
Long-Term Fiscal Imbalances, US External Liabilities, and Future Living Standards

WILLIAM R. CLINE

The long-term economic challenges facing the United States include the need to avoid widening, unsustainable fiscal and external deficits as well as to rebuild private saving from its extremely low levels of recent years. This chapter first examines the long-term outlook for the US current account balance and net international liabilities under a “benign” fiscal scenario that implies considerable future fiscal adjustment. It then considers the consequences for the US external sector if instead fiscal accounts are allowed to deteriorate sharply in future decades in the face of rising social spending.

Long-Term Current Account Baseline

In Cline (2005) I set forth a model of the US current account balance that incorporates the response of trade to the real exchange rate and to economic activity in the United States and abroad and includes capital service earnings and payments that depend on US foreign assets and liabilities.¹ In that study, the long-term baseline for the current account identified a

William R. Cline, senior fellow, has been associated with the Peterson Institute for International Economics since its inception in 1981 and holds a joint appointment at the Center for Global Development.

1. In the preferred Krugman-Gagnon Symmetrical (KGS) model of that study, income elasticities are set at 1.5 on both the import and export sides. Similarly there are symmetrical elasticities of 2 for cyclical changes in growth. Instead of applying a higher income elasticity for imports than for exports (the Houthakker-Magee assumption), the secular upward drift of imports relative to exports is captured by application of symmetrical export and import elasticities with respect to capacity growth (0.75 on both sides), combined with a higher trend capacity growth rate abroad than in the United States.

widening deficit that would have risen from 5.7 percent of GDP in 2004 to 14 percent by 2024. The corresponding path for net foreign liabilities would have been an increase from 22 percent of GDP in 2004 to 135 percent of GDP in 2024. The strong implication was that the current account was on an unsustainable path, even though by the first half of 2005 the dollar had already fallen about 15 percent from its peak overvaluation in early 2002.

Subsequently, the United States set the stage for considerable external-sector adjustment. The real effective exchange rate of the dollar fell by an additional 11.3 percent from its level in January–May 2005 (the base of the 2005 study) to July 2008, further boosting US international competitiveness.² With a sharp decline in oil prices in the second half of 2008, slow growth in 2008 and recession in 2009 and hence falling imports, and strong export growth in 2008, the US current account deficit shifted to a narrowing path for the near term. The deficit had already fallen from 6.1 percent of GDP in 2006 to 5.3 percent in 2007 and eased further to 4.7 percent in 2008. However, as a consequence of the safe-haven effect in the face of the global financial crisis, the trade-weighted value of the dollar rose by about 13 percent from its trough in March 2008 to its average level in February 2009 (Federal Reserve 2009). The prospective further narrowing of the current account deficit in 2009 from lower imports associated with recession and the collapse in oil prices will likely be partially reversed by 2010 as a result of the lagged effects of the recovery in the dollar.

Table 2.1 reports projections of the US external account using the same model as applied in Cline (2005). The results for 2009 and 2010 take account of global recession followed by recovery. Private-sector consensus forecasts are the basis for the estimate of the sharp decline of US real GDP in 2009, by 2.6 percent (Blue Chip 2009). This decline would be larger than in the previous worst recession since the 1930s, that in 1982 when output fell by 1.9 percent (IMF 2008b). The outlook in 2009 is for a major further reduction in the current account deficit—to 3.1 percent of GDP—mainly because of a collapse in oil prices but also as a consequence of a sharper decline in imports than exports. In 2010, lagged response to the recent loss of competitiveness of the dollar combines with some recovery in oil prices to widen the deficit once again to 4.5 percent of GDP.³

2. The Federal Reserve's broad real index for the dollar, with a base of March 1973 = 100, peaked at 113.0 in February 2002. By the first five months of 2005 it had fallen to 96.6. From then to July 2008, it fell to 85.6, close to its two all-time lows in October 1978 and July 1995 (both at about 84).

3. The foreign asset and liability values registered a substantial reduction in 2008 as a consequence of a decline of about 40 percent in both domestic and foreign equity prices. The estimates for 2009 and after assume that US and foreign equity prices return to end-2008 levels by end-2009 and that they then return to end-2007 levels by end-2012. This would be a slower rebound than in the 1980–82 recession but a more rapid return to previous peaks than in the recession of 1974–75. As measured by the S&P 500 Index, US stock prices fell by 42 percent from 1972 to 1974 and did not return to their 1972 level until 1980.

Table 2.1 US external accounts, 2007–30 (billions of dollars and percent)

| Measure | 2007 | 2008 | 2009 | 2010 | 2011 | 2015 | 2020 | 2025 | 2030 |
|---------------------------------------|--------|--------|--------|--------|--------|--------|---------|---------|---------|
| Exports, goods and services | 1,646 | 1,836 | 1,687 | 1,720 | 1,948 | 2,887 | 4,170 | 6,025 | 8,704 |
| Imports, goods and services | 2,346 | 2,517 | 2,048 | 2,301 | 2,587 | 3,529 | 5,005 | 7,148 | 10,286 |
| Oil | 331 | 453 | 226 | 277 | 343 | 598 | 694 | 805 | 955 |
| Trade balance, goods and services | -700 | -681 | -361 | -581 | -639 | -642 | -835 | -1,123 | -1,582 |
| Transfers ^a | -120 | -127 | -125 | -130 | -136 | -165 | -208 | -263 | -333 |
| Net capital income | 89 | 135 | 56 | 60 | 23 | 26 | -39 | -143 | -317 |
| Current account | -731 | -673 | -430 | -651 | -752 | -781 | -1,082 | -1,530 | -2,231 |
| Percent of GDP | -5.3 | -4.7 | -3.1 | -4.5 | -4.9 | -4.2 | -4.6 | -5.2 | -6.0 |
| External assets | 15,355 | 13,005 | 13,197 | 14,471 | 15,727 | 18,894 | 22,682 | 27,548 | 33,787 |
| External liabilities | 17,881 | 17,397 | 18,009 | 19,256 | 20,726 | 25,898 | 33,978 | 44,946 | 60,094 |
| Net international investment position | -2,525 | -4,392 | -4,812 | -4,785 | -4,999 | -7,004 | -11,296 | -17,398 | -26,306 |
| Percent of GDP | -18.3 | -30.8 | -34.3 | -32.8 | -32.6 | -37.9 | -48.3 | -58.9 | -70.4 |
| Growth (percent) | | | | | | | | | |
| United States | 2.0 | 1.1 | -2.6 | 1.9 | 3.0 | 2.75 | 2.75 | 2.75 | 2.75 |
| Foreign | 4.2 | 2.0 | -0.9 | 2.4 | 4.1 | 3.5 | 3.5 | 3.5 | 3.5 |
| Real dollars/foreign currency | 0.96 | 1.00 | 0.96 | 1.00 | 1.04 | 1.06 | 1.06 | 1.06 | 1.06 |
| Bond rate (percent) | 4.6 | 3.7 | 3.0 | 4.0 | 5.0 | 5.0 | 5.0 | 5.0 | 5.0 |
| Brent–WTI price (dollars per barrel) | 72 | 100 | 50 | 60 | 74 | 129 | 150 | 174 | 206 |

a. Includes employment income.

The projections assume that by 2010, as world recovery eases the safe-haven effect, the real exchange rate of the dollar declines again to the average level of 2008 and that thereafter it declines an additional 6 percent to approximately its trough in March 2008 and stabilizes at that level. The renewed improvement in competitiveness offsets an assumed rebound in oil prices, leaving the current account deficit in a steady long-term range of about 4 to 5 percent of GDP (table 2.1). Considering 2010 as an early benchmark, the baseline deficit has fallen from the 7.3 percent of GDP projected in Cline (2005) to 4.5 percent. This change primarily reflects the impact of adjustment in the value of the dollar.

The principal additional features of the projections are as follows. First, after severe recession in 2009, US growth returns to a steady rate at its potential of 2.75 percent by 2012, after recession in 2008–09 and a temporary catch-up pace in 2010–11. Second, modest inflation is assumed, with the GDP deflator rising at 2 percent annually (and only 1 percent in 2009). Third, real oil imports grow at half the GDP growth rate. Fourth, the oil price recovers substantially (to about \$85 per barrel by 2012 and \$130 by 2015).⁴ Fifth, following global recession in 2009, US export-weighted foreign growth rebounds from 0.4 percent in 2009 to 2.4 percent in 2010 and approximately 4 percent in 2011–13, before returning to steady growth at the potential rate of 3.5 percent thereafter.⁵ The moderately higher foreign than domestic long-term growth (3.5 versus 2.75 percent) weighs against the past tendency of US imports to grow more rapidly than exports for identical domestic and foreign growth rates.

Finally, the projections explicitly take account of more favorable earnings on direct investment abroad than on foreign direct investment in the United States.⁶ This difference, together with the greater concentration of US foreign assets in direct investment and portfolio equity in contrast to foreign concentration of holdings of bonds and credit claims on the United States, means that the capital services balance remains more favorable than would be expected simply from a comparison of total foreign liabilities against total foreign assets. Indeed, capital income does not turn negative until 2018, and the negative amounts remain moderate thereafter. Further details on foreign assets and liabilities and capital services payments are shown in appendix table 2A.1.

4. Based on forecasts by the Energy Information Administration (EIA 2009).

5. Growth estimates for major foreign economies are based on IMF (2009) and Deutsche Bank (2009) as well as other private-sector forecasts.

6. Rates of return on portfolio equity (excluding price appreciation) are set at 2.2 percent for assets and liabilities (as in Cline 2005). Based on 2005–07 results, returns on direct investment are set at 12.2 percent for foreign assets and 6.9 percent for foreign liabilities. Interest rates are based on Treasury bill and bond rates, with shares at 60 and 40 percent, respectively, for US credits abroad and the reverse for US liabilities. In addition, on the basis of observed returns from 1992 to 2007, a spread of 33 basis points is added for US credits abroad and a spread of 4 basis points is subtracted for external debt liabilities.

The broad picture that emerges is that although the United States is on a more sustainable external-sector path now than it was four years ago, it remains on a path that at best tests the limits of sustainability. With the current account deficit stabilizing in the range of 4 to 5 percent of GDP, net liabilities do not spiral rapidly out of control but nonetheless rise persistently relative to GDP. Yet this relatively benign baseline does not take account of possible future escalation of fiscal deficits, as analyzed below. Even so, net international liabilities rise from about 18 percent of GDP at the end of 2007 to about 50 percent of GDP by 2020 and 70 percent by 2030. Net liabilities already surged to an estimated 31 percent of GDP at the end of 2008 because of the sharp decline in stock prices (US holdings of equities abroad are almost twice as large as foreign holdings of US stocks) and the lower dollar valuation of foreign assets given the stronger dollar at end-2008 than at end-2007.⁷

A threshold of about 40 percent of GDP has in the past been associated with a critical turning point for debt sustainability in middle-income countries (Cline 2005, 168–69; Reinhart, Rogoff, and Savastano 2003). The United States might be thought to have more room for maneuver than middle-income countries. One reason is that it tends to owe debt in its own currency and is thus not subject to the ballooning of obligations if forced depreciation occurs (on the contrary, depreciation boosts the dollar value of foreign assets). A second reason is that the return tends to be higher on its external assets than on its liabilities. As a consequence, net capital service income does not turn negative in the baseline until net international liabilities reach about 40 percent of GDP, by about 2018. Nonetheless, other considerations suggest the United States may have less room for maneuver than most countries. One factor is that the large, rich US economy is less open than most other economies in terms of the trade base relative to GDP, so any particular percent of GDP benchmark would mean substantially higher international liabilities relative to the export base than would usually be the case. A second consideration is that as the lynchpin of the international economy, the US economy is subject to adverse feedbacks from the global economy in the event of an external-sector crisis, which could complicate adjustment of the external sector.

Overall, a prudential ceiling in the range of 40 to 50 percent of GDP for net external liabilities would seem a meaningful benchmark for the United States. Baseline net international liabilities would start to exceed the lower end of this range by 2017 and the upper end by 2022. Further simulations indicate that an additional depreciation of the dollar of about 5 percent by 2011 (compared with the baseline in table 2.1) would be required to set the

7. The end-2008 data on assets and liabilities in table 2.1 are my estimates; official data will not be published until June 2009.

external accounts on a path that would hold net international liabilities within this target long-term range.⁸

A potential downside risk in even this relatively benign baseline is adverse feedback of a rising net international liability position to induced increases in interest rates. Figure 2.1 presents informal international evidence supporting the notion that countries with higher net external liabilities are forced to pay higher real interest rates.

A simple regression on annual observations for 1991–2007 for Australia, the United States, and Japan yields the result that an extra percent of GDP in net international liabilities is associated with an increase in the real interest rate on government long-term (10-year) bonds by 0.0265 percentage point. So the baseline increase of the US net international liability position from 18 percent in 2007 to 70 percent by 2030 (table 2.1) would boost the bond rate by about 140 basis points, or from 5 to 6.4 percent. This increase in interest paid on a large net external debt would in turn widen the current account deficit, from 6.0 percent of GDP in 2030 before taking this feedback into account to 8.0 percent. Net international liabilities by 2030 would correspondingly reach 83.7 percent of GDP rather than the 70.4 percent level identified before considering induced increases in interest rates.

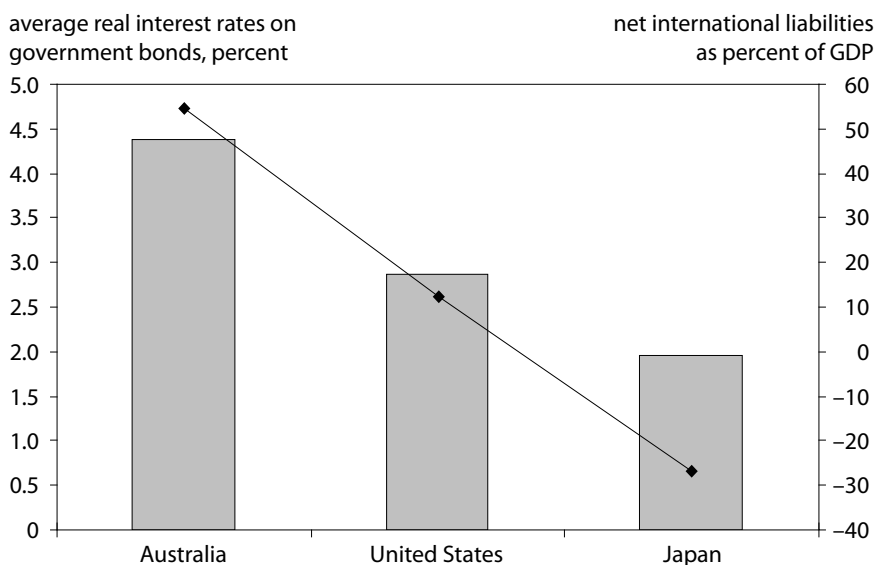
In sum, despite the considerable adjustment of the dollar and some external adjustment through domestic demand slowdown (with the weak economy of 2008–09), the long-term baseline for the US external accounts remains precarious. Net international liabilities would reach about 70 to 80 percent of GDP by 2030 even under the relatively benign conditions (and in particular, relatively favorable fiscal performance). A level this high should be seen as being already beyond the outer limits of prudence for the United States. Even so, modest additional dollar correction would probably suffice to hold the long-term net liability position within the target range of 40 to 50 percent of GDP.

External-Sector Impact of Widening Fiscal Imbalances

Even the external-sector baseline of table 2.1 may be considerably too optimistic, however, because it is implicitly premised on no major changes in the magnitudes of US fiscal imbalance experienced in recent years. The actual fiscal outcome for the federal government was a deficit of 1.9 percent of GDP in fiscal 2006, 1.2 percent in fiscal 2007, and 3.2 percent in fiscal 2008 (CEA 2008, 320; CBO 2009a, 16). Holding the current account deficit to no more than about 4½ percent of GDP in 2010–25 would be consistent with ongoing fiscal deficits centered in this range, or at around 2 percent

8. With the real dollars per unit of foreign exchange index at 1.10 by 2011 and after, rather than 1.061 in the baseline, net international liabilities would reach 40 percent of GDP in 2020, 47 percent in 2025, and 54 percent by 2030.

Figure 2.1 Average real interest rates on government bonds and net international liabilities, Australia, United States, and Japan, 1991–2007



Note: The bars show average real interest rates on government bonds (left axis) and the line shows net international liabilities as percent of GDP (right axis).

of GDP. A benchmark of 2 percent of GDP will be used for the “benign baseline” estimates of this study. This range is by no means unrealistic. The average fiscal deficit for 1994–2007 was 1.3 percent of GDP (CEA 2008). A 2 percent of GDP fiscal deficit target would bring back the long-term ratio of government debt held by the public to its level of about 40 percent of GDP in recent years, after a multiyear excursion to around 60 percent as a consequence of the financial crisis and recession.⁹

Unfortunately, in the absence of major political efforts, the US fiscal deficit could easily widen to much larger magnitudes in the years ahead. It is therefore useful to examine what the baseline for the external deficit

9. Federal government debt held by the public at the end of 2007 was \$5 trillion, or 37 percent of GDP (CEA 2008). Long-term real GDP growth for the United States is 2.5 percent per year, and inflation is 2.5 percent, so total nominal growth is 5 percent. The ratio of net debt to GDP stabilizes at the ratio of the fiscal deficit as a percent of GDP to the nominal growth rate in percentage terms, so a 2 percent benchmark for the fiscal deficit would yield a steady 40 percent of GDP ratio of net debt to GDP. In the next few years, however, federal debt held by the public could rise to 66 percent of GDP (58 percent net of financial assets) as a consequence of the financial crisis (OMB 2009, 114).

and net external liabilities would look like in the absence of meaningful fiscal adjustment measures.

The Office of Management and Budget places the fiscal 2009 federal deficit at an astounding 12.3 percent of GDP (OMB 2009, 114). In contrast, in September 2008 the Congressional Budget Office expected the 2009 deficit to reach only 3 percent of GDP (CBO 2008). By January 2009 the CBO had raised its estimate to a deficit of 8.3 percent of GDP (CBO 2009a). The change reflected greatly weakened tax revenue as a consequence of recession (2.5 percent of GDP fiscal loss) and a large expected cost of the financial crisis interventions in Fannie Mae and Freddie Mac and through the Troubled Asset Recovery Program (2.9 percent of GDP).¹⁰ Subsequently the \$780 billion fiscal stimulus program (American Recovery and Reinvestment Act of 2009) added another 1.3 percent of GDP (\$185 billion) to the 2009 deficit and an additional \$399 billion or 2.8 percent of GDP to the 2010 deficit (CBO 2009b). The Barack Obama administration submitted a budget proposal that added another 1.8 percent of GDP (\$250 billion) as a “placeholder for ... financial stabilization” (OMB 2009, 115). These successive increments, together with the effect of a smaller 2009 GDP than expected earlier, boosted the prospective fiscal deficit by 9 percentage points of GDP from the September 2008 estimate. It should be recognized that the 2009 deficit is historically unprecedented for the United States in peacetime.¹¹

The new administration’s proposed budget would bring the deficit back down to 8 percent of GDP in 2010, 5.9 percent in 2011, 3.5 percent in 2012, and then a steady plateau of 3.1 percent in 2013–19 (OMB 2009, 114). However, in the latter part of this period and especially in the following decade the deficit could reach far higher in the absence of painful political decisions. To consider the fiscal path out as far as 2030, it is necessary to return to the long-run budget projections of the CBO as of late 2007, its most recent analysis for this long a horizon.

The CBO remains the most authoritative source for long-term projections of US budget deficits and public debt. It is a bipartisan entity with a strong incentive to maintain its reputation for solid analysis and even-handedness, like a central bank’s need to maintain its anti-inflationary reputation. There is, however, an important quirk about CBO projections. By mandate, the CBO is required to make projections under current law. A major problem arises when current law embodies unsustainable elements. In particular, under current law, the tax cuts granted under the Economic Growth and Tax Relief Reconciliation Act (EGTRRA) of 2001 and the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) of 2003 are set to

10. The CBO counted only the expected loss from these interventions, not their full face values, as budgetary outlays.

11. The largest previous peacetime deficit was 6 percent of GDP in 1983. The prospective 2009 deficit was exceeded only during 1942–45, when the average was 22.2 percent.

expire after 2010. Similarly, the alternative minimum tax (AMT) is part of current law, but it will increasingly sweep middle-class families into its coverage because of the absence of adjustment for inflation in its rates, and some relief is highly likely. Already its rising effective bite has routinely been deferred on an ad hoc annual basis in recent years.

The new administration's budget proposal does allow a rollback of the 2001 and 2003 tax cuts for the richest brackets, but introduces new tax cuts and credits for middle- and lower-income families and realistically accounts for reform of the AMT. As a result, it calls for revenues to stabilize at about 19 percent of GDP by 2013 and after, almost unchanged from the 2007 level instead of rising by 2.5 percent of GDP by 2030.

On the spending side, under the rules set forth in the Balanced Budget and Emergency Deficit Control Act of 1985, the baseline projections calculate discretionary spending (for defense, education, and other nonmandatory items as opposed to mandatory Social Security and health spending) under the assumption that levels remain constant in real terms rather than keeping pace with a rising GDP. So, on both the revenue and spending sides, the CBO projection rules result in an overly optimistic baseline.

The pattern of CBO projections has thus become to adhere to its current law mandate for its "baseline" projection, but then to set forth an "alternative" projection that more realistically takes account of likely changes in current law and of likely real growth in discretionary spending.¹² Table 2.2 reports the resulting estimates for 2007 and projections for 2030 in the CBO's most recent long-term projections (CBO 2007).

In the current law baseline, the rollback of the EGTRRA and JGTRRA tax cuts and the maintenance of the AMT would drive revenue substantially higher in the future, from 18.8 percent of GDP in 2007 to 21.4 percent by 2030. As a result, despite large increases in spending on Medicare-Medicaid and to a lesser extent Social Security, the fiscal deficit remains at only 1 percent of GDP by 2030. In particular, Medicare plus Medicaid rise from a combined 4.1 percent of GDP in 2007 to 8.1 percent of GDP by 2030, and spending on Social Security rises from 4.3 percent of GDP to 6.1 percent. Medical spending costs per beneficiary that rise substantially in excess of growth in per capita income are the main force in the rising health costs, rather than increasing numbers of beneficiaries. In contrast, Social Security costs increase mainly because of the demographics of more retirees.

The CBO's alternative scenario gives a much more realistic picture of the challenges that lie ahead. In this case, the unrealistic compression of

12. As the CBO puts it: "The 'alternative fiscal scenario' represents one interpretation of what it would mean to continue today's underlying fiscal policy... [It] incorporates some changes in policy that are widely expected to occur and that policymakers have regularly made in the past" (CBO 2007, 2).

Table 2.2 Congressional Budget Office long-term fiscal projections: Current law baseline and alternative scenario based on present policy trends (percent of GDP)

| Spending/revenue | 2007 | 2030 | |
|------------------|------|----------------------|----------------------|
| | | Current law baseline | Alternative scenario |
| Spending | 20.0 | 22.4 | 29.1 |
| Primary | 18.3 | 21.8 | 24.3 |
| Social Security | 4.3 | 6.1 | 6.1 |
| Medicare | 2.7 | 5.6 | 5.9 |
| Medicaid | 1.4 | 2.5 | 2.5 |
| Other | 9.9 | 7.7 | 9.8 |
| Interest | 1.7 | 0.6 | 4.8 |
| Revenue | 18.8 | 21.4 | 18.9 |
| Balance | -1.2 | -1.0 | -10.2 |
| Primary | 0.5 | -0.4 | -5.4 |

Source: CBO (2007).

“other” (discretionary) spending in the baseline (from 9.9 percent of GDP in 2007 to 7.7 percent by 2030) is replaced by a constant-share-of-GDP assumption. As a consequence primary spending (excluding interest) rises to 24.3 percent of GDP by 2030. On the revenue side, in the alternative scenario none of the scheduled changes in the tax law is allowed to take effect, and the AMT becomes indexed for inflation. Revenue thus stays unchanged as a share of GDP (as in the new administration’s proposal in 2009) rather than rising by about 2½ percentage points of GDP by 2030. With the resulting wider deficits over time and growing public debt, interest costs soar from 0.6 percent of GDP in the mandated baseline to 4.8 percent. The total fiscal deficit under the alternative scenario continuing “today’s underlying fiscal policy” thus reaches 10.2 percent of GDP in 2030, rather than the minimal 1 percent in the “baseline” calculated following the CBO’s projection rules.

A federal deficit of this size would be 8 percent of GDP larger than the 2 percent of GDP long-term fiscal deficit indicated earlier as consistent with the current account projections of table 2.1. For purposes of the present study, then, the benchmark for investigating the stakes in fiscal responsibility is this: Without an improvement in business as usual policy trends, the fiscal deficit will increase by 8 percentage points of GDP by 2030 from the reference “benign” level. The task for the analysis here, then, is to recalculate the prospective path of the US external accounts under the

assumption that the US fiscal deficit widens by about 8 percent of GDP from the implicit deficit that underlay the initial baseline projections of table 2.1.

There is a textbook relationship between the fiscal deficit and the trade deficit that stems from national accounts identities. GDP on the product side equals consumption plus investment plus government spending plus exports minus imports. GDP on the factor payment side equals what households and firms use their income for: private consumption, private saving, and tax payments. Subtracting the second identity from the first, it turns out that the excess of imports over exports has to be equal to the excess of investment over saving (including public saving, namely the excess of tax revenue over government spending). So if a widening of the fiscal deficit reduces saving, the excess of domestic demand for resources is filled by widening of the trade deficit as additional imports fill the resource gap.

However, an extra dollar of fiscal deficit does not necessarily cause exactly one extra dollar of trade deficit. One theoretical reason is the so-called Ricardian effect. Classical economist David Ricardo suggested that if households see the government embarking on larger fiscal deficits, they will increase their private saving against the inevitable day when the government must once again collect more taxes; so there is a Ricardian offset whereby private saving goes up when public-sector saving goes down (i.e., when fiscal deficits go up). Actual experience in the past decade has flown cruelly in the face of the Ricardian hypothesis, because private saving has continued to plunge rather than rebound as the fiscal accounts shifted from sizable surplus in 1999–2000 to large deficit by 2003–05. First the stock market boom and then the now flailing housing market boom made households feel richer and thus less in need of saving; so the Ricardian view would have to argue that private saving would have fallen even more without the decline in public saving.

A more robust reason why there would be less than a one-for-one relationship between changes in the fiscal deficit and the trade deficit (despite the national accounts identity) is that indirect effects cause some offset, apart from Ricardian changes in personal saving. A wider fiscal deficit places pressure on capital markets and bids up the interest rate, and a higher interest rate discourages investment. So there will be some reduction of investment as an indirect effect of larger fiscal deficits. The result will be a smaller increase in the excess of investment over saving, and hence of imports over exports, than would have occurred if investment had remained unchanged. In the context of the contemporary US economy, moreover, higher interest rates also tend to depress consumption, because of the role of credit (and, at least until the housing bust, home equity loans) in consumer purchases.

In Cline (2005) I develop a simple general equilibrium model that seeks to incorporate these and other interrelationships. The basic insight

is that three core equations must hold: Investment minus saving equals imports minus exports (national accounts identity); exports are a function of the real exchange rate (price influence) and foreign growth (income influence); and imports are a function of the real exchange rate and domestic growth. The direct and indirect effects of a wider fiscal deficit trace through these three equations in a fashion that results in a change in the external deficit, which is likely to be somewhat smaller than the change in the fiscal deficit.

In the estimates using stylized parameter values, the model finds that the change in the trade deficit is likely to be about 40 percent as large as the change in the fiscal deficit.¹³ Once feedback effects are incorporated into external debt accumulation and payments of capital earnings, the ratio of the change in current account to change in the fiscal deficit is somewhat larger.

To show the impact of an 8 percent of GDP increase in the fiscal deficit by 2030 on the path of the current account, a useful approach is to identify the change in the real exchange rate that would be consistent with a resulting change in the trade balance by 0.375×8 percent = 3 percent of GDP. In the current account model used above, the price elasticity of exports is unity, and the pass-through of exchange rate changes to export prices is 0.8 (exporters raise their dollar prices by 2 percent when the dollar declines by 10 percent). So a 1 percent rise in the real exchange rate depresses export earnings by 0.8 percent. The model uses an import price elasticity of unity, which means that there will be no change in the dollar value of imports from a change in the exchange rate (because any change in price is just offset by change in quantity). So the trade balance change stems fully from the change in exports.

In the projections of table 2.1, exports of goods and services stand at 17.8 percent of GDP in the middle of the horizon (2020). If an 8 percent of GDP fiscal erosion is to translate into a 3 percent of GDP decline in the trade balance, amounting to a rise in exports by $3/0.178 = 16.9$ percent, then the real exchange rate must rise by $16.9/0.8 = 21.1$ percent. The economic force driving a rising dollar is the rise in interest rates resulting from a rising fiscal deficit, which attracts additional foreign capital and bids up the dollar.

The first change to the model projections of table 2.1, then, is to increase the real level of the dollar exchange rate by 21.1 percent (reduce the dollar cost of foreign exchange by 17.4 percent) by 2030 (or more precisely by 2028 to allow for the lag from exchange rate to outcome) from the base otherwise shown. This is done by a smooth interpolation

13. Thus, in an experiment with an initial fiscal shock of 3 percent of GDP, resulting in an equilibrium change of 3.2 percent of GDP in the fiscal balance, the trade balance on goods and services changes by 1.2 percent of GDP, placing the relationship at 37.5 percent (Cline 2005, 148).

of annual increments. The other necessary change is to incorporate the influence of higher interest rates on the payments of capital income. William G. Gale and Peter R. Orszag (2004) find that a 1 percent of GDP increase in the fiscal deficit leads to an increase in interest rates by 25 to 35 basis points. On this basis, the fiscal deterioration of 8 percent of GDP by 2030 is assumed here to boost interest rates by 2.4 percentage points (240 basis points) by that time, once again phased in with steady annual increments. Thus, whereas the bond rate assumed in the calculations of table 2.1 is steady at 5 percent from 2011 to 2030 (after a brief dip), in the fiscal erosion scenario the rate rises from 5 percent in 2011 to 7.4 percent by 2030. It should be noted, however, that the CBO long-term projection itself does not appear to increase the interest rate in response to the higher deficit, suggesting that its 10.2 percent of GDP fiscal deficit by 2030 in the absence of adjustment may be understated.¹⁴

Table 2.3 reports the results of applying an 8 percent of GDP fiscal erosion to the current account and external liability estimates in this fashion, showing the same projection variables as in the baseline case with fiscal prudence shown in table 2.1.

Comparing tables 2.1 and 2.3, and focusing attention on the outcomes for 2030, several key differences are apparent. First, exports are considerably lower in the fiscal erosion scenario, as a consequence of a stronger dollar. Second, net capital income is far more negative, at a deficit of \$2.5 trillion (6.8 percent of GDP) rather than \$317 billion (0.85 percent) in the fiscally prudent baseline. Third, and driving the more negative capital income result, net external liabilities are much larger in the fiscal erosion case, at 140 percent of GDP by 2030 rather than 70 percent. External assets are about \$3.3 trillion smaller by 2030 than they would have been without fiscal erosion, because of an adverse exchange valuation effect from the 21.1 percent rise in the real value of the dollar. External liabilities are about \$23 trillion larger, reflecting the much larger cumulative current account deficits and higher interest rates applied to larger external debt.

Will a Revival of Personal Saving Curb External Deficits?

The financial crisis and recession of 2008–09 have caused considerable expectation that the time may be at hand for a return of personal saving to more reasonable long-term levels, after its remarkable decline over the

14. The report is silent on the interest rate assumptions, but they can be inferred from the size of the interest bill in comparison to the size of government debt held by the public. In the current law (i.e., unrealistic) baseline, by 2030 debt stands at 10 percent of GDP and interest amounts to 0.6 percent of GDP, implying an interest rate of about 6 percent. In the “alternate” (i.e., more realistic in the absence of adjustment) scenario, debt reaches 110 percent of GDP and interest reaches 4.8 percent of GDP (CBO 2007, 4–5), implying an interest rate of 4.4 percent. This is implausibly low under such high-debt circumstances.

Table 2.3 US external accounts under fiscal erosion, 2008–30 (billions of dollars and percent)

| Measure | 2008 | 2009 | 2010 | 2011 | 2015 | 2020 | 2025 | 2030 |
|---------------------------------------|--------|--------|--------|--------|--------|---------|---------|---------|
| Exports, goods and services | 1,836 | 1,687 | 1,720 | 1,944 | 2,782 | 3,828 | 5,255 | 7,210 |
| Imports, goods and services | 2,517 | 2,048 | 2,301 | 2,576 | 3,509 | 4,975 | 7,100 | 10,263 |
| Oil | 453 | 226 | 277 | 343 | 598 | 694 | 805 | 955 |
| Trade balance, goods and services | -681 | -361 | -581 | -632 | -727 | -1,147 | -1,845 | -3,053 |
| Transfers ^a | -127 | -125 | -130 | -136 | -165 | -208 | -263 | -333 |
| Net capital income | 135 | 56 | 60 | 14 | -72 | -405 | -1,129 | -2,549 |
| Current account | -673 | -430 | -651 | -755 | -964 | -1,760 | -3,238 | -5,935 |
| Percent of GDP | -4.7 | -3.1 | -4.5 | -4.9 | -5.2 | -7.5 | -11.0 | -15.9 |
| External assets | 13,005 | 13,197 | 14,471 | 15,663 | 18,465 | 21,580 | 25,448 | 30,449 |
| External liabilities | 17,397 | 18,009 | 19,256 | 20,728 | 26,300 | 36,576 | 53,618 | 82,630 |
| Net international investment position | -4,392 | -4,812 | -4,785 | -5,065 | -7,835 | -14,997 | -28,170 | -52,181 |
| Percent of GDP | -30.8 | -34.3 | -32.8 | -33.1 | -42.4 | -64.1 | -95.3 | -139.6 |
| Growth (percent) | | | | | | | | |
| United States | 1.1 | -2.6 | 1.9 | 3.0 | 2.75 | 2.75 | 2.75 | 2.75 |
| Foreign | 2.0 | -0.9 | 2.4 | 4.1 | 3.5 | 3.5 | 3.5 | 3.5 |
| Real dollars/foreign currency | 1.00 | 0.92 | 1.00 | 1.03 | 1.01 | 0.96 | 0.91 | 0.88 |
| Bond rate (percent) | 3.7 | 3.0 | 4.0 | 5.1 | 5.7 | 6.3 | 7.0 | 7.4 |
| Brent-WTI price (dollars per barrel) | 100 | 50 | 60 | 74 | 129 | 150 | 174 | 206 |

a. Includes employment income.

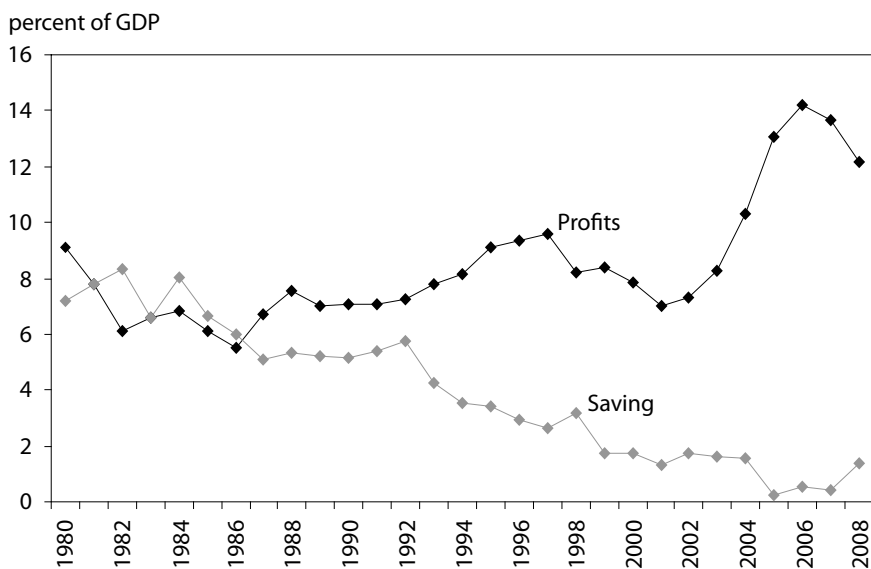
past several years. A corresponding possibility is that a major rebound in private saving could partially offset the long-term trend toward greater public dissaving and hence help arrest the resulting increase in the external deficit. Personal saving fell from an average of 7.3 percent of disposable income in 1986–90 to 6.0 percent in 1991–95, 3.3 percent in 1996–2000, 1.8 percent in 2001–05, and only 0.7 percent in 2006–07. Although the rate was even lower at only 0.2 percent in the first quarter of 2008, it then rose to an average of 2.3 percent for the rest of the year, and climbed further to 5 percent in January 2009 (BEA 2009).

The steady decline in the saving rate in the late 1990s and first half of the present decade was likely associated with wealth effects from price increases in households' assets, first in the dot-com stock market bubble and then in the housing market bubble. Households enjoyed rising net worth from asset appreciation and so needed less current saving to achieve net worth goals. In contrast, by end-2008, stock market losses in the United States were on the order of \$7 trillion, and home equity losses, on the order of \$2 trillion.¹⁵ A rule of thumb is that the level of annual consumption declines by 4 percent of the decline in wealth (Mehra 2001). So a \$9 trillion reduction in household wealth would reduce consumption by \$360 billion, or about 2.5 percent of GDP and about 3.5 percent of disposable personal income. However, households are unlikely to consider these reductions as permanent and would thus scale back their consumption somewhat less.

Moreover, the same drastic conditions that may be raising personal saving are likely to reduce corporate saving. Figure 2.2 reports the path of corporate profits and personal saving over the past three decades, with both expressed as a percent of GDP (BEA 2009). In broad terms there has been a mirror image, with falling personal saving accompanied by rising corporate profits. The recent modest rebound in personal saving has similarly been accompanied by a decline in corporate profits. The implication is that to the extent the recent changes do turn out to be a watershed event reviving personal saving to higher, earlier levels, the new environment may also involve considerably lower corporate profits. The net result would tend to be little change in private-sector saving and hence little scope for offsetting prospective long-term increases in public-sector dissaving and in the rising potential path of the current account deficit.

15. At the end of the third quarter of 2007, households held \$6.1 trillion directly in corporate equities, \$5.1 trillion in mutual funds, and pension funds held \$13.2 trillion. Assuming that half of the pension funds were in equities and the other half in bonds, total direct and indirect household holdings of equities were about \$17 trillion. A 40 percent loss amounts to about \$7 trillion. Households held \$20.2 trillion in real estate assets at the end of 2007 (Federal Reserve 2008). Housing prices have fallen from their peaks by about 5 percent according to the Federal Housing Finance Agency (2008), but by as much as 22 percent from the July 2006 peak to September 2008 according to the S&P/Case-Shiller index for 20 major cities (Standard & Poor's 2008). Applying an intermediate 10 percent gives an estimate of \$2 trillion for losses in housing asset values.

Figure 2.2 Corporate profits and personal saving as percent of GDP, 1980–2008



Source: BEA (2009).

The Recession of 2008–09 and an Unusual Relationship of Fiscal and External Deficits

There is a major paradox in the outlook for the fiscal and external deficits in 2009. As indicated above, the current account deficit should narrow to about 3 percent of GDP, whereas the fiscal deficit could reach an extraordinary 12 percent of GDP. If the central concern of this study is that a larger fiscal deficit over time will drive a larger external deficit, how can the opposite be true in the most proximate evidence, that for 2009? The answer lies in the atypical relationship between the two deficits in a recession.

A recession tends to cause a sharp contraction in imports, as households purchase fewer imported goods. Recession can also boost exports, as firms seek to sell excess production abroad. However, recession is also a major source of fiscal erosion. As incomes fall, tax revenue declines. As unemployment rises, payments in unemployment benefits rise. The “automatic stabilizers” automatically contribute a fiscal loss during recession. So the basic expectation should be that in a recession there is likely to be a widening of the fiscal deficit and a narrowing of the current account deficit.

Nonetheless, the national accounts identity linking investment and

saving to the external deficit must be met. This identity states that the trade deficit in goods and services equals the excess of domestic investment over domestic saving. Domestic saving includes both private and government saving, and government saving is defined as the fiscal surplus. The large fiscal deficit in store for 2009 does raise the question of what will be the offsetting factors that will keep the investment-saving gap from rising when government dissaving is surging.

It is useful to start from the perception that whatever government stimulus and automatic stabilizer deficits arise, they are likely at most to compensate for a collapse in private-sector demand. That is their purpose, and it is unlikely that the stimulus will be so excessive as to thrust the economy into overheating. Moreover, much of the 2009 fiscal deficit will be in the form of accounting entries that do not represent purchases of real goods and services. The bookkeeping entries for losses expected from Fannie Mae and Freddie Mac and from the Troubled Asset Recovery Program amount to 2.9 percent of GDP in the 2009 deficit, and the placeholder for further financial rescues in the administration's proposed budget adds another 1.8 percent of GDP. Thus, 4.7 percent of GDP amounts to a fiscal deficit contribution in accounting terms but not in terms of purchases of real goods and services in the national accounts.

The widening of the fiscal deficit that is germane for increased pressure on direct purchase of domestic goods and services is thus much smaller than the total 9 percent of GDP surge from the 2008 deficit (3 percent) to the 2009 deficit (12 percent). Additional layers of the increment also do not count in the national product accounts: increases in transfer payments. The influence of these transfers shows up only insofar as they induce households to spend more. Of the 1.3 percent of GDP in stimulus spending that will occur in 2009, suppose that one half is in the form of additional transfers or tax reductions. That represents an additional 0.65 percent of GDP that can be subtracted in arriving at the rise in the real government claim on production. A total of about 5.4 percent of GDP can thus be removed from the rise in the fiscal deficit to identify the extra claim on goods, reducing it from 9 percent of GDP to 3.6 percent.

This diagnosis then leaves the question of where the reduction in private demand will come from that will provide not only the supply for an extra 3.6 percent of GDP in government demand but also a reduction of 1.6 percent of GDP in external saving (the decline in the current account deficit from 4.7 percent of GDP to 3.1 percent), or a total of 5.2 percent of GDP to be accounted for. As noted earlier, personal saving is likely to rise sharply in 2009. If it were to rise from its 2008 level of 1.35 percent of GDP (BEA 2009) to its January 2009 level of 5 percent of disposable personal income, or 3.75 percent of GDP, there would be an increase of 2.4 percent of GDP in personal saving. This leaves a gap of 2.8 percent of GDP that would need to be released from net private demand. The most likely source is a plunge in investment. Business in-

vestment is expected to plunge by 13 percent in 2009 (Blue Chip 2009). Nonresidential investment was about 11 percent of GDP in 2008, so the decline would amount to about 1.4 percent of GDP. Residential investment was about 3.5 percent of GDP in 2008, and by the fourth quarter was falling at an annual rate of 23 percent. So another 0.7 percent of GDP in demand reduction could come from lower residential investment. The falling residential and nonresidential investment would largely eliminate the remaining gap in demand reduction (accounting for 2.1 percent of the 2.8 percent of GDP needed). However, as noted before, another consideration is working in the opposite direction: Corporate profits and thus business saving are also likely to fall sharply in 2009. To complicate matters further, however, about 1.6 percent of GDP, or virtually the entire amount of the reduction in the current account deficit, will come from a fall in oil prices—suggesting that there is no reduction at all in the real value of foreign saving and thus less of a puzzle to be explained in sorting through the investment-saving gaps in 2009 in the face of the megadeficit in fiscal accounts.

All will be clear when the national accounts eventually arrive, duly revised, sometime in 2010. In the meantime, the bottom line is that 2009 will be an unusual year in which there is a huge rise in the fiscal deficit but a substantial narrowing of the current account deficit. This atypical pattern should not distract attention from the long-term dynamic relevant for the fully employed economy, in which a path of ever-widening fiscal deficits if not corrected will drive a corresponding path of ever-widening current account deficits and ever-deepening international indebtedness.

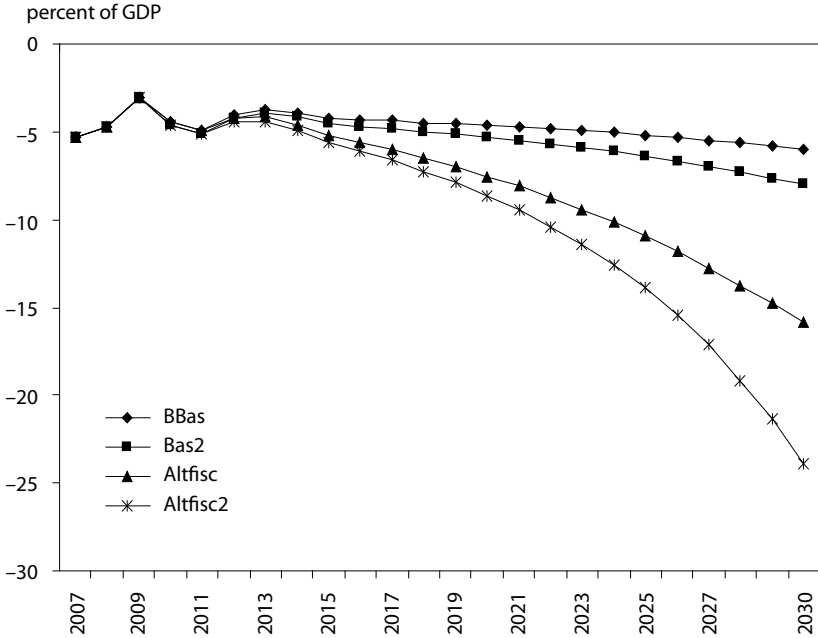
Scenario Overview and Crisis Risk

Figure 2.3 shows the projections of current accounts and the net international investment position (NIIP) as a percent of GDP under four scenarios. The first (BBas) is the benign baseline of table 2.1. The second (Bas2) is that baseline after incorporation of the induced interest rate increase associated with rising net international liabilities (figure 2.1). The third (Altfisc) is the CBO alternate fiscal (fiscal erosion) case of table 2.3. The fourth (Altfisc2) incorporates the induced increase in interest rates from rising net international liabilities.

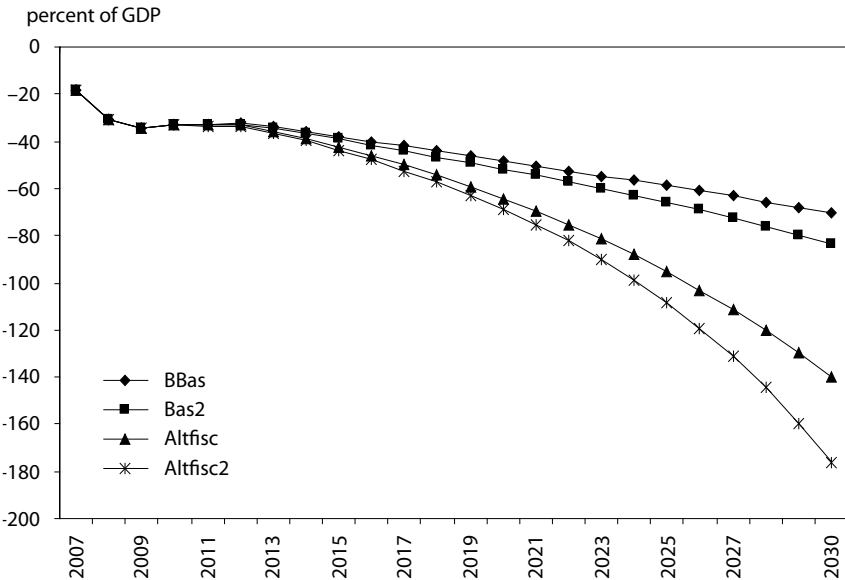
The central message of figure 2.3 is that the external accounts could be on an explosively adverse path over the next quarter century if the US fiscal deficit were to rise to 10 percent of GDP by 2030 because of uncontrolled increases in health and other social spending, as in the CBO's "alternate" long-term scenario. In the worst scenario, the current account deficit would reach 14 percent of GDP in 2025 and 24 percent in 2030. Net international liabilities would reach 109 percent of GDP in 2025 and 176 percent in 2030. Four forces drive these adverse effects. First, the rise in the

Figure 2.3 Current account and net international investment position as percent of GDP, 2007–30

a. Current account



b. Net international investment position (NIIP)



BBas = benign baseline; Bas2 = with induced interest rate increase from falling NIIP;
 Altfisc = Congressional Budget Office (CBO) alternative fiscal scenario; Altfisc2 = with NIIP-induced
 interest rate effect.

fiscal deficit translates into a rise in the trade deficit that is about 40 percent as large. Second, as the real value of the dollar is buoyed up by rising interest rates and becomes the vehicle that causes the rising trade deficit, there is a reduction in the dollar value of foreign assets. Third, because of a higher interest rate associated with the rising fiscal deficit, combined with more rapidly rising net liabilities, the net capital income turns massively negative late in the horizon, instead of remaining close to balance. Fourth, further induced increases in the interest rate as a consequence of rising net international liabilities aggravate the widening external deficit and net liability positions.

Some form of crisis would be likely to disrupt the external-sector path associated with the fiscal erosion cases (Altfisc and Altfisc2) long before the current account deficit and net international liabilities reached their extreme levels of the 2025–30 projections here. There would likely be a run on the dollar, causing a sharp depreciation of the currency and forcing a narrowing of the trade deficit. With the fiscal deficit large and unchanged, other domestic absorption would have to change, probably in the form of a forced reduction of domestic consumption.

Suppose that when net international liabilities reached 80 percent of GDP (in about 2022 in Altfisc2, figure 2.3), there were such a run on the dollar. It seems likely that by that time there would have been a major shift in the currency denomination of US external debt, as foreigners became more wary of holding dollar assets. The projection numbers in the worst scenario are as follows by then: US gross external debt (bonds, banks, nonbanks) would stand at about \$32 trillion and external credit claims at about \$7 trillion. Suppose that two-thirds of this US external debt by then were denominated in foreign currency. Suppose that the dollar were forced to decline by 30 percent.¹⁶ This would mean that on \$22 trillion in foreign currency–denominated external debt, there would be a currency loss amounting to about \$10 trillion.¹⁷ So the dollar magnitude of foreign debt would rise to \$42 trillion.

In the same scenario, US holdings of direct investment and portfolio equity abroad would amount to \$16 trillion. So there would be valuation gains of about \$7 trillion on these assets from the 30 percent fall in the dollar.¹⁸ These gains would narrow the currency losses for overall net international investment from \$10 trillion to \$3 trillion, but these losses

16. For example, in the underlying model a 10 percent rise in the dollar value of foreign currency generates a 1.6 percent of GDP narrowing of the current account deficit. A forced reduction of the 2023 current account deficit from 10 percent of GDP to 3 percent would require a rise in the dollar cost of foreign currency by $7/1.6 \times 10 = 44$ percent, or a decline of 31 percent in the value of the dollar.

17. Or 44 percent applied to \$23 billion.

18. That is: $\$16 \text{ trillion} \times (1/0.7) = \16 trillion .

would still be relatively large (at about 12 percent of GDP in 2022).¹⁹ The United States would not yet be in the position of many developing countries that experience sharp increases in net international debt as a percent of GDP when they depreciate because their entire external debt is in foreign currency, but it would be well along that path.

Further Implications for Vulnerability and Living Standards

The overall result of the fiscal erosion scenario for the next quarter century would be to raise US external-sector vulnerability substantially by boosting the long-term current account deficit from about 4½ percent of GDP in 2020 and 6 percent in 2030 to about 16 to 24 percent by 2030, and by raising net external liabilities from 70 percent of GDP in 2030 to about 140 to 175 percent. Considering that 40 to 50 percent is a key threshold range beyond which international experience and unique features of the US economy suggest it could be dangerous to venture, even the benign baseline would arguably exceed prudential limits. Modest further dollar correction beyond that assumed in this baseline would probably suffice to keep net international liabilities within this range under the benign fiscal baseline. However, under the fiscal erosion baseline, net liabilities would go so far beyond this range as to invite crisis.

Even if there were no external-sector crisis as a consequence of rising net external liabilities between now and 2030, there would be important implications for future living standards as an increasing share of US national income would be transferred abroad to service the higher foreign debt. Comparing table 2.3 with table 2.1, by 2030 annual net payments of capital income to foreign investors would amount to 6.8 percent of GDP in the fiscal erosion scenario instead of only 0.85 percent in the fiscally prudent baseline. In addition, it is highly likely that with the net international liabilities at well over 100 percent of GDP, foreign investors would begin to insist that US external imbalances be reduced. The current account deficit would have to be cut back from about 16 percent of GDP to about 3 percent of GDP to be consistent with stabilizing the ratio of net foreign liabilities at 60 percent of GDP.²⁰ This would require resources amounting to 13 percent of GDP annually.

Thus, by 2030 US households would be paying about 6 percent of

19. Note that the scenarios shown in figure 2.3 instead assume that US external debt remains denominated in dollars.

20. This ratio eventually stabilizes at the ratio of the current account deficit as a percent of GDP to the nominal growth rate of GDP. With potential growth at 2.75 percent and inflation at about 2 percent, the nominal growth rate would be about 5 percent, and 60 percent of that would be a 3 percent of GDP limit for the current account deficit.

GDP more in capital income to foreigners than if fiscal prudence had been pursued, and in addition they would be faced with cutting back consumption by about 13 percent of GDP in comparison to the excessive levels to which they would have become accustomed. If the resources secured from abroad had been invested, then national output might have been correspondingly higher. But the resources from abroad would instead have been used for larger government spending on current consumption. Indeed, as most analyses of long-term fiscal issues conclude, the rising fiscal imbalances would reduce investment, not increase it, by raising interest rates.

These estimates for the external sector confirm the broader diagnosis that unless corrected, widening fiscal deficits will place a burden on US households by the 2020s and after. The estimates here suggest that by 2030 households could be forced to cut back consumption on the order of 19 percent of GDP (6 percent for higher capital income payments abroad plus 13 percent to trim back to sustainable current account deficits) from levels to which they had become accustomed under the fiscal erosion scenario, in comparison with the outcome under fiscal prudence.

In sum, external considerations reinforce the numerous domestic economic reasons for forceful action to prevent likely fiscal erosion over the next two decades. Rising net international liabilities could make the US economy vulnerable to an external-sector crisis, and even if no such crisis arises, excessive reliance on foreign resources would set up US households for a wrenching cutback in standards of living to which they had become accustomed once unsustainable foreign deficits were forced to be cut back.

References

- BEA (Bureau of Economic Analysis). 2008. *U.S. Net International Investment Position at Yearend 2007* (June). Washington.
- BEA (Bureau of Economic Analysis). 2009. *National Income and Product Accounts* (March). Washington.
- Blue Chip. 2009. *Blue Chip Economic Indicators* 34, no. 3 (March 10). New York: Aspen Publishers.
- CBO (Congressional Budget Office). 2007. *The Long-Term Budget Outlook* (December). Washington.
- CBO (Congressional Budget Office). 2008. *The Budget and Economic Outlook: An Update* (September). Washington.
- CBO (Congressional Budget Office). 2009a. *The Budget and Economic Outlook: Fiscal Years 2009 to 2019* (January). Washington.
- CBO (Congressional Budget Office). 2009b. Letter to Senator Grassley on ARRA Effects, March 2. Washington.
- CEA (Council of Economic Advisers). 2008. *Economic Report of the President* (February). Washington.
- Cline, William R. 2005. *The United States as a Debtor Nation*. Washington: Institute for International Economics and Center for Global Development.

- Deutsche Bank. 2009. Country Infobase. Deutsche Bank Research (March). Frankfurt. Available at www.dbresearch.de.
- EIA (Energy Information Administration). 2009. Forecasts and Analyses. Washington: Department of Energy. Available at www.eia.doe.gov.
- Federal Housing Finance Agency. 2008. Home Prices Slide Further in Summer Months: Few States Show Price Gains. News Release, November 25. Washington.
- Federal Reserve. 2008. *Flow of Funds Accounts of the United States* (September). Washington.
- Federal Reserve. 2009. Price Adjusted Broad-Dollar Index. Washington. Available at www.federalreserve.gov.
- Gale, William G., and Peter R. Orszag. 2004. The Budget Outlook: Projections and Implications. *Economists' Voice* 1, no. 2.
- IMF (International Monetary Fund). 2008a. *World Economic Outlook* (April). Washington.
- IMF (International Monetary Fund). 2008b. *World Economic Outlook Update* (November 6). Washington.
- IMF (International Monetary Fund). 2009. *World Economic Outlook Update* (January). Washington.
- Mehra, Yash P. 2001. The Wealth Effect in Empirical Life-Cycle Aggregate Consumption Equations. *Federal Reserve Bank of Richmond Economic Quarterly* (Spring).
- OMB (Office of Management and Budget). 2008. *Fiscal Year 2009 Mid-Session Review* (July). Washington.
- OMB (Office of Management and Budget). 2009. *A New Era of Responsibility: Renewing America's Promise* (February). Washington.
- Reinhart, Carmen M., Kenneth S. Rogoff, and Miguel A. Savastano. 2003. Debt Intolerance. *Brookings Papers on Economic Activity* (Spring), no. 1: 1–74.
- Standard & Poor's. 2008. *S&P/Case-Shiller Home Price Indices*. New York: McGraw-Hill.

Appendix 2A

Table 2A.1 Additional projection details, benign baseline, 2007–30 (billions of dollars, indexes, and percent)

| Measure | 2007 | 2008 | 2009 | 2010 | 2011 | 2015 | 2020 | 2025 | 2030 |
|---|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Capital services balance | 89 | 135 | 56 | 60 | 23 | 26 | -39 | -143 | -317 |
| Income | 815 | 752 | 471 | 747 | 897 | 1,136 | 1,431 | 1,814 | 2,309 |
| Payments | -726 | -618 | -415 | -687 | -874 | -1,109 | -1,470 | -1,957 | -2,625 |
| Foreign assets | 15,355 | 13,005 | 13,197 | 14,471 | 15,727 | 18,894 | 22,682 | 27,548 | 33,787 |
| Direct investment | 3,333 | 3,584 | 3,775 | 4,316 | 4,755 | 6,253 | 8,529 | 11,488 | 15,323 |
| Portfolio equity | 5,171 | 2,722 | 2,570 | 3,303 | 4,119 | 5,789 | 7,301 | 9,208 | 11,612 |
| Bonds, loans | 6,852 | 6,699 | 6,852 | 6,852 | 6,852 | 6,852 | 6,852 | 6,852 | 6,852 |
| Foreign liabilities | 17,881 | 17,397 | 18,009 | 19,256 | 20,726 | 25,898 | 33,978 | 44,946 | 60,094 |
| Direct investment | 2,423 | 2,809 | 3,051 | 3,307 | 3,578 | 4,830 | 6,840 | 9,479 | 12,924 |
| Portfolio equity | 2,833 | 1,642 | 1,599 | 1,911 | 2,305 | 3,188 | 4,021 | 5,071 | 6,395 |
| Bonds, loans | 12,625 | 12,947 | 13,359 | 14,038 | 14,843 | 17,881 | 23,117 | 30,396 | 40,775 |
| Valuation changes | 697 | -1,372 | -143 | 678 | 538 | 84 | 103 | 127 | 157 |
| Prices | 242 | -912 | 19 | 189 | 270 | 84 | 103 | 127 | 157 |
| Exchange rate | 455 | -460 | -162 | 489 | 268 | 0 | 0 | 0 | 0 |
| Treasury bill rate (6-month, percent) | 4.44 | 1.62 | 0.50 | 2.36 | 3.36 | 3.36 | 3.36 | 3.36 | 3.36 |
| Foreign direct investment return difference (percent) | 6.3 | 6.9 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 | 5.3 |