Volume Title: Measuring Wealth and Financial Intermediation and Their Links to the Real Economy

Volume Author/Editor: Charles R. Hulten and Marshall B. Reinsdorf, editors

Series: Studies in Income and Wealth, volume 73

Volume Publisher: University of Chicago Press

Volume ISBN: 0-226-20426-X, 978-0-226-20426-0 (cloth); 978-0-226-20443-7 (eISBN)

Volume URL: http://www.nber.org/books/hult10-1

Conference Date: November 12–13, 2010

Publication Date: January 2015

Chapter Title: The Return on U.S. Direct Investment at Home and Abroad

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Chapter URL: http://www.nber.org/chapters/c12538

Chapter pages in book: (p. 205 – 230)

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The Return on US Direct Investment at Home and Abroad

Stephanie E. Curcuru and Charles P. Thomas

7.1 Introduction

A longstanding puzzle is that the United States is a net borrower from the rest of the world and yet somehow manages to, on net, receive income on its external position. Net investment income receipts reported in the US balance of payments (BOP), the top line in figure 7.1, have continued to grow even while the net liabilities position, the bottom line, has also grown. This situation has mystified economists for almost a quarter-century:

> 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? (Milton Friedman 1987)[1]

The income received on the US external position plays an important role in one of the biggest issues confronting international macroeconomists—the sustainability (or lack thereof) of the US current account deficit. Net income receipts, which equaled 33 percent of the goods and services balance

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The authors thank Ralph Kozlow and participants at the International Finance Seminar at the Federal Reserve Board, the CRIW/NBER Joint Conference on Wealth, Income and Financial Intermediation, and an anonymous referee for comments and suggestions. We thank Corinne Land for excellent research assistance. The views in this chapter are solely the responsibility of the authors and should not be interpreted as reflecting the views of the Board of Governors of the Federal Reserve System or of any other person associated with the Federal Reserve System. For acknowledgments, sources of research support, and disclosure of the authors' material financial relationships, if any, please see http://www.nber.org/chapters/c12538.ack.

1. Personal correspondence with Charles Thomas, June 1987.

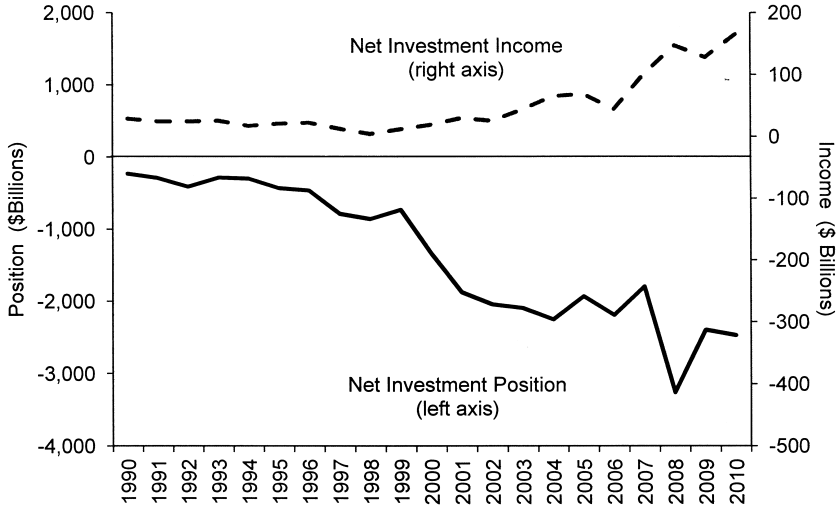

Fig. 7.1 US cross-border investment income and position

Source: Net investment income is from the US balance of payments and the net investment position from the US international investment position, both published by the Bureau of Economic Analysis.

in 2010, provide a significant stabilizing force for the current account. Future sustainability will depend, in part, on the persistence of these net income receipts. So an understanding of what is generating this income will help economists assess how the US imbalance might evolve.

One asset class is responsible for the puzzle. Net income receipts in the BOP owe entirely to a difference between the yields (income divided by the position) on direct investment claims and liabilities (Hung and Mascaro 2004; Bosworth, Collins, and Chodorow-Reich 2008; Bridgeman 2008; Curcuru, Dvorak, and Warnock 2008). The aggregate yield on US cross-border claims averaged 140 basis points per year higher than that paid on US cross-border liabilities from 1990–2010, shown in the first columns of figure 7.2. The next columns show that the main driver of this difference was foreign direct investment (FDI); the average yield received on US FDI claims was an impressive 620 basis points per year higher than that paid on liabilities. In contrast, for portfolio equity and debt, the average yields on claims and liabilities were nearly identical. The overall yield advantage was enough to move the income balance in favor of US claims despite the large net liability position.[2]

Why is there such a large difference between the yield received on US direct

2. Although there is a difference between the asset compositions of claims and liabilities, it contributes very little to the yield differential.

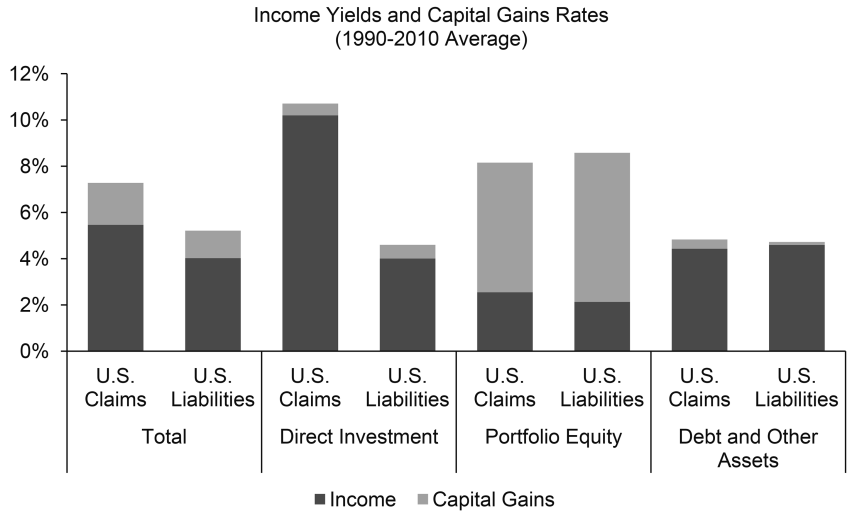

Fig. 7.2 Income yields and capital gains on US cross-border positions

Source: Income and capital gains are from Gohrband and Howell (chapter 8, this volume) for 1990–2009 and from the US balance of payments and international investment position published by the Bureau of Economic Analysis for 2010.

Note: Yields are computed by scaling income and capital gains with positions. Direct investment positions valued at current cost.

investment abroad (USDIA) and that paid on foreign direct investment in the United States (FDIUS)? Several studies suggest that the large difference between these yields is the result of USDIA earnings that are unusually high, FDIUS earnings that are unusually low, or a combination of the two. These conclusions are drawn from comparisons between US FDI yields and yields which, at least on the surface, appear to be similar. However, a closer look at the comparator yields used in these studies reveals some important differences. Some studies compare pretax with posttax yields. Other studies use comparator yields that are only valid in certain situations, such as when the affiliate borrows only from the parent firm. Our approach in this chapter is to first closely examine direct investment (DI) earnings and position data to find the most comparable measures before constructing yields. We then identify any remaining differences between the investments and quantify how these differences might affect yields.

We identify several reasons for the large differential between USDIA and FDIUS yields. In foreign countries, US multinational enterprises (MNEs) earn about the same on their USDIA as do investors from other countries, but the yield on USDIA is above that of firms operating in the United States. For USDIA we focus on the return from the parent firm's perspective and calculate the return net of all tax liabilities and estimate the amount of

compensation for the risks specific to investing abroad. We find that taxes and risk account for all but about 50 basis points of the average difference between USDIA yields and those earned by US firms on their domestic operations (USIUS) since 2004, and all but about 100 basis points over the entire sample. Compensation for the sunk costs of investing abroad can account for the rest. Years in which FDIUS significantly underperformed domestic investments followed significant increases in US investments by foreign parents—in other words, FDIUS performed relatively poorly when it was relatively young. In recent years, however, FDIUS has performed about as well as other investments in the United States.

Taken together, compensation for taxes, risk, sunk costs, and age account for virtually all of the difference between USDIA and FDIUS yields. Favorable transfer prices associated with trade between related firms further narrows the gap. Therefore we agree with Bosworth, Collins, and Chodorow-Reich (2008) that the difference between USDIA and FDIUS yields is not "an illusion of bad data" as suggested in the quotation in the opening paragraph; rather, data quirks and investment differences create a divergence between these returns, the effect of which has decreased in recent years. Looking ahead, we expect this differential will narrow further if the FDIUS capital stock continues to age or the relative perceived risk of investing abroad decreases.

This chapter contributes to the literature on sustainability, returns differentials, and FDI in several ways. Work by Cavallo and Tille (2006) and Kitchen (2007) shows that the positive income yield differential limits pressure on the exchange rate in the event of a trade balance adjustment. Our results, which suggest the yield differential is likely to persist, tend to lower the probability of a rapid decline of the US exchange rate predicted by these models. Several papers have noted the large yield and capital gains differential between US claims and liabilities (Lane and Milesi-Ferretti 2005; Obstfeld and Rogoff 2005; Meissner and Taylor 2006; Gourinchas and Rey 2007; Forbes 2010; Habib 2010; Gourinchas, Rey, and Govillot 2010), although some of the difference in capital gains may be overstated because of inconsistent data (Curcuru, Dvorak, and Warnock 2008, 2009; Lane and Milesi-Ferretti 2009). This work is also the first to fully account for all the components of the DI differential. Throughout this chapter we discuss implications for the yield differentials of the extensive work done by Desai, Foley, and Hines on the factors influencing FDI decisions.

The chapter proceeds as follows: section 7.2 summarizes existing literature; section 7.3 compares USDIA yields with those on direct investment liabilities reported by other countries; section 7.4 compares USDIA and FDIUS yields with yields on the domestic operations of US firms; section 7.5 summarizes what the results suggest for future differences between USDIA and FDIUS yields; and section 7.6 concludes.

7.2 Existing Literature

Existing literature suggests that USDIA yields are abnormally high, FDIUS yields are abnormally low, or a combination of the two. The focus of most studies has been the role of firm characteristics (firm age, industry, intangibles, productivity), transfer costs, and taxes.

7.2.1 Firm Characteristics

Several papers link low FDIUS yields to the relative youth of FDIUS affiliates (Lupo, Gilbert, and Liliestedt 1978; Landefeld, Lawson, and Weinberg 1992; Grubert, Goodspeed, and Swenson 1993; Laster and McCauley 1994; Grubert 1997; Mataloni 2000; McGrattan and Prescott 2010). Many new firms have relatively high expenses associated with depreciation of newly purchased assets or interest on debt used to finance acquisitions. Inexperience can also lead to relatively poor performance for younger firms.

The industry mix of FDIUS is dramatically different than USDIA and US investment more generally, with a large share of USDIA classified as holding companies and a large share of FDIUS classified as manufacturing firms. However, Mataloni (2000), the only study examining the role of industry composition, finds that the return on FDIUS assets was below that of US operations for most industries.

Other work suggests that differing amounts of investment in intangible capital (defined in Bridgeman [2008] as patents, trademarks, trade secrets, and organizational knowledge) is responsible for the large difference between FDIUS and USDIA yields. The value of intangible capital is excluded from the valuation method for DI that the Bureau of Economic Analysis (BEA) features, the current-cost method, because of measurement difficulties.[3] Bridgeman (2008) estimates the stocks of intangible assets and finds that including them in the USDIA and FDIUS positions reduces the gap between USDIA and FDIUS yields by three-fourths. McGrattan and Prescott (2010) finds the FDIUS yield is held down by the large amount of research and development investment these firms engage in, which is accounted for as an expense. However, they find that the USDIA yield is higher than can be explained by intangible capital and other factors in their model.[4]

Studies in the trade literature find that more productive US firms are more likely to engage in FDI, which leads to higher USDIA yields relative to

3. Investments in intangible capital are generally excluded from the US National Accounts because of difficulties in measuring its production and depreciation. The BEA plans to start including some intangible assets related to research and development in the accounts in 2013.

4. In related work, Hausmann and Sturznegger (2006) infer from the large net income receipts that USDIA intangible investment is much larger than FDIUS intangible investment, although Buiter (2006) challenges their methodology.

domestic-only firms (Helpman, Meliz, and Yeaple 2004; Fillat and Garetto 2010). These models also suggest the high return of USDIA relative to USIUS is compensation for the higher sunk costs and risks associated with FDI.

7.2.2 Transfer Pricing

Early studies find little evidence that the low FDIUS yield arises from favorable intrafirm transfer pricing. Laster and McCauley (1994) and Mataloni (2000) find no difference in the earnings of firms with a significant share of imports from the foreign parent and those with a smaller share. Similarly, Grubert (1997) finds no difference in the earnings of FDIUS affiliates, which are wholly owned by the parent, and those with a smaller share of foreign ownership. In more recent work Bernard, Jensen, and Schott (2006) examines detailed price and transaction data on US exports and imports and finds that the prices of exports to related firms are systematically lower than exports to unrelated firms, while the prices of imports from related firms are systematically higher. These pricing anomalies should have some effect on USDIA or FDIUS yields. Although reliable estimates of the size of the effects cannot be constructed because firm nationality is not tracked in the trade data, we provide some sense of their magnitude in section 7.5.

7.2.3 Tax Issues

A series of papers by Desai, Foley, and Hines (hence DFH) shows that affiliate funding, dividend repatriations, and the location of MNE subsidiaries are heavily influenced by tax considerations. Because US tax laws generally allow US MNEs to defer US taxes on foreign income until that income is repatriated, foreign operations in low-tax jurisdictions are disproportionately funded using reinvested earnings rather than new equity capital. In contrast, affiliates in relatively high-tax jurisdictions are funded using debt finance (Feldstein 1994; DFH 2001, 2003, 2004). DFH (2001) finds that USDIA affiliates in countries with 1 percent lower tax rates on foreign income have 1 percent lower dividend payout rates. Looking across affiliate countries, DFH (2004) finds that USDIA affiliates located in countries with relatively high tax rates had a higher debt-to-asset ratio in order to take advantage of the tax deductibility of interest payments, and that internal borrowing was particularly sensitive to tax rates. Complementary work by Grubert (1998) finds that interest payments to USDIA parents are higher for affiliates in countries with higher statutory tax rates. DFH (2006) finds that large US MNEs with heavy research and development spending and relatively large amounts of intrafirm trade are most likely to have affiliates located in tax havens. Bosworth, Collins, and Chodorow-Reich (2008) estimate that the diversion of income to low-tax jurisdictions accounts for one-third of the difference in USDIA and USIUS yields.

7.2.4 Other Areas of Research

Other explanations for the low FDIUS yield include a relatively low cost of capital in the home country (Grubert, Goodspeed, and Swenson 1993), price concessions to gain access to the US market or scarce raw materials (Landefeld, Lawson, and Weinberg 1992), and several high profile US. investments by foreigners in the 1980s that had particularly poor results (Laster and McCauley 1994; Jorion 1996). Other explanations for the large gap between USDIA and FDIUS yields include compensation for the additional risk of investing in countries with low sovereign credit ratings (Hung and Mascaro 2004), the venture capitalist nature of the US external position, which issues safe assets while investing in risky assets (Gourinchas and Rey 2007), and the "erroneous" inclusion of reinvested earnings in income that artificially boosts USDIA earnings (Gros 2006).

7.3 USDIA and Direct Investment by Other Countries

The USDIA yields are double those earned by other cross-border claims and liabilities (figure 7.2), which has led some to conclude that the data are misreported (Gros 2006; Hausmann and Sturzenegger 2006). In our first analysis we take a different approach than earlier papers that compared USDIA yields to those earned on other assets or in different locations. We focus our comparison on similar investments; at the country level we compare USDIA yields in a given country with the yield on all direct investment in that country (ACDIA). To the extent that USDIA investment in each country is similar to that undertaken by non-US investors, the yields should be similar. A finding of similar yields would suggest that the seemingly high USDIA yields are not unusual or temporary.

A close look at global direct investment earnings and positions data needed for a cross-country comparison of DI yields reveals that neither is reported on a consistent basis across countries. USDIA earnings are measured using the current operating performance concept (COPC) recommended by the International Monetary Fund (IMF), which includes reinvested earnings and intercompany debt payments in income and excludes capital gains and losses. In a survey conducted by the IMF only nineteen out of sixty-one countries (eight Organisation for Economic Co-operation and Development [OECD] countries) fully applied the COPC to inward DI earnings, and only sixteen out of sixty-one (seven OECD) to outward earnings.[5] These deviations from the COPC standard can have a large impact on reported DI earnings. For example, France excludes the reinvested earnings of indirectly held subsidiaries from income; a similar omission from

5. See http://www.imf.org/external/pubs/ft/fdis/2003/fdistat.pdf for a description of the COPC and the survey results.

USDIA earnings would lower yields by one-third or over 300 basis points per year.[6] In addition, it is difficult to estimate the market values of private companies, particularly in countries without liquid stock markets, so the DI positions published by most countries value firms using some combination of historical cost and market values. Because of these data variations we focus on the eight countries that fully apply the COPC method, and provide results for an expanded selection of countries in the appendix. The ACDIA yield for each country is the ratio of net income payments associated with DI liabilities to the amount of DI liabilities from the balance of payments statistics published by the IMF.[7]

In addition to different measures of earnings, accounting methods also vary. The BEA reports country-level earnings on a financial accounting (historical cost) basis, and computes current-cost adjustments needed to transform earnings to an economic accounting basis only at the aggregate level. We use historical-cost earnings to compute yields because this is how earnings are reported in the United Kingdom and many other countries. However, including current-cost adjustments in earnings does not change our conclusions.[8] Similarly, country-level positions are reported at historical cost value and the adjustments needed to transform the position to a current-cost or market-value basis are released by BEA only at the aggregate level. We adjust the country-level positions from a historical-cost to current-cost basis using the ratio of the aggregates when we compute USDIA country-level yields.[9]

We find that USDIA yields in most countries are similar to or below those earned by other foreign investors in those countries. For five out of eight countries in table 7.1 the USDIA yield is below the ACDIA yield, significantly so for three countries. In the United Kingdom, where 13 percent of USDIA is located, US investors earn 6.7 percent on their USDIA, while all foreign investors in the United Kingdom earn significantly more—8.5 per-

6. In 2009, reinvested earnings in USDIA holding company affiliates totaled $110 billion or one-third of total earnings. Most of this income was generated by indirectly held affiliates. Excluding these reinvested earnings lowers aggregate USDIA earnings in 2009 from 9.7 percent to 6.4 percent.

7. We also estimated the yield earned by only non-US investors in each country by subtracting the USDIA earnings and position in each country from IMF DI liabilities. The resulting yields for the eight countries in the main sample were similar to those reported, but these estimates could not be constructed for the expanded sample for several countries because inconsistent reporting resulted in US income receipts or positions reported by the BEA that were larger than total DI payments or liabilities reported by that country.

8. Current-cost adjustments increase USDIA earnings and lower FDIUS earnings and the differential between USDIA and FDIUS yields widens to 650 basis points.

9. The aggregate USDIA yield falls to 6.6 percent, and the aggregate differential drops to 125 basis points per year when yields are computed using the market value estimate of the position. Using aggregate income and positions to compute yields may mask significant heterogeneity in the underlying data. Unfortunately, those data are maintained by the BEA and access to them by individuals from other government agencies, including the authors of this paper, is prohibited.

Table 7.1 **US direct investment abroad (USDIA) and all countries direct investment abroad (ACDIA) yields for selected countries**

Country	USDIA	ACDIA	Difference	Share of position	Data available
United Kingdom	6.7	8.5	–1.9**	13.0	1983–2010
Canada	7.5	7.6	–0.1	7.6	1983–2010
Ireland	17.6	21.6	–4.0**	4.9	2002–2010
Australia	7.7	7.5	0.2	3.4	1987–2010
Hong Kong	12.4	8.8	3.7**	1.4	1998–2010
Sweden	6.4	8.3	–1.9	0.8	1983–2010
New Zealand	6.3	8.4	–2.1**	0.2	1990–2010
Finland	13.6	10.7	2.9**	0.1	1983–2010
Weighted average yields for 8 countries:	7.5	8.5	–1.1*	31.3	

Notes: All values are average percentages over the sample period; share is of 2010 USDIA position. Sample includes countries that fully apply the current operating performance concept (COPC) to direct investment income reporting. The USDIA yield in each country is computed using BEA income and position data. The BEA country-level positions are only available at historical cost; we use the ratio of the aggregate position at current cost to the aggregate position at historical cost for each year to adjust the position to a current-cost basis. The ACDIA is the ratio of DI income payments reported in the IMF balance of payments for each country to the DI liabilities position for that country. The last line of the table presents yields weighted by the historical cost share of USDIA investment in each country each year.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

cent, on average. In Canada, home to almost 8 percent of USDIA, the average yields of US and foreign investors on their DI are nearly identical. The yield on USDIA investments in Ireland is surprisingly high—almost 18 percent per year—but not as high as that earned on all DI in Ireland, which earns almost 22 percent per year.[10]

The last line of table 7.1 presents average USDIA and ACDIA yields, where the average is weighted by the USDIA position share in the sample each year. The average yield is *lower* for USDIA—7.5 percent for USDIA versus 8.5 percent for ACDIA —and the difference is statistically significant at the 10 percent level. Figure 7.3 shows these yields track each other very closely over the sample period. The weighted average USDIA yield for this sample is noticeably lower than the aggregate USDIA yield because the sample excludes many tax havens that do not report the data needed to calculate ACDIA yield. For an expanded selection that includes countries that do not fully apply the COPC method (see appendix table 7A.1), the weighted USDIA yield averages 30 basis points per year higher than ACDIA, and the

10. The yield on all DI liabilities in Ireland calculated from IMF data slightly overstates the yield on those liabilities because recorded DI income payments are not net of interest income associated with lending from Irish affiliates to foreign parents.

Fig. 7.3 US direct investment abroad (USDIA) and all countries direct investment abroad (ACDIA) yields

Note: The USIDA and ACDIA series are those shown in the last line of table 7.1; see notes to table 7.1 for a description.

difference between the two weighted yields is not significant. At least by this measure, there is no evidence that USDIA earnings are unusual or is there any indication that they should not persist. Next, we examine how USDIA and FDUIS yields compare with yields on other US investments.

7.4 Domestic Operations of US Firms

Several studies find that USDIA yields are significantly higher than those of US domestic operations (USIUS), while FDIUS yields are significantly lower (Bosworth, Collins, and Chodorow-Reich 2008; MacGrattan and Prescott 2010). We begin this section with a discussion of alternative measures of USIUS yields, and then move to comparisons of USIUS yields with USDIA and FDIUS yields.

7.4.1 USIUS Yields

Many studies use the yield on tangible assets (YTA) for all US firms as a benchmark for evaluating USDIA and FDIUS yields (Howenstine and Lawson 1991; Bosworth, Collins, and Chodorow-Reich 2008, among others). This measure excludes financial assets and liabilities and their associated interest expenses from the position and income. Compared with YTA,

USDIA yields appear unusually high, while FDIUS yields appear unusually low.

Despite its frequent use, YTA is a weak benchmark for US DI yields because YTA cannot be constructed from the available DI data. The DI income reported in the BOP includes earnings on all assets, including net interest income associated with financial assets, and includes interest payments on intercompany debt paid to the United States (for USDIA) or foreign (for FDIUS) parent. The BEA does not separately report net financial assets and interest expenses of the affiliates—it only reports those associated with intercompany debt—so YTA cannot be constructed for USDIA and FDIUS affiliates. The YTA may differ markedly from a yield measure that includes net financial assets if affiliates have significant borrowing from entities other than the parent firm, which US FDI surveys suggest is indeed the case.[11]

Given this weakness of YTA as a DI yield benchmark, we instead construct a yield that includes net interest payments in earnings and financial assets in the position, and is much closer in spirit to the yield that can be constructed for USDIA and FDIUS affiliates from BEA data. We label this net yield measure USIUS_min. (To maintain comparability with earlier literature we also show YTA, which we label USIUS_max.) The USDIA, FDIUS, and USIUS yields are shown in figure 7.4, and details on the data series used to construct these yields are given in appendix table 7A.2. Consistent with earlier literature, USDIA yields are significantly higher than both FDIUS and USIUS yields, and for much of the sample FDIUS is below USIUS. We reconcile the differences between these yields in the next sections.

7.4.2 USDIA versus USIUS

As we did with ACDIA, our first step is to make sure we are making an apples-to-apples comparison between USDIA and USIUS yields. We then compute the USDIA return from the parent firms' perspective, and estimate the magnitude of other systematic factors that might account for differences between the two yields including tax accounting and compensation for risk and the sunk costs of investing abroad.

After-Tax USDIA Yield

The USDIA earnings reported in the BOP and USIUS earnings reported in the National Income and Product Accounts (NIPA) have different tax treatments. The USDIA earnings in the BOP are net of foreign taxes, but the US taxes paid by US parents on those earnings are not deducted. This

11. The BEA (2006), table III.C.1, reports that current liabilities and long-term debt owed by majority-owned nonbank FDIUS affiliates totaled $2.7 trillion in 2002, of which $719 billion (or 27 percent) was owed to the foreign parent. In contrast, BEA (2008), table III.C.1, reports that current liabilities and long-term debt owed by majority-owned nonbank USDIA affiliates totaled $4.2 trillion in 2004, of which $523 billion (or 12 percent) was owed to the US parent.

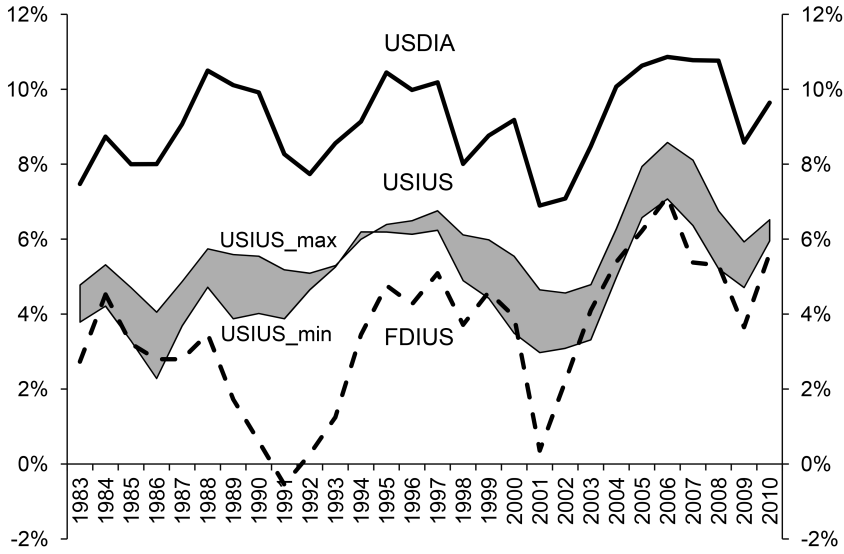

Fig. 7.4 Yields on US direct investment abroad (USDIA), foreign direct investment in the United States (FDIUS), and US investment in the United States (USIUS)

Notes: The USDIA series is the ratio of aggregate DI income receipts to the USDIA position reported by the BEA. The FDIUS series is the ratio of aggregate DI income payments to the FDIUS position reported by the BEA. The USIUS_max yield is the return (excluding interest payments) on tangible US nonfinancial corporate assets excluding USDIA and FDIUS, with tangible assets valued at replacement cost. The USIUS_min yield is the return on all US nonfinancial corporate assets excluding USDIA and FDIUS, with assets valued at replacement cost. The data series used to construct these yields are listed in appendix table 7A.2. Direct investment income does not include current-cost adjustments and positions are valued at current cost.

is because US taxes due on USDIA earnings are paid by the US parent firm, so they are not cross-border transactions. While US parents receive a credit for foreign income taxes paid against their US tax liability, because the US tax rate is generally higher, most US parents still owe some US tax on repatriated earnings even after this credit (Hines 1996). So, as implied in Bridgeman (2008), the USDIA yield computed using unadjusted BOP data generally overstates the after-tax earnings of the US parent firm. In contrast, USIUS and FDIUS earnings are already net of all taxes.[12]

We estimate the US taxes owed on USDIA earnings in two steps. First, we construct an estimate of the USDIA yield net of US taxes associated with earnings repatriated to the US parent firm. We estimate the yearly tax liability on repatriated income using the US tax rates from KPMG (2010),

12. The United States has a "worldwide taxation" policy that taxes income generated by US MNEs regardless of where it is earned. In contrast, most other countries have a policy of "territorial taxation" and only tax income generated by domestic activities. See the section "International Taxation for Beginners" in Hines (1999) for an overview of tax issues.

Table 7.2 Summary statistics for yields, 1983–2010

	Mean (%)	Standard deviation (%)	Sharpe ratio	Chi-squared test: Equal Sharpe ratios	
				USIUS_max	USIUS_min
USDIA, before US taxes	9.1	1.2	3.3	26.9** [0.00]	34.2** [0.00]
USDIA, after US taxes on repatriated earnings	8.3	1.2	2.8	31.5** [0.00]	34.0** [0.00]
USDIA, after US taxes on all earnings	7.3	1.1	2.7	22.4** [0.00]	24.0** [0.00]
USDIA, after US taxes on all earnings and risk	6.4	1.3	1.9	5.6** [0.02]	13.3** [0.00]
USIUS_max	5.8	1.1	1.4	—	—
USIUS_min	4.7	1.3	0.8	—	—
FDIUS	3.5	1.9	0.2	19.0** [0.00]	9.3** [0.00]

Notes: Details of how the yield series were constructed are in appendix table 7A.2. Direct investment income does not include current-cost adjustments and positions are valued at current cost. The Sharpe ratio is the ratio of average returns in excess of the risk-free (Tbill) rate to standard deviation. The last column is chi-squared test statistic for the null hypothesis that the Sharpe ratio is equal to the USIUS Sharpe ratio indicated by the column heading; probability that the null is rejected is shown. Asymptotic *p*-values computed from Newey and West (1987) standard errors are in brackets.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

less a credit for foreign taxes paid if the US tax rate is higher than the foreign tax rate.[13] If the foreign tax rate is higher than the US tax rate, there is no additional US tax liability. Deducting estimated US tax payments from affiliate earnings reduces the USDIA yield by about 80 basis points, shown in table 7.2, from an average of 9.1 percent to 8.3 percent per year. We view this as a lower-bound for the compensation required by US parent firms for the US tax liability associated with USDIA earnings.

In the second step, we adjust the yield for all taxes that will eventually be paid, including taxes on reinvested earnings that are not immediately due. The US parents pay US taxes on foreign affiliate earnings only when

13. Foreign tax rates are inferred from a 2004 benchmark survey (BEA 2008) and earlier surveys. An increasing number of multinational corporations include holding companies as intermediate firms between the parent company and foreign subsidiaries because several jurisdictions offer attractive tax treatment (DFH 2003; Ibarra-Caton 2010, chart A). See figure 1 in DFH (2003) for common ownership structures used by firms located in tax havens. The aggregate foreign tax rate is a relatively low 14 percent because of the large share of intermediate holding companies that almost entirely avoid foreign taxes. In practice, the foreign tax credit may be smaller than our estimate because credits against US taxes are given for only certain types of tax payments (DFH 2004).

those earnings are repatriated, which allows firms to defer a portion of their US tax liability by reinvesting earnings in a foreign affiliate. US MNEs use intricate corporate structures to aggressively funnel earnings to low income tax jurisdictions and defer US taxes on those earnings by reinvesting them abroad.

Although US taxes on reinvested earnings are not paid immediately, the potential US tax liability associated with those earnings is likely an important factor when firms decide whether the earnings potential of a DI investment offers a high enough return. This is because the firm might not be certain, ex ante, of how much they will need to repatriate to support domestic operations. While US firms might obviously prefer to never repatriate affiliate earnings in order to forever delay the additional US tax liability, there is evidence that many firms choose repatriation strategies that are not optimal from a tax perspective.[14] So as an upper bound for the tax-related compensation required by US parent firms, we calculate and subtract from earnings US taxes that would be due had the affiliate repatriated all of its earnings.[15] This reduces the USDIA yield by an additional 100 basis points per year to 7.3 percent (table 7.2), bringing the average adjustment for US taxes to 180 basis points per year. The tax-adjusted yields, plotted in figure 7.5, are much closer to the USIUS yields, particularly during the last decade.

The remaining difference between USDIA and USIUS yields—150 to 260 basis points depending on the USIUS measure—is greater than can be explained solely by earnings volatility. Table 7.2 also reports that the Sharpe (1966) ratio of the after-tax USDIA yield is significantly higher than that of even our upper-bound estimate for USIUS.[16] Some of this remaining difference could be compensation for other risks associated with investing abroad, discussed next.

Risk-Adjusted USDIA Yield

Some of the risks faced by MNEs beyond those faced by domestic-only firms include foreign regulations, foreign tax policy, fluctuations in foreign demand, US tax policy for foreign investments, and dependence on the for-

14. For example, Hines and Hubbard (1990) find that many firms repatriate earnings during the same period in which they inject equity, and that some firms with excess tax credits reinvest earnings. Similarly, DFH (2007) finds that the amount firms repatriate depends on domestic funds available to meet dividend payments to external shareholders and domestic investment needs.

15. US MNEs reinvest a substantial fraction of USDIA earnings—60 percent on average from 1999 to 2009—most of which is reinvested by holding company affiliates (Ibarra-Caton 2010). While 60 percent is the average, Hines and Hubbard (1990) find significant heterogeneity between firms. The 60 percent average excludes reinvested earnings in 2005 because reinvested earnings were large and negative in that year because firms took advantage of temporary reduction in the US tax liability on repatriated earnings contained in the American Jobs Creation Act of 2004.

16. Hung and Mascaro (2004) report a similar result using the USDIA (pretax) and FDIUS yields.

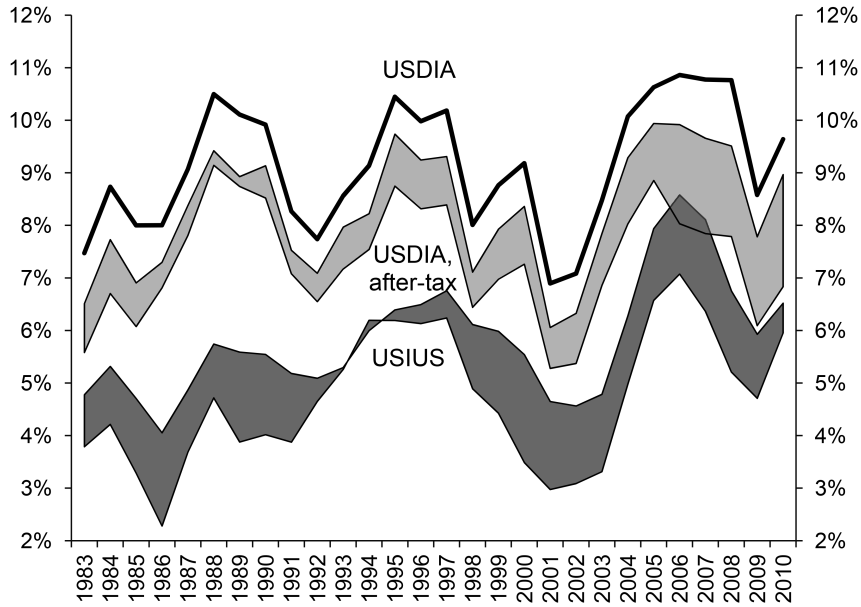

Fig. 7.5 Tax-adjusted USDIA yields

Notes: The USDIA series is the ratio of aggregate DI income receipts to the USDIA position reported by the BEA. The top boundary of the range of after-tax USDIA yields subtracts from income estimated US taxes on repatriated income (reported in the second line of table 7.2), the bottom boundary subtracts from income US taxes on all income (reported in the third line of table 7.2). Direct investment income does not include current-cost adjustments and positions are valued at current cost. The USIUS yields are from figure 7.4.

eign labor and goods markets. So the relatively high yields earned by MNEs likely represent compensation for these additional risks relative to domestic-only firms. Otherwise, as pointed out in Fillat and Garetto (2010), investors would not bother holding the equities of domestic-only firms in equilibrium.

To estimate how much might be required to compensate investors for the additional risks associated with investing abroad we use credit-default swaps (CDS) spreads on sovereign debt when they are available, and corporate debt spreads in earlier years. The CDS are a form of insurance that compensates the holder when the issuer of the underlying bond defaults (i.e., fails to make an interest or principal payment), and are commonly used as a proxy for the amount of compensation required for investors to invest in a country. We calculate the average difference between foreign country and US CDS spreads on sovereign debt, weighted by the share of the USDIA position in each country each year. Because of the extensive use of intermediate firms in low-income-tax and low-sovereign risk jurisdictions—about 36 percent of USDIA in 2010—recent USDIA positions have been shown to be a poor representation of where the activity of foreign affiliates actually occurs

Table 7.3 Sovereign CDS spreads

Country	Average sovereign CDS spread over United States	Share of USDIA position
United Kingdom	12.1	17.8
Netherlands	2.8	10.0
Canada	5.3	9.8
Japan	9.2	4.5
Germany	–0.7	4.4
France	4.7	3.5
Brazil	216.5	3.1
Mexico	104.2	3.1
Australia	7.8	2.9
Panama	162.6	2.8
Ireland	65.1	2.1
Hong Kong	17.7	1.9
Belgium	15.9	1.8
Singapore	4.7	1.7
Spain	35.9	1.6
Other	288.4	13.4
Total:		84.4
Weighted avg. of 49 countries:	70.4	

Note: Each value is the average difference between the CDS spreads on five-year sovereign debt and the CDS spread on five-year US Treasuries in basis points from 2004–2010. The CDS spreads are from Markit. Share is of 1999 USDIA position calculated from BEA data.

(Borga and Mataloni 2001). So we construct weights based on the positions in 1999, when the use of intermediate holding companies was more limited (about 7 percent of USDIA).

The average difference between US and foreign sovereign CDS spreads, our proxy for compensation for sovereign risk, averaged 70.4 basis points per year between 2004 and 2010 (table 7.3).[17] For earlier years when US and other CDS spreads are unavailable, we follow Hung and Mascaro (2004) and use the spread between the yields on Aaa- and Baa-rated corporate debt published by Moody's as a proxy for risk compensation.[18] For these earlier years, the weighted risk adjustment averages 98 basis points. Putting the two risk adjustments together, the estimated compensation for risk over the entire sample averages 91 basis points per year.

After adjustments for taxes and risk, the estimated yield on USDIA falls

17. The weighted spread is about 45 basis points using 2003 or 2009 weights.

18. Hung and Mascaro (2004) estimated that 11 percent of USIDA was invested in AAA-rated Canada, 17 percent in BB-rated Latin American countries, 50 percent in AA-rated European countries, and the weighted-average rating estimate for all countries was BBB, using Standard & Poor's ratings and the 2003 positions. We follow Hung and Mascaro and use the difference between Aaa and Baa corporate debt yields as an estimate of the additional risk of USDIA.

to 6.4 percent per year (table 7.2). The total compensation for taxes and risk averages 270 basis points per year, which is the bulk of the 330–440 basis point difference per year between unadjusted USDIA and USIUS yields. The remaining difference might represent compensation for the sunk costs of investing abroad, discussed next.

Sunk Costs of USDIA

The remaining difference between USDIA (after-tax) and USUIS yields averages between 60 and 170 basis points per year over the entire sample (table 7.2), and all but 50 basis points of the difference since 2004. Other literature suggests that foreign investments should also include compensation for sunk costs specific to investing in a foreign country. For example, in the models of Helpman, Melitz, and Yeaple (2004) and Fillat and Garretto (2010), FDI investments are subject to sunk costs beyond those encountered domestically. Fillat and Garetto (2010) estimate that compensation for these sunk costs adds 25 percent to MNE yields relative to the yields of domestic-only exporters. This translates to 120–145 basis points based on our USIUS estimates, roughly equal to the difference that remains between USDIA and USIUS yields after we adjust for taxes and risk. In sum, we estimate that compensation for taxes, risk, and sunk costs accounts for around 400 basis points of the 9.1 percent yield on USDIA. Now that we have reconciled the difference between USDIA and USIUS yields, we turn to FDIUS yields.

7.4.3 FDIUS versus USIUS

Existing literature reports that the yield on FDIUS has been low relative to YTA (USIUS_max in figure 7.4), and for much of the sample FDIUS also underperformed the net US yield (USIUS_min). This underperformance was striking in the early 1990s and early in the twenty-first century—totaling almost 600 basis points in 1991 and averaging over 300 basis points per year between 1988 and 2002. However, figure 7.4 shows that since 2002 the gap has closed considerably, suggesting a permanent change has affected the relative profitability of FDIUS.

One potential explanation for the comparatively low yield earned by FDIUS affiliates is their age. Several studies suggest that the relative youth of FDIUS affiliates has played a role in their low profitability relative to other US firms (Lupo, Gilbert, and Liliestedt 1978; Landefeld, Lawson, and Weinberg 1992; Grubert, Goodspeed, and Swenson 1993; Laster and McCauley 1994; Grubert 1997; Mataloni 2000). Younger firms may underperform more experienced firms because of inexperience, startup costs, or interest expenses on debt used to fund acquisitions.

To see how age affects FDIUS yields we construct several proxies for affiliate age using the equation:

$$AGE_t = \frac{\sum_{i=1}^{T} \omega^{i-1} \times AGEVAR_{t-i}}{FDIUS\_Position_t}, \quad (1)$$

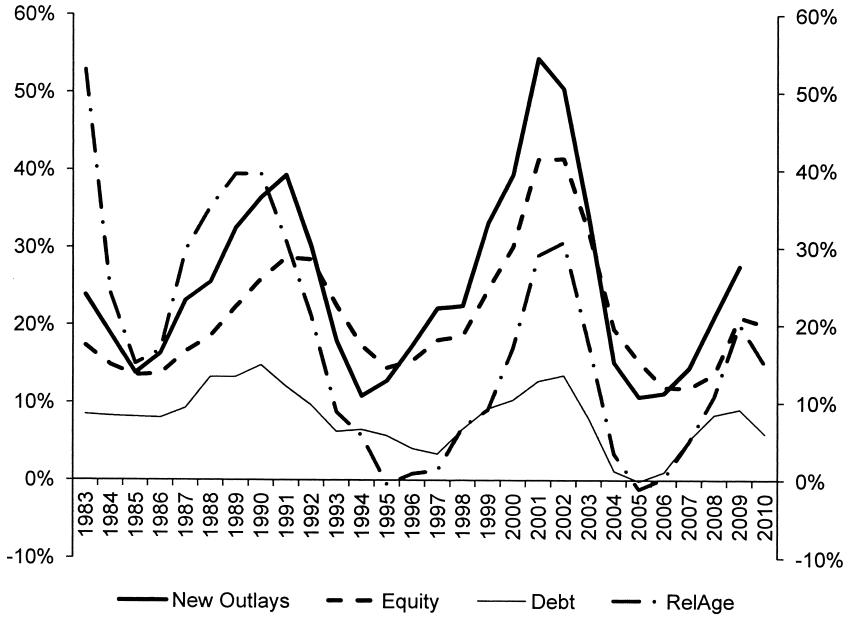

Fig. 7.6 Age of FDIUS affiliates

Notes: The chart shows several alternative proxies for the age of FDIUS given by:

$$AGE_t = \frac{\sum_{i=1}^{T} \omega^{i-1} \times AGEVAR_{t-i}}{FDIUS\_Position_t},$$

for $\omega = 1.0$, $T = 3$; *AGEVAR* is new outlays (http://www.bea.gov/international/xls/io_ind_0508.xls), gross debt flows (BOP table 7a line 96 or 7b line 61), equity flows (BOP table 7a line 92 or 7b line 57), or relative age (the difference between the annual growth rate of the FDIUS and USIUS_min. positions; see table 7A.2 for definitions). RelAge is not scaled by the FDIUS position when AGE_t is constructed.

where *AGE* represents the "newness" of the FDIUS investment; specifically, the share of FDIUS that has occurred in the last T years. We use several types of investment in *AGEVAR*, including outlays to acquire or establish new FDIUS, increases in US affiliates' intercompany debt payables, and increases in parent equity. We also construct a measure of the relative age of FDIUS and USIUS using the differential between the growth rates of the respective positions. The weight variable ω (≤ 1) represents effects such as learning, which decay the importance of new investment over time. We sum weighted investment over T prior years and scale by the FDIUS position. Estimates for *AGE*, shown in figure 7.6, suggest that there have been three waves of new FDIUS investment during the last thirty years; 1987–1990, 1998–2001, and to a lesser extent 2008–2010. Glancing back at figure 7.4, it is apparent that FDIUS underperformed USIUS during these three investment waves, suggesting that affiliate age does depress the FDIUS yield.

To more precisely measure the relationship between *AGE* and FDIUS yields we regress FDIUS yields on USIUS yields and *AGE* from equation (1):

$$FDIUS_t = \alpha + \beta \times AGE_t + \gamma \times USIUS_t. \quad (2)$$

A significant and negative β will confirm results from earlier studies that the underperformance is linked to firm age. The regressions results, presented in table 7.4, suggest that FDIUS performance is indeed related to new investment by foreign parents as β is negative and significant in every specification. The adjusted-R^2 values are quite high, ranging between 41 percent and 74 percent. New intercompany debt has the most explanatory power, suggesting that debt service costs play a large role, likely in the form of higher outside borrowing costs. The age effect subtracts 150 basis points on average from FDIUS (based on the first specification in table 7.4), and in the absence of age effects the FDIUS yield increases to 5 percent—higher than USIUS_min, which averages 4.7 percent (table 7.2). An FDIUS esti-

Table 7.4 FDIUS age regressions

USIUS	AGEVAR	ω	*T*	α	β	γ	Adj. R^2
USIUS_min.	Outlay	1.0	3	2.61**	–6.47**	0.52**	0.41
				(0.88)	(2.76)	(0.18)	
USIUS_min.	Debt	1.0	3	4.69**	–30.73**	0.27	0.54
				(1.23)	(7.13)	(0.21)	
USIUS_min.	Equity	1.0	3	2.33**	–8.71*	0.64**	0.43
				(1.15)	(4.83)	(0.19)	
USIUS_max.	Debt	1.0	3	1.18	–23.37**	0.72**	0.62
				(1.75)	(6.08)	(0.22)	
USIUS_min.	Debt	1.0	5	7.27**	–34.84**	0.09	0.74
				(1.37)	(6.14)	(0.16)	
USIUS_min.	Debt	0.7	5	5.75**	–44.98**	0.20	0.61
				(1.55)	(11.57)	(0.21)	
USIUS_min.	RelAge	1.0	3	2.07**	–5.73**	0.52**	0.44
				(0.98)	(2.48)	(0.19)	

Notes: This table shows coefficient estimates from the regression:

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

where:

$$AGE_t = \frac{\sum_{i=1}^{T} \omega^{i-1} \times AGEVAR_{t-i}}{FDIUS\_Position_t}$$

The USIUS variable is either USIUS_max or USIUS_min from table 7A.2. The AGEVAR is either new outlays (http://www.bea.gov/international/xls/io_ind_0508.xls), gross debt flows (BOP table 7a line 96 or 7b line 61), equity flows (BOP table 7a line 92 or 7b line 57), or the difference between the annual growth rate of the FDIUS and USIUS_min. positions (table 7A.2). RelAge is not scaled by the FDIUS position when AGE_t is constructed. Newey and West (1987) standard errors are in parentheses. Estimation period is 1983–2009 for regressions that include the outlay variable; 1983–2010 for all other regressions.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

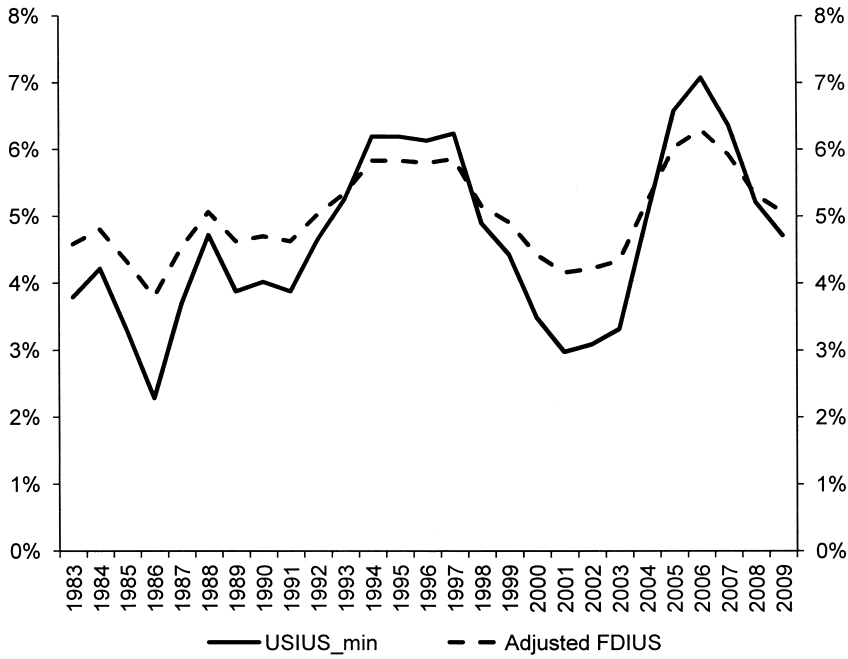

Fig. 7.7 US domestic yields (USIUS) and foreign direct investment in the United States (FDIUS) adjusted for age effects

Note: The dashed line is the FDIUS yield predicted by the regression in the first line of table 7.4, with the contribution of age removed. The USIUS_min yield is the return on all US nonfinancial corporate assets excluding USDIA and FDIUS with assets valued at replacement cost.

mate where the effects of age have been removed, plotted in figure 7.7, closely tracks USIUS_min, even during new investment waves.

This evidence confirms the results of previous studies that concluded that age was an important factor in the comparatively poor performance of FDIUS. However, since 2002 FDIUS affiliates have matured and there is little underperformance. So far we have accounted for most of the difference between FDIUS and USIUS, in addition to accounting for most of the difference between USDIA and USIUS. We end this section with a discussion of the difference between USDIA and FDIUS.

7.5 USDIA versus FDIUS

To recap, we estimate that compensation for taxes, risk, and sunk costs can account for as much as 400 basis points of the 9.1 percent average USDIA yield (table 7.2), and that age subtracts 150 basis points from the FDIUS yield, which averages 3.5 percent (tables 7.2 and 7.4). Taken together, these

adjustments account for just about all of the 560 basis point difference between USDIA and FDIUS.

Although evidence on the existence of transfer-pricing effects is mixed, the results of one paper suggest transfer pricing might add further to the wedge between USDIA and FDIUS yields. Bernard, Jensen, and Schott (2006) find that the prices of US exports to related firms in 2004 were systematically lower than those to unrelated firms, while the prices of US imports from related firms were systematically higher. This mispricing will have a downward effect on the earnings of firms located in the United States and an upward effect on the earnings of related firms located abroad. Unfortunately, firm nationality is not reported in the customs data used in that study so a direct link to USDIA or FDIUS earnings cannot be made. However, if half the $15.7 billion mispricing identified by the authors is attributed to USDIA and the other half to FDIUS, that would account for 80 basis points of the 480 basis point difference between USDIA and FDIUS yields in 2004.[19] So while transfer pricing effects play a role in the DI yield differential, their effect is less than that of taxes or sunk costs.

Looking ahead, we can say a few things about how much of the difference between USDIA and FDIUS we expect to persist. The performance of FDIUS affiliates has caught up to other US firms in recent years, probably because the capital stock has reached a comparable maturity level. So we suspect that FDIUS affiliates will continue to earn about the same yields as USIUS firms, or even outperform because of the tendency of only the most productive firms to engage in FDI. Further, we do not have a reason to expect the yield of USDIA affiliates to decline—absent a change in US tax laws or the perception of the relative risk of investing in the United States versus abroad. Taken together, this suggests that the difference between USDIA and FDIUS yields might remain near or slightly below the 2010 difference of 400 basis points. How this yield difference will translate into net income will depend on the relative amount of capital flows into USDIA and FDIUS affiliates and other changes in the values of the positions.

7.6 Conclusion

In this chapter we showed that compensation for taxes, risk, sunk costs, and age account for just about all of the difference between USDIA and FDIUS yields, which is behind the puzzling behavior of the US net income. Unless there is a change in the underlying factors driving the difference—the perception of investment in the United States as relatively safe and the relatively high US tax rate—we expect the difference to remain near or slightly

19. Bernard, Jensen, and Schott (2006) estimate that US exports to related parties in 2004 were underreported by $1.9 billion, while US imports to related parties were overreported by $13.8 billion, for a total of $15.7 billion.

below the 400 basis points recorded in 2010. Therefore the United States will continue to, on net, earn income on the net liability position, which, in turn, will continue to provide a stabilizing force for the US current-account deficit.

Our results provide evidence against misreporting of USDIA earnings (Gros 2006), or that the United States is earning abnormally high returns because of the role of the dollar as an international reserve currency (Gourinchas and Rey 2007). In sum, we agree with Bosworth, Collins, and Chodorow-Reich (2008) that the large difference between USDIA and FDIUS yields is not "an illusion of bad data."

This study suggests several areas of future research. One obvious extension is to verify all of our results using the firm-level data available on-site at the BEA, as the existence of significant heterogeneity in the underlying firm data might result in different conclusions. Our results have implications for the sustainability of the US current-account deficit, so it would be interesting to see how they change the predictions of sustainability models such as those presented in Kitchen (2007) or Gourinchas and Rey (2007). Finally, our results can also inform policy discussions on the potential effect of changes in the taxation of MNEs.

Appendix

ACDIA for an Expanded Selection of Countries

In table 7A.1 we extend our comparison of USDIA and ACDIA yields to include countries that do not fully apply the COPC to earnings. These countries either include capital gains and losses in direct investment income, which could either overstate or understate the ACDIA yield, or exclude some reinvested earnings or interest on intercompany debt, which would tend to understate the ACDIA yield. The USDIA yield for these countries averages 8.3 percent per year, lower than the 9.1 percent per year reported in table 7.2. This is because yields in countries for which IMF BOP data are not available, such as Bermuda or the Cayman Islands, have a higher yield than the reported countries.

For this less comparable sample the USDIA yield averages only 0.3 higher per year than the ACDIA yield and the difference is not statistically significant. Therefore our conclusion remains unchanged—US investors earn about the same yields on their USDIA as investors from other countries earn on their FDI.

Table 7A.1 **US direct investment abroad (USDIA) and all countries direct investment abroad (ACDIA) yields for selected countries**

Country	USDIA	ACDIA	Difference	Share of position	Data available
A. ACDIA income includes capital gains and losses					
Austria	11.7	8.4	3.3**	0.4	1983–2010
Belgium	5.3	4.5	0.8	1.9	2002–2010
Chile	11.6	12.4	–0.8	0.7	1998–2010
Norway	26.0	12.7	13.3**	0.9	1999–2009
Russia	12.6	10.8	1.8	0.3	2000–2010
Switzerland	11.2	5.8	5.4**	3.7	1984–2010
B. ACDIA is missing intercompany debt payments and/or reinvested earnings					
France	5.7	5.0	0.8	2.4	2000–2009
Germany	7.3	7.1	0.1	2.7	1983–2010
Japan	8.1	9.2	–1.1	2.9	1991–2010
Mexico	9.3	3.6	5.7**	2.3	2002–2010
Netherlands	12.0	8.0	4.0**	13.3	1983–2010
Spain	9.7	5.2	4.5**	1.5	1983–2010
Weighted average yields for 20 countries in table 7.1 and panels A and B above:					
	8.3	7.9	0.3	64.1	

Notes: All values are average percentages over the sample period; share is of 2010 USDIA position. Sample includes countries that do not fully apply the current operating performance concept to direct investment income reporting. See notes to table 7.1 for a description of the USDIA yields. The ACDIA yield is the ratio of total direct investment income payments reported by the IMF's BOP statistics to the liabilities position with two exceptions: DeNederlandsche Bank data that includes special financial institutions are used for the Netherlands starting in 2000, and returns for France are from Banque de France report (http://www.banque-france.fr/gb/stat_conjoncture/telechar/bdp/FDI-overview-1999–2009.pdf). The last line of the table presents returns weighted by the historical cost share of USDIA investment in each country each year.

**Significant at the 5 percent level.

*Significant at the 10 percent level.

Table 7A.2 Yield definitions

	Variable name	Description	Source
1	USDIA	Yield on US direct investment abroad	[BOP table 7a, 7b line 10]/[IIP table line 18]
2	FDIUS	Yield on foreign direct investment in the United States	–[BOP table 7a line 75 or 7b line 51]/[IIP table line 35]
3	USIUS_max	Yield on tangible assets	[NIPA 1.14 line 38 + NIPA 1.14 line 25 – (FOF F.7 line 14 – FOF F.7 line 19)]/[FOF B.102 line 2 – FOF B.102 line 3 + FOF B.102 line 33 + FOF B.102 line 34]
4	USIUS_min	Yield on net assets	[NIPA 1.14 line 38 + (BOP table 7a line 80 – BOP Table 7a line 83) – (FOF F.7 line 14 – FOF F.7 line 19)]/ [FOF B.102 line 32 – FOF B.102 line 3 + FOF B.102 line 33 + FOF B.102 line 34 –FOF L.102 line 17]

Notes: FOF = flow of funds; BOP = balance of payments; NIPA = National Income and Product Accounts.

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