

Current Account Sustainability and the Relative Reliability of the International Accounts*

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Abstract

We provide a brief but relatively complete survey of various theories that have been offered regarding the sustainability of the U.S. current account deficit. We focus on the data these theories rely on, provide an evaluation of the *relative reliability* of data on various subcomponents of the international accounts, and through this analysis weigh in on which theories are better supported by the data. Our analysis of the dark matter theory is cursory; from a relative reliability perspective, it fails as it is built on the assumption that an item that is largely unmeasured is the most accurate component of the entire set of international accounts. Our analysis of the exorbitant privilege theory requires much more depth, as we must first construct estimates of adjustments for known shortcomings in the accounts. After plugging various holes in the accounts, we find that the positive returns differential the United States earns on its net international investment position is much smaller than implied by the exorbitant privilege theory.

Keywords: current account imbalances, international investment, financial derivatives, real estate, short sales, R&D

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1. Introduction

We are currently in a world of substantial global imbalances in which the United States has a sizeable current account deficit of over five percent of GDP and, to a first approximation, the rest of the world has a sizeable current account surplus. There are varied views about how this situation of global imbalances might resolve itself. In a simplistic way these views can be divided into those who believe these imbalances will evolve in a benign manner and those who worry that their resolution will involve substantial disruptions to the global economy.

Often these views are framed in terms of the sustainability of current account balances.¹ Along at least one dimension, one's view on whether the U.S. current account deficit is sustainable or not hinges importantly on one's beliefs about the *relative reliability* of various components of the international accounts.² For example, some believe that the United States might be able to earn its way to current account sustainability because it appears that U.S. claims on foreigners earn a higher rate of return than foreign claims on the United States, resulting in a returns differential cited by several authors as "the exorbitant privilege." Such a return differential has been widely cited in analyses such as those by Gourinchas and Rey (2007a), Obstfeld and Rogoff (2005), Lane and Milesi-Ferretti (2005, 2008), and Meissner and Taylor (2006), among others. However, Curcuru, Dvorak, and Warnock (2008a), henceforth CDW, find that the large U.S. returns differential and, hence, the empirical cornerstone of this view, rests on the implicit but ultimately incorrect assumption that the various components of the U.S. international accounts form a cohesive dataset. CDW's view can be interpreted as one in which improvements to the data collection system make information on relatively recent positions (taken from the IIP) more reliable than information on past positions (also in the IIP) and that position data is generally more reliable than that on financial flows (presented in the IIP, but originating in the BOP) which are seldom revised even after errors are identified. Another example is the "dark matter" view of Hausmann and Sturzenegger

¹ See, among others, Hausmann and Sturzenegger (2007), Kitchen (2007), Pavlova and Rigobon (2008), Edwards (2005), Frankel (2006), Roubini and Setser (2004), Obstfeld and Rogoff (2007), and Meredith (2007).

² By international accounts we are referring to the balance of payments (BOP) and the international investment position (IIP).

(2007), henceforth HS. HS suggest that the external position for all asset types should be estimated by capitalizing income at a common discount rate; they then compute the net position from these capitalized values. The current account is then the year-to year change in the constructed net position. This explicitly assumes that investment income, a subcomponent of the current account, is the most reliable portion of the entire set of international accounts, and that it is appropriate to construct positions in this manner. Given this view of the relative reliability of various components of the international accounts, current account sustainability follows. Global net asset positions constructed this way appear to be relatively stable, suggesting that global imbalances are sustainable and that neither a major adjustment in the exchange value of the dollar nor a large rebalancing of the global economy is necessary. Gros (2006) takes an alternative view, assuming financial transactions are the most reliable and concluding that the U.S. net IIP is more negative than reported.

In this paper we provide a brief but relatively complete survey of various theories that have been offered regarding the sustainability of the U.S. current account deficit. We focus on the data these theories rely on and provide an evaluation of the *relative reliability* of data on various subcomponents of the international accounts. Through this analysis we weigh in on which theories are better supported by the data.

Questions about the relative reliability of entries in the international accounts are not new:

“Clearly, if our investments abroad are yielding a positive return, their capital value must be positive not negative. Is this a defect of the figures on current flows, or is it a defect of the balance-sheet figures? The only obvious reconciliation is to assign the whole of the statistical discrepancy as an unrecorded negative net investment income, but even that does not seem satisfactory...” (Friedman 1987)³

And, today, relative reliability remains a useful perspective through which to view theories on current account sustainability. As noted, the dark matter view hinges on a very strong assumption about relative reliability. So does the CDW view on the (lack of an) exorbitant privilege, as it results in a substantial difference between cumulated current account deficits and the net IIP—a difference that must be

³ Personal correspondence with Charles Thomas, June 1987.

addressed. The difference between cumulated current accounts and the net IIP was examined closely in Lane and Milesi-Ferretti (2008), who investigate the impact of allocating the difference to capital gains or flows in existing financial account assets. We extend the Lane and Milesi-Ferretti analysis in the following way. While both papers drill down into the difference between cumulated current accounts and the net IIP by examining what is essentially the by-asset-class “gap”—described in more detail below—rather than allocating each by-asset-class gap to either capital gains or capital flows we take another approach. Specifically, we start by recognizing that there are known holes in the international accounts that must be filled before any “gap” analysis can be conducted. We form adjustments for (i) assets not currently captured in the historical financial accounts data (residential real estate, which should be in the direct investment data, and financial derivatives, introduced only in 2006), (ii) items that have known shortcomings in the transactions data in the current and financial accounts but have no known accompanying flaws in the positions data (IPOs, asset-backed repayments, goods exports), and (iii) items that have known shortcomings in the positions data but for which the associated transactions data are thought to be sound (short positions, direct investment in intangibles). We develop reasonable plugs to these holes and construct revised estimates of the remaining unexplained difference between the cumulated current account deficit and the net IIP.

Our results can be summarized as follows. First, on the dark matter view, while we have sympathy for some parts of the hypothesis, we find the methodology of capitalizing income streams to be questionable. Thus, even if the investment income numbers are entirely reliable, we doubt this method of constructing the current account or position is an improvement over the published estimates.

Second, the view that the U.S. can earn its way to current account sustainability which rests on the continued existence of an exorbitant privilege, rests in turn on a view of relative reliability in which positions and flows data form a cohesive dataset. CDW (2008a) argue that positions and flows data do not form an internally consistent dataset; based on that view, they show that the returns differential—the difference between the rate that the United States earns on its foreign claims and the rate it pays on its foreign liabilities—is not as sizable as previously assumed. But the debate does not end, as combining the

recorded current account deficits with the valuation adjustments implied by the CDW returns differentials implies that the net IIP is much more negative than that currently recorded, a difference that we refer to as the “gap” in the international accounts. This, in turn, hinges on one’s interpretation of the nature of the “other adjustments” reported in the IIP. If one believes “other adjustments” are valuation adjustments, they would argue that returns differentials are larger than CDW compute. Alternatively, the CDW results suggest that the current account deficit is over-estimated by roughly 0.6% of U.S. GDP per year.

To address this from a relative reliability perspective, in Section III we take a two-pronged approach. First, we note that for one asset class—direct investment (DI)—some portion of “other adjustments” are plausibly thought of as valuation adjustments. We form a time series of DI “other adjustments” that enables us to show that one obtains a smaller differential than that estimated in the exorbitant privilege literature whether or not one considers them to be valuation adjustments. Second, because the gap in the international accounts is a function of the constellation of valuation adjustments, reported balance of payments data, and reported international investment positions data, we then address known weaknesses in each. In the end, after accounting for these weaknesses, the gap is entirely consistent with small CDW-type valuation adjustments. With this view of relative reliability, the idea that the U.S. can earn its way to current account sustainability finds little support. A modest capital gains returns differential can be consistent with repeated U.S. current account deficits and the stable recorded net IIP. Moreover, our best estimate indicates that the current account deficit is somewhat smaller than has been reported (on average 0.34% of GDP per year), net financial inflows are smaller than reported (on average 0.59% of GDP per year), the end-2006 net IIP is slightly more negative than reported, and the unexplained gap is much smaller than previous work suggests.

2. Dark Matter

At least in its original incarnation, the dark matter of HS rested on a very severe notion of relative reliability. In particular, HS explicitly assume that investment income, a subcomponent of the current account, is the most reliable portion of the entire set of international accounts. Given this view of the relative reliability of various components of the international accounts—in this case that information on investment income is more reliable than information on the IIP and the current account—a view of current account sustainability follows. If investment income is the most accurate component of the entire accounts, then the HS suggestion that the net IIP should be estimated by capitalizing net investment income is reasonable, and so might be estimating net financial flows as the changes in the capitalized-net-income measure of the net IIP.⁴ Doing so produces global net asset positions that appear to be relatively stable, leading to the HS view that global imbalances are sustainable and that neither a major adjustment in the exchange value of the dollar nor a large rebalancing of the global economy is necessary.

Kozlow (2006) presents a cogent critique of this dark matter hypothesis. Here we will raise only one point about the leg on which it stands. The notion that income streams are the most accurate aspect of the account is patently false. In gross valuation terms, more than two-thirds of the income streams—those arising from non-DI positions—are derived by taking an estimate of the position, picking a reasonable yield, and applying that yield to positions to estimate income streams. In 2007, combined gross income payments and receipts totaled a bit less than \$1.5 trillion; of this more than \$1 trillion was non-DI and hence was estimated by applying an estimated rate of return to estimated positions. Thus, when positions data are revised when more accurate information becomes available, so too are income streams. This explains why starting in the late 1990s the U.S. repeatedly became a net debtor in the income balance only to have revisions to positions push it back into the black. Our view is that this theory which relies on largely constructed data, is fairly weak.

⁴ HS actually suggest that the current account balance, not net financial flows, be measured in this way. However, estimating the current account in this way ignores the potentially large (if currently unmeasured) contribution of capital account transactions and introduces inconsistencies into the NIPA measurement of product.

Since HS first applied the term dark matter to international accounting, it has become associated with the difficulty in accounting for cross-border transactions in intellectual property (IP) such as patents, trademarks, and other intangibles. We have some sympathy for this view. In the U.S. National Income and Product Accounts (NIPA) all trade in IP (whether for the use of the IP or ownership rights to it) are included in the current account under services.⁵ This is true for trade between unaffiliated parties as well as trade within a DI relationship. BEA has recognized that its coverage of these transactions has been incomplete and recently revised its forms and reporting panels.⁶ Although these efforts will likely increase coverage, and perhaps increase recorded services trade, they will likely do little to address the issue of how firms value the IP transferred between affiliates. One hypothesis to reconcile the high income rate of return earned on U.S. direct investment abroad and the low income rate of return earned on foreign direct investment in the United States is that U.S. firms undervalue the IP transferred to their foreign affiliates while foreign parents overvalue the IP transferred to their U.S. affiliates.

We are not going to address this issue beyond making two points: First, the current cost valuation of DI used throughout this paper excludes intangibles, including IP. Second, the fundamental issues associated with sustainability depend on the willingness of cross-border investors to continue investing and the servicing burden of the investment positions. The particular values that compilers attach to DI positions in the IIP are irrelevant. For example, foreign parents may be quite happy with the fact that their U.S. affiliates earn low (profit) rates of return so long as they pay large royalty payments back to the parent. From the standpoint of the current account (and hence financial flows), except for taxes, it does not matter if the debit entry is recorded as investment income payments or royalty payments.⁷

⁵ This treatment is out of sync with the System of National Accounts, 1993, (SNA93) and causes an inconsistency in the NIPA measurement of product. Within SNA93, transactions in the ownership rights to IP are to be recorded in the capital account unless the IP is the result of research and development (R&D). Trade in the ownership rights to IP that results from R&D is to be recorded in the current account as “research and development services.” However, trade in the rights to use IP are to be recorded in the current account under services as “royalties,” regardless of whether R&D was an input to the IP. In the draft edition of the update to the Balance of Payments Manual, BPM6, the term “royalties” has been replaced by “Fees for franchises and other property rights.”

⁶ The new form, BE-125, first collected data for 2006. Estimates based on these data will be folded into the annual revisions to the IT accounts published in June 2008.

⁷ The accounting treatment of these earnings may, however, violate IRS transfer-pricing guidelines and can result in significant tax penalties such as those recently levied on pharmaceutical companies Merck & Company and Glaxo

3. Exorbitant Privilege

The exorbitant privilege view that the United States might be able to earn its way to current account sustainability also hinges on views of relative reliability. Proponents of this view point to the large returns differential the U.S. enjoys—the idea that the U.S. can persistently earn sizably more on its foreign portfolio than it pays foreigners on their U.S. portfolios—that has been reported in Gourinchas and Rey (2007a), Obstfeld and Rogoff (2005), Lane and Milesi-Ferretti (2005), and Meissner and Taylor (2006). CDW (2008a) find that the large U.S. returns differential and, hence, the empirical cornerstone of the exorbitant privilege view, rests on the implicit but ultimately incorrect assumption that the various components of the U.S. international accounts form a cohesive dataset. The CDW view can be interpreted as one in which information on relatively recent positions (taken from the IIP) is more reliable than information on past positions (also in the IIP) and financial flows (presented in the IIP, but originating in the BOP).

While CDW (2008a) suggests that the returns differential is not as sizable as previously assumed, there remains room for counterarguments. If it is true that there is at most a small returns differential, how does one reconcile the relatively stable recorded U.S. net international investment position (IIP) with persistent and large recorded U.S. current account deficits? Combining the recorded current account deficits with the valuation adjustments implied by the CDW returns differentials implies that the net IIP is much more negative than that currently recorded—see Figure 1, reproduced from CDW (2008a)—a difference that we refer to as the gap in the international accounts. If one treats the gap as capital gains valuation adjustments, as much of the literature has, one comes back to the exorbitant privilege view.

To weigh in on this, we first must understand the source of the gap. Kitchen (2007) takes the view that the gap—the bulk of which owes to “other adjustments” (to be discussed below)—has been persistent in the past and is thus likely to remain persistent in the future; thus concluding the current account is

SmithKline. See “Merck Tax Settlement Carries \$2.3B Tab”, WebCPA, Feb. 15, 2007, available at <http://www.webcpa.com/article.cfm?articleid=23366>.

likely sustainable. In contrast, we are not comfortable opining on the likely persistence of what is essentially a residual and prefer instead to get a sense of potential holes in the international accounts by carefully scrutinizing individual components—specifically, valuation adjustments, current and financial account transactions, and position data—at the asset class level. With an improved understanding of these holes (and, at least in ballpark terms, their sizes), we are then better armed to think about “other adjustments,” the gap, and whether the U.S. can earn its way to current account sustainability.

Our plan in this section is to provide a detailed decomposition of the gap that arises when CDW-type market-based returns are used, then plug known holes in the international accounts and reapply our calculated returns differentials to the newly formed measures of the financial account, and finally to recalculate the gap. The complete details behind our returns calculations and estimates of the holes in the international accounts are relegated to appendices.

3.1 Estimating Returns and “Other Adjustments” By Asset Class

At the heart of competing views on the exorbitant privilege are interpretations of the gap in the international accounts and whether “other adjustments” can be considered valuation adjustments. We tackle these two issues jointly by first calculating valuation adjustments for assets for which such calculations are straightforward and then computing “other adjustments” by asset class so that those that may be additional valuation adjustments can be identified.

We begin with a detailed examination of valuation adjustments by asset type. We calculate valuation adjustments at the asset class level by using the methods employed in CDW for a slightly longer time horizon, 1990-2006. As we will show, these calculations, as in CDW (2008a), produce modest differentials.

Methods for Constructing Returns Differentials

Returns on international investment positions are never directly measured and thus must be inferred from other data. There are essentially three methods for estimating cross-border returns. One, the

market-based approach of CDW, assumes that holdings data are the most accurate aspect of the international accounts and then applies reasonable returns indices to the measured positions to form estimated returns. The second method, which we call the “original IIP” approach, estimates capital gain returns for a particular asset class using:

$$r_t^O = \frac{A_t^O - A_{t-1}^O - FLOW_t^O - OA_t^O}{A_{t-1}^O + \frac{1}{2} FLOW_t^O} \quad (1)$$

where A , $FLOW$, and OA denote positions, flows, and “other adjustments” and the O superscript denotes that all are as reported in the original year t IIP release.⁸ This method presumes that originally reported positions and flows form a cohesive dataset and that originally reported “other adjustments” are not valuation adjustments. The third method, the “revised” method, uses the following formula to calculate implied capital gains returns:

$$r_t^R = \frac{A_t^R - A_{t-1}^R - FLOW_t^R}{A_{t-1}^R + \frac{1}{2} FLOW_t^R} \quad (2)$$

where the R superscript denotes that these variables are formed using the most recently-revised data (that is, the current vintage of revised data).⁹ We will use these three methods when calculating returns differentials. First, we delve a bit deeper into “other adjustments”.

“Other Adjustments” By Asset Class

In each annual IIP release, for both claims and liabilities positions and for each asset class, BEA provides a detailed reconciliation between start- and end-of-the-year positions, attributing movements over the year to net flows, valuation changes due to price or exchange-rate movements, and “other adjustments.” BEA defines these “other adjustments” as (i) changes in coverage, (ii) capital gains and

⁸ Throughout, direct investment positions are valued using the current-cost method.

⁹ Equations (1) and (2) differ slightly from those presented CDW (2008a) because the denominator includes a term for one-half of the year’s flows, and the numerator in equation (1) also subtracts the contribution of “other adjustments.” The differences in the resulting valuation adjustments are minor.

losses of direct investment affiliates, and (iii) other adjustments to the value of assets and liabilities. In general, large contributors to these “other adjustments”—and one that is particularly evident in the banking and nonbanking data—are the addition of new reporters to the panels, identified reporting errors, and reclassification of assets among categories. The “other adjustments” reported in the *original* IIP releases for other assets are generally very minor. Using the price and exchange rate movements reported on these original IIP releases, implied capital gains rates can be computed for each asset class as in CDW (2008a).

Subsequent to each IIP release, BEA has historically made extensive revisions to the recorded positions, with more modest changes to the transactions data. As discussed below, these revisions typically come in response to securities claims and liabilities holdings surveys that are collected and released at a long lag to the initial IIP publication, and, as discussed in detail in CDW (2008a), are often the result of sizable errors in the Treasury flow data supplied to BEA which are difficult to revise. This makes the estimation of capital gains due to price and exchange-rate movements very difficult because BEA does not release *revised* breakdowns of valuation and “other” adjustments at the asset class level.

In Appendix A we construct detailed estimates of revised price and exchange-rate valuation adjustments by asset class, which will allow us to estimate revised “other adjustments” by asset class. Our year-by-year revised “other adjustments” series by asset class is presented in Appendix Table A.1. In short, for traded securities for which returns are observable, we use the market-based price and exchange-rate return estimates, r_t^k , to compute the valuation adjustment for each year t :

$$VA_t^k = r_t^k \left(A_{t-1}^k + \frac{1}{2} FLOW_t^k \right) \quad (3)$$

where $k = M$ (market-based), O (original) or R (revised). We then use these valuation adjustments for the non-DI assets to infer asset-class level “other adjustments” for non-DI assets by estimating:

$$OA_t^R = A_t^R - A_{t-1}^R - FLOW_t^R - VA_t^k \quad (4)$$

where we use market-based valuation adjustments for equities and bonds, and IIP valuation adjustments for banking, nonbanking, and other assets. Then, using the fact that BEA publishes revised “other

adjustments” for aggregate claims and aggregate liabilities, we estimate the revised “other adjustments” for direct investment by subtracting our estimate of “other adjustments” for the other asset classes from aggregate “other adjustments”.

Estimated Returns Differentials

Table 1 provides estimated returns differentials using the three methods. As noted, the first is a market-based method that follows CDW (2008b) and presumes that positions data are the most reliable in the international accounts. Applying carefully constructed returns indices to high-quality positions data enables the computation of market-based returns, which generates a small capital gains differential of 0.6 percent per year (column A). The second, the revised approach (column B), assumes that all “other adjustments” in the current vintage of revised data should be counted as valuation adjustments. For securities, compared to the market-based method, the returns for equity claims and liabilities and bond claims are significantly higher when computed using the revised method, while the rate of return for bond liabilities is much lower. In aggregate the revised method produces a substantial capital gains returns differential of 2.4 percent per year. The third method, “Original IIP” provides estimates that are quite similar to the market-based ones. This is not surprising, as for equities and bonds BEA estimates the year-end position based upon the flows for the year and movements in the market prices of the underlying assets.

Embedded in the 0.6% returns differential using the market-based approach is the assumption that revised “other adjustments” are not valuation adjustments. For non-DI asset classes, that assumption rests on solid footing. For DI, as we discuss in more detail in Appendix A, some “other adjustments” could be considered valuation adjustments. Thus, in the memo item in Table 1 we also show the aggregate capital

gains differential if we assume that *all* DI “other adjustments” are in fact valuation adjustments.¹⁰ Doing so increases the aggregate differential by 0.4 percent per year.

While we have great confidence in our market-based returns differentials, and our results confirm those in CDW—our estimate of the average aggregate capital gains returns differential from 1990 to 2006 is at most 1.0 percent per year, depending on the estimation of direct investment (DI) capital gains—the skeptic would note that a large gap in the international accounts remains. We show that large gap next.

The Gap with Market-Based Valuation Adjustments and Reported International Accounts Data

Armed with our estimated market-based valuation adjustments for all asset classes, we next take a first pass at computing the gap between the current reported IIP figure and that implied by financial flows and our valuation adjustments.

First, note the relationship between the current and financial accounts:

$$\sum_{t=1}^T CA^R = -\sum_{t=1}^T KA^R - \sum_{t=1}^T FA^R - \sum_{t=1}^T SD^R \quad (5)$$

where CA=current account, FA=financial account, KA=capital account, and SD=statistical discrepancy, and the R superscript indicates that these are the recorded values; this identity must hold because by definition the recorded statistical discrepancy is the negative of the sum of the current, financial, and capital accounts. Second, note the relationship between changes in the NIIP and the financial account:

$$\Delta NIIP^R = NIIP_T^R - NIIP_0^R = -\sum_{t=1}^T FA^R + \sum_{t=1}^T VA^R + \sum_{t=1}^T OA^R \quad (6)$$

where NIIP is the net international investment position, VA are the valuation adjustments, and OA are “other adjustments” attributable to items like series breaks that create inconsistencies in the data series

¹⁰ This treatment of DI “other adjustments” is similar to that in Lane and Milesi-Feretti (2008). However those authors use a calculation similar to our “Original IIP” method for all other assets, including portfolio securities, whereas we use market-based returns for valuation adjustments on portfolio securities.

and the inconsistency that arises from recording DI positions at their current-cost value while DI transactions occur at market value.¹¹

Combining (5) and (6) we can express the relationship between the cumulated current account and the NIIP as:

$$\sum_{t=1}^T CA^R + NIIP_0^R = NIIP_T^R - \sum_{t=1}^T VA^R - \sum_{t=1}^T OA^R - \sum_{t=1}^T KA^R - \sum_{t=1}^T SD^R. \quad (7)$$

A graphical illustration of the relationships between equations (5), (6) and (7) is presented in Figure 2. The gap indicated in the figure is the difference between the right- and left-hand sides of equation (7) (assuming that there are no “other adjustments”).

At the time of the initial release of each annual IIP, for that year (and that year only) the relationship in equation (7) holds exactly. However, over time both positions and transactions data are revised, and valuation and “other adjustments” are not again provided at the asset class level. As discussed in CDW (2008a), naïve application of equation (7) using the current vintage of revised BOP and net IIP data to compute implied valuation adjustments and implied rates of return on the underlying assets results in returns that are implausibly large in favor of U.S. investors—the exorbitant privilege. Using the alternate valuation adjustments constructed in CDW (2008a), equation (7) does not hold; the difference between the left and right hand sides—the gap—is significant. Using the valuation adjustment estimates calculated in the previous sections, Figure 3 provides a representation of equation (7) for 1989 to 2006, assuming no “other adjustments”. The current account, capital account, statistical discrepancy and NIIP are taken from the most recently released (April 2008) BEA data. The individual components of equation (7) are shown in the embedded table, where the top shows the components to the left side of the equal sign, the bottom the components to the right side of the equal sign. Using our estimates of valuation adjustments, equation (7) does not hold, and the difference between the right and left-hand sides of this equation is a gap of \$1.8 trillion dollars.

¹¹ We assume that the financial account flows are signed according to the BOP convention, which is the opposite of how they appear in the BEA NIIP presentation and is why they have a negative sign in equation (6).

This reconciliation at the asset class level is shown in Table 2, and the final column shows by asset class the gap, which is equal to the difference between the position recorded in 2006 and the position that would be estimated by adding flows and valuation adjustments to the initial (1989, in this exercise) position. A positive gap indicates that 2006 positions are greater than implied by past flows and valuation adjustments, whereas a negative gap indicates that past flows and valuation adjustments imply a larger position for 2006 than is currently measured. The gap could be the result of errors in any of the other four columns of the table: incorrect flows, valuation adjustments, or problems with the initial or final position that could result from series breaks such as the reclassification of data between asset types or the introduction of new reporters or assets. For example, the large gap in the banking and non-banking data was created when deposits were reclassified between categories; because of this, we also group these categories together as a memo item. Breaks in the data series due to the introduction of new reporters or asset types indicate that there are both errors in the initial positions and in transactions. Interestingly, both the overall claims and liabilities gaps move the net IIP in the same direction - less negative - relative to what would otherwise be estimated given these estimated valuation adjustments.

The total gap of \$1.8 billion is equal to the net of “other adjustments” for claims and liabilities shown in Table 2. *If the valuation adjustments are correctly measured*, the gap suggests that on net there have been more outflows than what have been recorded. The gap is sizable and positive for equity and bond claims and equity liabilities, indicating that in sum the surveys have identified more securities holdings than implied by adding net purchases of foreign securities by U.S. residents’ and estimates of the capital gains on these holdings to the start year positions. In contrast, the gap for bond and DI liabilities is highly negative. Because most of the banking and nonbanking gaps are the result of inter-category shifts, more informative for them are the lines that combine these asset categories and show that the resulting claims and liabilities gaps are both positive, consistent with an expanding reporter panel.

In the main part of the table DI is shown with “other adjustments” excluded from valuation adjustments. An alternate estimate of the gap, shown as a memo item, treats DI “other adjustments” as

valuation adjustments. With these estimates the total gap would fall substantially by \$600 billion to \$1.2 trillion.

The aggregate positive claims gap and negative liabilities gaps (with a positive overall gap) have the same implication for the net IIP: The recorded net IIP is less negative than would be estimated using these valuation adjustments, and suggests that there have been more outflows than what has been recorded. However, if we find that there have been more outflows than recorded, then there must also have been be more inflows than recorded, the because the international transactions account must balance and the cumulative recorded statistical discrepancy in the accounts is close to zero.¹²

Table 3 and Figure 3 utilize our estimates of valuation adjustments but take as given recorded data on transactions and positions. We next address some known errors in the recorded transactions and positions.

3.2 Recalculating the “Gap” with Alternative International Accounts Data

In this section we isolate areas in which the international transactions accounts and the IIP have known shortcomings and provide estimates of their magnitude. We divide the discussion into three categories. The first, presented in detail in Appendix B, is entire asset classes missing from both the transactions accounts and IIP, such as financial derivatives (which were introduced in 2006) and residential real estate claims and liabilities (which should be included as part of direct investment). For financial derivatives, we form estimates based on the growth rate of transactions and holdings reported to the IMF by other countries (details in Appendix B and Appendix Table B.1). For residential real estate, which should be part of DI, we construct estimates of foreign purchases of U.S. real estate using recent National Association of Realtors survey data and estimates of U.S. purchases of foreign real estate by following the Flick and Yun (2007) construction of estimates using State Department data. While such missing flows and assets have no impact on the visible gap, their inclusion will have an impact on the

¹² Because the BOP is based on the double-entry accounting system, the sum of all current account, capital account, and financial account transactions should equal zero. Any remaining balance due to errors or omissions in the recorded international transactions is recorded as a statistical discrepancy.

statistical discrepancy and the IIP. Our analysis suggests that there are additional substantial net unrecorded inflows from these assets, and that residential real estate increases the net IIP liability position.

The second category of adjustments, presented in Appendix C, is shortcomings in the transactions data in the current and financial accounts that are not accompanied by known problems with positions data. Examples of these include initial public offerings and asset-backed repayments in the financial account (both measured well in the positions data but not in the financial account) and goods exports in the current account. There is substantial evidence that financial account net outflows are undercounted; we also identify research that has identified under-reporting of net exports.

The third category of adjustments, presented in detail in Appendix D, consists of items for which there are problems with IIP positions but for which the associated transactions data are thought to be sound. Examples of these include short positions and direct investment in intangible assets such as research and development. For short positions, the U.S. surveys used to collect position data do not admit the reporting of negative positions and, as a result, both the equity and bond positions are likely overstated. To estimate the impact of the omission of short positions, we construct estimates of the fraction of cross-border equity claims and liabilities that have negative positions using representative short sales as a percentage of float, and the corresponding impact on net dividend income. We find that adjusting for equity short sales makes the net IIP slightly more negative (though this would likely be offset by short bond liabilities positions.) For DI in intangible assets, we use BEA estimates of the impact of intangibles such as research and development, which also move the net IIP into a more negative position.

Our adjustments to the international accounts are summarized in Table 3.¹³ Panel A shows our adjustments to transactions. The net effect of our estimated adjustments to recorded net outflows into bonds, banking and nonbanking deposits, equities, and DI are only partially offset by inflows from financial derivatives, real estate, and goods exports. Panels B and C show our adjustments to claims and

¹³ Again, for details on any of our adjustments to the international accounts, please see Appendix B, C, or D.

liabilities positions. The estimated net IIP adjustment is shown in the final column of Table 3 Panel C; our adjustments indicate that the net IIP in 2006 was \$590 billion more negative than what was recorded.

After making adjustments to plug known holes in the accounts, we reevaluate the gap. Specifically, to construct revised estimates of the gap we utilize the transactions and positions adjustments summarized in Table 3 to form revised estimates of the gap for a number of adjustment scenarios (Table 4). The original estimate of the gap totaling \$1.8 trillion is shown in the first column; the subsequent columns add combinations of adjustments from Table 3. Column (A) includes all adjustments with an impact on the financial account, which average 0.59% of U.S. GDP per year, and offsetting current account adjustments for goods exports and R&D which average 0.34% of U.S. GDP per year. It also includes the corresponding valuation adjustment implied from equation (4) under the assumption that “other adjustments” are zero. The resulting gap falls dramatically to \$423 billion. As a secondary check we verify that after the BOP adjustments the statistical discrepancy is reasonable. The year-by-year recorded statistical discrepancy is shown in Panel B, with the total shown in the final memo line of Panel A. Under Scenario (A) the cumulated discrepancy increases substantially to \$892 billion, as the more than \$1.4 trillion decrease in financial account transaction adjustments is only partially offset by current account adjustments.

As discussed earlier, some of the “other adjustments” in DI are capital gains and losses of affiliates or adjustments reflecting the difference between the market value and book value of a transaction, but it is unclear how much; the original and column (A) scenarios assume that all these “other adjustments” are attributable to problems with the transactions data. In column (B) we go to the other extreme and treat all the DI “other adjustments” as capital gains or adjustments associated with the difference between current-cost and market value. Moving all these “other adjustments” to capital gains has no impact on the gap, but is equivalent to increasing the returns differential on DI from 0.3 percent to 2.4 percent (the naïve estimate from Table 1), and the aggregate returns differential from 0.6 percent to

1.0 percent, shown as a memo line in Table 1. This reclassification drops the discrepancy in column (B) significantly, to \$276 billion.¹⁴

In column (C) we remove our estimates for financial derivatives and real estate, as these were based on relatively thin information. Because the gaps associated with these assets were equal to zero, the overall gap remains unchanged. However, there is a notable increase in the discrepancy. Finally, in column (D) we replace the net goods exports adjustments in Scenario (C) with the alternate estimate from the last column of Appendix Table C.1, with a modest decrease in the discrepancy. This remaining discrepancy may be the result of known issues that we are unable to estimate, such as unrecorded services and intellectual property exports.

Figure 4 depicts Scenario (B) graphically. When compared with Figure 2, the most substantial differences are that in Figure 4 the 2006 Net IIP is more negative, cumulated current account deficits are less negative, and (because we shift DI “other adjustments” into valuation adjustments in that scenario) valuation adjustments are somewhat larger. There is still a gap, but it is quite a bit smaller than the gap without our (rather conservative) adjustments.

3.3 An Assessment of the Exorbitant Privilege

A reasonable counterargument to CDW (2008a) is that the gap calls into question the assertion that cross-border returns differentials have been overestimated in favor of the US. If one believes the gap—the bulk of which owes to “other adjustments”—is really unmeasured capital gains, one gets back to the large cross-border differentials.

In the previous sections we took the following approach: Plug known holes in the international accounts and recalculate the gap, in the end keeping an eye on the cumulated statistical discrepancy. We took a conservative approach to plugging the holes, and focused solely on low hanging fruit. All told, using the small returns differentials of CDW (2008a), we get a reasonably small end-2006 gap of \$423

¹⁴ This scenario is similar to the general illustrative scenario discussed in Lane and Milesi-Ferretti (2008), which also treats DI “other adjustments” as capital gains, and all other position changes not explained by reasonable capital gains estimates as unrecorded financial flows.

billion and a cumulated statistical discrepancy that ranges from \$276 billion to \$555 billion depending on the DI valuation adjustment. Thus, by harvesting some low hanging fruit in a conservative manner, we have shown that a small returns differential can be consistent with the patterns of cumulated (adjusted) current account deficits and (adjusted) IIP figures.

We recognize that even small returns differentials, when applied to large gross positions, can significantly impact the evolution of the current account and net investment position. Nonetheless, the positive differential enjoyed by the United States is not large enough to fundamentally alter the dynamics underlying sustainability analysis.¹⁵

4. Conclusion

In this paper we provided a brief summary of some of the theories of U.S. current account sustainability and viewed them through the lens of the relative reliability of various items in the international accounts. From the perspective of relative reliability, the dark matter view fails, as it rests on an assumption that income streams are the most accurate items in the entire set of international accounts. Given that the bulk of income streams are themselves estimates based on other items in the accounts, this assumption is false. The exorbitant privilege view also fails. In its original form it rested on the assumptions that the current vintage of revised positions and flows form a consistent dataset and that all “other adjustments” are best thought of as valuation adjustments. In this paper we show that this is not true, in part by calculating “other adjustments” by asset class and filling some known holes in the international accounts. The set of accounts we produce by doing so are entirely consistent with a small cross-border returns differential, suggesting that there is no evidence that the U.S. can earn its way to current account sustainability.

It is also useful to step back and ask if, even putting aside measurement issues, we should expect there to be a tight or stable relationship between the current account and whatever one might mean by sustainability? In our view, the answer is “maybe, but not too tight.” There are many reasons for this.

¹⁵ For example, see Bertaut, Kamin, and Thomas (2008).

Several of them stem from the fact that the current account is a System of National Accounts (SNA) concept designed to capture *transactions* in *produced* goods and services. As such, there is a step between the transactions recorded in the current account and the *transactions* recorded in the financial account. This step involves the capital account which captures, among other things, transactions in nonproduced, nonfinancial assets. As recorded in the U.S. accounts, the capital account is a minor annoyance in the identities. But in principle it captures many transfers of intellectual property, which one would expect to be quite important for the United States.¹⁶ Next there is the step between the transactions in the financial account and the changes in the IIP. This step includes the familiar valuation changes owing to price and exchange rate changes. But it also includes “other changes in the volume,” which do not arise from revaluations. As recorded in the U.S. accounts, these other changes are huge and much of the work of this paper explores the extent to which they are capturing more than they should. Finally, there are many steps between the IIP and what one might consider important in the determination of future investment flows. In particular, there are wide gaps between the IIP and a country’s ability to service its international obligations or the credit and price exposure of its creditors.

As we have noted repeatedly, in addressing some holes in the international accounts we only harvested low hanging fruit. There are, of course other aspects of the accounts that should, in the future, be addressed. We implemented an adjustment for goods exports, but the mis-measurement of trade in services is likely even greater; unfortunately, we have no information with which to adjust service trade data. The income generated by invisibles such as intellectual property is another area worth further study, as is short positions in U.S. Treasuries.

¹⁶ The treatment of intellectual property is changing with BPM6 as now drafted with the transfer of intellectual property moving to an expanded category under services in the current account.

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Appendix A. Estimating Returns and “Other Adjustments” By Asset Class

Equities and Bonds

For the capital gains returns on cross-border holdings of equities and bonds we use the market-based methodology detailed in CDW (2008b). In short, we take estimates of monthly bilateral securities positions constructed in Bertaut and Tryon (2007) and use representative indices to calculate the monthly returns of U.S. investors abroad and of foreigners in the United States.

The accuracy of this methodology hinges on how well the indices represent actual cross-border holdings. For returns on foreign equities we use dollar returns on the gross MSCI equity index for each country. MSCI indices are appropriate because MSCI firms represent almost 80 percent of U.S. investors’ foreign equity investment (Ammer et al. 2006). For foreign bonds, to a large extent U.S. investors tend to hold local currency bonds in developed countries and dollar-denominated bonds in emerging markets (Burger and Warnock, 2007). Thus, for developing countries we use J.P. Morgan’s EMBI+ indices (which are comprised of dollar-denominated bonds); for those developed countries in which U.S. holdings of local currency bonds are predominant, we use the MSCI bond index (which is an index of local-currency-denominated bonds); and, in those developed countries where U.S. holdings of dollar-denominated bonds are significant, we calculate returns as the weighted average of the MSCI bond index and MSCI Eurodollar Credit index (which is an index of dollar-denominated bonds), with the weight on the Eurodollar index being the share of dollar-denominated bonds in U.S. holdings of each country’s bonds.¹⁷ When calculating returns on the aggregate foreign bond and foreign equities portfolios, we weight each country according to U.S. bond (or equity) holdings in that country.

We have a similar degree of confidence in our estimates of the valuation adjustments for U.S. liabilities because of the level of detail provided on surveys of foreign holdings. For foreign holdings of U.S. debt, we use a weighted average of Lehman Brothers U.S. Treasury, corporate and agency bond indices, with the weights being the portfolio weights in each respective bond type. For holdings of U.S.

¹⁷ The developed countries where U.S. holdings of dollar-denominated bonds are significant include Australia, Belgium, Canada, Finland, France, Germany, Ireland, Netherlands, Sweden, and the United Kingdom.

equity, we use the return on the gross MSCI U.S. index, a market-capitalization-weighted index comprised of roughly 300 large and liquid U.S. equities. As shown in ABC (2008), this index does a good job of approximating the actual holdings of foreign investors.

Deposits, Currency, and Other Government Assets

The sizable claims reported by U.S. nonbanking concerns and U.S. banks primarily consist of interest-bearing deposits and very short-term securities, such as certificates of deposits, which are hold-to-maturity securities that do not trade in the secondary market. The return from these types of securities consists only of interest payments, which are recorded in the current account, and no valuation adjustments other than those from exchange-rate movements. The majority of these deposits, however, are dollar-denominated even though they are on deposit in foreign banks, so the impact of exchange-rate changes is minimal. Similarly, for the corresponding liabilities there are only minor exchange-rate movements because there is a small quantity of non-dollar denominated deposits held by foreigners in U.S. banks and non-banking concerns. Other U.S. government claims are fairly small, and the only valuation adjustments are those due to exchange-rate changes, primarily from holdings of foreign currencies, and changes in the value of gold.

On many IIP releases there are sizable “other adjustments” reported for the banking and non-banking categories. The largest was in the 2003 IIP, which was the result of a reclassification of deposits at securities brokers from the non-banking to banking category – so clearly including all the reported “other adjustments” as capital gains is incorrect at the asset level.¹⁸ We divide these assets into three types for computation of capital gains - banking, nonbanking, and other. We then estimate the capital gains for each asset based upon the rate of return shown in each annual IIP, equation (2), and the total valuation adjustment using equation (3) (below). For deposits this assumption is reasonable as long as the currency composition is largely unchanged between the initial and final data revision.

¹⁸ Bach (2004) p. 32.

The capital gains rates of return computed using the IIP method shown in Table 1 are very small. The rate of return computed using the revised method in column (b) of Table 1 for the banking and non-banking categories, however, are large. The large rate of return is due to the reclassification of assets between the categories mentioned above. To abstract from the impact of this move the last lines of the table combines these categories, which results in smaller revised capital gains.

Direct Investment

The valuation adjustments associated with direct investment present the greatest difficulty. As with the securities data, the surveys used to construct position estimates are collected at a lag, so historically there have been substantial revisions. Unlike securities, it would be extremely difficult for us to construct our own estimates of valuation changes. Survey data is collected on a historical cost basis - basically what is paid. To construct the current-cost estimates, BEA uses the current cost of capital equipment (to estimate the value of the U.S. and foreign parents' shares of their affiliates' investment in plant and equipment), general price indexes (for land), and, for inventories, estimates of their replacement cost.

Our strategy to estimate DI returns is to first estimate the amount of DI "other adjustments" and then back out implied returns with and without treating "other adjustments" as returns. This task would be easier if the updated IIP's for each year separated the revised series into flows, valuation, and "other adjustments." BEA does not publish this information by asset, but it does publish it for aggregate claims and aggregate liabilities.¹⁹ For non-DI assets, we can use the market-based price and exchange-rate return estimates, r_t^k , to compute the valuation adjustment for each year t :

$$VA_t^k = r_t^k \left(A_{t-1}^k + \frac{1}{2} FLOW_t^k \right) \quad (3)$$

where $k = M$ (market-based), O (original) or R (revised). We then use these valuation adjustments for the non-DI assets to infer the "other adjustments" for DI by first estimating:

$$OA_t^R = A_t^R - A_{t-1}^R - FLOW_t^R - VA_t^k \quad (4)$$

¹⁹ http://www.bea.gov/international/xls/intinv06_t3.xls

where we use market-based valuation adjustments for equities and bonds, and IIP valuation adjustments for banking, nonbanking, and other assets. We can then estimate the revised “other adjustments” for direct investment by subtracting our estimate of “other adjustments” for the other asset classes from the total.

A breakdown of “other adjustments” by asset class is shown in Appendix Table A.1, with claims in Panel A and liabilities in panel B. The last column shows an estimate of “other adjustments” for direct investment implied by subtracting “other adjustments” for the rest of the asset classes from the revised total “other adjustments” published by BEA. For DI claims the implied “other adjustments” are fairly small relative to that estimated for other assets, while for liabilities they are quite large. Using these “other adjustments” we infer the corresponding valuation adjustments for DI by rearranging equation (4). As shown in Table 1, the estimated DI capital gains (shown in column A because they are implied using market-based equity and bond returns) are close to those calculated using the original IIP method. The underlying annual capital gains returns, however, are as much as 4% different in some years (not shown), though the averages are the similar over the sample period. As DI “other adjustments” are larger for liabilities, estimated capital gains for DI liabilities depend more on how one categorizes “other adjustments.”

There are three interpretations of DI “other adjustments”; (1) errors in the transactions or series breaks, (2) the capital gains and losses of direct investment affiliates, and (3) the inconsistency that arises from recording DI positions at their current-cost value. Interpretation (3) is unique to DI. As noted earlier, the current-cost estimate of DI is an estimate of the value of tangible assets; the value of intangible assets is excluded. Recorded DI transactions, however, reflect the value of both tangible and intangible assets. This necessitates an “other adjustment” entry in the IIP presentation which reflects the difference between the total transaction value and the estimated value of intangible assets to account for the intangible piece. For example, in the purchase of an intangible-heavy firm such as an internet startup, there will be a substantial difference between the value of the firm paid by the acquirer and the current-cost value of the firm included in the IIP. This type of transaction will require a negative “other

adjustment” which effectively backs out the value of intangible assets. There is evidence of this type of transaction in Panel B of Table 2. There are sizable negative DI “other adjustments” in 1998 and 1999, reflecting foreign investment in U.S. internet firms with significant amounts of intangible assets.

Appendix B. Missing Asset Classes

Financial Derivatives

The introduction of the financial derivatives asset class in the 2006 IIP provides an example of how the addition of new asset classes or reporters leads to incorrect capital gains estimates when the revised BEA data are used. Because we know their impact on the 2006 financial account and IIP we excluded them from our analysis. In BEA's revised aggregate IIP the initial 2005 derivatives claims position of \$1,190 billion and liabilities position of \$1,132 billion are included in "other adjustments" in that year; because there is no correction for these "other adjustments" in the revised returns estimates, using equation (1) would overstate capital gains for both claims and liabilities, and would further overstate the favorable U.S. returns differential.

Estimates for net derivatives transactions will have an impact on the statistical discrepancy, and thus impact our BOP reconciliation. The BOP recorded a net financial derivatives inflow of \$29 billion for 2006. We construct flow estimates for earlier years based on the growth rate of transactions and holdings reported to the IMF by other countries, shown in Panel A of Appendix Table B.1. Prior to 2000 we assume that transactions increased by 50 percent each year, after that at an annual rate of 30 percent. As discussed in Curcuru (2007) the sum of net transactions across all countries should equal zero, as the flows out of each country should be reported as inflows by another country. However, since some countries do not report data to the IMF the sum will likely differ from zero; while our estimated world flows are not zero (the last column of Appendix Table B.1 Panel A), they are small. We construct estimates of holdings using the same growth rates for claims and liabilities; the historical estimates are shown in Panel B of Appendix Table B.1. The inflows are modest and range from \$0 to \$29 billion, and the net claims position is up to \$59 billion.

Residential Real Estate

In principle, cross-border transactions and holdings of residential real estate should be included as part of direct investment, as is currently the case for commercial real estate. In practice, individual homeowners are not surveyed and hence these data are omitted from the recorded DI figures. To the extent that

foreign activity in the U.S. residential real estate market is of the same magnitude as the level of activity of U.S. residents in the foreign real estate markets, there is no net impact on the international transactions accounts. However, recent surveys conducted by the National Association of Realtors (NAR) suggest that this may not be the case.

We construct estimates of foreign purchases of U.S. real estate using recent NAR survey data. According to NAR (2007a), a survey of members indicated that 7.3% of home sales in Florida in 2006 were purchased by foreign buyers. Since total existing home sales in Florida in 2006 were 395,300 this implies that there were about 29,000 purchases of Florida homes and condos by foreigners in 2006.²⁰ Assuming that foreigners purchased the same percentage of new homes adds about 6,000 additional homes bringing the total to 35,000 Florida homes purchased by foreigners. From April 2006 to April 2007 NAR (2007b) estimates that 26% of international purchases were in Florida, implying there were around 135,000 total purchases of U.S. homes by foreign residents. Multiplying the total number of purchases with the median sales price U.S. homes purchased by foreigners in that period of \$299,500, translates to roughly \$40.4 billion in sales to foreigners.

To construct historical estimates of foreign purchases of U.S. real estate, we assume that the foreign purchases have remained a constant 2.34% ($= \$40.4 / \$1,730.6$ billion) of total sales of U.S. real estate; the resulting estimated U.S. real estate liabilities inflows is shown in Appendix Table B.2. This is likely a somewhat conservative assumption as NAR (2007b) suggested that 2006 activity by foreign investors was relatively weak as compared to earlier years.

To construct holdings estimates, we started by looking at net inflows into other private financial liabilities in 2006 as a function of 2005 holdings. Total flows in 2006 ranged from a slight outflow from U.S. Treasuries in 2005 to a 20% inflow into corporate and agency bonds. As a compromise we assume that the 2006 flows constituted a 5% increase in stock over the 2005 levels to construct an estimate of the 2005 stock. We constructed the remainder of the liabilities stock series using the transactions estimates and price appreciation reported by NAR, also shown in Appendix Table B.2.

²⁰ Real estate transactions and price data are available at <http://www.realtor.org/>.

We face similar issues in trying to construct historical real estate transactions and holdings estimates on the claims side. While there are no available official figures for the number of homes or vacation properties Americans have purchased in foreign countries, Flick and Yun (2007) construct an estimate using State Department data. Based upon the number of U.S. residents living abroad in 1999, and a rate of homeownership equivalent to that observed in the United States (40%), they estimate that in 1999 U.S. residents owned 500-600K residential real estate properties located in other countries. Unfortunately, the State Department has not updated this information because of security concerns. Using the same mean price of U.S. homes in that year (\$171K), this equates to \$94 billion in foreign residential real estate holdings by U.S. residents. From this 1999 holdings estimate we assume that it changed at the same rate as total residential liabilities holdings. We then inferred transactions by assuming foreign holdings appreciated at the same rate as U.S. holdings.

Based on the Appendix Table B.2 estimates, there have been more foreign purchases of U.S. real estate than U.S. purchases of foreign real estate. When compared to other asset classes, however, net transactions and gross holdings are modest. In 2006 we estimate a \$29 billion net inflow, shown in Panel A of Table 3, and a sizable net liabilities position of \$544 billion (from Panels B and C).

Appendix C. Problems with Current and Financial Account Transactions

In this appendix we estimate problems with the recorded transactions in the current and financial accounts. These include issues with goods exports, intangibles, foreign equity and bond claims and liabilities, and deposit claims and liabilities.

Goods Exports

The data on merchandise trade is often considered one of the most reliable pieces of the international transactions accounts. The data are compiled from official import and export documents prepared by firms for the U.S. Customs Service, which are then classified and recorded by the U.S. Bureau of the Census. These data list goods by value, commodity, country of origin or destination, dutiable status, tariff rate (import), quantity, shipping weight, location of exit or entry, and method of transportation.

But the import data is likely of much higher quality than the export data. Because import documents are the basis upon which tariffs are collected, they are scrutinized much more closely and there is a larger share of manpower dedicated to their verification. This is in stark contrast to exports, which have many fewer resources dedicated to enforcement efforts, have higher reporting thresholds, and about which much less detail is recorded. There are several reasons why there might be a downward bias in the export figures. For instance, exporting firms have incentives to understate sales to reduce their taxable income and to pay lower import duties to importing countries. Also, the commercial carriers that consolidate freight for shipment file the paperwork for the exporters. In order to obtain the lowest freight for exporters, they often report the whole batch of goods that may have varying rates as if it consists of goods at the lowest rate.

Several studies have quantified the magnitude of under-reporting of U.S. exports. For example, a detailed comparison with Canada import data showed \$16 billion in unrecorded U.S. exports to Canada in 1989, approximately 20% of all U.S. exports to Canada. This problem is not limited to cross-border trade with Canada. An analysis in Kester (1992) found that for the period 1980-1989 a bilateral comparison of U.S. export and foreign import data suggested an undercount of about 7 percent per year of U.S. exports

to Japan, Germany, and the United Kingdom. Further reconciliation studies with Japan, Korea, Australia, and the European community summarized in U.S. Bureau of the Census (1998, 2002) found that while automated systems introduced to collect export data had improved data quality, the combined effect of proven non-reporting, underestimation of low value trade, and unresolved discrepancies ranged from 3-7% of reported U.S. export value. Reconciliations with Mexico estimated the discrepancy between 1991-1994 was between 8 to 12 percent per year, and for 1995-1997 15 to 19 percent per year. Despite these findings, there is so much variability in underreporting that no effort is made by Census or BEA to adjust the values of goods exports.

Because exports are recorded as an inflow in the balance of payments, the under-reporting of exports results in an under-reporting of current account inflows - a necessary counterpart to our under-reporting of outflows in the financial account. In Appendix Table C.1 we estimate the potential impact on the current account for an understatement of 5 percent for U.S. exports to the EU, Korea, and Japan and 12 percent to Mexico. These are conservative estimates since it is unlikely that this problem is limited to these countries. These estimates result in understatement of inflows on the order of 1.6 percent of all exports. Appendix Table C.1 also includes an estimate of the missing inflows if the error was as high as 3% of all goods exports, which is the estimate included in Panel A of Table 3.

Intangibles

Cross-border trade in intangibles creates difficult issues for both accounting methodology and data collection. With respect to methodology, the difficulties arise because the System of National Accounts (or in the U.S. case the NIPA) needs to distinguish between those nonfinancial assets that are created by the production process and those that arise by other means. A good example of a nonproduced, nonfinancial asset is broadcast spectrum rights. The electromagnetic spectrum is not the result of any productive activity; nonetheless, the rights to use it have value. When such assets are sold abroad, the transaction must be excluded from the current account. Otherwise, the GDP accounting identity ($GDP=C+I+G+X-M$) would not hold, with the disposition of product (right hand side) exceeding what the economy produced (left hand side). However it is not sufficient to simply exclude the

transaction from the current account because the sale to a foreigner gives rise to a financial flow. To deal with this, and a few other issues such as debt forgiveness, the capital account (KA) was introduced and added to the balance of payments identity ($0=CA+KA+FA$).

With respect to data collection, it is particularly hard to measure trade in intangibles, especially when the trade is between affiliated parties and the intangible represents intellectual property (IP) that may have only firm-specific value. As noted earlier in the discussion of dark matter, BEA has been making efforts to improve its data collection in this area, but the most recent changes to the collection system are not yet incorporated into the published IT accounts.

We do not make any attempt to estimate how much trade in intangibles is missing from the accounts. We simply note that it could be one source of the statistical discrepancy we are left with and a possible explanation for some of the ‘other adjustments’ found for DI.

U.S. Net Purchases of Foreign Equities and Bonds

As discussed in substantial detail in CDW (2008a), over our sample period there have been many significant revisions to U.S. holdings of foreign equity and bonds which have implications for our understanding of transactions in these assets. The first major revision occurred after the incorporation of the first security-level measurement of U.S. holdings of foreign securities abroad (from the Treasury Department’s 1994 benchmark survey), which resulted in large upward revisions to holdings of around 90 percent per year from 1990 to 1995. Prior to the 1994 benchmark survey the last claims survey was done in 1946, and positions were not measured but were estimated from capital flows data and approximations of capital gains - a method highly prone to error since there was no sense of the magnitude of initial holdings. The enormous revisions that were prompted by the benchmark survey were described by BEA in Bach (1997, p. 47) as follows:

“The differences between the two estimates can be attributed both to incomplete coverage of these transactions in the Treasury source data upon which BEA’s position estimates are based and to inexact valuation of price and exchange rate adjustments applied to BEA’s estimated positions. *However, it is not possible to determine the amount of underestimation attributable to each part of the estimation process.*” (emphasis added)

Because of the inability to definitively attribute the newly discovered claims to flows or valuation adjustments, BEA made *no* revisions to flows (the “transactions in the Treasury source data”)—financial flows are completely absent from Table 2 in Bach (1997), which shows all revisions for the balance of payments and international investment positions—and put the difference between estimated and measured positions in the residual “other adjustments” category. The same was the case in response to the 1997 benchmark, at which time BEA stated:

“When BEA adjusted its international investment positions estimates last year using preliminary benchmark results, it attributed all of the discrepancy to valuation changes and none to the less than complete coverage of transactions...BEA is now changing that practice and attributing a large part of the discrepancy to transactions.”²¹

As transactions adjustments attributed to the 1997 benchmark survey are absent from Table 2 in Bach (2000), it is clear that the practice of adjusting transactions was implemented at a future date.

There were also significant revisions to U.S. holdings of foreign securities that dated back to 1998 after the 2001 and 2003 Treasury surveys, but these revisions were accompanied by modest revisions to transactions estimates. As reported in Bertaut et. al. (2006), an in-depth investigation revealed under-reporting of U.S. investors’ purchases of newly issued foreign securities. While this reporting problem was resolved starting in 2004, because there were only modest revisions to underlying TIC data, BEA made only modest revisions to the recorded transactions.

The final notable revision to U.S. holdings of foreign securities occurred in response to the 2005 Treasury survey, which resulted in a revision to U.S. equity claims totaling \$231 billion. This was recorded in the 2005 position with no identified revisions to historical transactions.

Because the transactions were never adjusted for 1990-1997 even though they were suspected to be erroneous, and there were only modest transactions adjustments to the data from 1998-2003, we attribute much of the estimated “other adjustments” in equity and bond claims shown in Appendix Table A.1 to missing transactions. The other transactions associated with bonds are included in Table 3 Panel

²¹ Bach (2000, p. 71-72).

A. We defer our final estimates of how much of these “other adjustments” for equity should be attributed to unrecorded transactions until we also include the impact of omitting short positions, discussed below.

U.S. Equity and Bond Liabilities to Foreign Investors

The tendency not to fully revise corresponding flows when revisions to positions are made also holds for U.S. liabilities. Regarding U.S. liabilities, Bach (2002, p. 37) writes:

“In past benchmark years, BEA has assigned nearly all of the differences between the two estimates of the positions to either the price change or the ‘change in statistical coverage’ components of the investment position accounts, leaving data on financial flows as reported by the transactions reporting system little changed”

In contrast to U.S. claims, the revisions to liabilities positions were relatively small and, for some asset categories such as bonds, negative. Downward revisions in liabilities positions without a corresponding downward revision in flows imply low capital gains. According to Bach (2002, p. 38-39), BEA had tended to overestimate U.S. liabilities because the transaction reporting system underestimates redemptions and paydowns of principle on mortgage-backed securities. These redemptions should be recorded as outflows but are not recorded by the existing transactions reporting system because they do not involve the typical data reporters (brokers and dealers). As the above quote indicates, as a matter of practice BEA tended to revise positions but not flows, implying low or negative capital gains on U.S. liabilities.

As with claims, there were no adjustments to transactions in response to changes in recorded holdings for the early years of our sample period. In 1998 there were significant downward revisions to U.S. non-treasury liabilities for the years 1990-1996, in response to the 1994 survey. The position adjustments were as high as \$42 billion in 1996 with no corresponding revisions to transactions. In 2002 BEA made some revisions to transactions in debt liabilities in response to the problems with redemptions and paydowns identified in the 2000 survey. However, these revisions only went back to 1995; transactions for that year were adjusted downward by \$27 billion, and there were no revisions to transactions in earlier years. So as with claims, we assume that much of the “other adjustments” for securities liabilities are unrecorded transactions. The other transactions associated with bonds are

included in Table 3, but we defer our final estimates of how much to include for equity until Appendix D, where we include the impact of omitting short positions.

Banking and Nonbanking Assets

There is little ambiguity surrounding the calculation of valuation adjustments for this category, as they consist of interest-bearing deposits and short-term securities held-to-maturity, with only slight valuation effects due to exchange rate changes. On the banking side, the data are collected by monthly reports of outstanding balances – transactions are estimated as the change in the positions. Deposits reported by nonbanking concerns are mainly implied from bilateral and BIS data. The source of the “other adjustments” in these data are series breaks as new reporters are added to the panel. Revisions for both claims and liabilities go in the same direction – cumulative “other adjustments” for claims is \$338 billion, liabilities is \$189 billion, so on net this category contributes a relatively modest \$150 billion to the gap. We attribute all the “other adjustments” in these categories to missing transactions, shown in Table 3 Panel A.

Appendix D. Issues with Recorded Positions

There are two assets for which there are known problems with recorded positions, for which transactions are thought to be correctly recorded. The first is the recording of equities that have been sold “short”; that is, borrowed from one party and then sold to another. The other is the omission of positions in intangible DI investments such as research and development.

Negative Positions Arising from Short Sales

As is the case in most countries, the reporting of portfolio investment positions are based on data provided by custodians. The U.S. surveys used to collect position data do not admit the reporting of negative positions; this is currently not an international reporting standard but will likely be changed in the future (Taub 2008). This omission leads to the overstatement of both claims and liabilities. For example, if a foreign resident sells a U.S. security short to a U.S. resident, the transactions accounts will correctly capture the decrease in liabilities to foreigners, but the negative position of the foreigner will not show up in the holdings survey. The result is that the total liabilities position is the sum of positive holdings only, not short positions. A similar problem is realized on the U.S. claims side. Both result in the overstatement of positions relative to the transactions – and would lead to positive “other adjustments.”

There are potentially large negative positions in both equities and bonds; however, we have been unable to construct estimates of short bond cross-border positions using existing data. To estimate the impact of the omission of equity short sales, we construct estimates of the fraction of cross-border equity claims and liabilities that have negative positions using representative short sales as a percentage of float. Because U.S. restrictions on short sales are stringent compared to those in other developed nations, U.S. short positions are relatively small. Lamont and Stein (2004) estimate that short sales as a percentage of float for the NASDAQ ranged between 2% and 4% of total market capitalization over the period 1995-2002, while estimates of short-selling on the New York Stock Exchange are even lower at 1.5% in 2003 (OICV-IOSCO 2003). However, since foreign investors tend to hold large-cap equities these ratios are likely biased downward because for some equities there is no short-selling at all. Therefore we computed

average short sales as a percentage of float for the equities in the S&P 500 as that is more likely representative of the average short-selling in the equities owned by foreign investors. For the end of 2006 the average for the equities in the S&P 500 was just over 3%. As total U.S. equity liabilities in 2006 were \$2,539 billion, the estimated overstatement is \$76 billion, shown in Table 3 Panel C, and we assume the same share through history

On the equity claims side, the largest share of U.S. residents holdings is in U.K. equity, with large holdings also in Japan, Canada, France, Switzerland, and Germany. In most emerging market countries, market development lags developed economies and short sales of securities are generally prohibited or the required infrastructure for borrowing securities does not exist. Table 7 in Endo and Ree (2006) provides a list of countries that allow short-selling and in which short-sales are practiced. For these countries, we take U.S. holdings of those countries' equities from Table 18 in Dept. of Treasury (2007) for all of the U.S. holdings surveys; the combination is shown in Appendix Table D.1.

An estimate for short interest on FTSE 350 equities trading on the London Stock Exchange constructed by Au et. al. (2007) ranged between 2.5 percent in 2003 to 4 percent in 2006, and it is thought to be higher in other markets (Endo and Ree (2006)). We assume that U.S. holdings of equities in the U.K. are overstated by 4% and holdings overstated by 5% in other countries that allow short-selling; the resulting position adjustment is shown in the final line of Appendix Table D.1.

We use these position adjustments to construct short-adjusted equity returns. Adjusting the time series of equity liabilities positions downward by 3% each year and computing the revised capital gains returns results in a decrease in the returns from 11% over our sample period (Table 1) to 10.8%, in the correct direction but still higher than our market-based estimate of 10.1%. This moves the total "other adjustments" implied for equity liabilities to \$181 billion, a narrowing of \$36 billion. With the short adjustment, revised U.S. claims returns fall from an average of 13% over our sample period (Table 1) to 12.2%, still much greater than the market-based estimate of 7.7%. This narrows the total implied "other adjustments" for equity claims by \$76 billion to \$596 billion. We include the net impact of these adjusted "other adjustments" in Table 3 Panel A, and the revised position estimates are shown in Panels B and C.

These adjustments to positions have corresponding adjustments to current account income receipts and payments. Using the equity dividend yields on claims and receipts from CDW we estimate the impact on income receipts and payments, reported in Appendix Table D.2. The net impact, reported in Panel A of Table 3, is cumulative \$9 billion decrease in receipts.

Direct Investment Intangibles

BEA follows the standards published in the International Monetary Fund's *Balance of Payments Manual* in compiling the BOP and IIP. According to these standards financial flows and positions are based on market prices, when observable. The market prices of intangible assets are rarely observable, and as such BEA revalues book values to current-period prices using two indicator series: equity indexes and the replacement value of tangible assets. Recognizing the importance of measuring the impact of intangible assets such as research and development (R&D) and other intellectual capital, BEA publishes a satellite account that estimates the effects of R&D spending as investment rather than an expense. We assume that financial account transactions in intangibles are correctly recorded, but include a current account adjustment for BEA estimates of the change in investment income. Our estimates are shown in Table 3. For 1995-2004 we take the estimates shown in Robbins and Moylan (2007) Table G and base our estimated adjustments to the positions for earlier and later years in the sample period based on the growth rates, and for the current account impact we hold constant. The effects on these accounts are minor. The largest current account impact is a decrease of \$8 billion in 1998; the largest net IIP impact is a decrease of \$29 billion in 2003.

Table 1: Estimating Capital Gains Rates

Estimates are for 1990-2006. Details of how these estimates were constructed are given in Section 2.1. For banking, nonbanking, and other assets, the market-based aggregate returns in column (A) are computed using the original IIP returns in column (C). Other assets includes U.S. official reserve and other U.S. Government assets, U.S. Government liabilities associated with military sales contracts and other transactions arranged with or through foreign official agencies, and foreign holdings of U.S. currency. DI positions are valued using the current-cost method. Financial derivatives are not included.

		Market-Based (A)	Revised (B)	Original IIP (C)
Equity	Claims	7.7%	13.0%	8.1%
	Liabilities	10.1%	11.0%	9.8%
Bonds	Claims	2.1%	4.8%	0.6%
	Liabilities	0.6%	-1.0%	0.6%
DI	Claims	0.8%	0.2%	0.6%
	Liabilities	0.5%	-2.2%	0.4%
Banking and Non-Banking	Claims		-0.1%	0.1%
	Liabilities		0.4%	0.1%
Banking	Claims		4.8%	0.1%
	Liabilities		-1.0%	0.0%
Nonbanking	Claims		-8.1%	0.0%
	Liabilities		-4.0%	0.3%
Other Assets	Claims		1.8%	1.8%
	Liabilities		0.1%	0.0%
Aggregate	Claims	2.1%	3.2%	2.1%
	Liabilities	1.5%	0.8%	1.6%
Difference		0.6%	2.4%	0.6%
<i>Memo: Aggregate with DI "other adjustments" added to valuation adjustments</i>				
		<i>Claims</i>	<i>2.0%</i>	
		<i>Liabilities</i>	<i>1.0%</i>	
Difference		1.0%		

Table 2: A First Pass at Reconciling Positions, Flows and Valuation Adjustments

Flows and positions are from the current vintage of revised BEA data. Valuation adjustments are computed using the rates of return discussed in the text. Other assets includes U.S. official reserve and other U.S. Government assets, U.S. Government liabilities associated with military sales contracts and other transactions arranged with or through foreign official agencies, and foreign holdings of U.S. currency. DI positions are valued using the current-cost method. Financial derivatives are not included. The gap is positive if recorded 2006 positions are larger than flows and valuation adjustments would suggest.

US \$ Billions		1989 Recorded Position (A)	Flows (B)	Valuation Adjustments (C)	2006 Recorded Position (D)	Gap (D-A-B-C)	
Equity	Claims	197	1,320	2,062	4,252	672	
	Liabilities	251	958	1,112	2,539	217	
Bonds	Claims	117	701	103	1,181	260	
	Liabilities	688	5,368	10	5,739	-327	
DI	Claims	553	2,063	235	2,856	5	
	Liabilities	468	1,979	263	2,099	-611	
Banking and	Claims	948	2,612	40	3,938	338	
Nonbanking	Liabilities	841	3,289	38	4,356	189	
	Banking	Claims	714	1,707	28	3,089	640
		Liabilities	674	2,102	11	3,616	829
	Nonbanking	Claims	234	905	11	848	-302
		Liabilities	167	1,187	27	740	-641
Other Assets	Claims	255	-37	75	292	-2	
	Liabilities	82	295	0	383	6	
Total	Claims	2,071	6,659	2,515	12,517	1,273	
	Liabilities	2,330	11,889	1,423	15,116	-526	
	Difference	-260	-5,230	1,091	-2,599	1,799	
<i>Memo: DI with "other adjustments" added to valuation adjustments</i>							
	Claims	553	2,063	240	2,856	0	
	Liabilities	468	1,979	-348	2,099	0	
<i>Memo: Total with DI "other adjustments" added to valuation adjustments</i>							
	Claims	2,071	6,659	2,519	12,517	1,269	
	Liabilities	2,330	11,889	812	15,116	84	
	Difference	-260	-5,230	1,707	-2,599	1,184	

Table 3: Consolidated Adjustments

Details of the adjustments are in Appendices B, C, and D.

Panel A: Net Transactions Adjustments

	Fin. Derivs.	Real Estate	Goods Exports	Bonds	Banking and Nonbank	Equity (Short- adjusted Trans)	Equity (Short- adjusted Income)	R&D	DI "Other Adjs"	Total
1990	0	6	21	-11	4	-24	0	-4	-24	-32
1991	0	6	22	-32	3	-39	0	-4	29	-15
1992	0	7	23	-28	-4	-8	0	-4	-29	-44
1993	0	8	23	-47	-40	-55	0	-4	37	-78
1994	0	8	26	2	-29	1	0	-4	4	8
1995	1	8	30	-53	4	-42	0	-4	62	5
1996	1	10	32	19	-16	-51	0	-4	-42	-52
1997	2	11	36	-69	24	-65	-1	-4	41	-26
1998	2	13	36	-50	17	-16	-1	-8	-60	-66
1999	3	14	38	42	-11	-32	-1	-6	-198	-150
2000	5	15	43	-79	-29	20	-1	-5	25	-6
2001	8	16	39	-9	23	-16	0	-5	-78	-22
2002	10	19	38	-197	-16	47	-1	-3	-78	-182
2003	13	22	40	-61	-131	44	-1	-4	-45	-122
2004	17	27	47	-11	2	27	-1	1	-163	-54
2005	22	31	54	-105	-11	-210	-1	1	6	-213
2006	29	29	63	103	61	7	-2	1	-103	188
Total	114	251	610	-587	-150	-415	-9	-61	-615	-863

Table 3 (continued)

Panel B: Claims Holdings Adjustments

	Financial Derivs.	Real Estate	Equity	R&D	Total
1989	3	32	-8	48	75
1990	5	35	-8	50	82
1991	7	41	-12	53	89
1992	11	44	-13	57	98
1993	16	48	-23	60	101
1994	24	53	-27	64	115
1995	37	58	-28	67	134
1996	55	64	-35	72	156
1997	82	73	-50	75	180
1998	123	82	-61	80	224
1999	185	94	-68	87	298
2000	278	104	-61	92	413
2001	417	117	-63	98	568
2002	542	136	-54	103	727
2003	704	155	-82	112	890
2004	915	182	-99	125	1,124
2005	1,190	212	-129	139	1,411
2006	1,238	225	-166	154	1,451

Panel C: Liabilities Holdings Adjustments

	Financial Derivs.	Real Estate	Equity	R&D	Total	Net (Claims - Liabilities)
1989	3	111	-8	37	143	-69
1990	5	120	-7	41	159	-77
1991	7	139	-8	45	183	-93
1992	10	151	-9	50	202	-104
1993	15	165	-10	55	225	-124
1994	23	182	-11	60	255	-140
1995	35	197	-15	66	283	-149
1996	52	220	-19	73	326	-170
1997	78	248	-27	79	379	-199
1998	117	281	-35	92	454	-230
1999	176	322	-46	103	555	-257
2000	264	357	-47	116	690	-277
2001	396	399	-44	125	876	-308
2002	515	464	-37	132	1,073	-346
2003	670	532	-51	141	1,291	-401
2004	871	624	-59	149	1,585	-461
2005	1,132	724	-63	159	1,952	-540
2006	1,179	769	-76	169	2,041	-590

Table 4: Alternative Estimates of the Gap

This table shows the original estimate of the gap based on the revised BEA data and four alternative scenarios. Scenario (A) adds to our original estimate of the gap all adjustments from Table 4 that impact the financial and current accounts. (B) treats all DI “other adjustments” as valuation adjustments. (C) and (D) remove adjustments to financial derivatives and real estate; in addition, (D) replaces the net goods exports adjustments in Scenario (C) with those from the last column of Appendix Table C.1.

Panel A		Adjustment Scenario				
		Original	(A)	(B)	(C)	(D)
1.	1989 NIIP	-260	-328	-328	-250	-250
	Financial Derivatives		0	0		
	Real Estate		-78	-78		
	Equity Short Sales Adj.		-1	-1	-1	-1
	R&D Adj.		10	10	10	10
2.	Σ Financial Account	5,230	3,828	4,443	4,078	4,078
	Financial Derivatives		114	114		
	Real Estate		251	251		
	Equity Short Sales Adj.		-415	-415	-415	-415
	Bonds Adj.		-587	-587	-587	-587
	Banking and Nonbanking Adj.		-150	-150	-150	-150
	DI “Other Adjustments”		-615			
3.	Σ Valuation and Other Adjs.	1,091	545	1,161	1,202	1,202
	Financial Derivatives		173	173		
	Real Estate		-215	-215		
	Equity Short Sales Adj.		-504	-504	-504	-504
	DI “Other Adjustments”			615	615	615
4.	2006 NIIP	-2,599	-3,188	-3,188	-2,703	-2,703
	Financial Derivatives		59	59		
	Real Estate		-544	-544		
	Equity Short Sales Adj.		-90	-90	-90	-90
	R&D Adj.		-15	-15	-15	-15
5.	GAP (4+2-3-1)	1,799	423	423	423	423
	<i>Memo: Cumulated CA</i>					
		-5,219	-4,679	-4,679	-4,679	-4,592
	<i>Memo: Cumulated SD</i>					
		29	892	276	642	555

Panel B: Time Series of the Statistical Discrepancy

	Adjustment Scenario				
	Recorded	(A)	(B)	(C)	(D)
1990	25	58	34	40	44
1991	-45	-30	-1	5	9
1992	-46	-1	-31	-23	-21
1993	5	83	120	128	131
1994	-4	-11	-7	1	5
1995	28	23	85	94	100
1996	-12	40	-2	9	14
1997	-80	-53	-13	-1	4
1998	146	213	153	168	169
1999	70	221	23	41	39
2000	-68	-62	-37	-16	-20
2001	-14	7	-71	-47	-56
2002	-42	140	62	91	77
2003	-13	109	64	100	81
2004	86	139	-23	21	-2
2005	-18	195	200	254	226
2006	11	-177	-280	-223	-248
Total	29	892	276	642	555

Appendix Table A.1: Estimating “Other Adjustments” by Asset Class

Total revised “other adjustments” is reported by BEA at www.bea.gov/international/xls/intinv06_t3.xls. For equities, bonds, banking and nonbanking, and other assets, estimated “other adjustments” are from equation (4). Other assets includes U.S. official reserve and other U.S. Government assets, U.S. Government liabilities associated with military sales contracts and other transactions arranged with or through foreign official agencies, and foreign holdings of U.S. currency. DI is measured at current-cost. Throughout financial derivatives are excluded.

Panel A: “Other Adjustments” - U.S. Claims on Foreigners

	Total “Other Adjustments” Reported by BEA	Equities	Bonds	Banking and Nonbanking	Other Assets	The Residual: Implied DI “Other Adjustments” (F)=(A)-(B)-(C)- (D)-(E)
	(A)	(B)	(C)	(D)	(E)	(D)-(E)
1990	24	25	-6	-3	0	7
1991	34	21	3	-4	0	14
1992	42	32	9	1	-3	3
1993	95	60	13	37	0	-15
1994	29	32	13	43	0	-59
1995	13	34	5	-5	0	-21
1996	49	50	-11	1	0	9
1997	21	65	23	-30	1	-37
1998	-5	-5	15	-13	0	-1
1999	66	-4	-21	28	0	63
2000	17	32	8	19	0	-42
2001	77	44	17	26	0	-10
2002	218	27	65	118	0	8
2003	-63	51	73	-153	0	-35
2004	216	8	25	94	0	90
2005	309	208	33	50	0	18
2006	131	-6	-4	128	0	14
Total	1,273	672	260	338	-2	5

Appendix Table A.1 (continued)

Panel B: "Other Adjustments" - U.S. Liabilities to Foreigners						
	Total "Other Adjustments" Reported by BEA	Equities	Bonds	Banking and Nonbanking	Other Assets	The Residual: Implied DI "Other Adjustments" (F)=(A)-(B)-(C)- (D)-(E)
	(A)	(B)	(C)	(D)	(E)	(D)-(E)
1990	-34	-1	-17	1	0	-16
1991	-7	-21	-29	-1	0	44
1992	-26	21	-19	-3	0	-26
1993	-16	0	-34	-3	0	22
1994	4	31	15	13	0	-55
1995	-14	-6	-48	-2	0	41
1996	-47	-6	8	-15	0	-33
1997	-59	-10	-46	-6	0	3
1998	-117	-25	-35	4	0	-61
1999	-115	-23	20	17	6	-135
2000	-42	56	-72	-9	0	-17
2001	-13	18	8	50	0	-88
2002	-25	75	-132	102	0	-70
2003	-261	91	12	-283	0	-80
2004	72	35	14	95	0	-73
2005	-24	-15	-72	39	0	23
2006	198	-1	99	189	0	-89
Total	-526	217	-327	189	6	-611

Appendix Table B.1: Estimated Derivatives Transactions and Holdings

This table reports our estimates of cross-border derivatives transactions and holdings. The IMF data are the sum of derivatives transactions and holdings reported by all countries in International Monetary Fund (2007). U.K. holdings data start in 1999, and are reported in Office of National Statistics (2007). The U.S. transaction data for 2006 and holdings for 2005 and 2006 are from the U.S. Balance of Payments, available at www.bea.gov. Prior to 2000, U.S. transactions and holdings are assumed to increase at a growth rate of 50 percent, and after that 30 percent.

Panel A: Net Transactions

	IMF Reporters (ex-U.S.)	U.S.	Estimated World
	(A)	(B)	(C)=(A+B)
1990	0	0	0
1991	-1	0	-1
1992	0	0	0
1993	-5	0	-5
1994	5	0	6
1995	-7	1	-6
1996	-9	1	-8
1997	-5	2	-4
1998	-13	2	-11
1999	18	3	22
2000	-12	5	-7
2001	11	8	18
2002	-9	10	1
2003	-9	13	5
2004	-14	17	3
2005	-8	22	14
2006	23	29	51
Total	-36	114	78

Appendix Table B.1 (continued)

Panel B: Claims and Liabilities							
	U.K and IMF Reporters (ex-U.S.)			U.S.			Estimated World
	Claims	Liabilities	Net	Claims	Liabilities	Net	Net
	(A)	(B)	(C)=(A-B)	(D)	(E)	(F)=(D-E)	(G)=(C+F)
1989				3	3	0	0
1990	0	0	0	5	5	0	0
1991	0	0	0	7	7	0	0
1992	0	0	0	11	10	1	1
1993	0	-1	1	16	15	1	2
1994	34	27	7	24	23	1	8
1995	59	61	-2	37	35	2	0
1996	64	69	-5	55	52	3	-2
1997	74	79	-5	82	78	4	-1
1998	112	116	-5	123	117	6	1
1999	938	908	30	185	176	9	39
2000	888	881	7	278	264	14	20
2001	1,097	1,084	13	417	396	20	34
2002	1,479	1,494	-16	542	515	26	11
2003	1,669	1,731	-61	704	670	34	-27
2004	1,980	2,066	-86	915	871	45	-41
2005	2,423	2,496	-74	1,190	1,132	58	-16
2006	2,858	2,982	-124	1,238	1,179	59	-65

Appendix Table B.2: Estimated Real Estate Claims and Liabilities

This table reports our estimates of cross-border real estate transactions and holdings. The mean sales price and total U.S. sales are obtained from the National Association of Realtors. See Appendix B for details on how these estimates were constructed. Mean sales prices are in thousands of U.S. dollars; all other values are in billions of U.S. dollars.

	Mean U.S. Sales Price (\$K)	Total U.S. Sales (\$B)	U.S. Liabilities (\$B)		U.S. Claims (\$B)	
			Inflows	Holdings	Outflows	Holdings
1989	114.4			110.5		32.3
1990	115.3	360.8	8.4	119.8	2.5	35.0
1991	124.7	385.6	9.0	138.6	2.6	40.5
1992	126.6	427.1	10.0	150.7	2.9	44.1
1993	129.3	475.0	11.1	165.0	3.2	48.2
1994	133.5	509.3	11.9	182.3	3.5	53.3
1995	135.8	513.6	12.0	197.4	3.5	57.7
1996	141.8	579.9	13.5	219.7	4.0	64.2
1997	150.5	645.0	15.1	248.2	4.4	72.6
1998	159.1	774.3	18.1	280.5	5.3	82.0
1999	171.0	867.1	20.3	321.8	5.9	94.1
2000	178.5	901.4	21.1	356.9	6.2	104.3
2001	188.3	983.1	23.0	399.5	6.7	116.8
2002	206.1	1,141.6	26.7	463.9	7.8	135.6
2003	222.2	1,357.6	31.7	531.9	9.3	155.5
2004	244.4	1,648.4	38.5	623.5	11.3	182.3
2005	266.6	1,881.6	44.0	724.1	12.9	211.7
2006	268.2	1,730.6	40.4	768.9	11.8	224.8
Total			354.7		103.7	

Appendix Table C.1: Adjustments to U.S. Goods Exports

The table shows the balance of U.S. goods exports included in line 3 of Table 1 of the U.S. Balance of Payments reported by BEA for all countries, EU, Korea, Japan and Mexico. The last two columns show two alternative adjustment estimates. The first is equal to 3% of total exports, the second is equal to the sum of 5% of exports from EU, Korea and Japan, and 12% of exports to Mexico. All values are in billions of U.S. dollars.

	Total	EU, Korea, Japan	Mexico	3% Total	(5% EU, Korea, Japan) +12% Mexico
1990	707	149	28	21	11
1991	728	153	33	22	12
1992	751	152	40	23	12
1993	779	147	41	23	12
1994	870	158	51	26	14
1995	1,005	185	46	30	15
1996	1,078	191	57	32	16
1997	1,191	203	71	36	19
1998	1,195	203	79	36	20
1999	1,260	227	87	38	22
2000	1,422	253	111	43	26
2001	1,296	233	101	39	24
2002	1,256	212	97	38	22
2003	1,338	221	97	40	23
2004	1,559	246	111	47	26
2005	1,789	264	120	54	28
2006	2,096	299	134	63	31
Total	20,318	3,497	1,305	610	331

Appendix Table D.1: Estimated Equity Claims Short Sales

This table shows U.S. equity claims holdings from Table 18 in Dept. of Treasury (2007) in the countries where short-selling is allowed and practiced as listed in Table 7 of Endo and Ree (2006). All holdings are for end of December, except for the 1994 holdings which are as the end of March of that year. The final line shows an estimate of short sales in each of the years shown, calculated as the sum of 4% of U.K. holdings and 5% of holdings in the other countries listed.

	1994	1997	2001	2003	2004	2005	2006
Australia	16,917	31,120	37,112	56,454	57,052	71,141	101,990
Brazil	8,447	31,338	21,801	31,781	43,104	68,560	92,045
Canada	39,655	70,798	89,591	149,267	180,398	247,823	298,137
Chile	2,492	4,555	1,917	2,102	2,564	3,520	4,447
Czech Republic	300	763	444	1,249	1,843	1,727	3,045
Denmark	1,819	8,917	7,533	10,429	14,488	15,652	21,236
Finland	2,957	14,785	51,307	35,162	33,860	44,393	55,852
France	25,647	85,019	112,205	130,761	164,634	205,113	306,861
Germany	25,580	64,965	72,200	103,239	123,685	158,013	220,397
Greece	538	1,513	2,810	3,957	6,980	9,529	14,448
Hong Kong	17,527	28,102	30,154	36,210	35,395	44,465	85,833
Hungary	145	3,483	1,702	2,412	4,503	4,880	7,619
India	1,134	6,176	6,897	18,500	23,152	32,753	47,932
Italy	13,797	41,547	33,686	38,971	57,494	63,915	92,733
Japan	99,413	136,404	170,714	255,494	330,427	493,343	543,506
Korea	4,352	4,428	29,537	49,121	66,639	110,264	114,155
Mexico	34,665	34,965	26,279	28,529	37,516	57,876	84,620
Netherlands	38,054	106,984	112,751	115,792	136,467	132,769	161,493
Norway	3,929	9,494	7,906	11,972	18,153	22,023	32,096
Pakistan	226	1,180	86	85	111	364	780
Portugal	1,106	6,993	3,819	3,949	5,505	5,323	5,982
Singapore	6,832	10,185	21,376	21,932	23,968	29,109	43,911
South Africa	4,438	9,937	6,714	15,101	21,600	31,605	39,586
Sweden	11,769	38,784	24,274	27,529	38,284	40,530	59,433
Switzerland	20,962	61,897	75,587	117,910	138,187	191,812	262,620
Taiwan	468	4,939	19,607	26,970	34,554	57,088	74,228
Turkey	630	6,005	2,269	3,781	5,561	11,122	11,180
United Kingdom	99,729	217,525	350,014	420,675	455,919	537,891	673,978
(A) 4% of U.K. holdings	3,989	8,701	14,001	16,827	18,237	21,516	26,959
(B) 5% of holdings in other listed countries	19,190	41,264	48,514	64,933	80,306	107,736	139,308
Total Estimated Short Sales (sum of A and B)	23,179	49,965	62,514	81,760	98,543	129,251	166,267

Appendix Table D.2: Adjustments to U.S. Equity Income Receipts and Payments

The table shows the adjustments to income arising from the short-sales adjustments to equity claims and liabilities holdings. The dividend yield is computed using the “original” method discussed in CDW. The income adjustments are the products of the dividend yield and the short-sale adjustment reported in Panels B and C of Table 3.

	Receipts		Payments	
	Dividend Yield	Income Adjustment	Dividend Yield	Income Adjustment
1990	1.79%	-0.15	2.96%	-0.22
1991	1.52%	-0.13	3.01%	-0.20
1992	3.04%	-0.36	3.08%	-0.25
1993	2.88%	-0.39	2.81%	-0.25
1994	2.27%	-0.53	3.06%	-0.31
1995	2.79%	-0.75	3.24%	-0.36
1996	2.81%	-0.78	2.61%	-0.40
1997	2.80%	-0.99	2.19%	-0.41
1998	2.23%	-1.12	1.77%	-0.48
1999	2.00%	-1.22	1.48%	-0.52
2000	1.72%	-1.17	1.25%	-0.57
2001	1.33%	-0.82	1.29%	-0.60
2002	2.33%	-1.46	1.51%	-0.67
2003	2.99%	-1.61	1.93%	-0.72
2004	2.54%	-2.08	2.10%	-1.08
2005	2.42%	-2.38	1.90%	-1.12
2006	2.36%	-3.05	2.04%	-1.29
Total		-18.96		-9.47

Figure 1: Net International Investment Position Estimates

In this figure, reproduced from CDW (2008a), “IIP” is the revised net investment position published by BEA as of July 2007. By construction, the series equals the revised net position in 1989 plus revised cumulative current account balance plus cumulative revised capital gains. “CCA plus original capital gains” is the revised net position in 1989 plus revised cumulative current account balance plus cumulative original capital gains. The original capital gains are calculated by applying original capital gains rates from Section III of CDW (2008a) to revised gross positions. “CCA” is the revised net position in 1989 plus the revised cumulative current account balance.

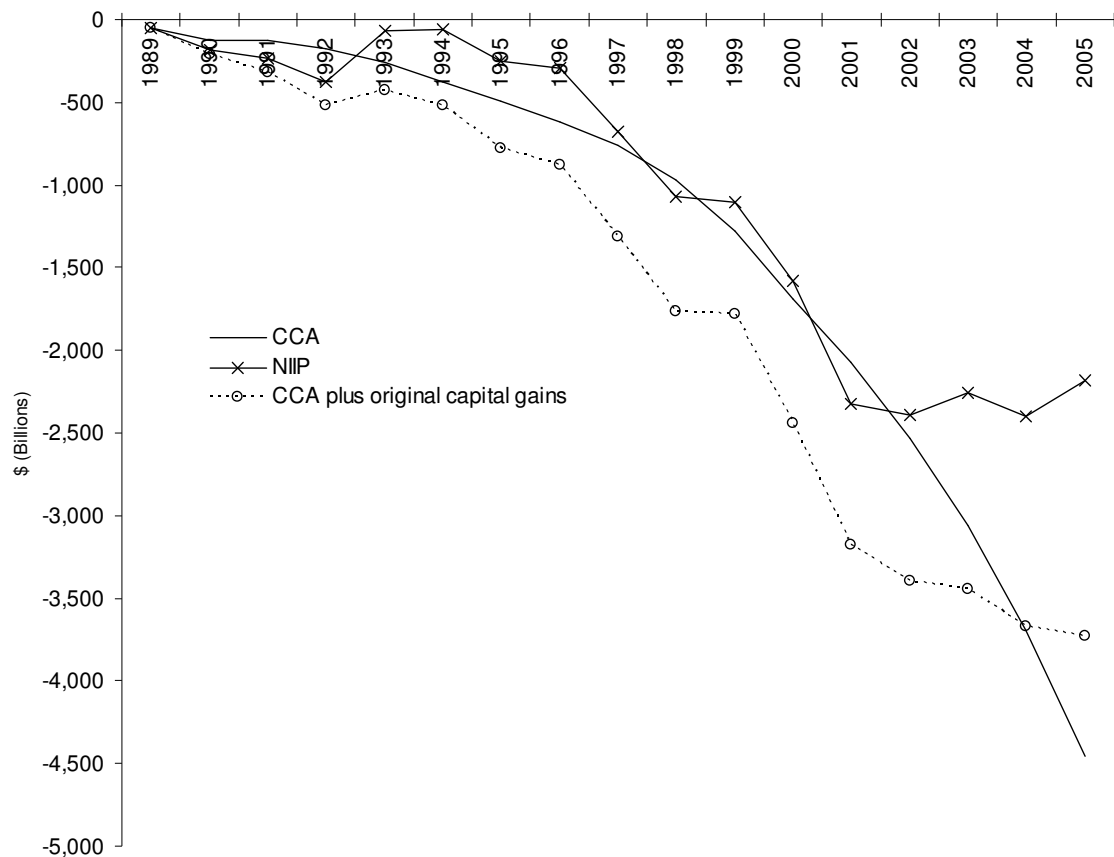


Figure 2: Reconciling the Net IIP, Cumulated Current Account and Cumulated Financial Account

This figure illustrates the relationships between the net IIP, cumulated current account and cumulated financial account represented in equations (5), (6) and (7). In the figure, NIIP is the net IIP, FA is the financial account, VA valuation adjustments, OA other adjustments, KA capital account, SD statistical discrepancy, CA current account. The gap indicated in the figure is the difference between the right- and left-hand sides of equation (7).

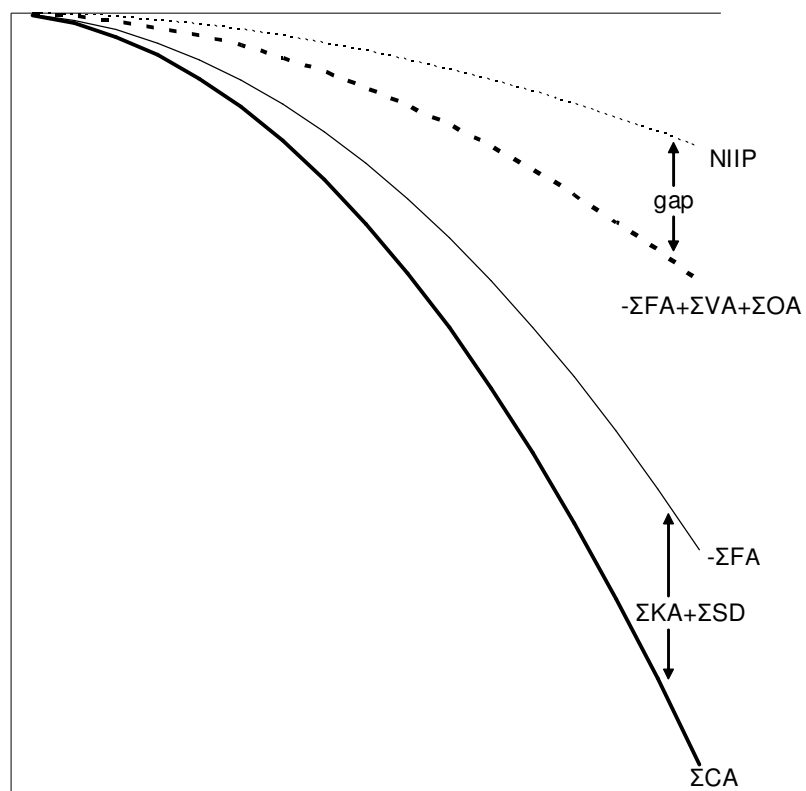


Figure 3: Reconciling the Net IIP, Cumulated Current Account and Valuation Adjustments: Original Data

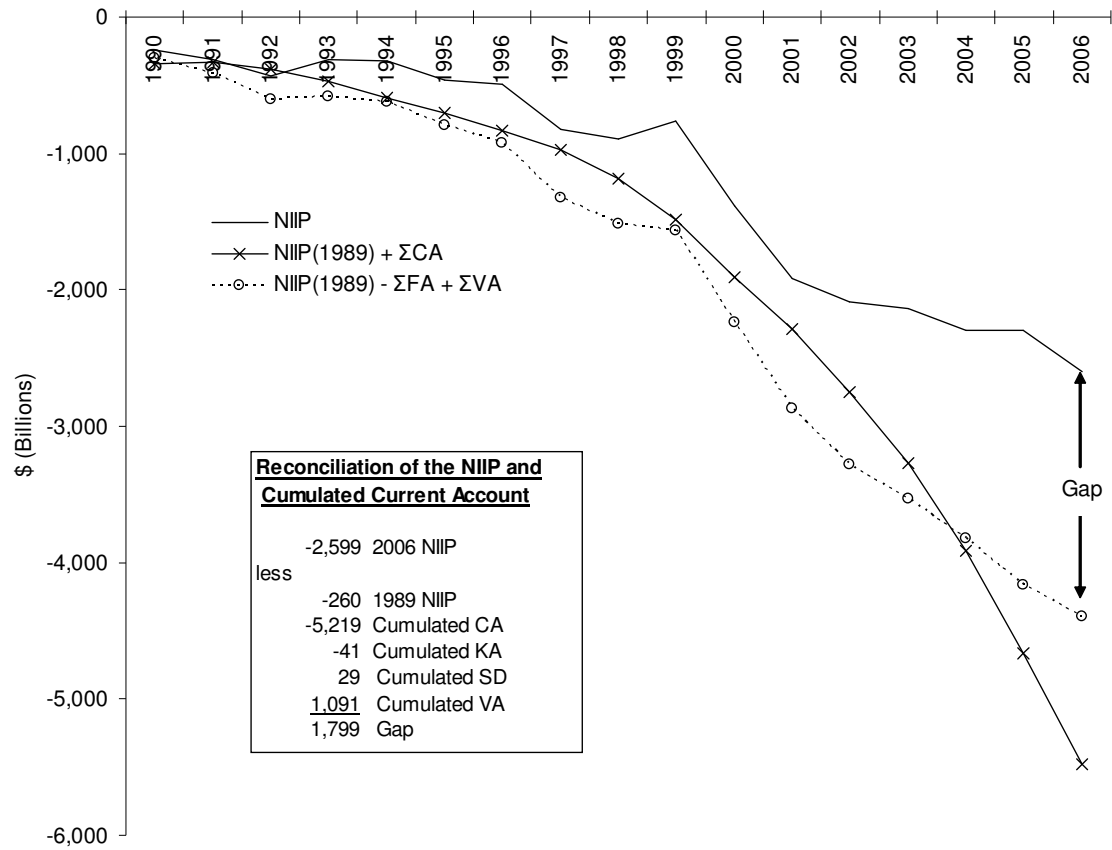


Figure 4: Reconciling the Net IIP, Cumulated Current Account and Valuation Adjustments: Adjusted Data

