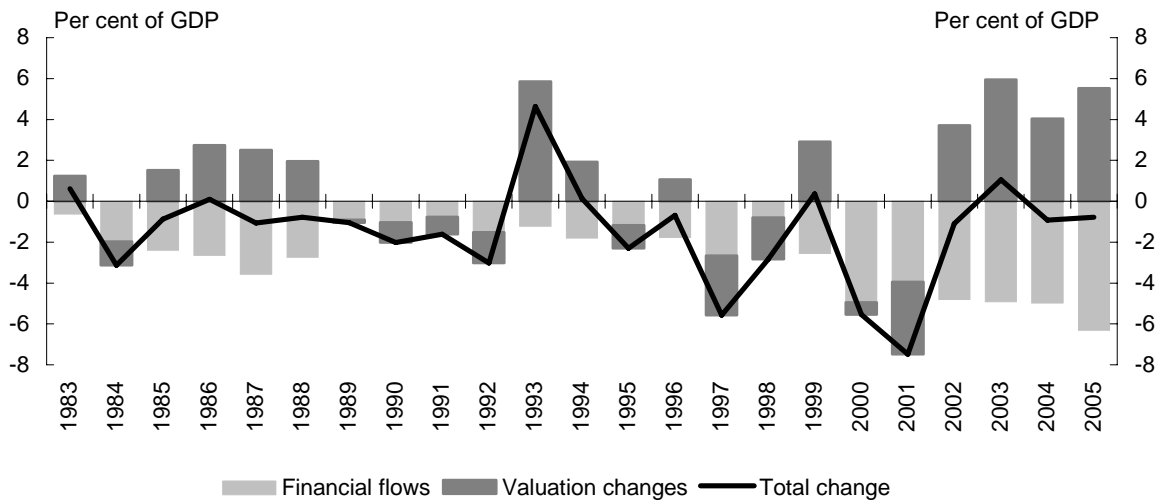
Source: BEA. Data for 2006 are annualised from the first three quarters.

Despite their size, these primary deficits have so far had only limited impact on NFLs and almost no effect on net income.⁷ The ratio of US NFLs to GDP is still a relatively moderate 20 per cent and has actually declined since 2001. In addition, the US net income balance has remained relatively stable over the past two decades, even though the US has shifted from being a net creditor to a net debtor. While net income has slipped into deficit since the final quarter of 2005, this is still very small as a share of GDP.

Chart 4 shows that the US has mostly benefited from valuation gains on its international investment position, offsetting on average half the effect of net financial inflows to finance CADs since 1983. Valuation gains have been particularly strong over the past four years, offsetting virtually all of the impact of CADs since 2001. These recent gains came from US dollar depreciation from 2002 to 2004 and strong growth in foreign, relative to US, equity prices in 2005.

7 As market values of direct investments are not observable, the BEA publishes two sets of figures, valuing direct investment at either imputed market value or the current replacement cost of underlying assets. This paper uses market value estimates where available (from 1982 onward). On a market value basis, gross foreign assets at end-2005 were 89 per cent of GDP and gross liabilities 109 per cent, while current cost estimates were 80 per cent and 102 per cent of GDP.

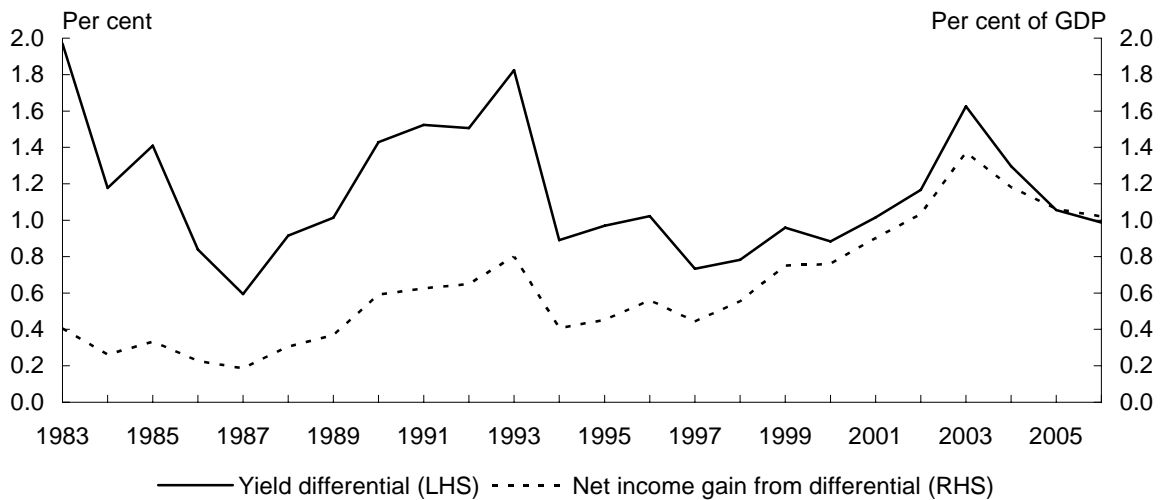
Chart 4: Changes in US net foreign assets



Source: BEA

Net income has remained in surplus despite the net liability position because the yield on US foreign assets (investment income receipts as a percentage of the previous year-end asset position) has exceeded the yield on liabilities by an average of more than 1 per cent (Chart 5). Had yields on assets and liabilities been identical the US would have run a net income deficit of about 1 per cent of GDP in 2005. The effect of the differential on the net income balance has been magnified over time by increasing international financial integration, which has seen US gross foreign assets and liabilities quadruple as shares of GDP since the early 1980s.

Chart 5: Excess yield on US external assets over yield on external liabilities

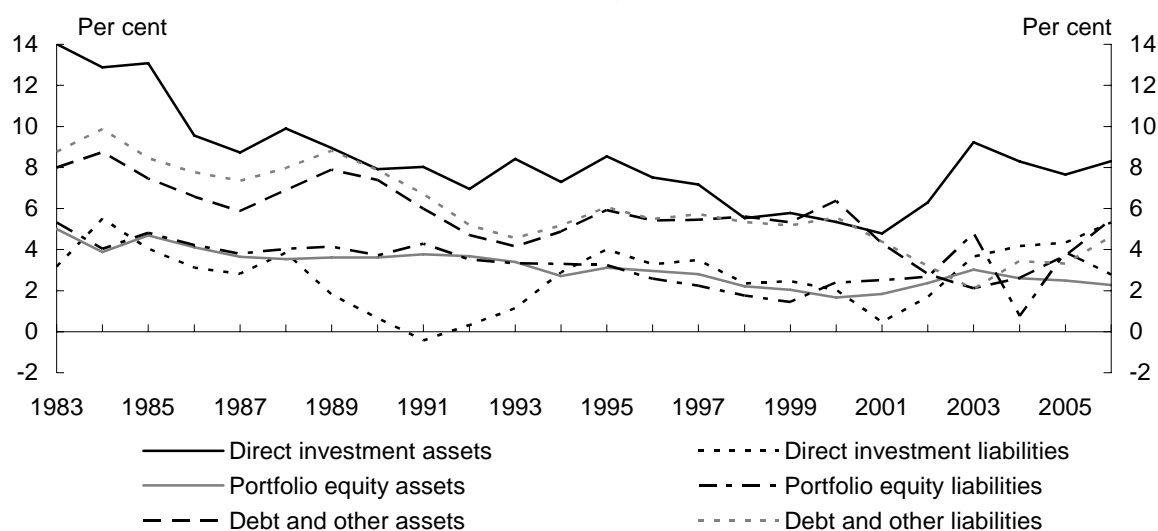


Source: BEA, Treasury calculations. Data for 2006 are annualised from the first three quarters.

This yield differential is explained by a large gap between yields on US direct investment abroad and those on foreign direct investment (FDI) in the US, averaging around 4 percentage points over the past decade (Chart 6). On other forms of investment, yields on assets and liabilities have been broadly similar.

The net income balance has also been boosted by the fall in world interest rates in recent years. As debt comprises more than 60 per cent of US liabilities, but less than 40 per cent of assets, the US gains from a general fall in interest rates. Higgins, Klitgaard and Tille (2005) estimate that net income would have been 0.5 per cent of GDP lower in 2004 had interest rates remained at 2000 levels, although this gain may have been partially reversed in 2005.

Chart 6: Yields on US foreign assets and liabilities

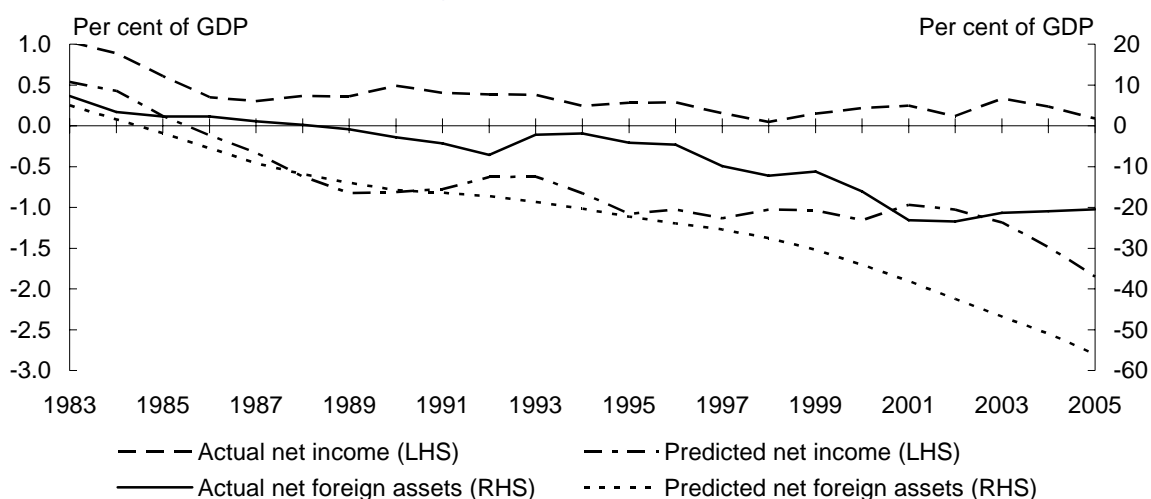


Source: BEA, author's calculations. Data for 2006 are annualised from the first three quarters.

All of this suggests that the assumptions underpinning the standard sustainability framework have clearly not held. To see how much this has mattered, consider a counterfactual in which the US had run the same primary deficits since 1982, but with no valuation changes and identical yields on foreign assets and liabilities, so that NFLs evolved according to equation (3). In this case NFLs would now be around 55 per cent of GDP rather than 20 per cent and the net income deficit would be about 2 per cent of GDP rather than near balance (Chart 7).⁸ The latter difference can be thought of as the gain to US living standards from valuation gains and the yield differential.

8 This calculation assumes the yield on foreign assets was reduced to match the lower yield on liabilities. Under the alternative assumption that the yield on liabilities was increased to match the higher yield on assets, NFLs would now be around 67 per cent of GDP and the net income deficit around 3.3 per cent of GDP.

Chart 7: US net foreign asset and net income counterfactuals



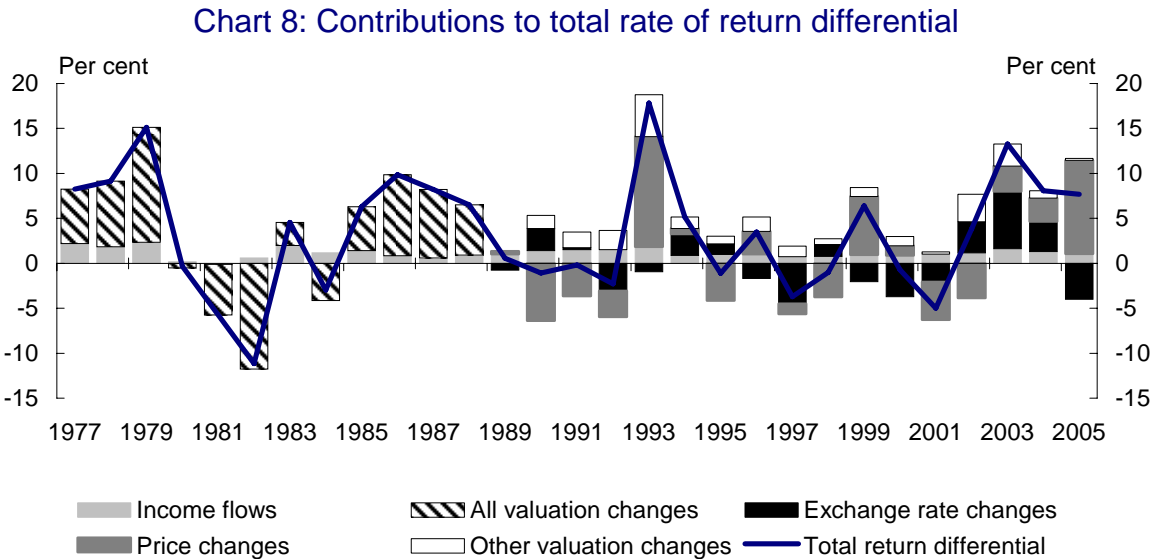
Source: BEA, author's calculations. Predicted outcomes assume the actual yield on US foreign liabilities also applied to US foreign assets. Data for 2006 are annualised from the first three quarters.

In light of this analysis, we can conclude that the standard framework outlined earlier is unlikely to provide a good guide to future US external sustainability. Before considering how this shortcoming can be addressed, we first need to better understand why yields and valuation changes have favoured the US so much and whether this is likely to continue in future.

4. THE TOTAL RATE OF RETURN DIFFERENTIAL

The combined effects of the yield differential and valuation gains can be considered as the total rate of return differential, defining returns as income payments plus net valuation gains as estimated by the BEA. Valuation effects can make a significant difference to relative rates of return, as some investments (notably portfolio equities) provide more of their returns through capital gains rather than income flows. Calculating rates of return in this way will allow valuation effects to be factored into a modified external sustainability framework, to be outlined later in the paper.

Chart 8 shows that valuation effects on the rate of return differential have varied considerably over time, but have generally added to the differential in favour of the US. High positive return differentials have been associated with periods of dollar depreciation (1985-88 and 2002-04) and foreign equity prices outperforming US prices (1993, 1999 and 2005). Negative return differentials have been associated with periods of dollar appreciation (early 1980s and 1997-2001), and US equity prices outperforming foreign prices (1990-92).



Source: BEA, author's calculations. Data on breakdown of valuation changes only available from 1989.

Given the variability in valuation changes, it makes sense to consider average return differentials over a period of time. Table 1 shows average differentials for different periods over the past three decades. The total return differential in favour of the US has generally averaged over 3 percentage points, around two-thirds of this coming from valuation gains. Significantly, exchange rate changes have been close to neutral on average since 1990, so the differential over this period cannot be attributed to unexpected dollar depreciation.

Table 1: Decomposition of average total rate of return differentials (per cent per annum)

	1977-1989	1990-1997	1998-2005	1977-2005	1990-2005
Real return on assets	7.7	7.1	5.5	6.9	6.3
Real return on liabilities	4.0	4.8	1.5	3.5	3.1
<i>Total return differential</i>	3.7	2.3	4.1	3.4	3.2
of which:					
Income flows	1.2	1.2	1.1	1.2	1.2
Valuation changes	2.6	1.0	3.0	2.3	2.0
of which:					
Exchange rate changes		-0.5	0.3		-0.1
Price changes		-0.4	1.4		0.5
Other valuation changes		1.9	1.2		1.5

Source: BEA, author's calculations.

The return differential has been higher than the long-term average over the recent period since 1998, but this might have been inflated by special factors. A small part of the recent differential is due to dollar depreciation, which cannot be included in an analysis of whether the return differential might reduce the need for future depreciation. As noted earlier, unusually low world interest rates have benefited the US in recent years.

A factor that may have suppressed US interest rates specifically is the high level of foreign official purchases of US securities since 2002. Different studies have estimated that these purchases have reduced US rates by between 40 and 100 basis points (Ahrend, Catte and Price 2006). While BEA data suggest that official purchases receded in 2005, these data may be misleading as they do not capture official purchases through foreign private intermediaries. Other evidence, such as the rate of global reserve accumulation, does not support the BEA data. Foreign central banks are unlikely, however, to sustain high levels of purchases indefinitely, given the associated opportunity costs and difficulties of maintaining control over domestic monetary policy.

It is also notable that the real return on US liabilities has been unusually low since 1998 (in comparison, annual real GDP growth has averaged around 3 per cent). Again this suggests it would be more appropriate to use the post-1990 average as the norm for the differential, rather than the average of the more recent period.

Another perspective is provided by examining return differentials by investment category (Table 2). The differential on income yields is largely confined to direct investment (Chart 6), but when capital gains are included the US has generally enjoyed a favourable differential within each category. Direct investment has still produced the largest differential since 1990: the overall differential would have been 0.6 percentage points lower had this been equal to the average differentials on other forms of investment.

Table 2: Decomposition of rate of return differentials by investment category (per cent per annum)

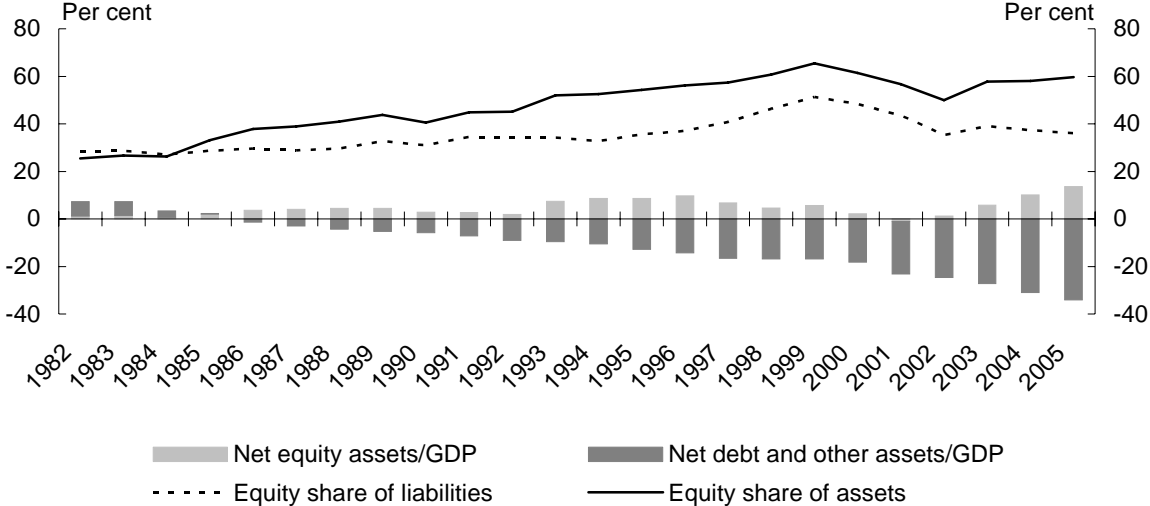
	1982-1989	1990-1997	1998-2005	1982-2005	1990-2005
<i>Differential by investment type</i>					
Direct investment	13.3	1.5	5.9	7.4	3.7
Portfolio equity investment	16.7	0.4	2.0	7.4	1.2
Debt and other investment	-0.7	1.2	2.4	1.2	1.8
<i>Contributions to overall differential</i>					
Direct investment return	3.0	0.4	1.7	1.8	1.0
Portfolio equity return	1.2	-0.2	0.4	0.5	0.1
Debt and other return	-0.4	0.7	1.2	0.6	1.0
Composition effect	-1.1	1.3	0.8	0.6	1.0

Source: BEA, author's calculations. Data on the decomposition of portfolio investments into equity and debt are only available from 1982. Appendix B explains the derivation of return and composition effects.

In addition to favourable return differentials *within* each investment category, the US has also benefited since 1990 from a composition effect, which stems from differences in rates of return *between* investment categories. Direct and portfolio equity investment has accounted for an increasingly large share of US foreign

assets, while liabilities are still mostly comprised of debt (Chart 9). This means the US gains from leverage, having a net liability position in relatively low-yielding debt and a net asset position in higher-yielding equities.

Chart 9: Composition of US external balance sheet



Source: BEA

These calculations depend on the accuracy of BEA estimates of net income flows, valuation changes and foreign asset and liability positions. The apparent differential in favour of the US might be inflated if there were systematic errors in estimation of one or more of these determinants.

One issue concerns the estimated market values of direct investments. These are not directly observable, but are imputed by the BEA using the ratio of market to book values for portfolio equities in destination economies, raising the possibility of estimation bias. Table 3 shows, however, that the return differential is slightly larger if we use estimates valuing direct investment at the current replacement cost of underlying assets. Market valuation adjustments to US direct investment abroad have been proportionately larger than adjustments to FDI in the US.

Table 3: Alternative measures of the total rate of return differential (per cent per annum)

	1990-1997	1998-2005	1990-2005
With direct investment at market value	2.3	4.1	3.2
With direct investment at current cost	2.8	4.0	3.4
Excluding other valuation changes	2.1	4.5	3.3

Source: BEA, author's calculations.

Another issue concerns the 'other valuation changes', which have contributed nearly half of the differential since 1990 (Table 1). The BEA provides little information on this item, but it appears to be a residual arising from discrepancies between international financial transactions and investment position data (Gros 2006). 'Other valuation changes' have been consistently positive because survey-derived estimates of the liability position have been consistently smaller, and estimates of the asset position larger, than those implied by estimated financial flows and exchange rate and price valuation changes.

This raises the possibility that 'other valuation changes' are not valuation changes at all but, rather, a reflection of estimation errors in either financial flows or asset and liability positions. Nonetheless, as Table 3 shows, excluding this item does not significantly alter the calculated rate of return differentials. 'Other valuation changes' have had largely offsetting effects; increasing returns on assets and reducing returns on liabilities, but also increasing the asset position and reducing the liability position. That still leaves the question of

whether the NFL position is understated, but the official view seems to be that the discrepancy is more likely to come from the financial transactions data.⁹

5. WHY DOES US INVESTMENT ABROAD EARN MUCH HIGHER RETURNS THAN FOREIGN INVESTMENT IN THE US?

The obvious question raised by the preceding analysis is why there has been such a persistently large gap between rates of return on US foreign assets and liabilities. Put another way, why have foreign investors been so keen to acquire US assets when US investors appear to have gained much higher rates of return on investments elsewhere?

A fundamental axiom of efficient financial markets is that differences in expected rates of return on investments should reflect differences in risk. Over the long term, higher average rates of return should be associated with more risky portfolios, whose returns will be subject to greater variability and larger downside risks. In the short term, differences in returns might result from luck or foreign investors being over-optimistic, but this is unlikely to explain differences over longer periods.

One reason why the US could be expected to make higher returns on its foreign assets than on its liabilities is the composition effect discussed above, which has

9 Gros (2006) has argued that the discrepancy is due to understatement of US liabilities, as surveys do not fully capture foreign portfolio investments held with non-US custodians and non-business investment in US real estate. However, Bertaut, Grier and Tryon (2006) suggest that the investment position data are more accurate as transactions data do

contributed 1 percentage point of the average differential since 1990 (Table 2). Foreign assets are weighted toward equities while liabilities are weighted toward debt. Equity investments are generally riskier than debt investments; hence they yield a higher average rate of return over time.

As Cline (2005) explains, there is a structural reason for this balance sheet asymmetry. Portfolio balance theory suggests that investors optimise their portfolios by holding a mix of low-risk, low-return and high-risk, high-return assets. As the US has a comparative advantage in the supply of safe, liquid financial assets, it is not surprising that it mainly exports capital into risky assets and imports capital into safe assets.

The US could also be expected to earn higher returns within each investment category because many of the countries in which it invests are riskier investment destinations than the US. Based on yield spreads associated with different credit ratings, the Congressional Budget Office (2005a) has estimated that around 0.8 of a percentage point of the differential on direct investment yields may be attributed to differences in country risk. As the geographical distribution of other forms of US investment abroad is broadly similar, this country risk premium should carry over to other investment categories.

An additional benefit to the US comes from seignorage: the gain from having interest-free liabilities in the form of US currency held abroad. Currency accounts for less than 3 per cent of US liabilities, however, so the contribution

not properly capture changes in some types of security (asset-backed securities, repurchase and securities-lending agreements and stock swaps).

from this source to the overall return differential would be no more than 0.2 of a percentage point.

Around two-thirds of the average return differential would therefore appear to be readily explained. Consistent with the hypothesis that higher returns are explained by higher risk, Table 4 shows that the standard deviation of the total rate of return on US foreign assets has been consistently higher than that on US liabilities. This also holds for the portfolio equity and debt and other investment categories.

Table 4: Standard deviations of total rates of return on US assets and liabilities (per cent per annum)

	1977-1989	1990-1997	1998-2005	1977-2005	1990-2005
All assets	8.5	6.5	10.1	8.9	8.6
All liabilities	4.5	5.2	6.6	5.9	6.3
<i>Difference</i>	4.0	1.3	3.4	2.9	2.2
Direct investment assets	18.2	12.4	17.3	16.9	15.1
Direct investment liabilities	14.2	13.4	16.4	15.0	15.4
<i>Difference</i>	4.1	-1.0	0.9	1.9	-0.3
Portfolio equity assets	22.2	16.5	21.3	22.5	19.5
Portfolio equity liabilities	10.4	12.1	18.6	14.9	16.5
<i>Difference</i>	11.8	4.3	2.6	7.6	3.0
Debt and other assets	8.0	4.1	6.7	7.2	5.6
Debt and other liabilities	3.9	2.9	3.1	4.2	3.3
<i>Difference</i>	4.1	1.1	3.6	3.0	2.3

Interestingly, differences in the variability of returns have been less marked for direct investment, even though this is the category in which the total return differential has been largest. This suggests that there are likely to be specific factors at work here. Analyses of this issue have generally highlighted two possibilities (CBO 2005, Higgins, Klitgaard and Tille 2005 and Hung and Mascaro 2004).

First, foreign direct investments in the US are newer on average than US investments abroad. Profitability on new investments may be lower because of initial start-up costs and the time it takes to build a market presence, but could be expected to increase over the life of the investment. This explanation would suggest the differential in the US' favour could decline as the average age of inward and outward investment converges, unless new investment is sufficiently large to prevent this. The long-term decline in the differential on direct investment (Chart 6) seems consistent with this argument, although it is notable that this decline has ceased over the past decade.

Second, firms may understate profits on US activity and overstate profits on overseas activity to reduce tax payments. The US corporate tax rate is higher than the weighted average of rates in investment source countries, creating an incentive for profit-shifting. This explanation would suggest that part of the apparent differential could be an accounting fiction.

The implications for the external position depend on how profit-shifting occurs. If it is through transfer pricing on transactions with related overseas parties, overstatement of net income is balanced by understatement of net exports. In this case, the trade deficit would be lower than currently measured but the CAD would be unaffected. Empirical studies have not, however, provided clear support for the existence of significant transfer pricing.

Another possibility is that tax minimisation occurs through unrecorded reinvestment of earnings on FDI in the US (Buiters 2006 and Gros 2006). Only 18 per cent of earnings on FDI in the US for the period 1999-2004 were reinvested, compared to 65 per cent of US earnings on direct investment abroad. Reinvested earnings do not give rise to a financial flow, so these data depend on

surveys of US and foreign firms. US affiliates of foreign firms have an incentive to under-report reinvested earnings to reduce tax paid in the US, but this does not apply to foreign affiliates of US firms as US tax is deferred until repatriation.

In this case, overstatement of net income would be balanced by understatement of foreign investment in the US. Both the CAD and NFLs would be understated. An indication of the possible size of the effect can be obtained by assuming that earnings on foreign investment in the US since 1990 had been reinvested at the same rate as earnings on US investment abroad. Net income would have been 0.5 per cent of GDP lower on average, NFLs would be larger by 5 per cent of GDP, and the return differential on direct investment would have been slightly lower than on other investments.

Box 1: The 'Dark Matter' hypothesis: Is the US external imbalance just a figment of flawed accounting?

Hausmann and Sturzenegger (2005, 2006) have advanced a novel interpretation of the apparent US external imbalance. These authors start from the premise that a continued net income surplus implies that the US has remained in a positive net foreign asset position in underlying economic terms. A similar argument is made by Cline (2005).

The 'true' net foreign asset position is imputed by capitalising the value of net income flows using a price-earnings ratio of 20, equivalent to applying a discount rate of 5 per cent to all flows. (This assumption is not critical to the argument, as any uniform discount rate must yield a positive net asset position.) The authors argue that the change in this imputed net foreign asset position is a more meaningful measure of external imbalance than the conventional current account. As net foreign assets on this basis are little changed from the early 1980s, the implication is that the US has really been close to external balance.

'Dark matter' is defined as the difference between this imputed net foreign asset position and either (i) the official net foreign asset position or (ii) the cumulated value of current account deficits. The former measure is equivalent to the capitalised value of the yield differential, while the latter also includes cumulated valuation gains (see Appendix C). Dark matter can be viewed, therefore, as an alternative way of conceptualising the rate of return advantage to the US.

Hausmann and Sturzenegger suggest that 'dark matter' arises from two sources. The first is the value of knowledge services (such as know-how, brand recognition and technology) bundled with US direct investment abroad, which are not fully captured by BEA estimates of market value. These estimates are imputed from equity prices in destination countries, which are unlikely to reflect the value of knowledge services provided by US firms. The second is the value of liquidity and insurance services provided by US financial assets held by foreigners. These comprise the implicit values of seignorage on foreign holdings of US currency and risk premia on foreign relative to US securities.

Analysis by Setser (2006a) concludes that dark matter in recent years is largely explained by two factors; namely, the difference in the rate of reinvested earnings on direct investment and unusually low interest rates. As noted earlier, these factors have each contributed about 0.5 of a percentage point to the recent return differential.

Setser (2006b) also notes that recent rises in interest rates are likely to have improved net income because US foreign lending has a shorter-term structure than its borrowing, so interest payments adjust more slowly than interest receipts. On this basis, Setser concludes that dark matter is disappearing. However, this analysis does not take account of capital gains, which have accounted for most of the return advantage to the US. The total return differential is still large, even if we allow for the above two factors.

6. THE RATE OF RETURN DIFFERENTIAL AND THE SUSTAINABILITY OF US EXTERNAL IMBALANCES

The large differential between returns on US foreign assets and liabilities suggests that the standard sustainability framework outlined earlier is misleading. Liabilities can be serviced not only from future primary surpluses, but also from higher returns on foreign assets relative to liabilities. In order to take this into account, we need to modify the earlier condition for evolution of the NFL to GDP ratio (equation (3) from page 6). As shown in Appendix A, differentiating between rates of return r^A and r^L on gross foreign assets (FA) and liabilities (FL) as share of GDP gives us:

$$(5) \quad NFL_t - NFL_{t-1} = -PB_t + (r_t^L - g_t) \times NFL_{t-1} - (r_t^A - r_t^L) \times FA_{t-1}$$

Hence, stabilising NFLs as a share of GDP at some level requires:

$$(6) \quad PB = (r^L - g) \times NFL - (r^A - r^L) \times FA$$

Rates of return are defined here to include valuation effects, as previously discussed. This relationship tells us that the sustainable primary balance depends on the relativities between nominal GDP growth and rates of return on foreign assets and liabilities (both expressed in either real or nominal terms) and on the size of net liability and gross asset positions.¹⁰

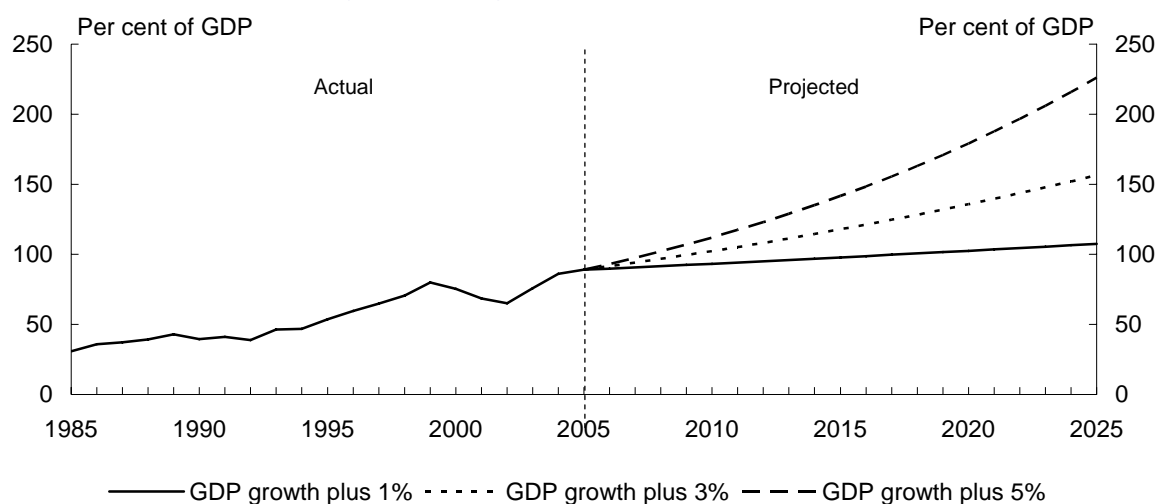
10 NFLs equal gross foreign assets less gross foreign liabilities; hence, for a given level of NFLs, higher gross assets imply higher gross liabilities. Equation (6) can be equivalently expressed as $PB = (r^A - g) \times NFL - (r^A - r^L) \times FL$.

Since 1990 the nominal rate of return on US foreign liabilities has averaged 0.7 of a percentage point above the rate of nominal GDP growth, and 3.2 percentage points below the nominal rate of return on foreign assets. On this basis, and given current levels of foreign assets and liabilities, equation (5) implies that the US would keep the ratio of NFL to GDP constant by running a primary deficit of about 2.7 per cent of GDP on average.

As gross foreign assets are much larger than NFLs, the final term in equation (5) appears key to future sustainability. The larger the return differential, the higher is the sustainable primary deficit and the less the need for future external adjustment and real depreciation. Moreover, unless higher leverage reduces the return differential, the more that gross foreign assets and liabilities grow in future, the higher is the sustainable primary deficit.

Chart 10 shows projected paths for gross foreign assets as a share of GDP under different growth assumptions. This share could more than double within 15 years if asset growth continues at the rate of the past two decades; which has averaged 5 percentage points faster than nominal GDP. Even if growth moderates somewhat, foreign assets would still increase significantly as a share of GDP. Continued financial integration (declining 'home bias') could therefore significantly reduce the need for adjustment.

Chart 10: US gross foreign assets under alternative scenarios



Source: BEA, author's calculations

To put these projections into context, US household financial assets have averaged around 420 per cent of GDP in recent years. The high growth projection implies the foreign share of these assets could increase from around one-fifth now to around half in 20 years time. Complete elimination of home bias would require the foreign asset share to increase to around 70 per cent, which is the non-US share of world financial assets.¹¹

The sensitivity of future adjustment to different assumptions is illustrated by Table 5, which shows the reduction in the US primary deficit (now 6½ per cent of GDP) needed to prevent NFLs exceeding a specified share of GDP over the next 20 years, for different assumptions on rates of return and gross foreign asset growth. The full adjustment in each case is assumed to occur in 2007, with the

11 Household financial assets are sourced from *OECD Economic Outlook No. 79, May 2006*, Statistical Annex Table 58. Total financial assets (measured as the sum of stock market capitalisation, debt securities on issue and bank assets) are sourced from the IMF *Global Financial Stability Report*, Statistical Appendix, Table 3.

primary balance remaining at this lower level for the entire period. Somewhat larger adjustments would be needed if adjustment were to occur later or over a longer timeframe, due to the greater build-up of NFLs in the interim.

Table 5: Primary balance adjustment (per cent of GDP) under different scenarios^(a)

$r^A - r^L$	3.2%	2.2%	1.2%
$r^L - g$	0.7%	1.7%	2.7%
<i>NFL/GDP ≤ 30% to 2025</i>			
Gross foreign asset growth			
GDP+1%	3.3	4.6	5.9
GDP+3%	2.9	4.3	5.7
GDP+5%	2.6	4.0	5.5
<i>NFL/GDP ≤ 60% to 2025</i>			
Gross foreign asset growth			
GDP+1%	1.9	3.2	4.6
GDP+3%	1.2	2.8	4.4
GDP+5%	0.4	2.3	4.1

(a) Changes in the return differential are assumed to occur through an increase in the rate of return on foreign liabilities.

These figures suggest a wide range of uncertainty around the size of the future external adjustment that may be needed in the US. If US NFLs were able to increase to 60 per cent of GDP, and both the return differential and foreign asset growth continue at recent levels, then external adjustment for the US might be quite small. Moderate reductions in both the return differential and foreign asset growth would require a more significant adjustment, but still smaller than the 5½ per cent of GDP suggested by the standard analysis outlined earlier. Adjustment would only be comparably large in the most pessimistic scenarios where increases in gross asset and NFL positions are limited and the return differential narrows much further.

7. US FOREIGN LIABILITIES AS A SHARE OF FOREIGN PORTFOLIOS

The discussion has so far focused on NFLs as a share of GDP, which is a measure of US capacity to service its liabilities. An alternative benchmark is US liabilities as a share of assets or wealth of the rest of the world, which is a measure of the rest of the world's capacity to absorb US liabilities. This recognises that the key constraint on foreigners' willingness to accumulate US assets is their exposure to US-specific risks; including the risk of losses from US dollar depreciation.

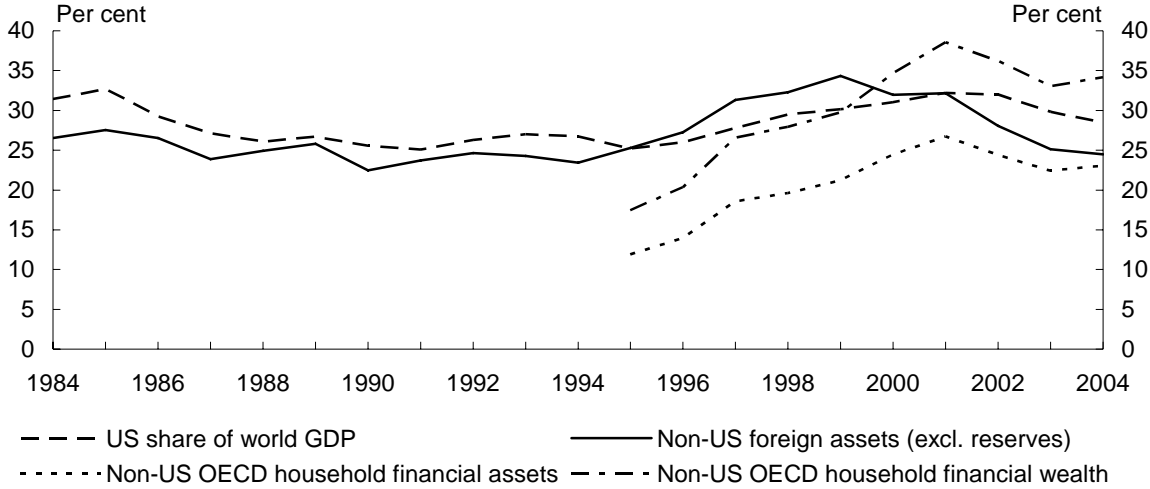
While Gruen and Harris (2004) conducted a similar analysis in terms of net US liabilities, gross liabilities may be more relevant to currency risk exposure. US investments abroad are largely foreign-currency denominated, so they provide only a partial offset to foreign exposure to currency losses on US investments.¹² Chart 11 shows gross foreign holdings of US assets (excluding official holdings), relative to three different foreign portfolio benchmarks: total non-US gross foreign assets, non-US OECD household financial assets and non-US OECD household financial net worth. (Household assets are used here because households are the ultimate owners of assets held by financial and other corporations.)

Foreign holdings of US assets have increased significantly since the mid-1990s as a share of all household financial assets and wealth in the non-US OECD. (This

12 As noted in footnote 6, around 95 per cent of US foreign liabilities and 30 per cent of US foreign assets are denominated in US dollars. Given assets are around four-fifths the size of liabilities, this implies that the net US dollar exposure of the rest of the world is around 70 per cent of the US gross liability position.

ratio is likely to be overstated by about one-fifth, which is the share of US liabilities held outside the OECD.¹³⁾ Nonetheless, the US share of total non-US holdings of *foreign* assets has not increased over the past two decades. Indeed, this share has actually fallen over the period since 1997 in which the US CAD has been rising.

Chart 11: Gross US asset share (excluding official holdings) of alternative foreign portfolio benchmarks



Source: BEA, OECD.Stat, Lane and Milesi-Ferreti (2006).

The difference between these trends is explained by the rapid growth in world gross foreign assets, which has averaged 13 per cent annually over the past decade. Declining home bias is increasing foreign asset shares of investor portfolios generally, and US asset holdings have only increased proportionately with other foreign asset holdings. Further, the US share of foreign asset portfolios is still smaller than the 30 per cent US share of global financial assets

13 US Treasury Bulletin, September 2006. Calculation excludes liabilities held through the tax havens of the Cayman Islands and the Bahamas, which are more than one-third of the total.

noted above. This suggests that the rising supply of US assets has not yet clearly created an imbalance in foreign investor portfolios, lessening the risk that a disorderly adjustment might occur.

8. CONCLUSIONS

The analysis in this paper points to a major shortcoming in the conventional analysis of external sustainability. The standard approach focuses on trade and current account balances as shares of GDP, on the assumption that these have clear implications for the level of net foreign liabilities and the cost of servicing them. But this will only be the case if investment returns on foreign assets and liabilities (including valuation changes) are symmetric, which has been far from true for the US.

The rate of return on US foreign assets (including valuation gains) since 1990 has exceeded that on liabilities by an average of more than 3 per cent per annum, with none of this average being due to exchange rate gains. This asymmetry has meant that the rise in US NFLs since the US began running current accounts in the early 1980s has been only half as large as that predicted by conventional analysis. At current levels of gross foreign assets and liabilities this advantage is worth nearly 3 per cent of GDP to the US, offsetting more than two-fifths of the current primary deficit.

The persistence of this differential over a long period suggests that it has a structural cause, independent of factors that might have been unusually favourable to the US in recent years, such as a 'global saving glut', foreign official purchases of US assets, or unusually easy monetary policies. The US is a relatively safe investment destination. Its comparative advantage as a provider

of safe, liquid financial assets means that its foreign liabilities are mainly in the form of debt, while its assets are mainly equities. As the US is engaging in a risk-return swap with the rest of the world, it should benefit from higher returns on average, although the variance of its returns will also be greater.

Provided this US comparative advantage is maintained, the effect of this return differential could increase further as declining 'home bias' continues to increase gross international investment positions. Declining 'home bias' is also increasing the rest of the world's capacity to absorb the growing supply of US liabilities. On plausible assumptions the extent of needed US external adjustment might be considerably less than conventional analysis suggests.

That said, the fact that the US has an increasingly-leveraged external balance sheet means that it is also more exposed to risk, both in relation to the returns it receives on its overseas investments and the interest rates it pays on its external borrowing. This means there is a wide range of uncertainty around the future evolution of the US external position for any given level of primary deficits and, hence, around the extent of future adjustment that might be needed.

APPENDIX A: DERIVATION OF EXTERNAL SUSTAINABILITY RELATIONSHIPS

The inter-temporal budget constraint

The inter-temporal budget constraint is derived by iterating forward the single period identity (where subscripts denote the time period and r is the average rate of yield on NFLs):

$$NFL_1 = NFL_0(1+r) - PB_1$$

$$NFL_2 = NFL_0(1+r)^2 - PB_1(1+r) - PB_2$$

and so on to:

$$NFL_T = NFL_0(1+r)^T - \sum_{t=1}^T PB_t(1+r)^{T-t}$$

$$\Rightarrow NFL_0 = \sum_{t=1}^T \frac{PB_t}{(1+r)^t} + \frac{NFL_T}{(1+r)^T}$$

Applying the transversality condition that $\lim_{T \rightarrow \infty} \frac{NFL_T}{(1+r)^T} = 0$ yields the inter-temporal budget constraint:

$$NFL_0 = \sum_{t=1}^T \frac{PB_t}{(1+r)^t}$$

The transversality condition constrains borrowers from perpetually taking on new liabilities to service existing ones. This is not feasible because it would imply that lenders' savings are never consumed. Note that this does not mean that liabilities must be repaid in the long run; only that they must grow more slowly than r .

Conditions for stabilising net foreign assets as a share of GDP

A constant NFL to GDP ratio requires NFLs to grow at the same rate as GDP; that is, $\Delta NFL / NFL = g$. Substituting $\Delta NFL = CAD$ gives us:

$$CAD / NFL = g \Rightarrow CAD = g \times NFL$$

To express the same relationship in terms of the primary balance we substitute $CAD = -PB + (r \times NFL)$ into the previous equation to get:

$$-PB + (r \times NFL) = g \times NFL \Rightarrow PB = (r - g) \times NFL$$

All of the above relationships have been derived on the assumption that valuation effects on the NFL position are zero. For the identity to hold in general it must include the net valuation change (V):

$$PB = (r - g) \times NFL + V$$

In the case where rates of return on assets and liabilities differ, the relationship is derived by substituting $NFL = FA - FL$ and $CAD = -PB + (r^L \times FL) - (r^A \times FA)$ into the above equation. Expressing the net valuation change as percentage changes in the value of gross liabilities and assets, that is $V = v^L \times FL - v^A \times FA$, gives:

$$-PB + (r^L \times FL) - (r^A \times FA) = g \times (FL - FA) - v^L \times FL + v^A \times FA$$

$$\Rightarrow PB = (r^L + v^L - g) \times FL - (r^A + v^A - g) \times FA$$

$$= (\tilde{r}^L - g) \times FL - (\tilde{r}^A - g) \times FA$$

$$= (\tilde{r}^L - g) \times FL - (\tilde{r}^A - \tilde{r}^L + \tilde{r}^L - g) \times FA$$

$$= (\tilde{r}^L - g) \times NFL - (\tilde{r}^A - \tilde{r}^L) \times FA$$

Here, $\tilde{r}^L = r^L + v^L$ and $\tilde{r}^A = r^A + v^A$ are total rates of return on liabilities and assets.

APPENDIX B: DECOMPOSING THE RATE OF RETURN DIFFERENTIAL INTO RETURN AND COMPOSITION EFFECTS

The differential between overall rates of return on gross foreign assets and liabilities can be decomposed into a return effect, arising from differences in rates of return on assets and liabilities within investment categories, and a composition effect, arising from differences between asset and liability shares of investment categories with different rates of return.

Following Gourinchas and Rey (2005b), this decomposition uses the equation:

$$r^A - r^L = \bar{s}^D (r^{DA} - r^{DL}) + \bar{s}^E (r^{EA} - r^{EL}) + (1 - \bar{s}^D - \bar{s}^E)(r^{OA} - r^{OL}) \\ + (s^{DA} - s^{DL})(\bar{r}^D - \bar{r}^O) + (s^{EA} - s^{EL})(\bar{r}^E - \bar{r}^O)$$

The return effects are the three terms in the first line of the above equation and the composition effect comprises the two terms in the second line. Here r denotes the average rate of return on each category of foreign assets or liabilities, s denotes each categories' share of total assets or liabilities, while \bar{r} and \bar{s} are averages of asset and liability returns/shares for each category. The superscript letters A and L denote assets and liabilities, while D , E and O denote direct, portfolio equity and other investments.

It can be shown that the above equation collapses to the difference between the weighted sum of returns on asset and liability categories:

$$r^A - r^L = s^{DA} r^{DA} + s^{EA} r^{EA} + (1 - s^{DA} - s^{EA}) r^{OA} - s^{DL} r^{DL} - s^{EL} r^{EL} - (1 - s^{DL} - s^{EL}) r^{OL}$$

The above equation provides only an approximation to the overall rate of return differential because it assumes that asset and liability shares are constant. Marginal differences arise when asset and liability shares vary from year to year, due to the interaction between shares and rates of return.

APPENDIX C: 'DARK MATTER' AND THE RATE OF RETURN DIFFERENTIAL

Hausmann and Struzzenegger (2005, 2006) use two definitions of 'dark matter' (DM). The first is the difference between the capitalised value of net investment income (NII) and the official measure of net foreign assets (NFA). It can be shown that this is equivalent to the capitalised value of the yield differential (excluding capital gains) using the yield on foreign liabilities as the discount rate:

$$DM = NFA^{DM} - NFA = \frac{NII}{r^L} - NFA = \left(\frac{r^A \times FA - r^L \times FL}{r^L} \right) - \left(\frac{r^L \times FA - r^L \times FL}{r^L} \right) = \frac{(r^A - r^L) \times FA}{r^L}$$

In 2005, the US had net foreign liabilities of 20.4 per cent of GDP, a net income surplus of 0.1 per cent of GDP, an average yield on foreign liabilities of 3.6 per cent and an average yield on foreign assets of 4.7 per cent. The capitalised value of net income was therefore almost 3 per cent of GDP, implying dark matter of around 23 per cent of GDP.

The alternative definition of dark matter is the difference between the capitalised value of net income and the value of cumulated current accounts. This is equivalent to the capitalised value of the yield differential plus cumulated net valuation gains:

$$DM = NFA^{DM} - \sum CAB = \frac{NII}{\tilde{r}^L} - (NFA - \sum V) = \frac{(r^A - r^L) \times FA}{r^L} + \sum V$$

The cumulative value of valuation gains since 1976 has amounted to 19 per cent of GDP in 2005, implying dark matter of 42 per cent of GDP on this definition.

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