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From World Banker to World Venture Capitalist
U.S. External Adjustment and the Exorbitant Privilege

Pierre-Olivier Gourinchas and Hélène Rey

1.1 Introduction

This paper takes a fresh look at the historical evolution of the United States external position over the postwar period by carefully constructing the U.S. gross asset and liability positions since 1952 from underlying data and applying appropriate valuations to each component.

The last two decades have been characterized by a sharp increase in international capital flows and, in particular, by a rising globalization of equity markets.[1] The broadening of the set of assets internationally traded, the switch to a floating exchange rate regime in 1973, and the larger size of gross asset and liability positions have made it increasingly necessary to incorporate valuation adjustments when computing net foreign asset positions.

The net foreign asset position of a country is nothing but a leveraged portfolio where the country is short in domestic assets and long in foreign assets. Hence, changes in asset prices and exchange rate movements will either tighten or relax the U.S. external constraint. For instance, everything else equal, a depreciation of the dollar generates a capital gain on U.S. foreign asset holdings, which increases the return on its net foreign portfolio.

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1. These phenomena have been documented in particular in Lane and Milesi-Ferretti (2001) and Lane and Milesi-Ferretti (2004).

As of December 2004, the Bureau of Economic Analysis (BEA) reports a U.S. net foreign asset position of –$2.5 trillion (or 22 percent of gross domestic product [GDP]), with assets representing $10 trillion (85 percent of GDP) and liabilities $12.5 trillion (107 percent of GDP). Almost all U.S. foreign liabilities are in dollars, whereas approximately 70 percent of U.S. foreign assets are in foreign currencies. Hence a 10 percent depreciation of the dollar represents, ceteris paribus, a transfer of around 5.9 percent of U.S. GDP from the rest of the world to the United States. For comparison, the trade deficit on goods and services was 5.3 percent of GDP in 2004. These capital gains can therefore be very large.[2]

This paper revisits a number of historical stylized facts about the U.S. external adjustment in light of the new data that we have put together.[3] Of particular interest to us is the idea that the United States's unique position in the international monetary order allows it to enjoy an "exorbitant privilege," in the famous words attributed to de Gaulle in 1965.[4] The specific definition of this *exorbitant privilege* has varied over time and with different commentators. For some, it refers to the fact that the U.S.'s income balance has remained positive all these years, despite mounting net liabilities. For others—and this was the interpretation favored by the French in the 1960s—the exorbitant privilege referred to the ability of the United States to run large direct investment surpluses, ultimately financed by the issuance of dollars held sometimes involuntarily by foreign central banks. This particular interpretation views the United States as playing a pivotal role at the center of the world financial system. In the words of Kindleberger (1965) and Despres, Kindleberger, and Salant (1966), the United States was the "Banker of the World," "lending mostly at long and intermediate terms, and borrowing short" thereby supplying loans and investment funds to foreign enterprises and liquidity to foreign asset holders. Since then, the United States has become an increasingly leveraged financial intermediary as world capital markets have become more and more integrated. Hence, a more accurate description of the United States in the last decade may be one of the "Venture Capitalist of the World," issuing short-term and fixed-income liabilities and investing primarily in equity and direct investment abroad. While the latter interpretation of the exorbitant privilege is, of course, consistent with the former, it is conceptually distinct. The United States's excess return of its external assets over liabilities may come from a return effect (higher returns within each asset class) or

2. See also Tille (2003, 2004).

3. We present in appendix A a line-by-line description of the database we use in this paper and in Gourinchas and Rey (2005).

4. In fact, the quote is nowhere to be found in de Gaulle's speeches. It is actually Valéry Giscard d'Estaing, Finance Minister at the time, who spoke of an "exorbitant privilege" in February 1965. He was then cited by Raymond Aron in *Le Figaro,* February 16, 1965, from *Les Articles du Figaro, vol. II* (Paris: Editions de Fallois, 1994), 1475. We thank Andrew Moravcsik and Georges-Henri Soutou for this information.

from a composition effect (the structure of the balance sheet is asymmetric with more low yielding assets on the liability side). One contribution of this paper is to present a break up of the exorbitant privilege into these return and composition effects over the whole postwar period.

We begin by presenting our estimates of the net foreign asset position of the United States between 1952 and 2004 in section 1.2. In particular, we compare our results to the official numbers. Section 1.3 provides a first historical measure of the exorbitant privilege by estimating yields and total returns on the net foreign assets of the United States between 1952 and now. We show that our data support the notion that the United States enjoyed a substantial premium on its gross assets relative to its liabilities and that this premium has been increasing since the collapse of the Bretton Woods fixed exchange rate system.

Section 1.4 studies the evolution of the composition of gross assets and liabilities and relates it to the role of the United States as the world venture capitalist. We find that a nonnegligible fraction of the exorbitant privilege comes from the risk premium that the United States enjoys, even though the major part of the exorbitant privilege comes from return differentials between U.S. and foreign assets within each class of assets. Finally, in section 1.5, we present simple estimates of the amount of depreciation of the U.S. dollar needed to wipe out given amounts of U.S. external debt via both the valuation and trade channels.

1.2 Measurement of the U.S. External Asset Position

1.2.1 The U.S. Net Foreign Asset Position Reconstructed: 1952–2004

We first set the stage with a comparison of various estimates of the U.S. net foreign asset position. The methodological details on the construction of our own estimates are provided in appendix A. Briefly, the main drawback of the official series is that they generally measure the U.S. external investment position not at current prices but at historical cost. It is well known, for example, that the current account is measured at historical cost. This implies that the official statistics are inappropriate to study valuation effects. Hence, we construct market value estimates of each asset and liability category from 1952 by combining data from the BEA's international investment positions data (after 1980) and data on international transactions from both the BEA and the Flow of Funds. We compute dollar capital gains or losses for each asset category (equity, bonds, foreign direct investment [FDI], bank loans and trade credit) and apply those valuation adjustments to our international investment position series. We use available Treasury benchmark surveys on external asset and liabilities to form estimates of the currency and country weights in the U.S. investment portfolio. Our constructed series give, therefore, a quarterly account of

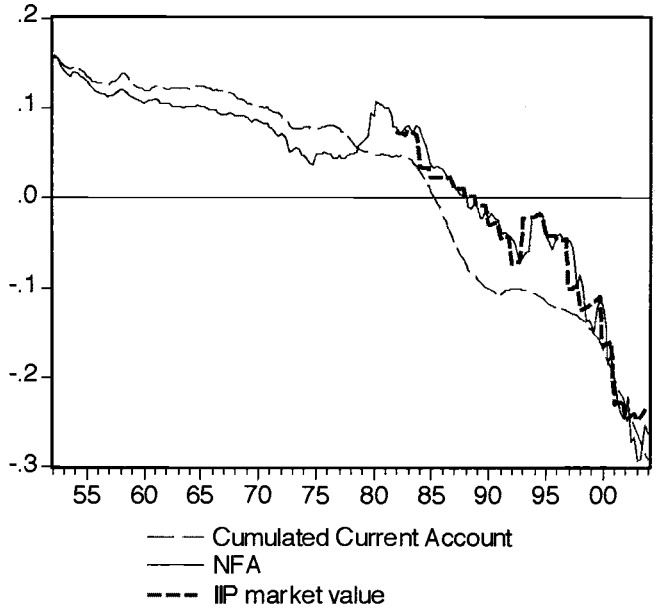

Fig. 1.1 U.S. net foreign assets, relative to GDP, 1952:1 to 2004:1
Sources: BEA (http://www.bea.gov) and authors' calculations.

U.S. external wealth dynamics at market prices since 1952:1, disaggregated by asset class.

Figure 1.1 reports three different measures of the U.S. net foreign asset position. We denote by NFA_t our constructed net foreign asset position at the end of period t. Figure 1.1 also reports the naive estimate obtained from cumulating current accounts,[5] as well as the BEA's estimates of the U.S. international investment position (IIP) at market value since 1982.

The three series exhibit a striking common trend: the United States went from a sizable creditor position in 1952 (15 percent of GDP) to a large debtor position (–26 percent of GDP) by the end of the period. According to our data, the United States became a net debtor around 1988, which is roughly similar to the official data with valuation effects (1989). Our NFA series is also reassuringly close to the BEA's IIP estimates available only after 1982, in spite of a different approach to valuing direct investment positions.

While the general tendency of the three measures is the same, figure 1.1 reveals that valuation components have an important influence on the

5. Starting from our estimate of NFA in 1952:1. The current account data are from the National Income and Products Accounts (NIPA, table 4.1) since the balance-of-payments (BOP) data only extend back to 1960. There are small differences between the BOP and the NIPA definitions of the current account. These are largely irrelevant for our analysis.

Fig. 1.2 Net valuation component (relative to GDP)

short- to medium-run dynamics of the U.S. external position. We define the *valuation component* as the difference between our measure (NFA) and the cumulated current account series (Σ CA). It reflects exactly the cumulated value of the capital gains and exchange rate adjustments omitted from the current account measure. Figure 1.2 reports this net valuation component as a share of GDP and highlights a number of interesting facts.

First, during the Bretton Woods period and until 1977, the cumulated current account measure tended to overestimate the NFA position of the United States, by up to 4 percent of GDP. Since then, valuation effects worked in favor of the U.S., and reached a peak of 9.4 percent of GDP in 1994:3. The figure reveals a striking correlation: the valuation component was on average negative while the United States was a net creditor and positive after the United States became a net debtor. The startling implication is that *over the entire period,* and with the exception of a few years, the valuation component worked to *stabilize* the net foreign asset position of the United States and offset current account movements.

Second, the evolution of the valuation component is consistent with the broad evolutions of the U.S. dollar. The period of the dollar depreciation after 1985 as well as the more recent depreciation can be clearly identified on the figure, associated with an increase in the valuation component. Conversely, between 1995 and 2003 the valuation component largely disappeared while the dollar appreciated.

Third, there are a few important exceptions to that pattern. Most dramatically, we observe a dramatic turnaround in the valuation component in 1977 to 1980. Between 1976:4 and 1980:2, the valuation components

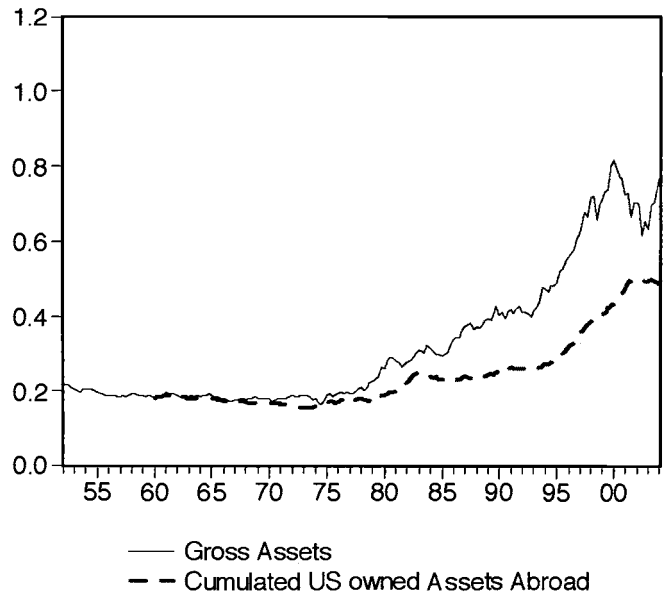

Fig. 1.3 Gross assets position and cumulated U.S.-owned foreign assets (relative to GDP)

shifts from –3.6 percent to 5.9 percent of GDP, a total shift representing about 10 percent of GDP. During that period, the returns on U.S. gross foreign assets far exceeded the returns on U.S. gross liabilities. This was in large part due to low returns on U.S. equities. The U.S. stock market dramatically underperformed the foreign stock markets over that period, which substantially increased the value of U.S. net foreign assets.[6]

1.2.2 Gross External Positions and Valuations

One additional benefit of reconstructing the net foreign asset position from the underlying disaggregated data is that we can document the time evolution of the gross assets and liabilities separately. Figures 1.3 and 1.4 report the naive construction of gross asset and liability positions, starting in 1960 and cumulating the corresponding balance of payment flows, together with our estimates. The difference between the two series provides a direct estimate of the valuation component on the underlying gross positions (figure 1.5 reports the two valuation components side by side).

We observe first that the share of U.S. gross assets in GDP remained

6. During this period, the annual dollar capital gain on the U.S. stock market averaged only 2.2 percent, while the same return was 31.7 percent on the U.K. stock market and 18.3 percent on the Japanese stock market. These two countries accounted for 38 percent of U.S. equity assets (see table 1B.2 in appendix B).

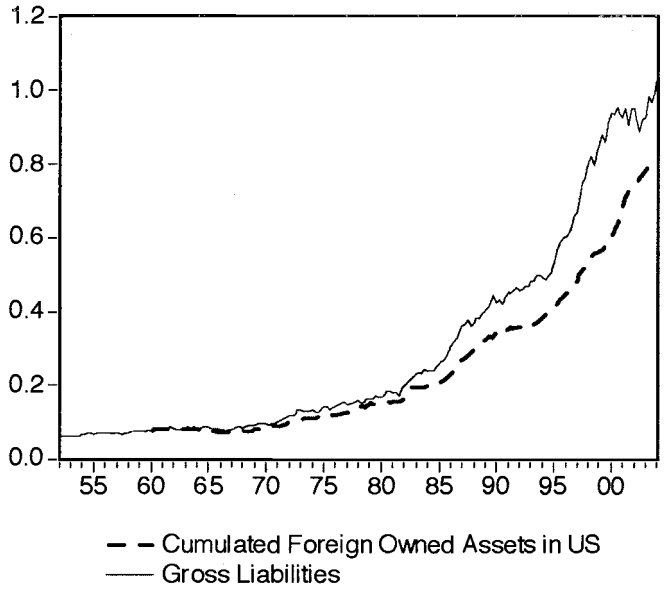

Fig. 1.4 Gross liability position and cumulated foreign-owned U.S. assets (relative to GDP)

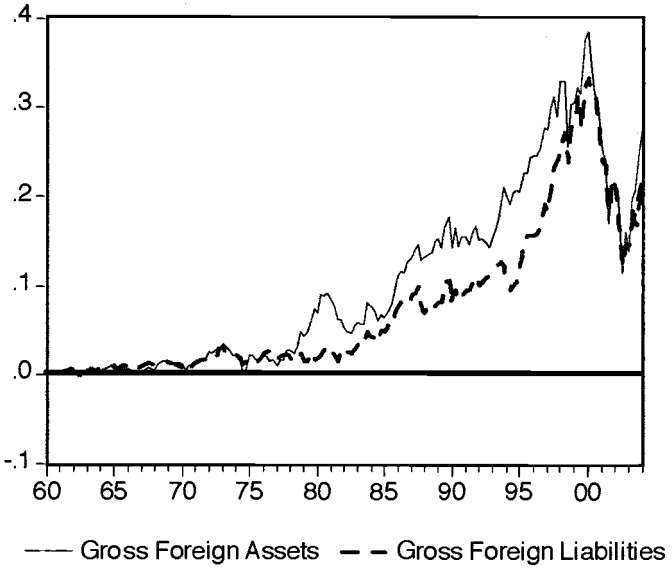

Fig. 1.5 Valuation effects, gross foreign assets, and gross foreign liabilities (relative to GDP)

stable or even slightly declining between 1952 and 1975 (figure 1.3). Starting in 1975, it has grown rapidly, reaching 80 percent of GDP in 2000. The share of U.S. gross liabilities in GDP, on the other hand, has increased throughout the postwar period, with a sharp acceleration post-1980 (figure 1.4).

The valuation component on the gross positions is an order of magnitude larger than on the net positions. It accounts for 45 percent of gross assets and 30 percent of gross liabilities in 2000 and around 35 percent of GDP. The evolution of that component reflects the evolution of asset returns. Both valuation components grew rapidly over time until 2000 (figure 1.5). Then they declined precipitously as asset prices around the world collapsed.

1.3 The Exorbitant Privilege Part I: Yields and Total Returns

Now that the stage is set, we begin our analysis of the external balance of the United States. We start with the famous observation that the large increase in U.S. net liabilities to the rest of the world has not been accompanied by a commensurate increase in net income payments. It is well known that the income account has remained positive for the United States despite gross liabilities exceeding assets by approximately 34 percent in 2004. In other words, the income generated by the (smaller) U.S.-owned assets abroad is larger than the income paid on the (larger) foreign-owned assets in the United States. This observation is sometimes taken as evidence that the United States enjoys an exorbitant privilege in the sense that it can borrow at a discount on world financial markets. Figure 1.6 presents the annual yield on the NFA as a percent of GDP, since 1960. Despite a substantial drop in the mid 1980s, it remained positive throughout the period.

One should recognize, however, that the yield represents only one component of the total return on U.S. gross external assets and liabilities. The other component is the dollar capital gain or loss due to asset price and currency fluctuations. Figure 1.6 reports our estimate of the total annual return on the net foreign asset portfolio as a percent of GDP.

The first striking observation is the volatility of total returns relative to yields, especially after 1975. Total returns fluctuate between –3.4 and 6.4 percent of GDP, while the income balance represents between 0.09 and 1.2 percent of GDP (we can see on this figure the large total return between 1976 and 1980 that underlies the turnaround in the valuation component as well as the effect of the depreciation of the dollar after 1985).

Second, total returns can be substantially negative. The annual return (relative to GDP) was indeed negative in all but two years from 1995 to 2001, a period during which the dollar appreciated substantially.

Third, despite this substantial volatility, the average total return on assets and liabilities is consistent with the evidence on yields. Over the sample

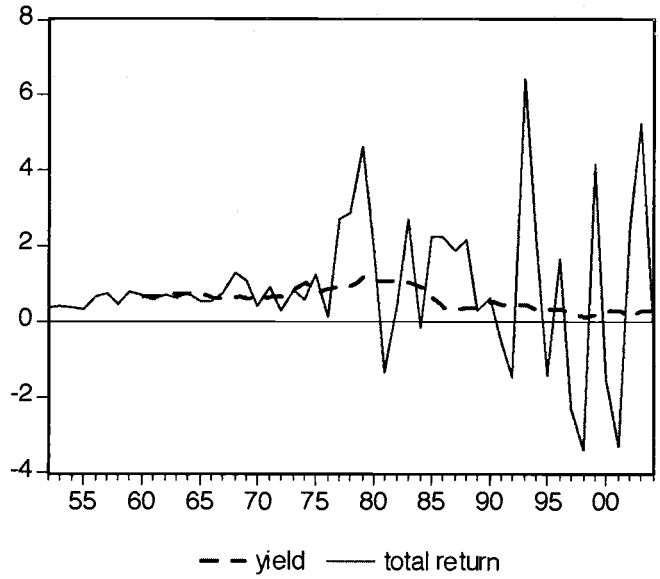

Fig. 1.6 Yield and total return on NFA (in percent, annual rate, relative to GDP)
Sources: U.S. international transactions (BEA; http://www.bea.gov) and authors' calculations.

period, we find that the annualized average real rate of return on gross liabilities (3.61 percent) is substantially smaller than the annualized average real rate of return on gross assets (5.72 percent). The difference, 2.11 percent, is quite considerable.[7]

Moreover, if anything, the puzzle has increased over time. Our estimates indicate that the average total return on assets during the Bretton Woods period (4.04 percent) was only 26 basis points larger than the average total return on gross liabilities (3.78 percent). Since 1973, however, the gap has widened enormously. The post-Bretton Woods average asset return is 6.82 percent, while the corresponding total liability return is only 3.50 percent. The excess return reaches an astonishing 3.32 percent (see figure 1.7). Hence, the exorbitant privilege puzzle is reinforced when one looks at total returns.

We can use these historical averages to assess the tipping point beyond which we should expect the United States to pay more on its gross liabilities than it earns on its gross assets. The calculation, first proposed by Obstfeld and Taylor (2005), goes as follows. The tipping point is defined

7. These returns are reported in table 1.1. For a study disentangling the effect of capital gains, investment flows and trade balance on the accumulation of net foreign assets of different countries see Lane and Milesi-Ferretti (chap. 2 in this volume).

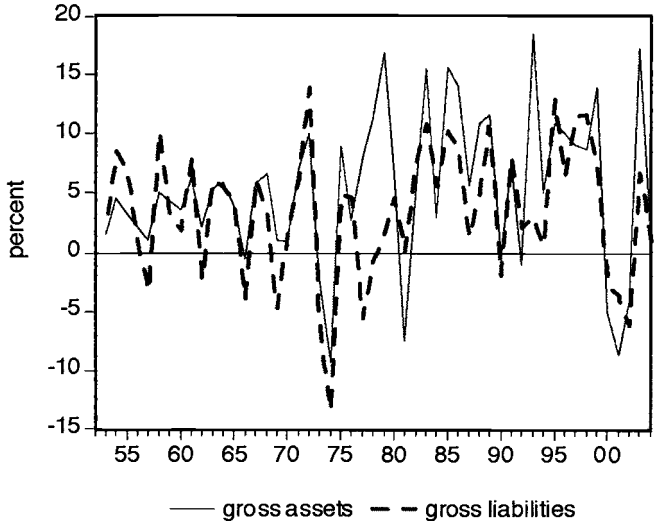

Fig. 1.7 Annual real return on gross assets and gross liabilities (1952–2004)

as that ratio of gross liabilities to gross assets beyond which $\tilde{r}^a A - \tilde{r}^l L$ becomes negative, where $\tilde{r}^a$ (respectively $\tilde{r}^l$) denotes an estimate of the *nominal* average total return on gross assets A (resp. liabilities L).

Using the nominal historical values of $\tilde{r}^a$ and $\tilde{r}^l$, we estimate a tipping point $L/A > \tilde{r}^a/\tilde{r}^l = 1.30$.[8] The implication of the exorbitant privilege is that a 2 percent excess return allows the United States to accumulate debt exceeding its gross assets by 30 percent and yet still be a recipient of positive investment income. Because the exorbitant privilege of the United States has increased over time, the tipping point has also been pushed back substantially. Calculated using the average returns over the Bretton Woods period, we estimate a tipping point of only 1.04. Using the post-Bretton Woods period estimates of returns, the tipping point now reaches an astonishing 1.43.

Interestingly, our estimates of the net foreign asset position of the United States suggest that the leverage ratio L/A has increased steadily over the period from 0.3 in 1952 to 0.73 in 1973, reached 1.09 in 1991 and, finally, 1.34 in 2004. Hence, the United States may be getting close to the position where it will have to start making net payments to the rest of the world.

Of course, this simple computation ignores the endogeneity of the returns on gross assets and liabilities. Reaching the tipping point where the

8. The values of the nominal returns on assets and liabilities $\tilde{r}^a$ and $\tilde{r}^l$ are, respectively, for the whole sample 9.15 percent and 7.04 percent; for the Bretton Woods period, 6.32 percent and 6.06 percent; for the post-Bretton Woods period, 11.00 percent and 7.69 percent.

United States for the first time since the second World War ceases to have a positive net return on its net assets could be seen by the market as a significant blow to the credibility of the dollar. In a context where the external net worth of the United States is negative and the return on its net assets also turns negative, market participants could start demanding a higher premium on their dollar assets, thereby setting off unstable dynamics. This may also affect the structure of market participants' borrowing: for example, they could start to coordinate on another international currency, such as the euro, to provide liquidity. They could also abandon short-term, low-yield U.S. securities such as T-Bills for higher yielding assets (equity, FDI).[9] This would considerably change the external balance sheet of the United States and narrow the gap between the total return on U.S. assets and liabilities, further deepening the adjustment problem. As the gap between the return on gross assets and gross liabilities declines, the net interest burden would rise rapidly, setting off further moves away from U.S. assets. While this is a possible scenario, we stress that understanding the dynamics of the composition of international portfolios, asset returns, and the exchange rate requires a dynamic general equilibrium model of the world economy, which is well beyond the scope of this paper.

1.4 The Exorbitant Privilege Part II: The United States as World Venture Capitalist

1.4.1 Composition of the Gross Asset and Liability Position

We now turn our attention to the structure of gross assets and liabilities and its evolution over time. This structure is particularly interesting in the case of the United States, which has been the center country of the Bretton Woods system since 1944 and has remained the most important financial center in the world, even after the collapse of the fixed exchange rate regime.

The United States has succeeded the United Kingdom as the "Banker of the World" and the issuer of the main international currency. This means, in particular, being able to borrow short (foreigners are willing to purchase liquid dollar assets) and lend long (the United States supplies long-term loans and investment funds to foreign enterprises). Just like a bank, the United States can extract an intermediation margin, given by the (positive) return differential between external assets and liabilities. During the whole period, U.S. assets have shifted more and more out of long-term bank loans toward FDI and, since the 1990s, toward FDI and equity. At the same time, its liabilities have remained dominated by bank loans, trade

9. Witness the recent attempts by China to move away from U.S. treasuries and into direct investment (Maytag, Unocal, IBM).

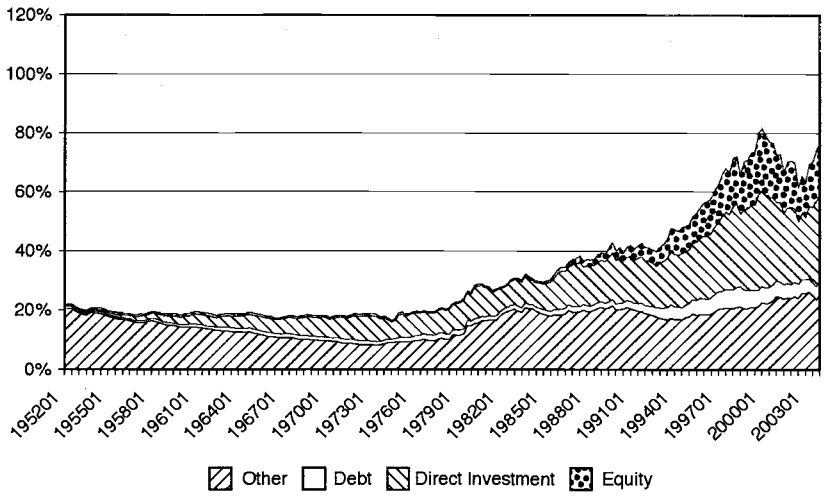

Fig. 1.8 U.S. gross external asset (share of GDP), 1952–2004
Source: Authors' calculations.

credit, and debt, that is, low-yield safe assets. Hence, the U.S. balance sheet resembles increasingly one of a venture capitalist with high-return risky investments on the asset side. Furthermore, its leverage ratio has increased sizably over time.

The currency denomination of securities is also rather specific. The issuer of the international currency is able to denominate its entire stock of liabilities in dollars, thereby shifting the exchange rate exposure to the rest of the world. This key characteristic of the external balance sheet of the United States, shared to some extent by other developed countries, is instrumental in the stabilization of the external accounts of these countries. As pointed out in Gourinchas and Rey (2005), a depreciation of the U.S. dollar has two beneficial effects on the external position. It helps to increase net exports (*trade adjustment channel*), and it also increases the dollar value of U.S. assets (*valuation channel*).

Figures 1.8 and 1.9 present our estimates of the ratio of each asset class to GDP. Several interesting episodes can be read from these graphs: (a) the petrodollar recycling in the 1970s until the Latin American debt crisis of 1982 (see the large increase in "other assets"—mostly bank loans over that period—followed by a stagnation and a decrease); (b) the erosion of the home bias in equity portfolios at the end of the 1990s (particularly spectacular in the U.S. asset portfolio); (c) the bursting of the equity market bubble in 2000 to 2001 (which affects both the U.S. gross assets and liabilities).

During the 1960s, the United States was running moderate current account surpluses but was investing sizable amounts abroad in the form of FDI. The share of FDI steadily increased between 1952 and 1973, from

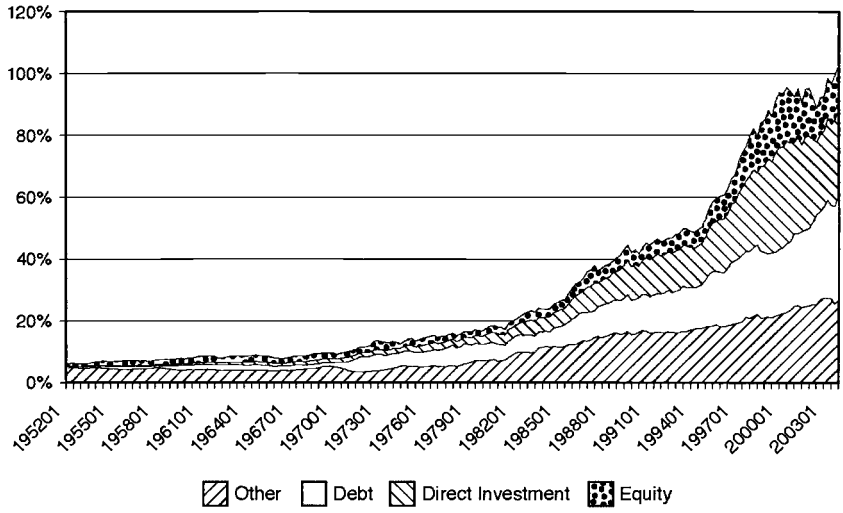

Fig. 1.9 U.S. gross external liabilities (share of GDP), 1952–2004
Source: Authors' calculations.

zero to 40 percent of gross external asset positions. On February 4, 1965, the French president de Gaulle famously complained in a press conference at the Elysée Palace that an increase in the U.S. money supply was leading to increased capital outflows from the United States and "for some countries to a sort of expropriation of their enterprises." For de Gaulle, the role of the dollar as the international currency meant that the United States could borrow money from the rest of the world free of charge. By printing dollars and using them to purchase foreign companies, it was claimed, the United States was abusing its hegemonic position at the center of the international monetary system. But these long-term capital outflows led to a continuous drain of the U.S. gold reserves, despite the numerous and futile attempts by the United States to limit the size of the balance of payments deficit. This is visible in figure 1.8 where a sharp increase in FDI assets is matched almost one for one by a decrease in other assets. As figure 1.10 documents, a substantial share of the decline in other assets was due to the drain on U.S. gold reserves. Successive U.S. administrations used various expedients such as the interest equalization tax, voluntary restraint programs, restrictions on tourism, offset agreements, and sheer political pressure on foreign central banks (especially the Bundesbank and the Bank of Japan) to prevent dollars held abroad from being converted into gold. Despite these interventions, the credibility of the convertibility of the dollar waned over time, and the tensions on the foreign exchange markets culminated in 1970 and 1972 to 1973, with successive runs on the dollar that triggered the collapse of the fixed exchange rate system of Bretton Woods.

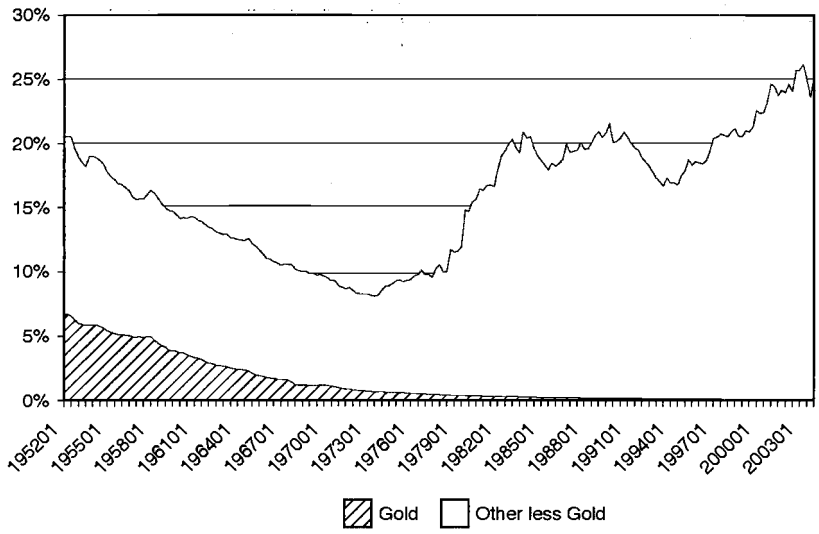

Fig. 1.10 U.S. other gross assets and gold (share of GDP), 1952–2004

The abandonment of gold parity, however, did not lead to the demise of the dollar as the main international currency.[10] The United States has remained the world liquidity provider ever since. As shown in figure 1.11, the share of liquid liabilities (defined as debt, trade credits, and bank loans) in total U.S. liabilities has gone down only slightly, from roughly 70 percent in 1973 to around 60 percent in 2004 (the decrease of the end of the 1990s is due to the equity bubble). This constitutes a remarkably high share of total liabilities. It reflects the high demand from the rest of the world for liquid U.S. securities as a transaction medium, reserve or store of value, both during Bretton Woods and after the collapse of the fixed exchange rate regime.

Over the same period, the share of high-yield risky investment increased considerably. From a conservative world banker, the United States became a bold world venture capitalist. The share of risky assets in total assets increased continuously during the Bretton Woods era, as growing FDI outflows led to a decrease in gold reserves. This gold drain was stopped in 1973 once the Nixon Administration decided to end the convertibility of the dollar. After the emerging market debt crisis of the 1980s and the deregulation of equity markets of the 1990s, the growth in FDI and portfolio equity flows gathered pace so that by 2004, the share of risky assets in the total asset portfolio of the United States reached about 60 percent, against

10. See Portes and Rey (1998) for a review of the dominant position of the U.S. dollar in the international monetary system.

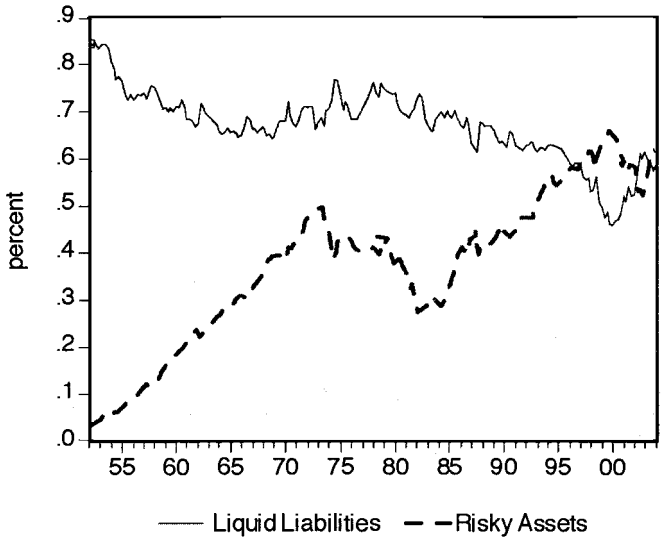

Fig. 1.11 Share of risky assets in all assets and share of liquid liabilities in all liabilities (1952–2004)

roughly 50 percent in 1973. Hence the collapse of Bretton Woods has not deprived the United States of its fundamental role as world liquidity provider. This upward trend in the share of high-yielding risky assets is consistent with the increase over time of the (positive) return differential between assets and liabilities, as documented in the previous section.[11]

1.4.2 Total Returns

The yields that the United States receives on its external assets are higher that the yields that it pays on its liabilities. In the previous section, we showed that this is also true for the aggregate total returns on the net foreign asset position of the United States. We now look at total returns on gross assets and liabilities and on each class of assets independently. Table 1.1 presents estimates of average total real annual returns on the different subcomponents of assets and liabilities for the whole sample, the Bretton Woods period and the floating exchange rate regime.[12] We denote by r^a, the return on gross assets; r^l, the return on gross liabilities; r^{ae}, the return on equities; r^{ad}, the return on debt; r^{af}, the return on FDI; and r^{ao}, the return on others (all returns are real). Symmetrically, r^{le} denotes the return on foreigners' holdings of U.S. equity (in other words, U.S. equity liabilities); r^{lf},

11. It would be of great interest to compare the balance sheet of the United States to those of other developed countries more precisely. This is the undertaking of Obstfeld and Taylor (2005).

12. See appendix B for details on how we computed the returns.

Table 1.1 **Descriptive statistics: Average quarterly total real returns (annualized; %)**

Total real returns	r^a	r^l	r^{ae}	r^{af}	r^{ad}	r^{ao}	r^{le}	r^{lf}	r^{ld}	r^{lo}
A. Summary statistics (1952:1–2004:1)										
Mean	5.72	3.61	13.68	9.57	4.35	3.43	10.28	9.56	0.51	1.19
Standard deviation	11.98	10.49	39.76	23.10	15.94	9.33	36.70	24.18	13.09	4.91
Sharpe ratio	47.73	34.40	34.39	41.43	27.31	36.78	28.02	39.56	3.87	24.29
B. Summary statistics (1952:1–1973:1)										
Mean	4.04	3.78	10.83	9.44	4.82	2.40	11.59	9.96	0.80	1.24
Standard deviation	4.79	9.60	36.83	16.32	17.67	1.75	36.29	21.33	10.66	1.32
Sharpe ratio	84.51	39.34	29.41	57.85	27.29	137.10	31.93	46.68	7.47	94.63
C. Summary statistics (1973:1–2004:1)										
Mean	6.82	3.50	15.54	9.65	4.05	4.11	9.43	9.31	0.32	1.16
Standard deviation	18.84	11.07	41.61	26.69	14.77	11.89	37.09	25.96	14.50	6.24
Sharpe ratio	45.91	31.60	37.35	36.16	27.40	34.54	25.43	35.85	2.19	18.58

the return on FDI liability; r^{ld} and r^{lo}, the return on debt and other liability, respectively.

Several features are noteworthy. First, as we already mentioned, over the whole period, the United States gained a sizable excess return in real terms on assets over liabilities (2.11 percent = 5.72 percent – 3.61 percent). This excess return is especially large during the floating exchange rate period (between 1973 and 2004, it is equal to 3.32 percent in real terms). Considering each asset in turn, the United States earns an average of 340 basis points (bp) excess return yearly on its equity assets (r^{ae} versus r^{le}), 384 bp on its debt (r^{ad} versus r^{ld}) and 214 bp on its bank loan and trade credits (r^{ao} versus r^{lo}). By contrast, the United States does not seem to enjoy sizable superior returns on its direct investment abroad. The excess return is only 1 bp (r^{af} versus r^{lf}).

Second, there is a sizable gap between returns on the safe assets (debt and others) and the returns on risky assets (equity and FDI). During the 1950s and the 1960s, foreigners earned a very low real return on U.S. debt (0.80 percent, on average): de Gaulle was not that far off when he was talking of the U.S. debt being free of charge. With the advent of the floating exchange rate regime, the real returns on debt became even lower (0.32 percent on average).

Third, the volatility of all returns has increased significantly after the collapse of Bretton Woods so that the Sharpe ratios of assets have in general declined during the floating exchange rate regime.

1.4.3 A Break Up of Total Returns

The large positive excess real return of gross assets over gross liabilities can be broken up into a *composition* effect and a *return* effect. The U.S. lia-

bilities are dominated by low-yield safe securities, whereas U.S. assets contain a large (and increasing over time) share of FDI and equity. The United States can be therefore characterized as a very leveraged investor, which is increasingly shorting low-yield securities to buy high-yield investments. This is the composition effect. But there is also a return effect. Within each class of assets, the preceding discussion showed that the United States earned higher returns on its assets than on its liabilities. This return effect represents the other dimension of the exorbitant privilege and could occur, in particular, because of a liquidity discount for the issuer of the international currency as discussed in Portes and Rey (1998). Formally, we can decompose the return on assets r^a and the return on liabilities r^l as

$$r^a = \mu^{ae} r^{ae} + \mu^{ad} r^{ad} + \mu^{af} r^{af} + \mu^{ao} r^{ao}$$

$$r^l = \mu^{le} r^{le} + \mu^{ld} r^{ld} + \mu^{lf} r^{lf} + \mu^{al} r^{lo},$$

where μ^{ae}, μ^{af}, μ^{ao}, and μ^{ad} are the weights on equity, FDI, other foreign assets (bank loans and trade credit) and debt in total assets. Notations for the liability side are defined in an entirely symmetric fashion.

We can then write the expected excess return of assets over liabilities as

$$\begin{aligned} E(r^a - r^l) = {} & E[\overline{\mu}^o (r^{ao} - r^{lo})] + E[\overline{\mu}^d (r^{ad} - r^{ld})] + E[\overline{\mu}^e (r^{ae} - r^{le})] \\ & + E[\overline{\mu}^f (r^{af} - r^{lf})] + E[(\mu^{ad} - \mu^{ld})(\overline{r}^d - \overline{r}^o)] \\ & + E[(\mu^{ae} - \mu^{le})(\overline{r}^e - \overline{r}^o)] + E[(\mu^{af} - \mu^{lf})(\overline{r}^f - \overline{r}^o)], \end{aligned}$$

where E denotes the expectation sign, $\overline{\mu}^i = (\mu^{ai} + \mu^{li})/2$ is the average portfolio share for asset class i and $\overline{r}^i = (r^{ai} + r^{li})/2$ is the average return on asset class i. The first four terms represent the *return* effect. They denote the average excess return on external assets relative to liabilities within each class of assets. This return effect is zero if the return is the same within each asset class ($r^{ai} = r^{li}$).

The last three terms represent the *composition* effect. It quantifies the difference in weights between assets and liabilities for equity, FDI, and debt. The composition effect is zero if U.S. external assets have the same composition as U.S. external liabilities ($\mu^{ai} = \mu^{li}$).[13]

In table 1.2, we analyze the relative importance of the composition and return effects in explaining the high return enjoyed by the United States on its net foreign asset position. All the returns are in percentage terms.

We first observe that the return effect plays a dominant part in explaining the excess return of the U.S. net foreign asset portfolio. We find that it accounts for 1.97 percent of the 2.11 percent total excess return over the entire sample, 1.23 percent during the Bretton Woods period, and 2.45 percent since 1973. The return effect is especially significant for the short-term

13. The shares μ^{ai} and μ^{li} are time-varying. Hence, the overall excess return depends also upon the covariance between asset returns and shares.

Table 1.2 **Break-up of total real returns in a return and a composition effect**

	Return effect					Composition effect				Total
Period	Other (1)	Debt (2)	Equity (3)	FDI (4)	Total (1) to (4)	Debt (5)	Equity (6)	FDI (7)	Total (5) to (7)	$r^a - r^l$ (1) to (7)
1952–2004	1.00	0.56	0.35	0.06	1.97	0.03	–0.59	0.70	0.14	2.11
1952–1973	0.69	0.38	0.04	0.12	1.23	–0.23	–1.46	0.73	–0.96	0.27
1973–2004	1.21	0.68	0.55	0.01	2.45	0.20	–0.02	0.68	0.86	3.32

liquid assets (other and debt) where it accounts for about half of the total excess return (1.56 percent of the total 2.11 percent). It is smaller in the other asset classes, although it remains positive for all asset classes on all subsamples.

The composition effect plays a smaller role over the entire sample (0.14 percent), but its relevance has increased significantly over time, from –0.96 percent before 1973 to 0.86 percent since then. Hence, between a quarter and a third of the current excess return (3.32 percent) can be explained by the asymmetry in the U.S. external balance sheet and the fact that the United States earns an equity premium. Looking at the subcomponents of this composition effect, we find that most of it arises from the asymmetry in direct investment (0.70 percent). The increased contribution of the composition term, however, reflects mostly the increased symmetry in equity positions (from –1.46 percent to –0.02 percent), reflecting the decrease of home bias in U.S. portfolios (the share of foreign equity in U.S. portfolios has risen over time).

1.5 Exchange Rate Adjustment

Current external imbalances can be compensated either by future trade surpluses or by future favorable returns on the net foreign asset position of the United States. In this section, we perform a simple exercise, meant to illustrate the joint capacity of the *valuation channel* and of the more traditional *trade channel* to stabilize the external accounts of the United States. Gourinchas and Rey (2005) show that the valuation channel operates at short to medium horizons, while the trade channel operates in the medium to long run. Historically, the valuation channel has contributed around 30 percent of the process of international adjustment.

The exercise we perform in this section should be taken with a lot of caution and is meant to be illustrative as we do not have a structural model of the U.S. and foreign economies. The elasticities presented in table 1.3 in particular are dependent on the underlying model of the economy and of the shocks.

Table 1.3 **Elasticities of asset and liability returns to exchange rate changes**

	Horizon h (years)				Horizon h (years)		
$h =$	1	3	5	$h =$	1	3	5
β_a^h	0.28	0.26	0.19	β_l^h	–0.08	–0.15	–0.14
Standard error	(0.10)	(0.09)	(0.08)	Standard error	(0.08)	(0.09)	(0.09)
$\bar{r}_h^a$ (annualized)	6.64%	6.96%	7.52%	$\bar{r}_h^l$ (annualized)	3.6%	4.04%	4.44%

1.5.1 Theory

We start from the law of accumulation of foreign assets between t and $t + 1$:

$$\text{NFA}_{t+1} \equiv R_{t+1}\text{NFA}_t + \text{NX}_{t+1}, \tag{1}$$

where NX_t represents net exports, defined as the difference between exports X_t and imports M_t and net foreign assets NFA_t is defined as the difference between gross foreign assets A_t and gross foreign liabilities L_t measured in domestic currency at the end of period t. Equation (1) states that the net foreign position increases with net exports and with the total return on the net foreign asset portfolio R_{t+1}. Dividing through by U.S. GDP Y_t, and using lowercase letters to denote normalized variables (so that $\text{nfa}_t = \text{NFA}_t/Y_t$), we obtain

$$\text{nfa}_{t+1} = \frac{R_{t+1}}{g_{t+1}}\,\text{nfa}_t + \text{nx}_{t+1}, \tag{2}$$

where g_{t+1} represents the growth rate of output between t and $t + 1$.

Net exports and the return on the net foreign asset positions are both affected by movements in the exchange rate. In the case of the United States, a dollar depreciation helps on both counts. It stimulates net exports and it increases the dollar value of U.S. assets, thereby improving the return on the net foreign asset position. This is because most U.S. liabilities are in dollars, whereas a share of U.S. assets are in foreign currency.[14] We estimate the magnitude of a devaluation needed, ceteris paribus, for the U.S. net foreign debt and the U.S. net exports to satisfy the following long-run equilibrium (steady state) condition, obtained from equation (1):

$$\text{nx} = \left(1 - \frac{R}{g}\right)\text{nfa}, \tag{3}$$

where variables without time subscript denote steady state values. Numerically, we equate g to the historical average of real GDP growth (1.033 per

14. In contrast, for an emerging market with dollarized liabilities, a depreciation will be destabilizing.

year in gross terms). R is the steady-state rate of return on the net foreign asset position. From Gourinchas and Rey (2005), we know that $R = g/\rho$, where ρ is a growth-adjusted discount factor, a function of steady state weights on exports, imports, assets, and liabilities. Empirically, we assume that $\rho = 0.95$, which implies that $R = 1.033/0.95 = 1.0874$ (the net steady-state return on the net foreign asset position is therefore equal to 8.74 percent). Given these estimates, we find a long-run ratio of net exports to net foreign assets equal to $\text{nx/nfa} = 1 - R/g = -5.26\%$.

Next, we need to quantify the effect of an exchange rate depreciation on net exports and on the net foreign asset portfolio return. Estimates in the literature imply that a 1 percent increase in the ratio of net exports to GDP requires a depreciation of 11 to 20 percent of the exchange rate (see Blanchard, Giavazzi, and Sa 2005). We pick two estimates: a middle range estimate of 15 percent and a low estimate of 10 percent. Hence, we assume

$$\text{dnx} = \eta \frac{de}{e}, \tag{4}$$

where η is taken to be 1/15 or 1/10.

We now assess the effect of a change in the exchange rate on the first term on the right-hand side of (2). Using the definition of R_{t+1}, we can write

$$R_{t+1}\text{nfa}_t = r^a_{t+1} a_t - r^l_{t+1} l_t.$$

In the absence of a general equilibrium model of portfolio allocation and equilibrium returns, we make the assumption that the asset composition of the net foreign asset position remains constant relative to GDP over the period considered. Hence, the response of the net foreign asset position to changes in the exchange rate is solely determined by the response of the returns on assets and liabilities to exchange rate changes:

$$dR_{t+1}\text{nfa}_t = dr^a_{t+1} a_t - dr^l_{t+1} l_t$$

We use historical data of the floating exchange rate period to estimate the elasticity of the dollar returns on gross assets and liabilities to the exchange rate for a given horizon h. To do so, we estimate regressions of the form:

$$r^a_{t,h} = \bar{r}^a_h + \beta^h_a \frac{de_{t,h}}{e_{t,h}}$$

$$r^l_{t,h} = \bar{r}^b_h + \beta^h_l \frac{de_{t,h}}{e_{t,h}},$$

where $r^g_{t,h}$ denotes the annualized net returns on gross assets and $r^l_{t,h}$ the annualized net return on gross liabilities at horizon h, while $de_{t,h}/e_{t,h}$ is the annualized rate of depreciation between t and $t + h$. These regressions use quarterly data for the 1973 to 2004 sample. The results are reported in table

1.3, for horizons between one and five years, with standard errors in parentheses.

We find that depreciations are associated with significantly larger returns on gross assets and (marginally significantly) lower returns on gross liabilities. This indicates potentially powerful valuation effects.

Given these (admittedly) reduced-form relations, we can now estimate the magnitude of the depreciation needed for the United States to satisfy the steady state relation linking its net foreign asset position to its net exports within an horizon of h years. To do so, we start by w riting the accumulation equation (2) between t and $t + h$:

$$\mathrm{nfa}_{t+h} = \prod_{j=1}^{h}\left(\frac{R_{t+j}}{g_{t+j}}\right)\mathrm{nfa}_t + \sum_{j=1}^{h}\mathrm{nx}_{t+j}\prod_{i=j}^{h-1}\left(\frac{R_{t+i+1}}{g_{t+i+1}}\right)$$

Assuming that we reach the steady state in $t + h$, so that $\mathrm{nfa}_{t+h} = \mathrm{nfa}$ and $\mathrm{nx}_{t+h} = \mathrm{nx}$, and assuming that the growth rate of the economy is constant along this transition and equal to g, we obtain[15]

$$\mathrm{nfa} \approx g^{-h}\left[\left(\bar{r}_h^a + \beta_a^h h\frac{de}{e}\right)a_t - \left(\bar{r}_h^l + \beta_l^h h\frac{de}{e}\right)l_t\right] + \mathrm{nx}_t\frac{1-(R/g)^h}{1-R/g} + \eta\frac{de}{e}\sum_{j=1}^{h} j\left(\frac{R}{g}\right)^{h-j}. \tag{5}$$

The first term on the right-hand side reflects the impact of the change in the exchange rate on the net foreign asset position (the valuation effect). The second term represents the cumulated impact of the depreciation on the trade balance (the trade balance effect).

Finally, we observe that in the steady state, $\mathrm{nfa} = \mathrm{nx}/(1 - R/g) = [\mathrm{nx}_t + h\eta de/e]/(1 - R/g)$. Putting everything together, we can solve for the annual depreciation rate that restores the long-run external balance in h years:

$$\frac{de}{e} = \left[\frac{h\eta}{1-\frac{R}{\gamma}} - g^{-h}h(\beta_a^h a_t - \beta_l^h l_t) - \eta\sum_{j=1}^{h} j\left(\frac{R}{g}\right)^{h-j}\right]^{-1} \cdot \left[g^{-h}(\bar{r}_h^a a_t - \bar{r}_h^l l_t) - \mathrm{nx}_t\frac{(R/g)^h}{1-R/g}\right]$$

The required rate of depreciation depends upon the horizon h, the trade elasticity η, the semielasticity of returns to the exchange rate (β_a^h and β_l^h) as well as the initial trade balance (nx_t) and gross foreign asset positions (a_t and l_t).

15. This assumes that the growth rate of the U.S. economy is unaffected by the change in the exchange rate. Obviously, this is a strong assumption.

1.5.2 Numerical Application

We use data from 2004 for the net foreign asset to GDP ratio ($na_t = -26$ percent), the net export to GDP ratio ($nx_t = -4.8$ percent), the ratio of gross assets over GDP ($a_t = 76$ percent), and the ratio of gross liabilities over GDP ($l_t = 103$ percent). Returns and elasticity of returns to exchange rate changes are taken from table 1.3 for the relevant horizon.

Table 1.4 reveals that a return to equilibrium in one year would require an implausible depreciation of 75 percent. Such a large depreciation would turn around the trade balance from –4.8 percent to 0.18 percent. However, the main direct effect of the depreciation would be to wipe out most of the net foreign liabilities of the United States. The long-run net foreign assets would stabilize around –3.3 percent. Of course, it is rather implausible that the asset composition of international portfolios would remain constant in the face of such a major change in relative prices.

Going back to the long-run equilibrium in three years instead would require a depreciation of 26 percent per year, while a return to equilibrium in five years would require a depreciation of 18 percent per year. An extended adjustment period implies that the United States would be running current account deficits—and accumulate foreign debt—for a longer time. This has two implications. First, the long-run value of the net foreign debt remains quite substantial. In fact, we find that if the adjustment takes five years, the net foreign debt will still represent 22 percent of GDP, only slightly down from its current value of 26 percent. Second, this requires a more substantial turnaround in net exports. We find that the trade balance would have to reach a surplus of 0.46 percent each year at a three-year horizon, or 1.15 percent at five years.

A higher elasticity of exports allows for a smaller depreciation of the exchange rate. When $\eta = 1/10$, the depreciation at one year is only 53 percent and drops to 13 percent per year for a five-year adjustment. The equilib-

Table 1.4 **Depreciations required to go to the long-run equilibrium**

	Horizon h (years) =		
Annual depreciation to:	1	3	5
$\eta = 1/15$			
Required depreciation (%)	74.6	26.3	17.8
Long-run trade balance (% of GDP)	0.18	0.46	1.15
Long-run net foreign asset position (% of GDP)	–3.3	–8.7	–21.9
$\eta = 1/10$			
Required depreciation (%)	52.9	18.7	12.6
Long-run trade balance (% of GDP)	0.49	0.82	1.48
Long-run net foreign asset position (% of GDP)	–9.3	–15.6	–28.1

rium trade balance exhibits a larger surplus, and the net foreign asset debt remains comparably larger (28 percent at five years).

Our exercise is very different from Obstfeld and Rogoff (chap. 9 in this volume). They look at the effect of an unexpected drought of capital flows on the exchange rate (unanticipated forced adjustment). Unlike them, we study the effect of expected exchange rate changes on the adjustment process.

There is, of course, no theoretical reason to assume that the U.S. net foreign asset position should go back to its long-run equilibrium in one or three or five years. In Gourinchas and Rey (2005), we base our forecasts of exchange rate depreciation on historical adjustment speeds and predict smaller rates of depreciation. But the type of exercise that we have undertaken here could be seen as estimating the necessary exchange rate depreciation in the event of *exogenous* shocks on capital flows that could force the U.S. net foreign asset position to adjust suddenly.[16]

1.6 Concluding Remarks: Current Issues in Light of the Bretton Woods Debates

The main objective of this paper is to bring new data to bear on the question of the external adjustment process of the United States. We constructed a quarterly data set of U.S. external assets and liabilities at market value going back to 1952. We showed that the United States has always faced a weakened external constraint. In particular, it has consistently been able to borrow on quite favorable terms and earn a significant premium on its provision of global liquidity. Perhaps surprisingly, this ability has strengthened over time, despite the runs on the dollar of the 1970s and the demise of the fixed exchange rate system.

In this context, we find it instructive to revisit the intellectual debates of the 1960s regarding the U.S. balance-of-payments problem. We are certainly not the first ones to point out interesting parallels between the challenges of the Bretton Woods system and the current global imbalances (see Dooley, Folkerts-Landau, and Garber 2003; Eichengreen 2004). Our contribution is merely to point out what our revised estimates of the U.S. external positions have to say about both historical and current debates.

Broadly speaking, we identify three strands of analysis of the current situation with their parallels in the 1960s. The first strand puts the blame squarely on the subordination of U.S. economic policies to domestic objectives, at the expense of external adjustment. In the 1960s, many argued, the United States was unwilling to pursue the tight monetary policy that would

16. We also note that our analysis does not allow us to infer anything regarding the effect of a (possibly large) dollar depreciation on aggregate income. In that respect our analysis is very complementary to Adalet and Eichengreen (chap. 6 in this volume) and to Freund and Warnock (chap. 4 in this volume).

have been required to prevent the drain on gold reserves. Instead, the United States adopted indirect policy initiatives (interest equalization tax, offset agreements, import surcharge) that were designed specifically to free monetary policy from its external constraint. In the current context, this line of thought emphasizes the impact of the recent string of fiscal deficits (Bush tax cuts, military expenditures) on national savings (Roubini and Setser 2004).

Seen in the broader perspective that our data analysis allows, it is not clear that this can be the whole story. Since 1973, and the decoupling of the U.S. dollar from gold, the dollar exchange rates have been largely free to adjust and restore external stability—if need be—through the usual channels of adjustment. Yet what do we observe since 1973? First, a stabilization, even an improvement between 1975 and 1980, where the ratio of net assets to GDP climbs back to its 1960s level (10 percent). But this is followed by an unprecedented slide between 1980 and 2004, from 10 percent to –26 percent of GDP. Looking at the figure, the Bretton Woods era looks like a period of relatively modest balance of payments imbalances.[17] While domestic fiscal and monetary developments certainly play a role, we are struck by the secular decline in net foreign assets across the Reagan combination of fiscal deficits and tight money and the Clinton era of fiscal rectitude and surging asset prices to the current descent into fiscal deficits and lax monetary policy.

A second line of thought emphasized the unique role of the United States as the provider of the main international currency and liquidity. In 1966, Despres, Kindleberger, and Salant argued that the United States was the world banker. It provided safe low-yield assets to world savers with a preference for liquidity. In exchange, U.S. investors, with a lower taste for liquidity, saw investment opportunities in the rest of the world in the form of long-term loans. This line of thought has two modern incarnations. The first variation puts the emphasis on the central banks of developing countries and their incentive to subsidize U.S. consumption by accumulating U.S. treasury bills (Dooley, Folkerts-Landau, and Garber 2003). The second variation is very much in the spirit of the original Despres, Kindleberger, and Salant (1966) analysis. It sees the United States as a provider of safe financial assets to the rest of the world (Bernanke 2005; Cooper 2004). Following the Asian and Russian crisis, the high savings from emerging economies looked for a safe and liquid haven. The U.S. assets, especially treasuries, provided the perfect vehicle. As we show, there is substantial evidence that the United States does indeed perform the functions of a liquidity provider. This is perhaps even more the case since the liberalization

17. This is in part due to the fact that the external constraint manifested itself on a small subset of the overall external balance sheet of the United States, the Official Settlement Balance. The United States experienced a gold drain even though it was running small current account surpluses over that period. But the larger point that the overall external portfolio of the United States did not deteriorate much over that period is still valid.

of financial markets that allow equity and direct investment in emerging economies. From world banker, the United States has become, for all intents and purposes, the world venture capitalist!

Yet that analysis does not imply that the current situation can be maintained indefinitely. In fact, our analysis of the tipping point indicates that while the United States is still some ways away from making net payments on its mounting stock of net liabilities, that moment is approaching. Foreign lenders could decide to stop financing the U.S. external deficit and run away from the dollar, either in favor of another currency such as the euro or, just as dramatically, requiring a risk premium on U.S. liquid assets whose safety could not be guaranteed any longer.[18] In either case, the repercussions could be quite severe, with a decline in the value of the dollar, higher domestic interest rates and yields, and a global recession.

The previous discussion points to a possible instability, even in an international monetary system that lacks a formal anchor. The relevant reference here is Triffin's prescient work on the fundamental instability of the Bretton Woods system (see Triffin 1960). Triffin saw that in a world where the fluctuations in gold supply were dictated by the vagaries of discoveries in South Africa or the destabilizing schemes of Soviet Russia, but in any case unable to grow with world demand for liquidity, the demand for the dollar was bound to eventually exceed the gold reserves of the Federal Reserve. This left the door open for a run on the dollar. Interestingly, the current situation can be seen in a similar light: in a world where the United States can supply the international currency at will and invests it in illiquid assets, it still faces a confidence risk. There could be a run on the dollar not because investors would fear an abandonment of the gold parity, as in the 1970s, but because they would fear a plunge in the dollar exchange rate. In other words, Triffin's analysis does not have to rely on the gold-dollar parity to be relevant. Gold or not, the specter of the Triffin dilemma may still be haunting us!

Appendix A

Detailed Description of the Construction of the International Investment Position for the United States

Overview of Data Issues and Methodology

In order to evaluate the extent and the nature of U.S. external imbalances, one needs an accurate measure of the IIP of the United States. A ma-

18. For a study of the likelihood of the euro replacing the dollar as the main reserve currency, see Chinn and Frankel (chap. 8 in this volume).

jor drawback of the official balance of payments statistics is the absence of valuation in the current account measures. This implies that if one were to simply cumulate the current account to compute the net foreign asset position of the United States, one would get a biased estimate.

Data on the net and gross foreign asset position of the United States is available from two sources: the U.S. Department of Commerce's Bureau of Economic Analysis (BEA) and the Federal Reserve Flows of Funds accounts (FFA) for the rest of the world. The BEA reports annually its *International Investment Position of the United States.* The IIP details gross and net foreign asset positions at the end of the year since 1976. In addition, the BEA reports quarterly flow data in the U.S. International Transactions (USIT) tables since 1960 for some flow series, 1982 for others.[19] The BEA data uses balance-of-payment concepts, in accordance with the IMF's *Balance of Payments Manual* (1993). Following official classifications, we split U.S. net foreign portfolio into four categories: Debt (corporate and government bonds), Equity, Foreign Direct Investment (FDI), and Other. The other category includes mostly bank loans and trade credits. The BEA data provide equity and FDI (since 1980) figures at market value and perform an exchange rate adjustment for debt. The quality of the data is good.[20]

For its part, the Federal Reserve publishes since 1952 the quarterly flows and positions for the "rest of the world" account, as part of its Flow of Funds accounts. While covering a longer sample, the FFA data presents two drawbacks. First, equity positions are the only series recorded at market value. Debt, FDI, and Other claims and liabilities are recorded at historical costs. Second, the FFA data is of poorer quality and uses National Income and Product Account (NIPA) concepts that differ subtly from their BOP equivalent. But the primary source data are often similar, except for a few items:[21] (a) the treatment of international banking facilities (IBF) and (b) the treatment of the Netherlands Antilles Affiliates. An IBF is a set of books maintained by a U.S. bank that are not subject to domestic banking regulations. They allow U.S. banks to offer offshore banking services onshore. The BEA considers that IBF are inside the United States, while the FFA consider that they are foreign residents. As to the second point, the BEA treats all transactions between parents and affiliates as part of direct investment. Instead, the FFA treats these flows as part of corporate debt liabilities.

Our approach was to supplement the BEA's IIP data for all categories of assets and liabilities, and each point in time back to 1952, using Survey of

19. For instance, equity and debt flows are available separately after 1982 only.

20. Technically, the BEA provides data on FDI at market value since 1982. However, the IMF constructed market value positions for 1980 and 1981. We use these estimates in our analysis. The Lane and Milesi-Ferretti (2001) data set includes annual data since 1973 and coincides with the BEA data after 1980.

21. See Hooker and Wilson (1989) for a detailed comparison.

Current Business reported holdings for Equity and Debt, BEA, and FFA flow data, U.S. Treasury benchmark surveys on holdings, and by constructing valuation adjustments for each subcategory of assets and liabilities. In this appendix, we describe in detail our methodology for constructing the gross asset and liability positions of the United States on a quarterly basis since 1952. In particular, we provide a reconciliation of the data treatment of the Flow of Funds and the BEA.

Denote PX_t the end-of-period t position for some asset category X. We use the following updating equation:

$$PX_t = PX_{t-1} + FX_t + DX_t, \tag{A1}$$

where FX_t denotes the flows corresponding to asset X that enters the balance of payments, and DX_t denotes a discrepancy reflecting a market valuation adjustment between periods $t-1$ and t. When we cannot measure DX_t directly, we construct an estimate as $r_t^x PX_{t-1}$, where r_t^x represents the estimated dollar capital gain on category X between time $t-1$ and time t. Our approach, therefore, requires that we specify market returns r_t^x for each subcategory of the financial account.

Data in the final quarter of each year are mapped to the IIP data of the BEA, when available.[22] Therefore, the valuation term between the third and fourth quarters includes all adjustments not captured by our valuation method, such as change in the coverage of the series.

Reconciliation of the Flow of Funds and the BEA Data

Mapping the Flows

The material in this section draws heavily from Hooker and Wilson (1989). It is important to understand why and how the FFA and BEA data differ. First and foremost, one should realize that the BEA and FFA data are essentially compiled from the same source data. The main differences lie in the definition of the various concepts (NIPA vs. BOP), their geographical coverage, and the treatment of valuation effects. This appendix clarifies the points relevant to our analysis.

To establish a correspondence between FFA and BEA, we start from the balance-of-payment's identity:

22. The only exception is for direct investment. The reason is that when we extend the valuation adjustment used by the BEA before 1980, we end up with negative gross positions before 1970. This could come from an imperfect accounting of reinvested earnings. According to the BOP manual, direct investment income in the current account includes distributed earnings as well as the share of reinvested earnings with an offsetting entry in the financial account. This implies that reinvested earnings are included in the flow FX_t and should be excluded from the return r_t^x in equation (A1). We adjusted the valuation terms to replicate the BEA's annual adjustment from 1982 onward but chose to start both FDI gross asset and liabilities position at 0 at the beginning of our sample and update (A1) forward.

$$\text{(A2)} \qquad CA + KA + FA + SD = 0,$$

where CA denotes the U.S. current account (USIT table 1, line 76), KA the U.S. capital account (table 1, line 39), FA denotes the financial account (table 1, lines 40 and 55) and SD the statistical discrepancy (errors and omissions, table 1, line 70).[23]

The equivalent accounting identity in the FFA takes the following form.[24]

$$\text{(A3)} \qquad CA' + KA' + FA' + SD' = 0,$$

where CA′ denotes the NIPA's current account (FFA table F107, line 5 minus line 1), KA′ is the (NIPA) net capital transfers (table F107, line 8 with sign reversed), FA′ denotes NIPA's net financial investment (table F107, line 12), and SD′ denotes the (NIPA) statistical discrepancy (table F107, line 55). KA′ is equal to KA, so that we can combine (A2) and (A3) to obtain:

$$\text{(A4)} \qquad SD' = (CA - CA') + (FA - FA') + SD$$

The NIPA statistical discrepancy SD′ is equal to the BOP statistical discrepancy SD plus an adjustment for the difference in the definitions of the current and financial accounts in the NIPA and BOP, respectively.

Next, we decompose the financial accounts FA′ and FA as follows:

$$FA' = FA'_f - FA'_{us}$$

$$FA = FA_f + FA_{us},$$

where FA'_f (respectively, FA_f) represents the change in foreign-owned U.S. assets (gross liabilities) in the FFA (respectively, the BOP), and FA'_{us} (respectively, FA_{us}) represents the change in U.S.-owned assets abroad (gross assets) in the FFA (respectively, the BOP).[25] The *Guide to the Flows of Funds Accounts* (Federal Reserve Board 2000, 370–80) establishes the following correspondence between FA'_f and FA_f:

$$\begin{aligned}\text{(A5)} \quad FA'_f = {} & FA_f + \text{Gold and special drawing rights (SDR); (Table F107 line 14)} \\ & + \text{net issuance of bonds by Netherland Antillean subsidiaries (table F107, line 27b)} \\ & - \text{change in interbank claims on foreigners (table F107, lines 15f to 15l)}\end{aligned}$$

23. All line references in USIT table 1 and FFA table F107 are accurate as of January 2005.

24. Note that we write this equation from the point of view of the United States, while the FFA is from the perspective of the rest of the world. So CA′ is the *opposite* of the current account recorded in the FFA.

25. This is with the BOP convention that $FA_{us} < 0$ when there is a gross capital outflow.

Accordingly, gross external liabilities according to the BEA and the FFA exhibit three differences:

1. The FFA treats transactions involving Gold and SDR as changes in foreign assets, while the BEA treats them as changes in U.S. assets. In the FFA, Gold and SDR (table F107, line 14) corresponds to sales of Gold and SDR by the United States (USIT table 1, lines 42 and 43), with the sign reversed.
2. In the late 1970s and 1980s, some U.S. corporations established financial subsidiaries in the Netherland Antilles to tap international capital markets and avoid capital control and tax laws. The subsidiary would issue eurobonds and channel the funds back to the U.S. parent company. The balance of payments considers all transactions between parent and affiliates as part of direct investment and subtracts issuance of eurobonds by foreign financial subsidiaries from direct investment outflows. By contrast, the FFA treats these capital flows as direct bond issuance by the U.S. parent companies, adds them to bond liabilities, and adds them back to foreign direct investment outflows.[26] The removal of the withholding tax in 1984 eliminated the incentive to use overseas subsidiaries to issue eurobonds. The FFA practice was discontinued in the fourth quarter of 1992.
3. The FFA nets interbank claims, while the BEA reports claims on a gross basis.[27] In order to map back the FFA to the BEA, we need to subtract the "changes in net interbank claims on foreigners" (lines 15f to 15l).

Further, FA'_{us} must satisfy the key identity (A3), given SD′:

$$FA'_{us} = FA'_{f} + CA' + KA' + SD' \tag{A6}$$

The last piece of the puzzle is the definition of SD′ in the FFA given by

$$\begin{aligned} SD'(\text{F107, line 55}) = {} & -CA' - KA' \text{ (F107, line 8 with minus sign)} \\ & + SD \text{ (F107, line 55a)} \\ & + CA \text{ (F107, line 55b with opposite sign).} \end{aligned} \tag{A7}$$

Combining with equation (A4), we obtain

$$FA' = FA + KA.$$

In words, the FFA net investment position includes the BEA capital transfers.

Combining (A7) and (A6), we extract FA'_{us} as

26. This assumes that the bond issue is purchased entirely by the rest of the world.

27. Net interbank claims (F107, line 15) = interbank liabilities (F107, lines 15a to e) – interbank claims (F107, lines 15f to l). An additional distinction comes from the treatment of international banking facilities, counted as domestic entities in the BOP and foreign entities in the FFA. We lump this term with the change in interbank claims on foreigners.

$$\begin{aligned} FA'_{us} = & -FA_{us} - KA \\ & + \text{Gold and SDR (F107, line 14)} \\ & + \text{net issuance of bonds by Netherland Antilles subsidiaries} \\ & \text{(F107, line 27b)} \\ & - \text{change in interbank claims on foreigners (F107, lines 15f} \\ & \text{to 15l).} \end{aligned}$$

To summarize, the asset flow side has the same adjustments as the flow liability side, plus the subtraction of the capital account transactions.

In order to construct a measure of the U.S. international investment position comparable with existing measures, we adopt the BEA's classification. Accordingly, we adopt the following decomposition for gross assets and liabilities:

$$FA_f = FEL + FDL + FFL + FOL$$

with

FA_f = Foreign-owned assets in the United States (table 1, line 55)

FEL = Equity (table 7a, line B4 and memo line 4)

FDL = Debt (table 7a, line 16, 30, and memo line 3)

FFL = Direct investment (table 1, line 64)

and

$$-FA_{us} = FEA + FDA + FFA + FOA$$

with

FA_{us} = U.S.-owned assets abroad (table 1, line 40)

FEA = Equity (table 7a, line A4)

FDA = Debt (table 7a, line 18)

FFA = Direct investment (table 1, line 51).

We have similar definitions for the FFA based gross flows:

$$FA'_f = FEL' + FDL' + FFL' + FOL'$$

with

FA'_f = Net acquisition of financial assets (table F107, line 13)

FEL′ = Equity (table F107, line 29)

FDL′ = Debt (table F107, line 21, 24, and 27)

FFL′ = Direct investment (table F107, line 33)

as well as for FA'_{us}:

$$FA'_{us} = FEA' + FDA' + FFA' + FOA'$$

with

FA'_{us} = Net increase in liabilities of the rest of the world (table 107, line 35)

FEA' = Equity (table 107, line 47)

FDA' = Debt (table 107, line 40)

FFA' = Direct investment (table 107, line 53).

According to the Guide to the Flow of Funds (Federal Reserve Board 2000), the FFA and BOP series satisfy

FDL' = FDL + net issuance of bonds by Netherland Antilles subsidiaries (F107, line 27b)

FEL' = FEL

FFL' = FFL

FEA' = FEA

FDA' = FDA

FFA' = FFA + net issuance of bonds by Netherland Antilles subsidiaries (F107, line 27b)

from which we conclude that

FOL' = FOL + Gold and SDR (F107, line 14)
− change in interbank claims on foreigners (F107, lines 15f to 15l)

FOA' = FOA − KA
+ Gold and SDR (F107, line 14)
− change in interbank claims on foreigners (F107, lines 15f to 15l).

Appendix B presents a line-by-line description of the mapping.

The Dynamics of the External Budget Constraint

The stock data in the BEA is updated as follows:

(A8) $$PX^i_{t+1} = PX^i_t + FX^i_{t+1} + DX^i_{t+1},$$

where PX^i_t represents the position at the end of period t for series i, FX^i_t the flow during period (BEA definition) t, and DX^i_t a discontinuity reflecting a market valuation adjustment or a change of coverage in the series between $t-1$ and t. Summing across all the series, we obtain the international investment position at the end of period $t+1$:

$$\begin{aligned}\mathrm{NFA}_{t+1} &= \sum_j PA^j_{t+1} - \sum_i PL^i_{t+1} \\ &= \sum_j (PA^j_t - \mathrm{FA}^j_{t+1} + DA^j_{t+1}) - \sum_i (PL^i_t + FL^i_{t+1} + DL^i_{t+1}) \\ &= \mathrm{NFA}_t - \left(\sum_j \mathrm{FA}^j_{t+1} + \sum_i FL^i_{t+1}\right) + \left(\sum_j DA^j_{t+1} - \sum_i DL^i_{t+1}\right)\end{aligned}$$

In turn, the flow data satisfies

$$\begin{aligned}-\mathrm{FA}_t &= -\sum_j \mathrm{FA}^j_t - \sum_i FL^i_t \\ &= \mathrm{CA}_t + \mathrm{SD}_t + \mathrm{KA}_t,\end{aligned}$$

where we used the fundamental BOP equation. Substituting,

$$\mathrm{NFA}_{t+1} = \mathrm{NFA}_t + \mathrm{CA}_{t+1} + \mathrm{SD}_{t+1} + \mathrm{KA}_{t+1} + ND_{t+1},$$

where

$$ND_t = \sum_j DA^j_t - \sum_i DL^i_t,$$

is the net discrepancy. In the case where there is no change in coverage of the data, this net discrepancy corresponds to the capital gains. Further, we can write the current account as follows:

$$\mathrm{CA}_t = \mathrm{NX}_t + I_t + \mathrm{UT}_t,$$

where I_t denotes net income receipts (including interest income, distributed dividends, and FDI earnings), and UT_t represents unilateral transfers plus net compensation of employees.[28] The sum of I_{t+1} and ND_{t+1} represents the total return on the net foreign asset portfolio between t and $t + 1$, $(R_{t+1} - 1)\mathrm{NFA}_t$. We can then rewrite the accumulation equation as

$$\mathrm{NFA}_{t+1} = R_{t+1}\mathrm{NFA}_t + \mathrm{NX}_{t+1} + \mathrm{UT}_{t+1} + \mathrm{KA}_{t+1} + \mathrm{SD}_{t+1}.$$

Appendix B

Line-by-Line Description, Flows, Positions, and Return Data

The remainder of this appendix presents a line-by-line account of the construction of the U.S. international investment position of the United States, from 1952:1 to 2004:1.

28. According to the BOP manual, direct investment income in the CA includes distributed earnings as well as the share of reinvested earnings. So there is an entry in the current account and an offsetting entry in the financial account.

The following is a list of acronyms:

BEA	Bureau of Economic Analysis (Department of Commerce)
FFA	Flow of Funds (Federal Reserve)
USIT	U.S. International Transactions, BEA, BOP concepts
IIP	U.S. International Investment Position, BEA, BOP concepts
SCB	Survey of Current Business, published by BEA

Assets

Equity

Flows

- After the first quarter of 1982, data are from BEA (USIT table 7b, line A2 before the first quarter of 1998, then USIT table 7a, line A4).
- Before 1982, data are from FFA table F107, line 47 (FU263164003.Q, foreign corporate equities, including American deposit receipts [ADRs] and not seasonally adjusted [NSA]). Before the first quarter of 1974, the FFA series reports incorrectly the sum of equity and debt holdings by U.S. residents (also reported in USIT table 1, line 52). The flow series is corrected by subtracting FFA table F107, line 40 (FU263163003.Q, bonds, NSA). This error is corrected in the FFA data published after June 2004.

Levels

End-of-year positions are from BEA.

- After 1976, data are from BEA IIP table 2, line 21 (corporate stocks, including results from the U.S. Treasury's 1994 and 1997 *Benchmark Surveys of U.S. Ownership of Foreign Long-Term Securities*).
- Before 1976, data are from SCB, various lines.

Valuation Adjustment

Quarterly equity portfolio dollar capital gains are constructed using the U.S. Treasury 1997 *Benchmark Surveys of U.S. Ownership of Foreign Long-Term Securities* (Series EQR97$). Details on returns are provided in the returns section.

Debt

Flows

- After the first quarter of 1982, data are from BEA (USIT table 7b, line A13 before the first quarter of 1998, then USIT table 7a, line A18).
- Before 1982, data are from FFA table F107, line 40 (FU263163003.Q, bonds, NSA).

Levels

End-of-year positions are from BEA.

- After 1976, positions are from BEA IIP table 2, line 20 (bonds, including results from the U.S. Treasury's 1994 and 1997 *Benchmark Surveys of U.S. Ownership of Foreign Long-Term Securities*).
- Before 1976, positions are available from SCB.

Valuation Adjustment

Maturity weights are 25 percent for short term and 75 percent for long term. There is no valuation adjustment for short term. For long-term bonds, this is the weighted average dollar holding period excess return (over yields; series RN$@RW). Details on returns are provided in the returns section.

Direct Investment

Flows

- After the first quarter of 1960, data are from BEA (USIT table 1, line 51).
- Before the first quarter of 1960, data are from FFA table F107, line 53 (FU263192005.Q, U.S. direct investment abroad). Note that through the fourth quarter of 1992, FFA U.S. direct investment abroad excludes net inflows from corporate bonds issued by Netherlands Antillean financial subsidiaries. There is no discrepancy here as these bonds issues start after 1978.

Levels

Start positions are at zero in the first quarter of 1952 and cumulate forward. Note that we do not benchmark the data to the BEA IIP series (table 2, line 18) available after 1982 at market value. The reason is that applying the BEA valuation adjustment backwards from the fourth quarter of 1982 results in negative gross FDI asset position before 1973. Our estimated position for the fourth quarter of 1982 is $267 billion. The BEA reports $227 billion.

Valuation Adjustment

Quarterly direct investment portfolio capital gains are constructed using rolling weights (series RFDR$). The weights are constructed using BEA direct investment positions by country (historical cost basis) from 1966 until 2002. The final shares cover 75 percent of direct investment assets in each year. The implicit annual return in the BEA positions is regressed on this capital gain series between 1982 and 2003. The regression coefficient

(0.754367) is used to scale down the capital gain series. It is smaller than 1, as expected. The reason is that the BEA records reinvested earnings as inflows. But reinvested earnings are also part of the capital gain series. Without adjustment, we would be double counting the reinvested earnings.

Other Assets

Flows

- Before the first quarter of 1960, other asset flows are constructed to match the BEA definition. We start with other asset flows defined from FFA: FFA total assets (table F107, line 35, FU264190005.Q, net increase in U.S. liabilities of the rest of the world) minus FFA bonds (F107, line 40, FU263163003.Q, change in bond liabilities of the rest of the world to U.S. residents) minus FFA equity (F107, line 47, FU263164003.Q, net purchase of foreign corporate equities by U.S. residents [corrected, see the description of equity asset flows]) minus FFA direct investment (F107, line 53, FU263192005.Q, U.S. direct investment abroad, excluding bonds sold by Netherlands Antillean financial subsidiaries). Then we adjust the flows to map into the BEA definitions: other assets from FFA plus capital account (USIT table 1, line 39) plus change in interbank claims.
- After the first quarter of 1960, it is defined as *residual* from total BEA asset flows: total assets (USIT table 1, line 40, U.S. owned assets abroad) minus equity, debt, and direct investment flows.

Levels

After 1976, end of year positions are from BEA IIP table 2, line 5 (U.S. official reserve assets) plus line 10 (U.S. government assets, other than official reserve assets) plus line 22 (U.S. claims on unaffiliated foreigners reported by U.S. nonbanking concerns) and line 23 (U.S. claims reported by U.S. banks, not included elsewhere). Note that the levels and the flows include Gold Reserves.

Valuation Adjustment

There is none.

Liabilities

Equity

Flows

- After the first quarter of 1973, data are from sum of BEA equity (SCB before the first quarter of 1982, USIT table 7b, line B2 between the first quarter of 1982 and the first quarter of 1998, then table 7a, line B4 af-

ter) and equity held by foreign officials (SCB before the first quarter of 1982, USIT table 7b, line memo 4 between the first quarter of 1982 and the first quarter of 1998 and table 7a, line memo 4 after).
- Before 1973, FFA equity data are from table F107, line 29 (FU263064003.Q, net purchases of U.S. corporate equity by the rest of the world). The FFA data includes equity purchased by foreign official agencies (reported separately by the BEA).

Levels

End-of-year positions are from BEA.

- After 1980, positions are from IMF IIP (B8660@C111). The IMF data includes equity holdings by foreign official agencies.
- Between 1976 and 1980, comparison of the BEA IIP table 40 (corporate stocks) show that foreign official holdings are zero.
- Before 1976, positions are available from the Survey of Current Business.

Valuation

Quarterly equity portfolio capital gains (series EQRUS) are from S&P 500 (see detailed descriptions for returns in returns section).

Debt

Flows

- After the first quarter of 1982, data are from BEA flows: sum of private foreign holdings of U.S. corporate and federally sponsored agency bonds (USIT table 7b, line 10 before 1998, then table 7a, lines 16 and 30) and foreign official holdings of U.S. government securities (USIT table 1, line 57) and foreign private holdings of U.S. Treasury securities (USIT table 1, line 65) and corporate and agency bonds held by foreign official agencies (USIT table 7b, line memo 3 before 1998, then table 7a, memo 3).
- Before 1982, data are from FFA U.S. treasury securities (table F107, line 21, FU263061105.Q, treasury securities) plus U.S. agency and GSE-backed securities (table F107, line 24, FU263061705) plus U.S. corporate bonds (table F107, line 27, FU263063005.Q, includes net issues by Netherland Antillean financial subsidiaries of U.S. corporations) minus estimate of net issues of corporate bonds from Netherland Antillean financial subsidiaries of U.S. corporations. Each FFA series is constructed or corrected as follows:
  —FFA table F107, line 22 (FU263061113.Q, foreign official holdings of Treasury securities), a subcategory of F107, line 21, is incorrect before the fourth quarter of 1981. The series is remapped to BEA table 1, line 58 (foreign official holdings of U.S. Treasury securities).

—FFA table F107, line 27 is adjusted upwards before the third quarter of 1977 for discontinuity in the coverage of the series (see section appendix C for a methodological description on how we treat discontinuities in coverage).
—Net issues of corporate bonds from Netherland Antillean financial subsidiaries are estimated as the difference between minus FFA-based direct investment assets (table F107, line 53, FU263192005.Q, U.S. direct investment abroad) and BEA-based direct investment assets (USIT table 1, line 51). They are set to zero before the first quarter of 1979.

Levels

- After 1982, end-of-year positions are from IMF IIP (B8669@C111). The IMF data includes foreign official agencies holdings of corporate bonds (reported separately in BEA IIP).
- Between 1976 and 1981, data are from BEA IIP table 2, line 27 (foreign official holdings of U.S. government securities) plus line 37 (foreign private holdings of U.S. Treasuries) plus line 39 (foreign private holdings of corporate and other bonds) plus line 32 (foreign official holdings of other assets).
- Between 1971 and 1976, the same positions are available from the Survey of Current Business. No data are available before 1971.

Valuation

We assume a maturity structure of 25 percent for short term (no valuation) and 75 percent for long term. For the long-term valuation, we use the quarterly holding excess return over yields on ten-year U.S. government debt (series RN@C111); see the returns section.

Direct Investment

Flows

- After the fourth quarter of 1976, data are from BEA direct investment (USIT table 1, line 64). The FFA series (table F107, line 33, FU263092001.Q, foreign direct investment in the U.S.) is identical to the BEA series after 1960.
- Before the fourth quarter of 1976, data are from FFA series (table F107, line 33, FU263092001.Q, foreign direct investment in the U.S.), adjusted upwards for the discontinuity in coverage in the fourth quarter of 1976 (see appendix C for a methodological description on how we treat discontinuities in coverage).

Levels

Start positions are at zero in the first quarter of 1952 and cumulate forward. Note that we do not benchmark the data to the BEA IIP series (table

2, line 36) available after 1982 at market value. The reason is that applying the BEA valuation adjustment backwards from the fourth quarter of 1982 results in negative gross FDI liability position before 1973. Our estimated position for the fourth quarter of 1982 is $144 billion. The BEA reports $130 billion.

Valuation

Quarterly direct investment portfolio capital gains are constructed using S&P 500 capital gains series (EQRUS). The implicit annual return in the BEA positions from 1982 to 2003 is regressed on this capital gain series. The regression coefficient (0.681023) is used to scale down the capital gain series. It is smaller than 1 as expected. The reason is that the BEA records reinvested earnings as inflows. But reinvested earnings are also part of the capital gain series. Without adjustment, we double count reinvested earnings.

Other Liabilities

Flows

- After the fourth quarter of 1976, they are defined as *residual* from total BEA liabilities: total liabilities (USIT table 1, line 55) minus debt, equity and direct investment liability flows.
- Between the first quarter of 1960 and the third quarter of 1976, they are defined as *residual* from total BEA liabilities: total liabilities (USIT table 1, line 55) minus debt, equity and direct investment liability flows measured as USIT table 1, line 64. (Note that the direct investment flows are not adjusted upward for the discontinuity. Hence, we are assuming that total liabilities are mismeasured before the fourth quarter of 1976.)
- Before the first quarter of 1960, data are constructed from FFA to match the BEA definition (see A2). Start with other liabilities FFA flows defined as FFA total liabilities (table F107, line 13, FU264090005.Q, net acquisition of financial assets by the rest of the world) minus FFA bonds (F107, line 21 FU263061105, Treasury securities, F107, line 24, FU263061705, agency and GSE-backed securities, F107, line 27, FU263063005, U.S. corporate bonds, all series corrected as described previously), minus FFA equity (F107, line 29, FU263064003.Q) minus FFA direct investment (F107, line 33, FU263092001.Q). Then adjust FFA series to map into the BEA definition: other liability (FFA) minus FFA Gold and SDR (F107, line 14, FU263011005.Q, net purchases of Gold and SDR from the United States by the rest of the world) plus change in interbank claims (equal to zero before 1960).

Levels

After 1976, end-of-year positions are from BEA IIP table 2, line 30 (other U.S. government liabilities) and line 31 (U.S. liabilities reported by U.S. banks, not included elsewhere) and line 41 (U.S. currency) and line 42 (U.S. liabilities to unaffiliated foreigners reported by U.S. nonbanking concerns) and line 43 (U.S. liabilities reported by U.S. banks, not included elsewhere).

Valuation

There is none.

Returns

Most financial and exchange rate data are obtained from the Global Financial Database (GFD) and International Financial Statistics (IFS).

Assets

Equity

Total Return (EQTR97$). Equity total return is for the rest of the world. The country weights are constructed from table 1 of The U.S. Treasury's (2000) report on U.S. holdings of foreign long-term securities. The country weights represent 75 percent of total foreign equity holdings by U.S. investors. For each country, a series for dollar quarterly total stock return is constructed. The local currency returns are converted into dollars using end-of-period nominal exchange rates against the dollar compiled from IFS after 1957 and from GFD before. Before 1987, total returns series for Mexico, Brazil, and Switzerland (before 1966) are unavailable. The weights are adjusted appropriately. Table 1B.1 reports the weights by subperiod and the total return series for each country.

Capital Gain (EQR97$). The equity capital gain series uses the same country weights as table 1B.1. For each country, a series for dollar quarterly capital gain return is constructed. Local capital gain returns from GFD are converted into dollars using end-of-period nominal exchange rates. Country weights are reported in table 1B.2.

Debt

Total Return. Weighted average of the total return on long-term bonds and total return on short-term bonds. Maturity composition is 75 percent for long term and 25 percent for short term, from table 2 in the U.S. Treasury's (2003) report on U.S. holdings of foreign securities.

- Long term (R$@RW): This is the weighted average dollar holding period return on foreign long-term bonds. The currency weights are

Table 1B.1 **Country-weights, equity assets, total returns**

Country	1952–1966	1966–1987	1987–2004	Series
United Kingdom	27.43	25.44	23.61	FT-Actuaries All-Share Total Return Index
Japan	17.20	15.95	14.80	Nikko Securities Composite Total Return
France	10.72	9.94	9.23	SBF-250 Total Return Index
The Netherlands	13.49	12.51	11.61	CBS Total Return-All Shares
Germany	8.19	7.60	7.05	CDAX Total Return Index
Canada	8.93	8.28	7.68	Toronto SE-300 Total Return Index
Sweden	4.89	4.54	4.21	Stockholm SBX Benchmark Gross Index
Switzerland	0.00	7.24	6.72	Performance Index
Italy	5.24	4.86	4.51	BCI Global Return Index
Mexico	0.00	0.00	3.79	SE Return Index
Australia	3.92	3.64	3.38	S&P/ASX 200 Accumulation Index
Brazil	0.00	0.00	3.4	São Paulo IBX-50 Return Index

Table 1B.2 **Country-weights, equity assets, capital gains**

Country	1952–1954	1954–2004	Series
United Kingdom	24.44	23.61	FT-Actuaries All-Share Index
Japan	15.33	14.80	Nikkei 225 Stock Average
France	9.55	9.23	SBF-250 Index
The Netherlands	12.02	11.61	CBS All-Share Price Index
Germany	7.30	7.05	CDAX Composite Price Index
Canada	7.95	7.68	S&P/TSX 300 Composite Index
Sweden	4.36	4.21	Affarsvarlden General Index
Switzerland	6.95	6.72	Stock Indices-Composites—Switzerland Price Index
Italy	4.67	4.51	Banca Commerciale Italiana General Index
Mexico	3.93	3.79	SE Indice de Precios y Cotizaciones (IPC)
Australia	3.50	3.38	ASX All-Ordinaries
Brazil	0.00	3.40	Bolsa de Valores de São Paulo (Bovespa)

taken from table 11 of the U.S. Treasury's (2000) report on U.S. holdings of foreign long-term securities for the year 1994. Given the availability of country bond yield data, we cover about 80 percent of the long-term debt positions. The currency weights are reported in table 1B.3. Total quarterly holding period returns are calculated from the changes in yields (assuming that the yield equals the coupon and using the formula (10.1.19) in Campbell, Lo, and MacKinlay (1997, 408) converted into U.S. dollars using end-of-period nominal exchange rates compiled from IFS after 1957 and GFD before.

- Short term (RSRW$): This is the weighted average dollar holding period return on foreign short term bonds. The currency weights are taken from table 14 of the U.S. Treasury's (2003) report on U.S. holdings of foreign securities for 2001. With the short-term returns avail-

Table 1B.3 Currency-weights, long-term debt assets

Currency	Weight (%)	Source
U.S. dollar	59.67	Yields on U.S. government ten-year constant maturity bonds (IFS)
Yen	12.35	Seven-year Government Bond Yield (OECD)
Canadian dollar	8.64	Average yield to maturity on government bonds with life over ten years (IFS)
German DMark	9.05	Yield on federal securities with residual maturities of over nine to ten years (IFS)
UK pound	5.35	Gross redemption bond yield, at par with twenty-year maturity (IFS)
French Franc	4.94	Ten-year Government Bond Yield (GFD)

Table 1B.4 Currency-weights, short-term debt assets

Currency	Weight (%)	Source
U.S. dollar	85.09	Discount on new issues of three-month Treasury Bill (IFS)
DMark	4.98	Germany three-month Treasury Bill Yield (GFD)
Yen	8.01	Lending rate for collateral and overnight loans in the Tokyo Call Money Market (IFS)
UK pound	1.92	Tender rate at which nine days bills are allotted (IFS)

ability, we cover 99 percent of the short-term debt positions. Short-term local currency returns are converted into U.S. dollars using end-of-period nominal exchange rates compiled from IFS after 1957 and GFD before. The currency weights are reported in table 1B.4.

Capital Gains (RN$@RW). Same weights are [R$@RW] but use *net* returns instead of total returns, where net returns are constructed as $\ln(1 + RN) = \ln(1 + R) - \ln(1 + Y)$, where RN is the net return, R is the total return, and Y is the yield. Local net returns are converted into dollars using end-of-period exchange rates.

Direct Investment

Returns are constructed using rolling weights based on BEA's FDI historical cost positions, from 1966 to 2002. In each year, we cover 75 percent of U.S. direct investment historical cost asset positions. Some countries are excluded for some years due to the absence of stock market data (e.g., Mexico, Brazil, Switzerland and Panama in early years). For each country, total stock return (in dollars) is computed from GFD total return indices and IFS end-of-period exchange rates.

Total Return (TRFDR$).

Capital Gain (RFDR$).

Other Assets

Total Return (RSRW$). See the preceding.

Capital Gain. There is none.

Liabilities

Equity and Direct Investment

Total Return (EQTRUS). This is total return indices: Stocks—S&P 500 Composite Total Return Index (Base 1988; SPXTRQ).

Capital Gain (EQRUS). This is stock indices: Composites—S&P 500 Composite (SPXQ).

Debt

Total Return. This is the weighted average of the total return on long-term bonds and total return on short-term bonds. Maturity composition is 75 percent long term and 25 percent short term, from table 2 and table 3 in the U.S. Treasury's (2002) Survey of Foreign Portfolio Holdings of U.S. Securities.

- Long term (R@C111). This is the quarterly total return on long-term bonds, calculated from the change in yields (see formula in Campbell, Lo, and MacKinlay 1997, equation 10.1.19, page 408), assuming that the yield is equal to the coupon. Yields are calculated on U.S. government ten-year constant maturity bonds. Before the third quarter of 1985, yield data are from McCulloch and Kwon (1993), as reported by Campbell (1999). After the third quarter of 1985, they are from IFS (L61@C111).
- Short term (R$@C111). After the fourth quarter of 1963, discount is on new issues of three-months Treasury bill (IFS L60@C111). Before the fourth quarter of 1963, the Treasury bill rate is from quarterly SBBI file in CRSP, which is from Campbell (1999).

Capital Gain (RN@C111). Quarterly net return on long-term bond is defined as $\ln(1 + RN) = \ln(1 + R) - \ln(1 + Y)$, where RN is the net return, R is the total return, and Y is the yield. The yield is already included in the current account transactions.

Other Liability

Total Return (R$@C111). See the preceding.

Capital Gain. There is none.

Implicit Returns

The *implicit* returns on each asset class are constructed as follows.

- For gross assets, we use the investment income series table F107, line 7 and SCB NIPA table 9.5, line 5 (receipts of factor income) and our total valuation series for assets. We compute r^a as (investment income + valuations)/foreign asset position at the end of the previous period.
- For gross liabilities, we use the investment income series table F107, line 3 and SCB NIPA table 9.5, line 11 (payments of factor income) and our total valuation series for liabilities. We compute r^l as (investment income + valuations)/foreign liability position at the end of the previous period.
- A breakdown of the investment income at the level of each asset class is unfortunately not available over the entire period. Instead, we distributed investment income across each asset in the following way. First, we deducted from total investment income FDI-reinvested earnings. We distributed the remaining investment income across assets in proportion to their share in total assets. Thus we obtain estimates of investment income for equity, debt and other. For FDI, we add back reinvested earnings to the FDI investment income estimated as in the preceding, that is, we add reinvested earnings to (total investment income-reinvested earnings) multiplied by share of FDI in total assets. We then compute the implicit return on equity assets, say, in the following way: r^{ae} = (investment income on equity + valuation change on equity)/equity asset position at the end of the previous period. We proceed in a parallel way for each asset class for gross assets and gross liabilities.

Appendix C

Miscellaneous Data Issues

Mapping the BEA Returns for Direct Investment and the Treatment of Reinvested Earning

Denote PX_t the stock at the end of period t for series X and FX_t the flow for the same period. Assume that the returns are accrued at the beginning of the period so that the accumulation equation from quarter t to quarter $t + 1$ takes the following form:

$$PX_{t+1} = R_{t+1}PX_t + FX_{t+1}$$

From the constructed series PX_t and FX_t we can extract the implicit return:

$$R_{t+1} = \frac{PX_{t+1} - FX_{t+1}}{PX_t}$$

We then regress the continuously compounded annual returns $R_{t,t+4} = \ln(R_t R_{t+1} R_{t+2} R_{t+3})$ on the annual return that is used to value the BEA series, $R^{\text{BEA}}_{t,t+4}$.

How to Treat Discontinuities?

The accumulation equation assumes that ND_t represents capital gains. In some cases, the discontinuity is too big to be justified by capital gains. Instead, it represents a rebasing of the underlying series (e.g., table F107, line 26, U.S. corporate bond liabilities, or table F107, line 32, direct investment liability). The valuation equation is

$$PX_{t+1} = PX_t + FX_{t+1} + DX_{t+1}.$$

DX_t reflects both the capital gain and the discontinuity in year t. If there is a discontinuity at time T, we need to adjust both positions and flows before T. Our approach is to attribute all the adjustment at time T to the discontinuity. Define the adjustment factor $\kappa = 1 + DX_t/PX_{T-1}$. We scale all positions, flows, and previous discontinuities by κ for $t < T$:

$$\hat{PX_0} = \kappa PX_0$$
$$\hat{FX_t} = \kappa FX_t$$

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Comment José De Gregorio

In these notes I will first discuss some salient features of the current U.S. external imbalance, with a focus on its impact on emerging markets. Then in the second section, I will discuss the relationship between exchange rate fluctuation and external adjustment, focusing on the quantitative importance of trade and valuation effects. Finally, I will present some concluding remarks.

The U.S. Current Account Deficit

Today's U.S. external imbalance is large and unsustainable as the United States cannot borrow permanently at current levels. The United States is the only major industrial country that has run a deficit above 5 percent of GDP since 1971 (Edwards 2005) and, given its weight in the world economy, the demand for foreign financing is unprecedented.[1] The origins of the imbalance, the timing of the adjustment, the policy implications, and the consequences are all sources of debate. At the core of the discussion is the required adjustment in the exchange rates for global rebalancing.

The benign view, although recognizing that such a situation cannot persist forever, would argue that the adjustment will occur with minor changes in exchange rates and no disruptions in the world economy. A more pessimistic view would argue that a sharp exchange rate correction is necessary for reallocating resources to the tradable-goods sector and for reducing domestic expenditure. This adjustment will not necessarily result in global turmoil, but, of course, it entails more risks than the benign view. Postponing action and adding to it a fiscal imbalance does not help to smooth the correction.

A number of authors have recently highlighted an additional channel through which exchange rates contribute to the external adjustment, namely *valuation effects,* also called the *financial adjustment channel* (Lane and Milesi-Ferretti 2001; International Monetary Fund [IMF] 2005; Tille 2003; Gourinchas and Rey 2005). Given that the foreign international investment position comprises many currencies, a depreciation will have valuation effects, resulting in wealth transfers across countries. This new paper by Gourinchas and Rey provides a detailed account of the foreign

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I am grateful to César Calderón, Gian Maria Milesi-Ferretti, Jorge Selaive and Cedric Tille for useful discussions, but I remain responsible for the views expressed herein.

1. Backus and Lambert (2005), looking at historical data, dispute the view that there are no precedents of this type of imbalances. However, they find large deficits during the Bretton Woods period, where under fixed exchange rates persistent imbalances were much more likely, due to persistent misalignments. Dooley, Folkerts-Landau, and Garber (2004) argue that we are now getting closer to a new Bretton Woods system because of the heavy reserve accumulation of Asian countries, especially China, to avoid an appreciation.

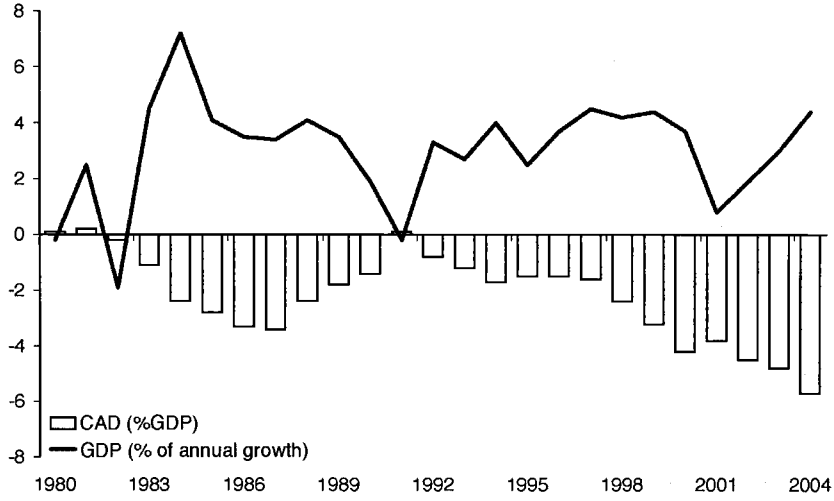

Fig. 1C.1 United States: Current account deficit and GDP growth
Source: IMF.

investment position of the United States, reporting yields across different types of assets and liabilities, identifying the impact of a depreciation of the dollar on different yields, and discussing the channels through which the exchange rate facilitates the adjustment, among many other interesting discussions and insights.

The discussion on global imbalances has also been complemented by recent research attempting to identify the main features of current account reversals, initiated by the influential work of Milesi-Ferretti and Razin (2000). Looking at U.S. history, perhaps the closest case of current account reversal took place in the mid-1980s. Despite some differences, the accumulated empirical evidence and an examination of the U.S. adjustment of the mid-1980s show three relevant features:

- One is that current account reversals come with a slowdown of economic growth (Freund and Warnock, chap. 4 in this volume). According to these authors, a 1 percentage point adjustment in the current account would result in a decline in GDP growth with respect to trend of about 0.15 percentage points over the first three years (figure 1C.1).
- Current account reversals are generally accompanied by sharp depreciations of the currencies, causing, in some cases, a currency crisis (Edwards 2005).[2] Moreover, Freund and Warnock (chap. 4 in this volume) have found that the exchange rate adjustment is larger when the

2. Here I use the broad index of the real exchange rate reported by the Federal Reserve. An increase in this index represents a real appreciation.

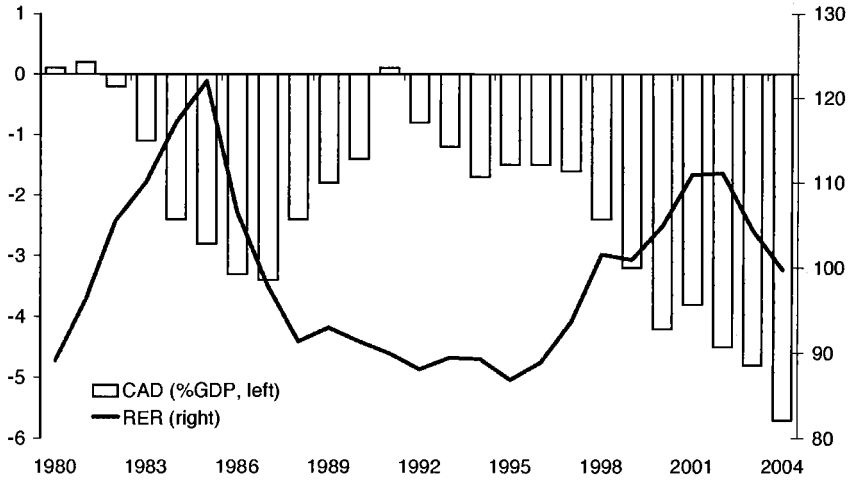

Fig. 1C.2 United States: Current account deficit and the real exchange rate
Source: IMF and U.S. Federal Reserve.

current account deficit is driven by consumption, not investment-financing. This is consistent with traditional models that predict that in the absence of investment in the tradable sector, a larger depreciation is needed to reallocate resources to restore external balance (figure 1C.2).

- The reversal of the current account deficit in the mid-1980s came with a surge of U.S. capital flows to emerging markets. Indeed, the surge of capital flows to emerging economies documented by Calvo, Leiderman, and Reinhart (1993) occurred when the demand of the United States for foreign financing declined (figure 1C.3). They suggest that this phenomenon was caused by push factors, to a large extent independent of developments in the emerging economies themselves. Figure 1C.3 shows that in recent years capital flows to emerging markets have been increasing, but mostly to Asia, particularly China, which is receiving the bulk of capital flows. In the case of China, these inflows have not financed a current account deficit but have been used primarily for reserve accumulation to ward off an appreciation of the renminbi. In contrast, emerging markets with floating exchange rates, in particular in Latin America, have seen very small net inflows as they have been running current account surpluses. Therefore, the availability of foreign financing for emerging markets should rise as the U.S. current account deficit narrows.

Sooner or later there must be a reversal. The issue is whether this reversal will be costly and what repercussions it will have on the global economy.

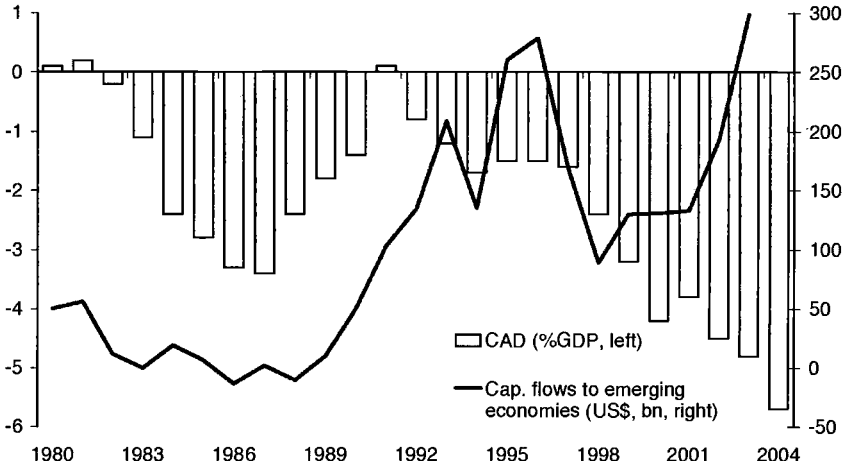

Fig. 1C.3 U.S. Current account deficit and capital flows to emerging economies
Sources: IFS and IMF.

I want to comment particularly on its impact on emerging market economies.

It is very likely that during the adjustment we will see a slowdown of growth in the United States, a depreciation of the dollar, and a surge of capital flows to emerging markets. The U.S. growth consensus forecast is already taking into account slower growth, which is falling from 4.4 percent in 2004 to 3.2 percent in 2006. However, the magnitude of the reduction should not cause major disruptions in the world economy as the United States will be growing close to its long-term potential.

A depreciation of the dollar brings up the uncertainty about which currencies will take the burden. The euro seems more unlikely, and costly, given weak economic performance in Europe. However, the adjustment may be retarded while Asian countries defend their currencies from a weakening dollar, building pressure on the rest of the currencies.

The question of whether these developments are good or bad news for emerging economies has a mixed answer. The impact of a slowdown of growth may be more than offset by the positive effect on capital flows. Regarding the depreciation of the dollar, the evidence shows that commodity prices increase when the dollar depreciates (Dornbusch 1985). Indeed, the significant gain in terms of trade experienced by commodity exporting countries has coincided with the depreciation of the dollar that has taken place since mid-2002 (see figure 1C.4).

Perhaps where we know least is interest rate adjustment. This evidence is more uncertain, in particular because of the low levels of long rates despite the large fiscal deficit of the United States. Naturally, a sharp increase

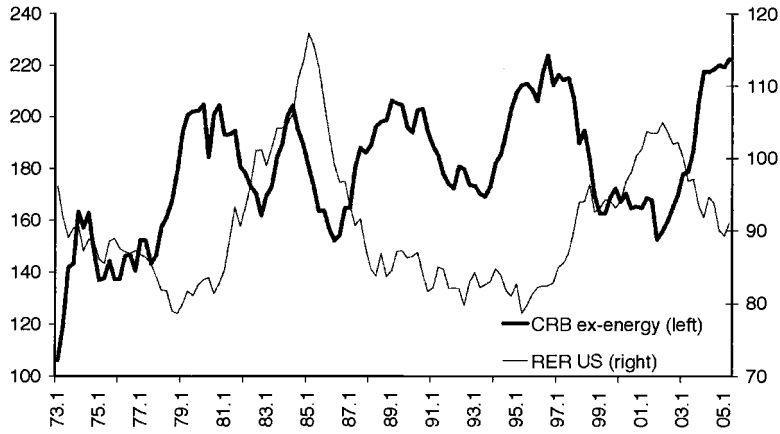

Fig. 1C.4 Real exchange rate and commodity prices (January 1973 = 100)
Sources: Commodity Research Bureau and U.S. Federal Reserve.

in interest rates could result in financial turmoil in developing countries, the more so the larger their debts.

Of course we can predict catastrophic scenarios, but they are improbable as the world economy is better prepared for significant adjustment to global imbalances. From the standpoint of emerging economies, some positive developments, such as those mentioned previously, may facilitate the adjustment. In addition, emerging economies are today in a better position than they were in the last twenty-five years to face difficulties in the external front. Inflation is under control. The external sector exhibits current account surpluses in most countries; for example, in Latin America this could be about 75 billion U.S. dollars during 2005. Fiscal deficit in Latin America is slightly over 1 percent of GDP, showing unprecedented fiscal prudence, and hence the demand for foreign financing is limited. This is also reflected in improved sovereign ratings for these countries.

The evidence reported by Gourinchas and Rey helps to better understand the channels through which an exchange rate correction in the United States contributes to external adjustment, and I will refer to this in more detail in the next section.

Valuation versus Trade Effects

Consider the following equation for the dynamics of net foreign asset (NFA) accumulation:

$$\text{(C1)} \qquad \text{NX}_t + (1 + r_t^a)A_t - (1 + r_t^l)L_t = \text{NFA}_{t+1},$$

where NX stands for net exports, A is foreign assets with a return equal to r^a, L is foreign liabilities with a return r^l, and NFA is net foreign assets

$(A - L)$. Expressing the previous equation as share of GDP we have (using lowercases to denote shares of GDP)

$$(C2) \qquad (1 + r_t^l)\text{nfa}_t = -[\text{nx}_t + (r_t^a - r_t^l)a_t] + (1 + \gamma_{t+1})\text{nfa}_{t+1}.$$

Net exports are a function of the exchange rate, where e denotes its log, and a set of other variables that for the purposes of this discussion will be omitted. As argued by many authors and carefully documented by Gourinchas and Rey most of U.S. foreign liabilities are denominated in dollars, while part of assets are denominated in foreign currency, which generates the valuation effect. However, the valuation effect must be in real terms because returns in dollars could compensate for changes in the price of the currencies. Indeed, what really matters for the valuation effects are unexpected changes in the exchange rate. For this reason, the return on foreign assets will depend on the rate of depreciation, which proxies for unexpected changes in the exchange rate.

When the dollar depreciates, there is a once-and-for-all gain in valuation. Therefore, I assume that r^a depends on the rate of depreciation, Δe. On the other hand, just for simplicity, I will assume that r^l is constant and equal to r and the rate of growth is also constant and equal to γ. Integrating forward equation (C2), considering the appropriate no-Ponzi game condition, we have the following intertemporal budget constraint.[3]

$$(C3) \qquad (1 + r)\text{nfa}_t = -\sum_{s=0}^{\infty} \frac{\text{nx}(e_{t+s}) + [r^a(\Delta e_{t+s}) - r]a_{t+s}}{(1 + r - \gamma)^s}.$$

This expression describes many exchange rates' equilibrium paths as more structure is needed to pin down a unique path.[4] But this equation shows that postponing an adjustment will require a more depreciated exchange rate in the future. The reason is that an appreciated exchange rate will result in a deterioration of the net foreign assets position, which implies that in the future more net exports will be needed.

From the perspective of Gourinchas and Rey's paper, the most important point of equation (C3) is that a depreciation has a permanent effect on net exports and a one-time valuation effect. Indeed, the estimations of Gourinchas and Rey show that a 10 percent depreciation of the dollar generates between a 2 and 3 percentage points decline in the return on foreign assets, for an average return of about 7 percent. On the side of liabilities, a 10 percent depreciation of the dollar produces an increase in the return on foreign liabilities between 1 and 1.5 percentage points, for an average return of about 4 percent. Their estimations stress some important features regarding the current U.S. foreign investment position:

3. Strictly speaking, r, the return on liabilities, also depends on the exchange rate. This will be considered when doing a numerical application below.

4. For example, asset markets equilibrium in a world of imperfect asset substitutability is a natural candidate, as done in Kuori (1983) or Blanchard, Giavazzi, and Sa (2005).

1. The United States enjoys an exorbitant privilege because $r^a > r^l$, and this difference is about 3 percentage points. Therefore, the United States can run a permanent deficit in net exports, despite having a negative international investment position.

2. From equation (1) we see that the exorbitant privilege is given by $r^a A - r^l L$, which can even become negative if external liabilities surpass assets by a large enough margin. Indeed, Gourinchas and Rey show that we are close to that point because at current rates, differential L/A must be less than 1.6, and it is currently at 1.34, which is close and approaching 1.6 while the deficit continues.

3. Another important aspect that can be seen in the budget constraint is that a depreciation of the U.S. dollar facilitates external adjustment not only via an increase in net exports but also via valuation effects. The valuation effect is due to the fact that r^a depends on the depreciation. The difference between the exorbitant privilege and the valuation effect is that the former depends on a persistent difference between the return on assets and the return on liabilities, while the valuation effect depends on unexpected changes in valuation due to changes in the exchange rate.

The effect of exchange rates on the return on foreign assets and liabilities for a number of industrial countries has been examined by Lane and Milesi-Ferretti (2005). They find that the effects of a real depreciation on foreign assets' returns for the United States is the smallest as the United States has probably the largest share of assets denominated in dollars. But on the side of liabilities, the United States is the only country where a real depreciation does not significantly affect returns, consistently with the fact that most U.S. liabilities are denominated in dollars. For the rest of industrial countries, a real depreciation increases the return on liabilities. In net terms, the United States is the country that benefits the most from a real depreciation.

In the recent experience with the widening of the U.S. current account deficit, many observers have argued that globalization facilitates the external adjustment. The budget constraint in equation (C3) also serves to illustrate this point. Increased globalization implies that, for a given net asset position (nfa), gross assets (a) are larger. In the presence of the exorbitant privilege, globalization helps the external adjustment. In the transition to a larger participation of U.S. assets in global portfolio, the United States may have massive financing available.

However, this effect has its limits. Increased demand for safe assets and global portfolio adjustment may lead to an increase in U.S. liabilities and assets. However, the increase in a is not unlimited, and it is difficult to justify that an increase in the international investment position of the United States can be sustained without a reduction in the exorbitant privilege. As Roubini and Setser (2004, 6) put it: "the U.S. should not count on being

able to fool all of the people all of the time: expected persistent real depreciation of the US dollar would lead foreigners to require ex-ante higher returns on their US dollar asset holdings to minimize their capital losses."

This approach can be used to estimate the effects of a real depreciation on external adjustment, adding up the valuation and trade effects. Gourinchas and Rey estimate the required depreciation to bring the economy to the steady state in one, three, and five years. In one year, a 75 percent depreciation would be required, and as the period lengthens, the depreciation must increase because during the transition to the steady state, the economy is increasing its negative foreign asset position. While interesting, this exercise may be unrealistic as the economy will adjust over the long run to the steady state, and this should be enough to keep solvency as indicated by the intertemporal budget constraint.

We can compute constant levels for net exports and the interest rate differential that keep net foreign assets at a constant value equal to $\overline{\text{nfa}}$. We can also compute the required exchange rate depreciation to achieve this. The valuation effect operates only in the period in which the depreciation takes place, from then on the exorbitant privilege persists, but with no gains from the exchange rate, which is assumed to be constant. Solving equation (C3) for constant nx and a, a once-and-for-all valuation gain at time t, and the remaining exorbitant privilege, we have that (ignoring growth)

$$\text{(C4)} \quad r \times \overline{\text{nfa}} = \text{nx}(\bar{e}) + \frac{r}{1+r}(r^a(\bar{e} - e_0) - r)a + \frac{1}{1+r}(r^a - r)a,$$

where $\bar{e} - e_0$ is the depreciation needed to achieve a constant level of net foreign assets. The first term is net exports, the second is the valuation gain at t for a depreciation from e_0 to e, and the third one is the flow of the exorbitant privilege.

We can use this expression to compute the effects of a depreciation on external adjustment. This is just an expansion of the traditional elasticity approach to consider valuation effects. However, we need to take into account that the valuation effect is a once-and-for-all effect, and for this reason it appears in equation (C4) as the annuity of the change in returns in the period in which the depreciation takes place. The last term of equation (C4) is not affected by the exchange rate, which I assume to remain constant after the depreciation happens.

Differentiating equation (C4) with respect to e we have that a change in de will induce an external adjustment of Λ given by

$$\text{(C5)} \qquad \Lambda = \frac{\partial \text{nx}}{\partial e} de + \frac{ra}{1+r} \frac{\partial r^a}{\partial \Delta e} de.$$

Using Gourinchas and Rey's parameters, we have that $\partial \text{nx}/\partial e = 1/15 = 0.067$. On the other hand, using an interest rate of 4 percent and a ratio of

foreign assets to gross domestic product (GDP) of 76 percent, we can calculate the valuation effect by using $\partial r^a/\partial \Delta e$ estimated by Gourinchas and Rey. However, we must also take into account that the return on liabilities is affected by a depreciation as well. The semielasticity of returns on assets in one year estimated by Gourinchas and Rey is 0.28, for assets being 76 percent of GDP, while the semielasticity for the return on liabilities is –0.08, for liabilities being 103 percent of GDP. Therefore, a rough estimate for the gain in returns on net assets deriving from a 1 percent depreciation, expressed with respect to assets, is $0.28 + 0.08 \times (103/76) = 0.39$. Therefore, we have that the valuation effect is $0.04 \times 0.76 \times 0.39/1.04 = 0.011$. Then a 10 percent depreciation would result in a total effect of 0.78 percent. The valuation effect accounts for only 14 percent of the total effect.[5]

An adjustment of 3 percent of GDP would require a 38 percent depreciation (3/0.078). If there were no valuation effect, the required depreciation would be 45 percent. Figures are similar to those of Blanchard, Giavazzi, and Sa (2005), Edwards (2005), and Obstfeld and Rogoff (chap. 9 in this volume).

The lesson from these simple calculations is that the valuation effect has a small impact on external adjustment. The reason is simply that it is a one-time effect. A back-of-the-envelope calculation may clarify the point. As argued in the Gourinchas and Rey's introduction, a 10 percent depreciation represents 5 percent of GDP transfer from the rest of the world to the United States. As an annuity this would be 0.2 percent of GDP, a figure somewhat larger than the 0.11 percent one obtains from the semielasticities of returns computed by Gourinchas and Rey. The reason is that, as argued by Gourinchas and Rey, the covariates of the returns reduce the effects of the depreciation. For example, a depreciation reduces the returns on assets, but this depreciation could result in an increase in the value of the stocks in dollars, for example, in the tradable sector, which would partly offset the direct gain—losses for foreign investors—from valuation.

In summary, although the valuation effects are conceptually important and may play an important role in the short run, over the long run, trade effects remain playing the lead part.

A caveat to this calculation is that these effects do not necessarily imply that welfare effects from valuation are necessary. Indeed, Tille (2004) has modeled the welfare effects from valuation and found that they are not small. The reason is that a depreciation affords greater consumption due to high net exports and gains in valuation. But in order for the trade channel to operate, an increase in net exports requires more work. In contrast, the valuation effect entails a wealth transfer that does not need extra work and, hence, has no costs from the welfare viewpoint.

5. According to Obstfeld and Rogoff (chap. 9 in this volume), the valuation effect would represent 20 percent of the total effect of a depreciation.

Concluding Remarks

In these comments I have argued that the valuation effect, although significant in the short run, is much less important from a longer-term view. Indeed, the exchange rate adjustment operates mainly through the traditional trade effect.

In the short run, and particularly from the point of view of emerging economies, the valuation effect could be more important. Short-term movements in capital flows could be partially offset by changes in valuation. This is related to the notion that one key problem of emerging economies is that they cannot borrow in their own currencies. Therefore, when the domestic currency depreciates, the return on liabilities increases in terms of local goods. The burden of liabilities rises. For industrialized countries, the valuation effect operates in the other direction, helping the external adjustment.

A typical case in point as a good example is Australia, where, according to the estimations of Lane and Milesi-Ferretti (2005), a 10 percent depreciation reduces the return on net foreign liabilities by about 2 percent, somewhat less than the 5 percent for the United States.

Whether the inability of many economies to borrow internationally in their own currencies is the original sin (Eichengreen and Hausman 1999), this discussion highlights the importance of international risk sharing. And precisely in moments where international financial markets stop lending to emerging markets, the ensuing depreciation will ameliorate the negative impact on countries that have been able to borrow in their own currencies.

From the point of view of current global imbalances, a current account reversal should occur sooner or later; a depreciation of the dollar should help, but the contribution of valuation effects will still be limited.

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