Returns Differentials and the Income and Position Puzzles*

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Abstract

The \textit{income} puzzle (of positive net income flows to the U.S. even as its net international investment position is negative and substantial) and the \textit{position} puzzle (of a sizeable gap between the reported U.S. net international position and cumulated current account deficits) can both be understood through an analysis of U.S. returns differentials. We categorize and analyze the first three waves of research on U.S. returns differentials and discuss (and update) a BEA assessment of how to interpret the underlying data. While estimates of U.S. returns differentials have ranged from exorbitant to quite small, the evidence points to a modest differential in favor of the U.S. that owes primarily to a differential in direct investment yields. The bulk of the DI yield differential and, hence, the overall U.S. returns differential, owes to a wedge between U.S. firms’ domestic and foreign earnings that can be attributed to country-specific factors such as tax rates and risk. The overall returns differential is small, the income puzzle owes to well-understood differences in the earnings of U.S. MNCs abroad and foreign MNCs in the U.S., and the position puzzle likely owes not to a large returns differential but to missing capital flows.

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“Go to the BEA website. Find the latest annual balance of payments data for the United States…Find the latest net international investment position data for the United States…Is the United States still privileged?” (Feenstra and Taylor 2008 page 661)

“[T]here is convincing evidence that statistical adjustments, not the over-performance of U.S. investments or exchange rate effects, would explain large net positive valuation gains by the U.S. and part of the excess return implied in the U.S. net foreign assets.” (Habib 2010 page 10)

“Habib (2010) confirms the existence of excess returns of about 3% for the US on the period 1981-2008 and points out the singularity of the US in its ability to earn excess returns for long periods of time.” (Gourinchas, Rey, and Govillot 2010 page 3)

1. Introduction

Returns differentials are at the heart of two puzzles in international macroeconomics, both depicted in Figure 1. The first is the position puzzle: The U.S. net international investment position (IIP) is far less negative than the large and persistent U.S. current account deficits would suggest (i.e., the reported IIP is less negative than cumulated current account deficits). The second is the income puzzle: Even with a substantial, negative IIP, on net the US earns income on its net international position (i.e., the income balance is positive). Moreover, not only is U.S. net international income positive—it amounted to $165 billion in 2010—but over time it has improved even as the net investment position has deteriorated.

Returns differentials are also central to a number of questions. Is the U.S. IIP much worse than reported? Does the U.S. have outsized earnings on its foreign positions? Are foreigners such bad investors that their U.S. positions earn substandard returns? When will the U.S. income balance finally turn negative (and how in the world can it be positive)?

Both an understanding of the two puzzles and the answers to these questions hinge on return differentials. However, as the above quotes suggest, anyone hoping to understand U.S. returns differentials by reading the literature will quickly realize that such an exercise is

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1 Obstfeld (2010) discusses issues related to returns differentials.
hopeless. There is no consensus. A leading international economics textbook (Feenstra and Taylor 2008) instructs undergraduate students to gather off-the-shelf data from the Bureau of Economic Analysis (BEA) and convince themselves that there is an “exorbitant privilege”, a common term for the apparent excess return that U.S. investors earn on their foreign portfolios compared to what foreigners earn on their U.S. portfolios. An economist at the ECB writes that statistical adjustments, not actual returns, produce the illusion of an exorbitant privilege (Habib 2010). Leading researchers then cite the ECB study as evidence of the existence of a privilege (Gourinchas, Rey, and Govillot 2010). And it does not end there. Eichengreen (2011) is motivated, at least in part, by the observation that "…the interest that the United States must pay on its foreign liabilities is two to three percentage points less than the rate of return on its foreign investments." (page 4)

We shed light on the position and income puzzles by alleviating confusion surrounding returns differentials. We do so in three steps. First, we categorize and analyze the burgeoning literature on cross-border returns differentials. An assessment of that literature points to direct investment (DI) yields as the only source of whatever returns differential exists. Second, we analyze what is driving the DI yield differential. Finally, we use our analyses of the overall differential and DI yields to shed light on the income and position puzzles.

Before starting, it is useful to lay out some terminology. While it is unusual to do so in the introduction of a paper, this topic requires precise language.

*Total Returns* are comprised of two components, *Yield* and *Capital Gains*. Yield is the return attributable to income streams (e.g., coupon payments, dividends, earnings on DI), whereas capital gains are the returns attributable to price movements (including exchange rate movements). We will be exact in our use of these terms. If we write “yield”, we are referring to
the returns attributable to income streams, not capital gains. If we write “returns”, we are referring to total returns (unless we include the modifier “capital gains”).

*Returns differentials*, which can describe differentials in yield, capital gains, or their sum, can be decomposed into three components: the composition, return, and timing effects. The first two—the composition and return effects—capture average characteristics of U.S. cross-border claims and liabilities. The *composition effect* is positive if U.S. claims on foreigners are weighted toward asset classes with higher average returns; Gourinchas and Rey (2007a) showed convincingly that there is a positive composition effect for the US. The *return effect*, at the heart of the exorbitant privilege view, is positive if U.S. investors earn higher average returns within each asset class.\(^2\) The *timing effect*, the focus of Curcuru, Dvorak, and Warnock (2010), is driven by reallocations among different asset classes and captures the covariance between current weights and subsequent returns; foreigners’ returns in the US are degraded by poor timing when switching between bonds and equities.

With these definitions, we note that discrepancies in the literature tend to be about different views of the *return effect* (whether U.S. investors earn higher within-asset-class average returns on their foreign portfolio than foreign investors earn in the US). The composition effect is not controversial. It is clear that U.S. foreign assets are weighted toward equity and DI, whereas foreigners’ U.S. assets are weighted toward bonds. If equities tend to outperform bonds, the composition effect will be positive for the US. Of course, over some (rather lengthy) periods bonds have outperformed equities; over those time periods the composition effect can be

\(^2\) A precise statement on the return effect is in Gourinchas (2006): “The remaining two thirds (of the U.S. excess return) arise from return differentials within asset classes. This reflects mostly the ability of the US to borrow at very low interest rates, a fact sometimes interpreted as evidence of the “exorbitant privilege” that the US enjoys from its unique position in the international monetary order, as the issuer of the world's reserve currency.”
negative for the US. For the timing effect, to date there is only one estimate of roughly 50 basis points per year in favor of the US (Curcuru, Dvorak, and Warnock 2010).

Our assessment of the returns differentials literature begins in Section 2, where we distinguish between three waves of research on average returns differentials. A first wave backed international returns out of IIP and flow data and found very large differentials in favor of the United States, differentials that exceed three percent per year. In the second wave either data issues from the first wave were addressed or direct readings of returns were used; doing so produces much smaller capital gains differentials of 0.5-1.0% per year. Then the pendulum swung back when a third wave produced differentials that were as large as those in the first wave. Following these three waves officials at BEA weighed in: The current vintage of IIP data should not be used to back out returns, and when returns are calculated carefully the capital gains differential is small (about 0.5%) and the total differential is almost entirely due to DI yields.

In Section 3 we focus on DI yields. If whatever differential exists is due to a differential in DI yields, then discussions of U.S. returns differentials should focus on DI, not on asset classes such as portfolio equity and debt for which the differentials are inconsequential. There is a long-standing literature on the DI differential (see papers from Landefeld et al. 1992 to Bosworth et al. 2008); we build on that literature, providing additional and updated analysis. To understand the wedge between yields on U.S. direct investment abroad (USDIA) and foreign direct investment in the United States (FDIUS), we first show that there is nothing special about USDIA; when comparing apples with apples the earnings of U.S. firms from their foreign operations are in line with the earnings of the foreign operations of firms from other countries (ACDIA). We then show that there is also nothing special about FDIUS, other than that it tends to be young, and young firms or new enterprises tend to have lower earnings. When FDIUS is
seasoned, it appears to earn about what the domestic operations of U.S. firms (USIUS) earn. If there is nothing special about USDIA (relative to ACDIA) and nothing special, other than age, about FDIUS relative to USIUS, why are there such large differentials between USDIA and FDIUS? Taxes, risk, and age. USDIA earnings reported in the BOP are not net of the U.S. taxes paid on those earnings. Further, there are strong incentives for U.S. firms to book earnings not at home, where corporate taxes are high, but abroad in low-tax jurisdictions so some of the U.S. tax liability is deferred. These tax issues add up to 2% per year to USDIA yields. If in addition an adjustment for risk is made, the difference between USDIA and USIUS is less than 1%. Age explains the difference between FDIUS and USIUS; taxes and risk explain most of the wedge between USIUS and USDIA; and, thus, age, taxes, and risk explain most of the DI yield differential.

In sum, the evidence indicates that the U.S. returns differential is not 3-4% per year, but more like 1.5-2%, and even that owes primarily to a roughly 5% differential in DI yields. A literature that has evolved over three decades shows that age, taxes (some due to a pre- and post-tax difference in reporting norms), and risk explain that differential. And, while a sizeable 2% aggregate yield differential exists (mostly in DI), the aggregate capital gains differential is small, averaging only 0.5% per year.

In Section 4 we explore the implications of our results for the income and position puzzles. Our analysis implies that the U.S. net income puzzle—that the U.S. on net earns positive income on its negative $3 trillion net external position—is also the result of the relatively high

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3 We do not focus on another interesting aspect of the literature, the information content of the differential, be it from the cyclical component (Gourinchas and Rey 2007b) or from the total differential (Evans and Fuertes 2011). We note that even with a small positive returns differential, the high yield earned on USDIA implies a substantial wealth transfer to U.S. firms. Because taxes and risk are behind its unusually high yield, unless there is a change in relative tax rates or the relative riskiness of investing in the U.S. or abroad, net investment income will continue to be a stabilizing force for the U.S. current account deficit.
yield earned on USDIA. Our analysis implies that the position puzzle—the large gap between reported net liabilities and those that would be implied by past current account deficits—is the result of large statistical discrepancies between the current and financial accounts rather than large average returns differentials. In short, the income puzzle is no puzzle—it owes to a DI yield differential, and it is easy to see why USDIA earns more than FDIUS—and the position puzzle owes to something as mundane as a disconnect between the data collection systems for flows and positions.

Our work impacts a range of different literatures. It impacts the literature on the valuation effect of the current account (see, among many others, Devereux and Sutherland 2010). An important distinction in that literature is whether valuation effects are anticipated or unanticipated. To rule on that, as Devereux and Sutherland do, requires an accurate measure of returns differentials. Our work directly impacts the global imbalances literature. For example, the theoretical models in Mendoza, Quadrini, and Rios-Rull (2009) and Mendoza and Quadrini (2010) are in line with Curcuru et al. (2008) and this paper, in that they imply that the excess return for the U.S. comes out of the composition of the U.S. external portfolio (that is, the composition effect of being short in riskless assets and long on risky ones) rather than any magical ability to produce higher yields on seemingly homogeneous assets (a returns effect). Were such models inconsistent with the perceived empirical regularities, they may well be shunned. Empirical regularities impact what theory is written and, of that, which gets an audience. It is important to get the regularities right.

Another area our work impacts is exchange rate prediction. After Meese and Rogoff (1983) showed how difficult exchange rate forecasting was, a number of papers have now found exchange rate predictability from returns differentials (Gourinchas and Rey 2007b, Evans and
Fuertes 2011). Evans and Fuertes state that over a short period their differentials are similar to those in Curcuru et al. (2008) and, hence, not subject to concerns raised about the first wave of estimates. Here we show that the issue with returns differentials such as those Evans and Fuertes utilize is not with the short mid-90s to 2004 period (their comparison period), but the preceding decades. The accuracy of returns differentials is vital for this exchange rate predictability literature to be on solid footing. Another area our work impacts is the long-standing literature on FDI differentials. McGrattan and Prescott (2010) show that most of the reported DI yield differential could be attributable to mismeasurement (or non-measurement) of investment in intellectual property (IP). In their system measured income is somewhat low (because investment spending is being expensed) and the measured capital stock is much too low (because past investment in IP has not been captured). This is consistent with our work, as the accumulated mismeasurement of the capital stock takes time and will be related to firm age. Finally, our work influences the way we think about the puzzles in the title. We show that these are not actually puzzles, but well-understood regularities in the data. This is an important distinction. Puzzles are something to explain and then move on. In contrast, regularities—especially those that involve significant magnitudes—must be accounted for in subsequent work.  

\[\text{Our work also impacts another literature—comparisons of returns differentials across countries—that we do not directly address in this paper. As hinted at in the conclusion, however, we can show convincingly that returns differentials are generally not comparable across countries, a finding that would surely impact the Habib (2010) and Nguyen (forthcoming) papers.}\]

2. The Returns Differential Literature: Three Waves and an Assessment

2.1 The First Wave

The main papers in the first wave of the returns differential literature are Lane and Milesi-Ferretti (2005), henceforth LMF1; Gourinchas and Rey (2007a), henceforth GR1;
Meissner and Taylor (2006, MT); and Obstfeld and Rogoff (2005, OR). This first set of papers—probably with GR1 and LMF1 leading the way and MT and OR following—used readily available (revised) series to calculate an implied returns differential. The total return on U.S. claims or liabilities can be calculated as follows:

\[ r_t^R = \frac{A_t^R - A_{t-1}^R - FLOW_t^R}{A_{t-1}^R} + \frac{INC_t^R}{A_{t-1}^R} \]  

(1)

where \( A_t^R \) is the position (claims or liabilities) at the end of period \( t \), \( FLOW_t^R \) is flows (U.S. flows abroad or foreign flows into the U.S.) during period \( t \), and \( INC_t^R \) is income (interest, dividend, and DI earnings) during period \( t \). The superscript \( R \) denotes revised, indicating that all variables are of the latest vintage. The first term in (1) is returns owing to capital gains, while the second term is the income yield.

Estimates of the yield (the second term in (1)) do not tend to vary much across researchers. But there are substantial differences in estimates of capital gains (the first term) and, more precisely, the dollar amount of valuation changes (the numerator of the first term). Call that \( Val \) (for valuation changes):

\[ Val_t^R = A_t^R - A_{t-1}^R - FLOW_t^R \]  

(2)

The logic behind (2) is straightforward. For any account, if you know the starting balance \( (A_{t-1}) \), the ending balance \( (A_t) \), and the contributions made between the start and end dates \( (Flows_t) \), you
can figure out the investment gains or losses ($Val_t$). Then, given $Val_t$, you can calculate the percentage (capital gains) returns as:

$$KG \text{ Returns}_t = 100 \times \frac{Val_t}{A_{t-1}}$$  \hspace{1cm} (3)

The first wave of research on external returns applied this logic to U.S. International Investment Position (IIP) data. In that context, $A$ is the U.S. international position and $Flows$ are U.S. net capital outflows. In theory, one could use (1) - (3) to produce an estimate of the returns the U.S. is earning on its international assets and liabilities. This is exactly what was done in the first wave of papers, which produced estimates ranging from 2.7% to 3.7% per year favoring U.S. claims (Table 1). Returns computed using (1) - (3) seem to indicate that in every asset class U.S. investors manage to outperform foreign investors in the U.S., and much of the favorable differential results from higher capital gains rates.

The problem that the first wave of papers did not anticipate is that in practice (2) cannot be used to compute a reasonably accurate estimate of $Val$, and thus there is no basis for applying (3). The reason is that $A$ and $Flows$, because they have completely different revisions policies and come from different data collection systems, are not consistent with one another. In the IIP data it need not be the case that $Flows$ plus $Val$ are equal to the change in $A$. This contrasts sharply with normal accounts, in which contributions plus investment gains/losses should equal the change in the balance.
In the IIP this inconsistency between $A$ and Flows is represented by an “other changes” term, $OC$, which is similar in spirit to the statistical discrepancy in the Balance of Payments (BOP) data.\(^5\) Including $OC$ as part of the change in $A$:

$$A_t = A_{t-1} + \text{Flows}_t + \text{Val}_t + OC_t$$

and the first wave of papers can be seen as computing implied (capital gains) returns using not $\text{Val}$ but $\text{Val} + OC$:

$$KG\text{ Returns}_t = 100 \times \frac{(\text{Val}_t + OC_t)}{A_{t-1}}$$

Applying (5) produces rather large returns differentials favoring U.S. claims on foreigners because, as it turns out, in the U.S. IIP presentation $OC$ has been on average more positive for U.S. claims than for U.S. liabilities. This is not an artifact of the older sample period. Even in the current vintage of data (i.e., recent data that incorporate all past revisions) $OC$ is on average positive for the U.S. and drives the return differential strongly in favor of the U.S.\(^6\)

2.2 The Second Wave

A second wave of papers realized the impact $OC$ might have on estimates of returns differentials. The second wave consisted primarily of Lane and Milesi-Ferretti (2009, LMF2); Curcuru, Dvorak, and Warnock (2008, CDW); and Curcuru, Thomas, and Warnock (2009, CTW). LMF2 shines the light on $OC$ and carefully assesses how much might be attributed to true

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\(^5\) Along with balancing items to offset measurement errors, the $OC$ also picks up changes in valuation methodology and reclassifications. An example of the latter is when a foreigner becomes a U.S. resident. His prior claims on the U.S. are no longer U.S. liabilities to a foreigner and his prior claims on the rest of the world become new U.S. claims on the rest of the world.

\(^6\) Gian Maria Milesi-Ferretti points out that for the US $OC$ has been positive on net in 19 of the past 20 years.
VAL and how much might be discrepancies in the data. CDW identifies the main source of the OC— inconsistent position and flow data resulting from disparate revisions policies affecting different items in the accounts—then constructs an estimate of the returns differential after removing this inconsistency.

Compared with the estimates computed in the first wave of papers, both LMF2 and CDW provide substantially lower estimates of the capital gains portion of the U.S. returns differential (Table 2). CDW estimates that capital gains differentials for debt and equity were 0.2% and -2.3% per year, respectively; their combined differential was a relatively modest 0.7% per year. LMF2 estimates that the aggregate capital gains differential is only 0.6% per year—only about one-fifth the magnitude of the estimates in the first wave of papers.

LMF2 and CDW both end in a puzzle: If returns differentials are smaller, there is a disconnect in the international accounts—if OC represent missing net outflows rather than valuation adjustments, where are the offsetting inflows needed to balance the BOP? CTW addresses this disconnect by investigating various known holes in the accounts and finds that some of the needed offsets might be explained by under-reporting of U.S. exports and the omission of foreign purchases of U.S. real estate from the international accounts. However, some of the puzzle remains.

We place a fourth paper in the second wave—Gourinchas and Rey (2007b), henceforth GR2—although we readily admit that we are not sure where it belongs. We put it in the second wave because it did not use (1)-(3) to compute returns, but rather relies on market returns (similar to the CDW approach). Note that GR2 report total returns, whereas the others in Table 2 are capital gains returns, so there is a disconnect in our table. But as can be seen in the table, GR2 produces returns that no one would describe as exorbitant. The aggregate capital gains
returns differentials are actually negative, as negative differentials for FDI and equity are not offset by the near-zero capital gains differentials for debt and other.\(^7\)

Comparing the first and second waves of papers, one might conclude that there appeared to be an exorbitant privilege, but that it was largely a function of statistical oddities, and when direct readings of returns are used U.S. capital gains returns differentials are positive but near zero.\(^8\) But then came a third wave of papers.

2.3 A Third Wave

Whereas the second wave of papers produced very low U.S. returns differentials, a third wave—Forbes (2010), Habib (2010) and Gourinchas, Rey, and Govillot (2010, GRG)—produced higher estimates, reported in Table 3. Forbes (2010) uses the CDW methodology and finds a very high returns differential: 6.9% excess returns per year during 2002-2006. Habib (2010) finds U.S. excess returns of about 3.4% for the period 1981-2007; that most of the differential comes from capital gains; that no other country in a broad panel has a similarly large differential; and, consistent with GR1, that most of the U.S. returns differential comes not from a composition effect but from a within-asset-class return differential. GRG updates and improves the GR1 dataset, confirms the GR1 results, and highlights a long-term average returns differential of 3.5% per year from 1973-2009 (GRG Table 1, Panel a).

How does this third wave square with the previous literature? Forbes found a high differential, but her very short sample is at a time when the dollar was depreciating (which adds to any underlying differential). Indeed, owing primarily to dollar depreciation, the period studied

\(^7\) The returns differentials for GR2 are not reported in that paper, but can be computed from [http://socrates.berkeley.edu/~pog/academic/IFA_data.xls](http://socrates.berkeley.edu/~pog/academic/IFA_data.xls). We thank Alberto Fuertes for pointing this out to us. See also Evans and Fuertes (2011), in which an aggregate returns differential of 0.0% is computed for 1973-2008.

\(^8\) Including the yield differential of about 1-1.5%, the overall returns differential was roughly 1-1.5%.
in Forbes (2010) was one of abnormally high differentials favoring the US (Figure 2).\(^9\) Forbes also reports returns with exchange rate movements stripped out; excluding exchange rate movements, the returns differential for the asset class at the heart of the exorbitant privilege view—bonds—is very small at only 0.3%. Although Habib (2010) acknowledges the findings of the second wave of literature, it uses equation (5) to calculate returns. GRG goes a step further and also estimates the returns differential after removing the \(OC\). The result is a more modest 1.6% per year (GRG Table 1, Panel b), and the differential drops dramatically for each asset class. Which is a better estimate of the returns differential: 1.6% or 3.5%?

2.4 An Assessment from BEA

Statisticians from the Bureau of Economic Analysis (BEA) have provided an answer to the question of how to best estimate the U.S. returns differential (Gohrband and Howell 2010, henceforth GH). GH resolves two questions confounding economists trying to construct estimates of the returns differential. What are “other changes” (the \(OC\)) and how much should be included in \(Val\)? And, what are the revised valuation adjustments for the components of the IIP?

To answer the first question of how much of the \(OC\) to include in \(Val\), GH states:

“Other changes” are changes in position that cannot be attributed to price changes, exchange rate changes, or financial flows . . . it is unlikely that significant price or exchange rate changes have been erroneously included in “other changes” . . . It is far more likely that financial flows that could not be identified from revisions to position estimates have been commingled with statistical changes in the “other changes” category.\(^{10}\)

Thus, the answer from BEA—the compilers of the data used in all three waves to estimate the size of the returns differential—is clear: \(OC\) likely represent unrecorded flows, and therefore

\(^9\) The volatility of international returns, specifically capital gains returns, depicted in Figure 2 motivates the search for data sets that span longer time periods—see, for example, the GR1 and GRG data that extend back to the early 1950s.

\(^{10}\) Gohrband and Howell (2010), p. 17.
should not be included in the valuation adjustments used to calculate the returns differential.\textsuperscript{11} Their estimate of the 1990-2005 returns differential is 1.7\% per year (Table 4), of which 1.2\% is from income yield and only 0.5\% is from capital gains. A time series plot of differentials (Figure 3) reveals that the GH differentials are very similar to those calculated by the second wave of papers (CTW data are shown). In contrast, the differentials calculated by the first wave (GRI data are shown) are more volatile, and it is clear from the figure that a good portion of the positive differential calculated by this wave of papers was generated by returns in the mid- to late 1970’s.

GH also provides data on revised valuation adjustments for the components of the IIP—data that until now were unavailable to researchers—and calculates returns differentials by asset class. The large aggregate yield differential is the result of a 4.8\% per year advantage for FDI claims, with a modest differential in favor of debt and a disadvantage in equity (which contrasts starkly to some estimates from the third wave of literature of an equity differential of over 4\%). We use the GH data (available through 2005) and their recipe to calculate returns through 2010 (also shown in Table 4). FDI yields are responsible for the bulk of the 2.1\% annual differential for the 1990-2010 period.\textsuperscript{12}

In Table 5 we split the sample into two periods: 1990-2004 and 2005-2010. That split shows that the difference between the two periods is not in yields—over the last two decades the yield differential has averaged 1.4\% with little variation (1.4\% for 1990-2004 and 1.5\% for 1990-2010). We caution that market-value estimates of FDI positions should not be used. BEA has stopped emphasizing the market-value measure, presumably because they lack confidence in it. One reason is that it is highly doubtful that broad stock market indexes can approximate the returns of privately held corporations. Another problem is how should one form an estimate of the return of USDIA affiliates in tax havens, where much of USDIA is located? Local stock market returns, which are used in market-value measures, clearly would not be appropriate. Parenthetically, we note that if we did use market-value estimates for DI, the aggregate total differential would narrow to 1.8\% per year.

\textsuperscript{11} “Other changes” for FDI does include some capital gains and losses that should be included in valuation adjustments, but these data are not available.

\textsuperscript{12} We caution that market-value estimates of FDI positions should not be used. BEA has stopped emphasizing the market-value measure, presumably because they lack confidence in it. One reason is that it is highly doubtful that broad stock market indexes can approximate the returns of privately held corporations. Another problem is how should one form an estimate of the return of USDIA affiliates in tax havens, where much of USDIA is located? Local stock market returns, which are used in market-value measures, clearly would not be appropriate. Parenthetically, we note that if we did use market-value estimates for DI, the aggregate total differential would narrow to 1.8\% per year.
2005-2010)—but in capital gains. The capital gains differential, 0.0% for 1990-2004, was 2.1% over the past six years, owing to a substantial capital gains differential on equity. Equity markets performed poorly around the world (and more so in the U.S.) during this period, but dollar depreciation added to the returns on U.S. claims. This capital gains differential, not evident in the preceding 15-year period, creates a large overall differential for 2005-2010 (consistent with Forbes 2010). It is difficult to predict what the differential on equity capital gains will be in the future (positive, negative, or zero are three reasonable guesses), but what is apparently more stable is the aggregate yield differential. That differential owes entirely to a difference in DI yields, the topic we turn to next.

3. On the DI Yield Differential

Based on the most recent and improved estimates the returns differential in favor of the US is about 2%, and, as depicted in Figure 4 (and Table 4), owes primarily to a large advantage in DI income yields. In contrast, the income yields and capital gains for other asset classes and capital gains for all asset classes (including DI) are virtually indistinguishable for claims and liabilities.\(^\text{13}\) This suggests that any discussion of the U.S. returns differential should focus squarely on DI. Not on the depth of U.S. financial markets, not on the U.S. government’s ability to borrow internationally for nothing, but on the earnings U.S. firms book on their foreign operations relative to the earnings foreign firms book on their U.S. operations.

Luckily there is a long, well-established literature to guide us. That U.S. firms earn more on their foreign operations than foreign firms earn on their U.S. operations—shown graphically in Figure 5—has been known for decades and is the subject of several papers (Lupo et al. 1978,

\(^{13}\) Capital gains for direct investment current-cost positions reflect changes in real estate or inventory values due to price or currency fluctuations.
Landefeld et al. (1992), Mataloni (2000), Gros (2006), Bosworth et al. (2008), McGrattan and Prescott (2010)).

To shed light on the excess DI yield—shown in Table 6 as the difference between the USDIA yield (row 1) and the FDIUS yield (row 8)—we take the following approach. First, we show that the yield U.S. firms earn on their foreign operations is not extraordinary, but almost exactly in line with the yield all foreign firms earn in those countries. Second, there is nothing special about the earnings foreign firms book in the United States; they are almost exactly in line with U.S. corporate earnings, and deviations are well explained by an age effect. Third, where there is a noticeable wedge, it is between U.S. firms’ domestic earnings yields and USDIA. Most of this wedge, at the heart of the DI yield differential and thus the overall returns differential, owes to country-specific factors such as tax rates. While there is a lot of work behind each of these three statements, in what follows we present them in a concise way and leave the details to Curcuru and Thomas (2011).

3.1 U.S. firms’ international earnings are not exorbitantly high

The first comparison we make is between USDIA earnings and the DI earnings made by firms from other countries. To do so we compare USDIA earnings yields in selected countries (computed from BEA income and position data)\(^{14}\) with the aggregate earnings yield on all direct investment in those countries (ACDIA), computed as the ratio of total direct investment income payments to the liabilities position reported in the IMF Balance of Payment Statistics. This income includes all affiliate earnings and interest payments to the parent, and excludes direct royalty payments (but includes royalties earned by affiliates as part of common tax-minimizing

\(^{14}\) FDI positions for other countries generally follow the IMF standard and are reported on a current-cost basis. BEA country-level DI positions do not include a current-cost adjustment, but the current-cost position values are available for the aggregates. We used the ratio of the aggregate current-cost to historical-cost position to adjust the country earnings yields to a current-cost basis.
structures). To ensure an apples-to-apples comparison, we include only countries in which earnings, like USDIA earnings, are measured using the IMF-recommended Current Operating Performance Concept (COPC). This criterion yields eight foreign countries which accounted for 31% of USDIA in 2009.\(^\text{15}\)

On their foreign direct investments in these countries, firms from other countries have done about as well as U.S. firms. The weighted-average USDIA and ACDIA earnings yields, where weights are the shares of the USDIA position in this country sample for each year, are very similar through time (Figure 6). The sample averages are also very similar; weighted-average yields over the sample period are 7.5% for USDIA and 8.6% for ACDIA.\(^\text{16}\) In sum, there is nothing special about USDIA: In their foreign operations, when doing an apples-to-apples comparison, U.S. firms’ earnings are in line with the earnings of other firms’ foreign operations.

3.2 Foreign firms’ U.S. earnings are not exorbitantly low

The next comparison we make is between FDIUS earnings (Table 6, row 6) and the earnings made by U.S. firms on their domestic operations (Table 6, row 4 or 5). Existing literature consistently reports that FDIUS underperforms other domestic operations and USDIA, despite the widespread belief that these earnings yields should be similar. However, this literature finds that a significant portion of the earnings yield differential is related to age (Lupo et al. (1978), Landefeld et al. (1992), Grubert et al. (1993), Laster and McCauley (1994), Feldstein (1994), Grubert (1997), Mataloni (2000), McGrattan and Prescott (2010)). FDIUS affiliates are generally younger than USDIA affiliates or U.S. domestic operations. Younger

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\(^{15}\) See http://www.imf.org/external/bopage/pdf/mar2000.pdf for a description of the COPC, which excludes earnings from capital gains and losses and includes reinvested earnings and intercompany debt payments. Including another six countries for which ACDIA income includes capital gains and losses and another six for which ACDIA is missing intercompany debt payments and/or reinvested earnings would increase coverage to 66% of USDIA and not change the conclusions that follow. See Curcuru and Thomas (2011).

\(^{16}\) The weighted-average USDIA yield for these countries is noticeably lower than the aggregate USDIA yield because it excludes countries with very high USDIA returns, such as Bermuda or the Cayman Islands, which do not report the data needed to compute ACDIA.
firms have relatively high expenses because of restructuring and other start-up costs, as well as accelerated depreciation schedules for fixed assets. These higher expenses lead to low initial earnings yields that disappear as firms age. Further, retained earnings eventually replaces external financing as the major source of capital as affiliates age, which also results in lower expenses and higher yields (Feldstein 1994). Finally, as McGrattan and Prescott (2010) demonstrate, over time firms can accumulate significant intellectual capital, which raises earnings, but is not included in the measured capital stock or flows.

We put forward evidence that suggests that age has an important influence on the FDIUS earnings yield. We simply regress FDIUS earnings on a proxy for firm age, $AGE_t$, and a measure of U.S. domestic earnings yields (USIUS), using the longest sample (1983 to 2009) available to us. This produces the following results: 17

$$ FDIUS_t = \alpha + \beta \times AGE_t + \gamma \times USIUS_t $$

(6)

Coefficient estimates are shown below the equation, with standard errors in parentheses; the adjusted $R^2$ of the regression is 40%. The age proxy in (6) is total outlays for new FDIUS in the previous 3 years scaled by the FDIUS position at $t$. Other age-related measures, such as new equity flows and new intercompany debt flows, would also be significant (Curcuru and Thomas (2011), Table 4). The FDIUS return predicted by (6) tracks movement in the reported FDIUS yield quite closely (Figure 7). FDIUS earnings are very much related to the age of investments.

17 Domestic earning yields are computed using the yield on not just non-financial corporate tangible assets (as in Bosworth et al. 2008), but on total net assets (including financial assets), though we report both measures in Table 6. FDIUS affiliates borrow and invest in the U.S. capital markets, so the FDIUS earnings yield is more similar to a U.S. earnings yield that includes earnings on financial assets. In regression (6) and Figure 7 we include all assets in computing the domestic yield, and use earnings reported by firms excluding the adjustments to depreciation made by BEA to aggregate income.
The difference between FDIUS and USIUS earnings yields has averaged 0.6% (Table 6, row 6 minus row 5). As shown by the regression (and implicit in Figure 7), movements in FDIUS yields relative to USIUS are well explained by the age of FDIUS.

3.3 The Source of the Differentials: U.S. firms’ domestic and foreign earnings

USDIA earnings yields are similar to yields on DI made by investors from other countries, but are significantly higher than USIUS earnings yields.

Some of the difference between USDIA and USIUS yields is an illusion of BOP accounting, because BOP-reported USDIA earnings are to some extent pre-tax while USIUS earnings are after-tax (i.e., after the deduction of U.S. taxes). For USDIA, BOP-reported earnings are indeed net of foreign taxes, and the U.S. parent earns credit for some of the foreign taxes it pays, but the parent usually still owes some U.S tax on repatriated earnings because the U.S. tax rate is generally higher. The U.S. taxes paid by U.S. parents on their foreign-generated income are not subtracted from BOP-reported cross-border income receipts because the tax is paid by the U.S. parent firm and is not a cross-border transaction. Because the reported USDIA earnings yield is net of (the usually low) foreign taxes but does not net out U.S. taxes, it tends to overstate the after-tax earnings of the U.S. parent firm on their foreign investment.

It does not appear that the existing literature has fully accounted for this simple tax treatment effect. To put USDIA on equal (i.e., after-tax) footing with USIUS, we form upper- and lower-bound estimates of tax adjustments. U.S. MNE tax policy allows deferral of the U.S. taxes incurred by USDIA earnings until these earnings are repatriated to the parent firm. And many U.S. MNEs do choose to defer their U.S. tax liability by reinvesting foreign earnings in their foreign affiliates; on average 60% of their annual earnings from 1999-2009 were reinvested in the foreign affiliates. Our lower-bound tax adjustment includes the estimated U.S. tax liability.
generated by repatriated foreign affiliate earnings. This reduces the USDIA earnings yield by an average of 1 percentage point (Table 6, row 1 minus row 2). The upper-bound tax adjustment adjusts for U.S. taxes on all foreign income that would be due had the affiliate distributed all of its earnings. This can be viewed as an upper bound because it is possible that firms will never repatriate reinvested earnings. However, because the U.S. parent firm may not be certain, ex ante, how much of its foreign earnings it will need to repatriate, it may only choose projects with a return high enough to compensate for this maximum potential tax liability. Thus, USDIA yield adjusted for all future tax liabilities represents a reasonable return for the actual and potential tax costs of USDIA earnings. Our upper-bound tax adjustment decreases the USDIA earnings yield an additional 1 percentage point per year (Table 6, row 2 minus row 3), bringing the total compensation for U.S. taxes to 2 percentage points per year (Table 6, row 1 minus row 3).

The remainder of the wedge between USDIA and USIUS yields, which is between 1.6% and 4.1% (depending on the tax assumption and USIUS estimate), can plausibly represent compensation for the additional risk associated with investing abroad. Curcuru and Thomas (2011) highlight risk adjustments that lower the USDIA yield by an additional 1 percentage points per year (Table 6, row 3 minus row 4), bringing the gap between the risk- and tax-adjusted USDIA and USIUS (tangible assets) yields to an average as low as 0.7 percentage points per year (Table 6, row 4 minus row 5). Further, the differential between the adjusted USDIA and age-adjusted FDIUS returns, in Figure 8, averages 1 percentage point per year (Table 6, row 4 minus row 7), and is not statistically significant.¹⁸ Age explains the difference between FDIUS and USIUS; taxes and risk explain the wedge between USIUS and USDIA; and, thus, age, taxes, and risk explain most of the DI yield differential.

¹⁸ We do not have annual estimates for the transfer pricing effect on USDIA or FDIUS. An estimate for a single year (2004) is that in that year transfer pricing reduced the difference between USDIA and FDIUS yields from 4.8% to 4.0%. 

20
4. Implications for the Income and Position Puzzles

Two puzzles were depicted in Figure 1: the income puzzle that the U.S. receives, on net, income payments on its international investment position even though the investment position is very negative, and the position puzzle of a large gap between the reported IIP and cumulated current account deficits. In this section we use evidence from the preceding sections to shed light on both puzzles.

4.1 The U.S. Net Income Puzzle

U.S. net income on its international positions is positive even though it is a net debtor because of the net income it receives on DI. As Figure 9 shows, U.S. net income has averaged $90 billion per year during the past decade. Net DI income more than accounted for the aggregate amount, averaging $190 billion per year. On other types of international investments, U.S. net income has averaged negative $100 billion.

Figure 10 shows this another way. If the yields on cross border claims equaled those on liabilities, income would be negative and trending down with the position; this counterfactual is depicted by the dotted line in the figure. If yields on everything except DI were as reported, but we constrain DI yields on assets to equal those on DI liabilities, income would still be negative (the dashed line). Over the 1990 to 2010 period, the cumulated dollar value of the gap between aggregate reported net income and net income with equal DI yields is $2.1 trillion, or 90% of the total net recorded liability position. This illustrates an important point: Although the total returns differential is relatively small, it nonetheless generates a significant net wealth transfer to the US.

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19 The dotted line in effect allocates claims across instrument types with the same shares as liabilities and sets the yields on each asset type to that on liabilities. The dashed line computes the effect of the DI differential alone, plotting what net payments would be with claims allocations and yields set to their actual values except that the yield on DI claims is set to the yield on DI liabilities.
The unusually high yield on USDIA is the main driver of the net income puzzle. Some of this owes to different treatments of taxes in the international accounts. For the 2000-2009 period, aggregate net income averaged $67 billion per year. An upper estimate is that differential tax treatment accounted for $60 billion of that.\textsuperscript{20} If not for the fact that BOP-reported USDIA earnings are to some extent pre-tax while USIUS earnings are after-tax (i.e., after the deduction of U.S. taxes), the aggregate net income balance would be near zero (roughly $7 billion per year for 2000-2009). But even after adjusting for taxes, net income is positive, and considering how large and negative that the U.S. international position is, this alone is enough to have macro implications. Because taxes and risk are behind USDIA’s unusually high yield, unless there is a change in relative tax rates or the relative riskiness of investing in the U.S. vs. abroad, net investment income should continue to be a significant stabilizing force for the U.S. current account deficit.

4.2 The Position Puzzle

Also depicted in Figure 1 was the position puzzle, the large gap between the reported IIP and cumulated current account deficits. Were the U.S. capital gains returns differential large, the puzzle would be explained, but the weight of evidence suggests that the capital gains returns differential is rather small. As noted by LMF2 and analyzed at length in CTW, low estimates of the U.S. capital gains differential leave us with a very large gap between reported net liabilities and those that would be implied by past current account deficits and measured capital gains rates. Cumulating from 1990, CTW estimated this gap to be $1.7 trillion as of 2007. Rather than closing the gap by adding these other changes to the valuation adjustments, as was done in the

\textsuperscript{20} To form this estimate, we start with estimates of foreign taxes paid by country based on benchmark survey data, then infer what additional U.S. taxes would be due on the income receipts (assuming full credit for foreign taxes paid, and including both repatriated and reinvested earnings). If instead we limit the adjustment to only taxes paid on repatriated earnings, aggregate net income would fall less, to $46 billion. Such calculations are not yet possible for 2010, so our estimates for this adjustment end in 2009.
first wave of literature, GH suggests that these are missing flows, which should be included in the statistical discrepancy. This implies that what has been previously presented as a returns puzzle is more likely a missing flows puzzle.\(^{21}\)

CTW attempted to close the gap by addressing three types of known weaknesses in the U.S. international accounts. First, some assets are not captured in the historical financial accounts data. These include residential real estate, which should be in the direct investment data, and financial derivatives, introduced only in 2006. Second, some items (IPOs, asset-backed repayments, goods exports) have known shortcomings in the transactions data in the current and financial accounts but have no known accompanying flaws in the positions data. Third, some items (short positions, direct investment in intangibles) have known shortcomings in the positions data but for which the associated transactions data are thought to be sound. CTW developed reasonable plugs to these holes, and was able to narrow the $1.7 trillion gap to $370 billion. However, their reconciliation resulted in a positive statistical discrepancy in the BOP of roughly $500 billion ($30 billion per year), representing additional unaccounted net inflows, at a time when the \textit{cumulated} reported statistical discrepancy was only $32 billion. The CTW estimates of the statistical discrepancy—formed as a residual after plugging some known holes in the U.S. data collection system—were greatly at odds with reported statistics.

In Figure 11 we update the CTW gap analysis. Recently, the reported statistical discrepancy has indeed become quite large, totaling $348 billion the last two years. As Figure 11 depicts, using updated Gohrband and Howell (2010) returns and a statistical discrepancy that is part reported and part updated CTW, the resulting gap is quite small. It appears that a small

\(^{21}\) If the \textit{OC} are not capital gains, that does not necessarily imply that they are missing flows. Some reclassifications that should be captured in “other changes”, such as the immigration of wealthy individuals to the United States, might be significant.
returns differential might indeed be consistent with reported BOP and IIP data, and that the position puzzle is really a missing flows puzzle.

5. Conclusion

In this paper we analyzed returns differentials to shed light on two puzzles in international macroeconomics: the income and position puzzles. We began with a survey of the literature on returns differentials. The first wave of papers in this literature produced differentials in favor of the U.S. that are large enough that “exorbitant” is an apt descriptor. The second wave recognized that reported (and, especially, revised) IIP and BOP data could not be combined to back out returns; this set of papers found much smaller differentials. Then a third wave found much higher differentials. Recently, the BEA has weighed in: Differentials are small, with the exception of those for FDI.

Researchers have recognized and analyzed the differential for FDI for decades. We build on that long-standing literature by showing that the FDI differential owes to a wedge between U.S. firms’ reported earnings on their foreign and domestic operations. Foreign firms’ (age-adjusted) earnings in the US are in line with U.S. firms’ domestic earnings, and U.S. firms’ earnings abroad are in line with other foreign firms’ earnings in those countries. The only wedge is between U.S. firms’ reported earnings on their foreign and domestic operations, and that wedge is plausibly explained by adjustments for taxation and risk.

Our analysis informs the two puzzles. The income puzzle—the fact that U.S. net international income is positive (and growing) even as its net IIP is negative (and becoming more so)—owes entirely to the large (reported) earnings U.S. MNCs earn abroad relative to what foreign MNCs earn in the US, a wedge well explained by issues such as taxation and risk. The
position puzzle—the fact that the U.S. net IIP is far less negative than cumulated current account deficits—is consistent with a relatively small returns differential, large recent statistical discrepancies, and adjustments along the lines of Curcuru, Thomas, and Warnock (2009).

Finally, we note that while it is tempting to compare returns differentials across a range of countries, there are a number of pitfalls researchers should be aware of. We highlighted some of the difficulties in interpreting the differentials for a single country. The same difficulties associated with statistical series breaks, inconsistent data collection systems and out-of-sync revision policies that give rise to influential “other changes” in the U.S. IIP also exist for other countries. For example, for the euro area $OC$ average 0.5% per year 2000-2009. If one ignores our caveats and computes returns for other countries via equations (1)-(3), the resulting differentials are much smaller than for the US and, indeed, often negative (Habib 2010). Our unreported analysis using IMF data reveals that portfolio returns differentials across countries are similar to U.S. differentials (excluding $OC$), suggesting that DI yield differentials are responsible for the difference between the aggregate U.S. differential and that reported by other countries. However, substantial differences in DI data definitions across countries make comparisons difficult for more than a handful of countries. We caution against such analysis unless one is willing to begin with an arduous data reconciliation exercise.

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22 Countries’ income and holdings data are not necessarily compiled using the same methods. One example: Based on IMF BOP data, French FDI claims earned an average of 1.8% per year from 2000-2009—this is the value that is likely included in the Euro Area accounts, but a presentation on the Banque de France website suggests that the return on French FDI equity capital claims was about 5% for this period. We can identify a likely reason for the discrepancy in this example—that French FDI income excludes intercompany debt payments and earnings reinvested in indirectly-owned affiliates—but other unidentified issues undoubtedly lurk in the data.

23 Excluding direct investment, U.S. returns differentials are in line with the differentials for other large developed economies including Australia, Canada, Japan, New Zealand, as well as the Euro Area.
References


Table 1: Returns Differential Estimates from the First Wave of Literature

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<th>Source</th>
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¹Capital gains inferred from the difference between Total and Yield differential.
²Values are from Gourinchas and Rey (2007a) Table 1.1. In that paper they are labeled as real returns (although exactly how nominal returns were transformed into real returns is not stated), but in the associated file posted on the web (http://socrates.berkeley.edu/~pog/academic/wb_data.xlsx) they match series labeled nominal.
³Values from Lane and Milesi-Ferretti (2005) are real returns averaged over the three time periods in Table 5.
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**Table 2: Capital Gains Differential Estimates from the Second Wave of Literature**

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¹ Capital gains from Lane and Milesi-Ferretti (2009) are averaged over the three time periods in Table 7.

² Curcuru, Thomas and Warnock (2009) aggregate and FDI capital gains include the value of “other adjustments” for FDI.

³ Returns for Gourinchas and Rey (2007b) are average nominal total (i.e., yield plus capital gains) returns, thus not directly comparable with the capital gains returns in the rest of the table, calculated from http://socrates.berkeley.edu/~pog/academic/IFA_data.xls.

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### Table 3: Returns Differential Estimates from the Third Wave of Literature

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</table>

1 Returns in Forbes (2010) for components exclude holdings of foreign official investors but these are included in total returns.
2 Includes OC.
3 Excludes OC.
.. not available
Table 4: Recent Total Returns Differential Estimates

Gohrband and Howell (2010)  
Tables D and E  
1990-2005 | 1990-2010 |  
--- | --- | ---  
Claims | Liabilities | Difference | Claims | Liabilities | Difference  
Aggregate  
Total | 7.6 | 5.9 | 1.7 | 7.3 | 5.2 | 2.1  
Yield | 5.0 | 3.8 | 1.2 | 5.5 | 4.0 | 1.4  
Capital Gains | 2.7 | 2.1 | 0.5 | 1.8 | 1.2 | 0.6  
FDI  
Total | 10.4 | 6.2 | 4.2 | 10.6 | 4.5 | 6.1  
Yield | 6.9 | 2.1 | 4.8 | 10.2 | 4.0 | 6.2  
Capital Gains | 3.4 | 4.0 | -0.6 | 0.4 | 0.5 | 0.1  
Debt  
Total | 7.7 | 6.4 | 1.3 | 7.3 | 6.2 | 1.1  
Yield | 7.0 | 6.3 | 0.6 | 6.6 | 6.0 | 0.6  
Capital Gains | 0.7 | 0.0 | 0.6 | 0.7 | 0.2 | 0.5  
Equity  
Total | 8.5 | 10.3 | -1.9 | 8.2 | 8.6 | -0.4  
Yield | 2.5 | 2.1 | 0.3 | 2.6 | 2.1 | 0.4  
Capital Gains | 6.0 | 8.2 | -2.2 | 5.6 | 6.4 | -0.8  
Other  
Total | 4.3 | 3.9 | 0.4 | 4.3 | 3.5 | 0.8  
Yield | 4.2 | 3.9 | 0.3 | 3.9 | 3.4 | 0.5  
Capital Gains | 0.1 | 0.0 | 0.1 | 0.4 | 0.1 | 0.3  

Notes: Gohrband and Howell (2010) aggregate and FDI capital gains include the value of capital gains that are included in “other changes” for FDI, and calculate returns using the market value of the FDI position. Our return calculations through 2009 use the Gohrband and Howell (2010) Table 3 estimates of income and capital gains for debt, equity, and other assets. For 2010 we use the IIP release for that year. For FDI we use the current-cost value of the FDI position and infer capital gains on a current-cost basis on FDI from BEA IIP Table 3, available online at http://www.bea.gov/international/xls/intinv10_t3.xls.
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Notes: Valuation adjustments based on data (and, to update, the recipe) from Table 3 of Gohrband and Howell (2010). Returns use the current-cost value of the FDI position.
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<th>Description</th>
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<td>9.1%</td>
<td>1.2%</td>
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<tr>
<td>2. USDIA, after U.S. taxes on repatriated earnings</td>
<td>8.1%</td>
<td>1.2%</td>
</tr>
<tr>
<td>3. USDIA, after U.S. taxes on all earnings</td>
<td>7.1%</td>
<td>1.1%</td>
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<td>4. USDIA, tax and risk-adjusted</td>
<td>6.2%</td>
<td>1.3%</td>
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<tr>
<td>5. USIUS, tangible assets</td>
<td>5.5%</td>
<td>0.8%</td>
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<tr>
<td>6. USIUS, tangible and net financial assets</td>
<td>4.0%</td>
<td>1.0%</td>
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<td>7. FDIUS, age-adjusted</td>
<td>5.2%</td>
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<tr>
<td>8. FDIUS, as reported</td>
<td>3.4%</td>
<td>1.9%</td>
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</table>
Figure 1: U.S. Net International Investment Position and Cumulated Current Account

Source: BEA. The cumulated current series starts with the U.S. net international investment position at the end of 1989 then cumulates subsequent U.S. current account balances.
Figure 2: Realized Returns on Cross-Border Claims and Liabilities

Capital gains through 2009 implied from Tables D and E of Gohrband and Howell (2010); for 2010 from the IIP release. Yields computed from BOP income and the 2010 IIP.
Figure 3: Time Series of Selected Returns Differentials Estimates

GR1 is the total returns differential from Gourinchas and Rey (2007a), CTW is from Curcuru, Thomas and Warnock (2009), and GH through 2009 is from Gohrband and Howell (2010), 2010 from the 2010 IIP.
Figure 4: Income Earnings yields and Capital Gains on U.S. Cross-Border Positions

Graphical depiction of the returns presented in the right side of Table 4. Income is from the balance of payments reported by BEA. Capital gains through 2009 are implied from Gohrband and Howell (2010); for 2010 from the IIP Direct investment valued at current-cost. All values are 1990-2010 averages.
The USDIA series is the ratio of aggregate DI income receipts to the USDIA position at current-cost reported by BEA. The FDIUS series is the ratio of aggregate DI income payments to the FDIUS position at current-cost reported by BEA.
Figure 6: U.S. Direct Investment Abroad (USDIA) and All Countries Direct Investment Abroad (ACDIA) Earnings yields for Selected Countries

The series are the USDIA and ACDIA returns, constructed by weighting country-level returns by the (historical cost) share of USDIA investment in each country each year. Includes only those countries which fully apply the current operating performance concept to direct investment income reporting; these countries comprise 31% of USDIA in 2009. The ACDIA earnings yield for each country is the ratio of total direct investment income payments reported in the IMF BOP to the liabilities position. The USDIA earnings yield in each country is computed using BEA income and position data. Only the historical-cost positions are available for BEA country-level data, so we use the ratio of the current-cost position to the historical-cost position computed at the aggregate level to adjust the USDIA yields to a current-cost basis.
Figure 7: Foreign Direct Investment in the United States (FDIUS) adjusted for age-effects

The predicted FDIUS yield is estimated using Equation (6), where AGE is the previous 3 years of outlays for new FDIUS, scaled by the FDIUS position.
The tax- and risk-adjustments made to the USDIA yield are described in Section 3.3 in the text. The age-adjusted FDIUS yield is estimated using the regression coefficients reported below Equation (6), where AGE is set to 0.
The dark bars are reported U.S. net income (BOP Table 1 line 75). The light bars are the reported U.S. DI net income, which equals DI receipts from abroad (BOP Table 1 line 14) plus (in BOP terms) DI payments to foreigners (BOP Table 1 line 31).
The top line on the chart is the net income reported in the U.S. BOP. Two alternative income estimates are shown. The dotted line estimates income using the product of the net position and the yield on aggregate liabilities; that is, it forces the yield on assets to equal the yield on liabilities. The dashed line estimates income by setting the USDIA income yield equal to that earned on FDIUS.
The figure uses Gohrband and Howell (2010) and the 2010 IIP rates of return and adjustments similar to those discussed in Curcuru, Thomas and Warnock (2009). NIIP = U.S. net international investment position, CA = current account, FA = financial account, KA= capital account, VA= valuation adjustments, and SD = statistical discrepancy.