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Return on Cross-Border Investment: Why Does U.S. Investment Abroad Do Better?

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Abstract

Despite the large size of U.S. net financial obligations to foreigners, U. S. residents have continued to earn more income on their assets abroad than foreigners have on their assets in the United States. In other words, the rate of return on U.S.-owned assets abroad is still higher than the rate of return on foreign-owned assets in the United States. The advantageous return gap for U.S. investment has reflected the much greater return on U.S. direct investments abroad than that on foreign direct investments in the United States.

We investigate the validity of three major hypothesis advanced to explain the persistent return gap that has been so advantageous to U.S. direct investments: (1) the risk-compensating hypothesis, which claims that U.S. direct investments abroad are riskier than foreign direct investments in the United States and therefore command a higher return to compensate for their higher risks; (2) the age-effect hypothesis, which claims that foreign-owned companies in the United States are temporarily less profitable than U.S.-owned companies abroad because they are relatively new and it takes time for new investment to turn a profit; and (3) the profit-shifting hypothesis, which maintains that the return gap is the net result of multinational companies' shifting profits through transfer pricing schemes to minimize their overall tax cost.

We find that evidence in support of the age-effect hypothesis is the strongest, followed by that for the risk-compensating hypothesis. There is no clear evidence that, on balance, profit-shifting activities by multinational companies contributed significantly to the return gap in favor of outward direct investment. Our findings suggest that the extent to which the (reported) return gap will remain favorable to the United States in the future largely depends on the net result of two opposing developments. First, the age effect suggests that foreign-controlled companies' profitability should improve over time, unless the positive age effect is dominated by the negative effect arising from new flows of inward direct investment. Second, as foreign subsidiaries become more profitable over time, they also are likely to become more active in profit-shifting practices, thereby depressing the reported profits of those companies.

1. Introduction

When the United States runs a current account deficit, its residents spend more than they earn. To pay for that extra spending, the nation must borrow from foreigners or sell them some assets. That is, Americans have to reduce their holdings of assets abroad or allow foreigners to increase their holdings of assets in the United States. (U.S. holdings of assets abroad consist of portfolio investment assets—such as stocks and bonds, bank loans and deposits, and government securities—and direct investment assets. Foreign holdings of U.S. assets have analogous components.[1]) Years of running persistent current-account deficits have caused a more rapid accumulation of foreign-owned assets in the United States than of U.S.-owned assets abroad (Figure 1). The net international investment position of the United States—the difference between U.S.-owned assets abroad and foreign-owned assets in this country—turned negative in 1987; by the end of 2003, that position dropped to -24 percent of GDP.[2]

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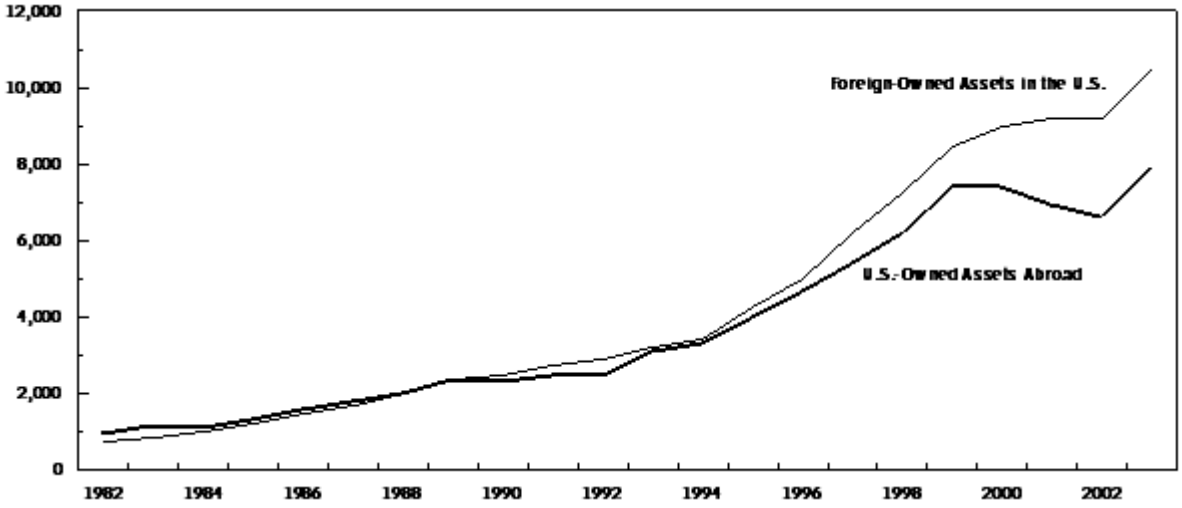
[1] The Bureau of Economic Analysis (BEA) measures U.S.-owned assets abroad as the sum of portfolio investment assets and direct investment assets. BEA defines direct investment assets as U.S. investors' ownership of foreign business which equals or exceeds 10 percent of the value of that business. Foreign-owned assets in the United States follow analogous conventions. For further details see, "The Balance of Payments of the United States: Concepts, Data Sources, and Estimating Procedures," Bureau of Economic Analysis (May 1990).

[2] BEA measures the value of U.S. and foreign direct investment by two methods: the current-cost method and the market-value method. The current-cost method measures direct investment assets and liabilities by their current replacement costs, while the market-value method measures direct investment at the current stock-market value of owners' equity. (All non-banking assets s are reported at their market values, and banking assets at their book values.) At the end of 2003, the U.S. net international investment position amounted to -22.1 percent of GDP based on the current-cost method and -24.1 percent based on the market-value method. For a recent exposition of the relationship between the current account deficit and net international investment position, see Congressional Budget Office (2004).

Figure 1. International Investment Position of the United States: U.S.-owned Assets Abroad versus Foreign–owned Assets in the U.S., 1982-2003 ($ billions)

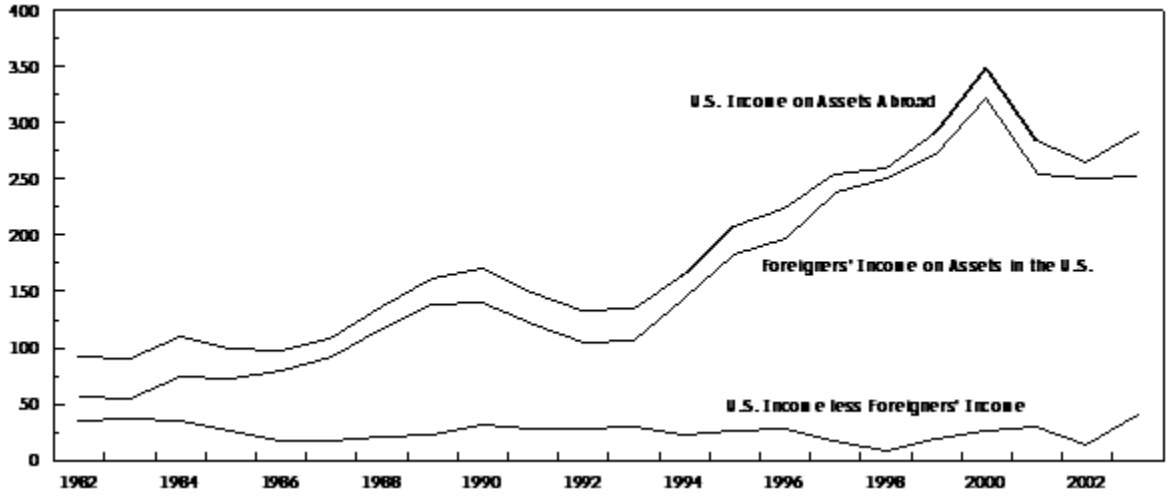


Despite the large U.S. net financial obligations to foreigners, according to data reported by the Bureau of Economic Analysis (BEA), U.S. residents have persistently earned more investment income on their assets abroad than foreigners have earned on their assets in the United States (Figure 2).[3] In other words, the rate of return on U.S.-owned assets abroad (the ratio of investment income to assets) has been higher than the rate of return on foreign-owned assets in the United States. (For more discussion of the measurement of the rate of return on international assets, see the Appendix.) The rate of return on U.S.-owned assets averaged 5.82 percent per year from 1982 to 2003, while that on foreign-owned assets averaged 4.59 percent over the same period (Figure 3). The corresponding positive net investment income has meant a

[3] U.S. international investment income consists of (1) dividends and interest income on portfolio investment; and (2) direct investment income which is the sum of distributed earnings (dividends), reinvested earnings, and net interest receipts between U.S. parent companies and their foreign affiliates. Investment income earned by foreigners on their assets in the United States follows analogous conventions.

higher level of national income for U.S. residents than otherwise. In 2003, for example, this net income flow added $55 billion, or 0.6 percentage points, to national income.

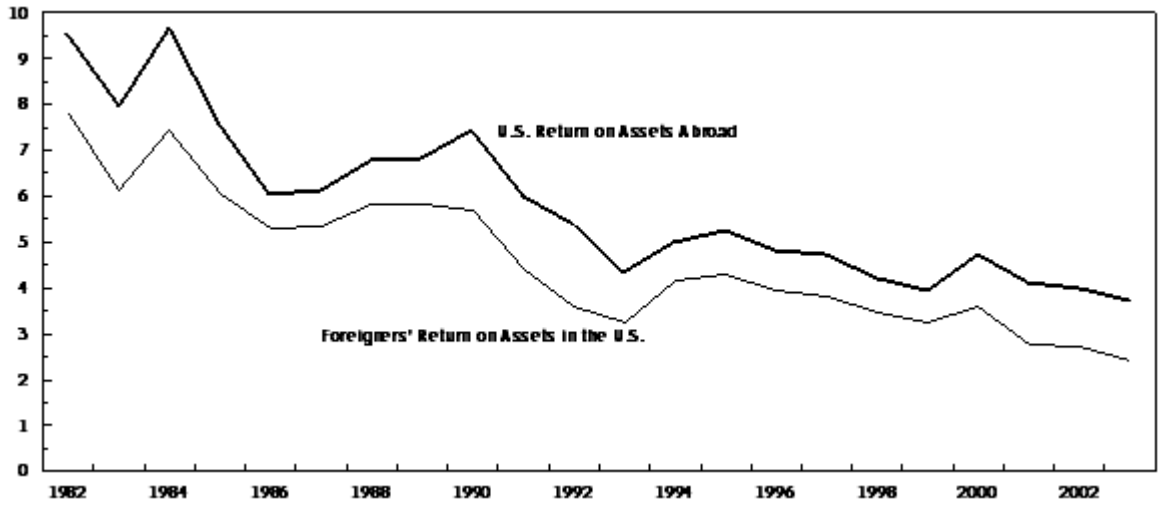
Figure 2. U.S. Income on Assets Abroad versus Foreign Income on Assets in the U.S., 1982-2003 ($ billions)



What has caused the positive gap between the returns on U.S.-owned assets abroad and foreign-owned assets in the United States? That positive gap has stayed relatively constant, even though both returns have been on a downward trend (Figure 3).[4] Is the persistent return gap to be believed, or does it somehow reflect measurement error? If it is true, how long can it continue to favor U.S. investment abroad? Answers to these questions will have significant bearings on the implications of growing U.S. external indebtedness for national income and the sustainability of the current account deficit.

[4] These rates of return are not adjusted for inflation (see the Appendix). The trend decline in the return on both inward and outward investments thus may merely reflect the decline in price inflation both in the United States and abroad during the 1982-2003 period.

Figure 3. U.S. Return on Assets Abroad versus Foreign Return on Assets in the U.S., 1982-2003 (percent)



The answer to the puzzle appears to lie in both the compositions of cross-border assets as well as the large difference in the returns on cross-border direct investment assets. U.S.-owned assets abroad are concentrated most heavily in direct investment assets (DIA), which earn a return rate that is not only much higher than returns on other components of U.S.-owned assets abroad, but also much higher than the return on inward DIA (i.e., foreign-owned DIA in the United States). The rate of return on outward DIA (i.e., U.S.-owned DIA abroad) averaged 6.5 percent from 2001 to 2003, contributing 2.2 percentage points to the 3.9 percentage-point return on overall U.S.-owned assets abroad. In comparison, return on inward DIA averaged 1.9 percent over the same period, contributing 0.4 percentage points to the 2.7 percentage-point return on overall foreign-owned assets in the United States. Overall, the return gap between outward and inward portfolio investments was slightly unfavorable to the United States.[5]

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[5] U.S.-owned stocks and bonds abroad earned a larger rate of return than foreign-owned stocks and bonds in the United States. However, the return on foreign-owned U.S. government securities, which consist of both Treasury securities as well as riskier securities issued by government-sponsored enterprises such as

Table 1. Average Rates of Return on U.S.-owned Assets Abroad and Foreign-owned Assets in the United States, 2001-2003 (percent)

	Rate of Return	Share of Assets	Contribution to Total Return
U.S. Assets Abroad	**3.9**	**100.0**	**3.9**
Direct Investment Assets	**6.5**	**34.2**	**2.2**
Portfolio Assets	2.6	65.8	1.7
Stocks	2.4	23.7	0.6
Bonds	4.8	7.3	0.4
Bank claims	1.8	23.1	0.4
Other	3.2	11.6	0.4
Foreign Assets in U.S.	**2.7**	**100.0**	**2.7**
Direct Investment Assets	**1.9**	**25.1**	**0.4**
Portfolio Assets	3.0	74.9	2.3
Government/Agency Securities [(a)]	5.5	15.5	0.8
Private Securities			
Stocks	1.6	15.0	0.2
Bonds [(b)]	3.5	18.3	0.6
Claims on banks	1.7	18.4	0.3
Other	3.6	7.8	0.3

Sources: (1) "U.S. International Transactions, 2003," by Christopher Bach, Survey of Current Business, April 2004. Bureau of Economic Analysis. (2) "Table 2. International Investment Position of the United States at Yearend,1976-2003," from BEA website at http://www.bea.doc.gov/bea/di/intinv03_t2.xls.

Notes: (a) About half foreign-owned U.S. government securities (from 2001 to 2003) are in U.S. Treasury securities, with the remaining half in securities issued by government agencies and government-sponsored enterprises. (b) Bonds include foreign governments' holdings of U.S. corporate bonds and stocks. The BEA does not separate foreign government's holdings of U.S. corporate stocks from their holdings of corporate bonds. The dollar value of foreign governments' holdings of bonds and stocks averaged about 7% of private foreigners' holdings of U.S. corporate bonds from 2001 to 2003.

Fannie Mae, was higher than even that on U.S.-owned stocks and bonds abroad. The puzzling observation that return on U.S. government securities was higher than that on U.S.-owned bonds and stocks abroad could be also partially attributable to measurement issues noted in the next section and in the Appendix.

Clearly, the large gap between returns on outward and inward direct investments and the large share of outward direct investment assets are responsible for the favorable return gap between overall outward and inward investments. This observation, however, begs the question of why this positive return gap has been so large and persistent. Among the various hypotheses advanced to explain the persistent and positive return gap between outward and inward FDI assets, three are cited most frequently in public discussion. The first is the risk-compensating hypothesis, which claims that outward direct investment is riskier than inward investment and therefore should command a higher return to compensate for its higher risk. The second is the age-effect hypothesis, which claims that foreign-owned companies in the United States are temporarily less profitable than U.S.-owned companies abroad because they are relative newcomers and it takes time for new investment to turn a profit. The third is the profit-shifting hypothesis, which maintains that the return gap is the net result of multinational companies' shifting income through transfer pricing schemes to minimize their overall tax cost.

This paper focuses on examining the evidence for these three hypothesis not only because they are most often-cited, but also because they have more lasting implications for forecasting reported net-investment income flows than other hypothesis.[6] We find that evidence in support of the age-effect hypothesis is strongest, followed by that for the risk-compensating hypothesis. There is no clear evidence that the profit-shifting hypothesis contributed significantly to the

[6] Other theories that have been advanced include (1) foreign-owned companies' low profitability in part stems from their access to a lower cost of capital unavailable to U.S. firms, (2) inward FDI is concentrated in industries that have low or negative profits, and (3) foreign owned companies have tended to incur heavy debt burdens (and associated interest expenses) when they acquired or established other U.S. business. These theories seem unlikely to explain the persistence of the return gap exhibited in the data, even if they have some validity for a period of time.

return gap in favor of outward direct investment. Based on our calculations of various measures of risks attending outward and inward DIA, we find that the risk associated with outward DIA could be higher than that with inward DIA by enough to account for one-third of the gap, leaving two-thirds of the return gap unexplained. Nearly all studies that we surveyed find evidence that newly acquired or established companies tend to have losses or low profits (mainly because of high start-up costs) initially, but their profitability improves as they "mature" over time. This finding suggests that the age-effect hypothesis can help close the unexplained return gap to some extent, if not fully. Regarding the profit-shifting hypothesis, there is only weak and indirect evidence that foreign-controlled companies have been shifting profits abroad, while the evidence is somewhat stronger that U.S.-controlled companies' have used transfer-pricing schemes to shift profits both out of and into the United States. On balance, there is no decisive evidence that the net effect of profit-shifting activities is a major reason for the return gap favoring U.S. outward direct investment.

Our findings suggest that whether, and to what extent, the reported return gap remains favorable to the United States in the future mostly will depend on two opposing developments. First, the age-effect hypothesis suggests that the profitability of foreign-controlled companies eventually should improve, narrow the favorable gap and possibly even reverse it.[7] Second, the profit-shifting hypothesis suggests that foreign affiliates in the United States may also become increasingly more active in understating profits through transfer pricing as they become more profitable. If profit-shifting by multinationals is the main reason that reported U.S. net

[7] It is possible, of course, that a rapid influx of new inward direct investments could, for a time, bring down the average rate of return as their initial loss or low profitability offset the profits of " older" foreign-owned companies.

investment income stays positive, however, the net "gain" in investment income through this channel will come at the cost of a net "decrease " in the reported trade balance (by raising reported imports or lowering reported exports), leaving little net impact on the current account.

2. The Return Advantage Comes from Direct Investment, Not from Portfolio Investment

The return gap favoring U.S. assets abroad has mainly reflected the greater return on outward DIA relative to the return on inward DIA (see Figures 3 and 4, and Tables 1 and 2). On average, from 1982 to 2003, the difference in portfolio returns favored foreign investment in the United States by about 30 basis points (4.98 percent vs. 5.31 percent). For direct investment, however, the difference favored outward assets by about 550 basis points (7.64 percent vs. 2.09 percent). For combined portfolio and direct investment assets, the difference favored U.S.-owned assets by about 120 basis points (5.82 percent vs. 4.59 percent), reflecting the fact that the share of DIA in all outward assets has been greater than that in total inward assets (Figure 5).

Figure 4. U.S. Return on Direct Investment Abroad vs. Foreign Return on Direct Investment in the U.S., 1982-2003 (percent)

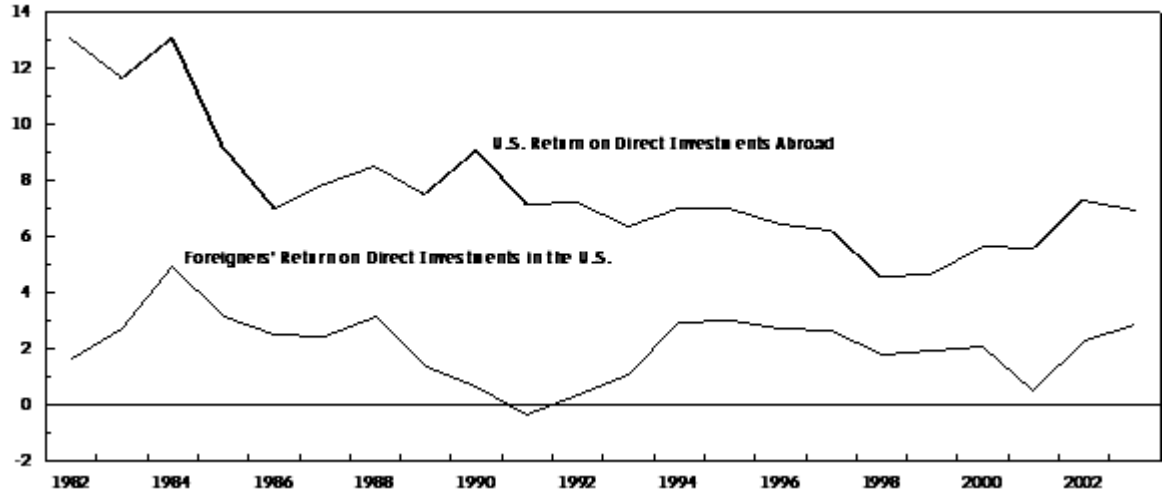
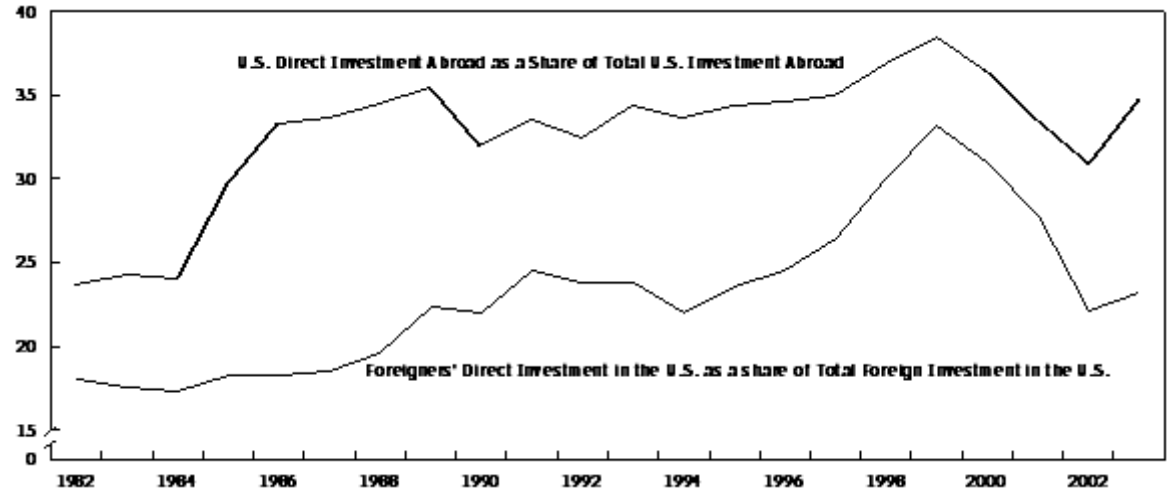


Table 2. Statistics on Returns, U.S. Investments Abroad and Foreign Investments in the U.S.

	1982-2003	1982-1992	1993-2003
U.S. Return: Total	5.82%	7.20%	4.43%
Portfolio Investment	4.98%	6.41%	3.56%
Direct Investment	7.64%	9.16%	6.11%
Foreigners' Return: Total	4.59%	5.76%	3.42%
Portfolio Investment	5.31%	6.72%	3.90%
Direct Investment	2.09%	2.03%	2.15%
Difference in Returns: Total	1.22%	1.44%	1.01%
Portfolio Investment	-0.32%	-0.31%	-0.34%
Direct Investment	5.55%	7.13%	3.97%
	Variability of Returns (Standard Deviation)		
U.S. Variability: Total	1.76%	1.42%	0.49%
Portfolio Investment	1.78%	1.29%	0.72%
Direct Investment	2.33%	2.32%	0.92%
Foreigners' Variability: Total	1.51%	1.19%	0.61%
Portfolio Investment	1.73%	1.18%	0.73%
Direct Investment	1.18%	1.50%	0.81%
	Correlation of U.S. and Foreign Returns		
Total Return	0.975	0.942	0.940
Portfolio Investment	0.984	0.943	0.978
Direct Investment	0.355	0.530	0.522

Source: CBO calculations based of data from Bureau of Economic Analysis

Figure 5. Shares of Direct Investment Assets in Total Outward Assets and in Total Inward Assets, 1982-2003 (percent)



Why is the return gap so advantageous to the U.S. for outward direct investment but not for outward portfolio investment? One possible explanation is that investors can shift portfolio investments more easily across countries in response to changes in expected returns than they shift direct investments. Thus, any return gap between outward and inward portfolio assets will likely be exploited more rapidly than that between direct investment assets, lowering the measured return gap between portfolio assets relative to that between direct investment assets.

Another possible factor in the explanation is simply that the return on international portfolio assets measured by the BEA data, which is a measure of return on assets (ROA), is a distorted indicator of the rate of return referred to conventionally (see the Appendix). The former uses interest and dividend incomes as the numerator and the market value of the assets as the denominator.[8] In contrast, the later uses the sum of capital gains and interest and dividend incomes as the numerator, and the purchase value of the assets as the denominator. Thus, a sustained rise in stock prices, which boosts the denominator but not the numerator of ROA, has a potentially perverse effect of depressing the ROA. (A sustained rise in bond prices would have the similar result by boosting the denominator but not the numerator because the latter is fixed income tied to the coupon rates of those bonds.) Moreover, this depressive effect is stronger, the higher is the share of stocks in the portfolio or the faster stock prices rise. Equities represented a much greater share of outward portfolio assets than of inward portfolio assets after 1989. Thus, the general upward trend in stock prices in the United States and abroad in the 1990s is likely to have a greater depressive effect on ROA of outward portfolio assets than that of inward portfolio

[8] BEA only reports market value of portfolio investment positions, and excludes capital gains in its measure of portfolio investment income.

assets during that period, helping to explain why ROA on outward portfolio investment is slightly lower than that on inward investment despite the common perception that outward portfolio investment is riskier.

Finally, the significant difference between the return gap in direct-investment assets and that in portfolio assets is likely to be caused, to a significant extent, by factors responsible for suppressing earnings of foreign-controlled companies in the United States relative to earnings of U.S.-controlled companies abroad. The question is, of course, what are the factors that have suppressed earnings of foreign-controlled companies here? We now turn to addressing that question.

3. Why Is the Rate of Return Gap Favoring Outward Direct Investment?

Among the hypotheses proposed to explain the persistent and large return gap favoring U.S. direct investment abroad, three have received most attention. The risk-compensating hypothesis, which takes BEA's data at face value, sees the higher return abroad as reflecting the greater riskiness of outward direct investment relative to that of inward direct investment. The age-effect hypothesis, which also takes data at face value, maintains that it takes time for foreigners to learn to manage their new direct investments in the United States and recover the large setup cost. Finally, the profit-shifting hypothesis claims that cross-country differences in tax rates have induced foreign multinationals to understate their profits in the United States through profit-shifting more than U.S. multinationals understate their profits from operations

abroad;[9] that is, observed returns are simply a measurement mirage, not a true reflection of profitability. We now turn to assess the weight of evidence regarding each hypothesis.

3.1 The Risk-Compensating Hypothesis

The risk-compensating hypothesis claims that the return gap reflects the greater riskiness of U.S. investment abroad relative to the riskiness of foreign investment in this country. The premise of this hypothesis is that investors will accept a riskier investment only when they expect to make a greater return on that investment. To ascertain the validity of this hypothesis, we investigate whether U.S. direct investments abroad exhibit greater risk, variously measured, relative to foreign direct investments in the United States We find from a variety of relative risk measures either contradictory evidence, or evidence that could support this hypothesis and might explain one-third of the return gap.

Measures drawn from the statistical characteristics of aggregate returns offer little support for the hypothesis that U.S. direct investments abroad are riskier. One measure of relative risk, which superficially supports the hypothesis, simply compares the standard deviation of returns on inward and outward direct investment (Table 2). This measure of risk shows that the return on U.S. direct investment abroad has had a higher standard deviation, and presumably higher risk, than has the return on foreign direct investment in the United States.[10] However, measures which

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[9] This claim includes the case that U.S. multinationals understate their profits in the United States and overstate their profits from operations abroad by shifting profits out of the United States through transfer pricing schemes.

[10] This result holds over the full interval for which data on the market value of direct investment assets are available (1982-2003), and for the half intervals (1982-1992, 1993-2003), even though a substantial narrowing of standard deviations occurred in the second half interval.

take into account returns as well as risk strongly contradict the risk-compensating hypothesis. As is well know from portfolio selection theory, standard-deviation comparisons alone can be a misleading measure of relative risk. A preferable measure is the excess return to variability ratio, or Sharpe ratio, which in the present context is calculated as the ratio of the difference between the direct-investment return and a benchmark return to the standard deviation of the direct investment return.[11] Investments with the higher Sharpe ratio have lower risk per unit of excess return. For all nonnegative values of the benchmark return and using the data in Table 2, the Sharpe ratio on outward direct investment is higher than that on inward investment, strongly contradicting the risk-compensating hypothesis.[12] For example, if the benchmark return is taken as zero, the Sharpe ratio is simply the ratio of average return to the standard deviation of average return. In that case the Sharpe ratio for U.S. direct investment is 3.28 (=7.64/3.33) and that for foreign direct investment is 1.77 (= 2.09/1.18). That result means outward investment received almost twice the return per unit of risk, or faced almost half the risk per unit of return, compared to inward direct investment.

Because relative risk measures which use aggregate returns and standard deviations of aggregate returns may miss some important differences across industries, we next apply Standard

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[11] The excess return to risk, or reward-to-variability, ratio is originally due to William Sharpe (1966). The excess return to risk ratio is a better ratio for ranking the relative superiority of investments than the simple ratioof return to standard deviation which, as shown by Sharpe, can often produce erroneous rankings. See Sharpe (1994).

[12] Using values presented in Table 2 for average returns and variability of direct investment, and letting r denote the benchmark return, the Sharpe ratio for outward investment over 1982-2003 is $(7.64-r)/2.33$ and that for inward investment is $(2.09-r)/1.18$. Manipulation of these two ratios shows that outward investment has earned a superior risk-adjusted excess return for all values of the benchmark return higher than the value $r = -0.03605$. Both Sharpe ratios fall with increasing values of the benchmark, but the ratio for foreign direct investment falls fastest.

& Poor's industry betas as a way to estimate the industry-weighted risk of outward and inward direct investment.[13] As developed in the literature on finance, beta is a numerical measure of the riskiness, or variability, of the return on a given investment relative to the riskiness of the return on the totality of available investments. The higher is an investment's beta, the riskier it is relative to the total set of investments. For example, if an investment has the same riskiness as the riskiness in the total set of investments under study, its beta would have a value of unity. If it is riskier, its beta would be above unity; if it is less risky, its beta would be below unity.[14]

An estimate of relative risk based on the industry composition of inward and outward FDI assets finds that outward investment is negligibly riskier than inward investment. The beta for inward investment is estimated to be 0.91, which is only marginally lower—or, less risky—than the estimated beta of 0.92 for outward investment (Table 3). Part of the reason for the closeness of the risk measure between inward and outward investment may simply be that, on balance, the industry mixes of inward and outward direct investment are roughly similar (Figure 6).

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[13] The Standard & Poor's industry betas are available at: http://www2.standardandpoors.com/spf/xls/index/GICS_500_Scorecard.xls. For a given industry, beta is computed over a 60-month span using the capitalization-weighted monthly returns for firms in the industry versus the capitalization-weighted return on the S&P500 index.

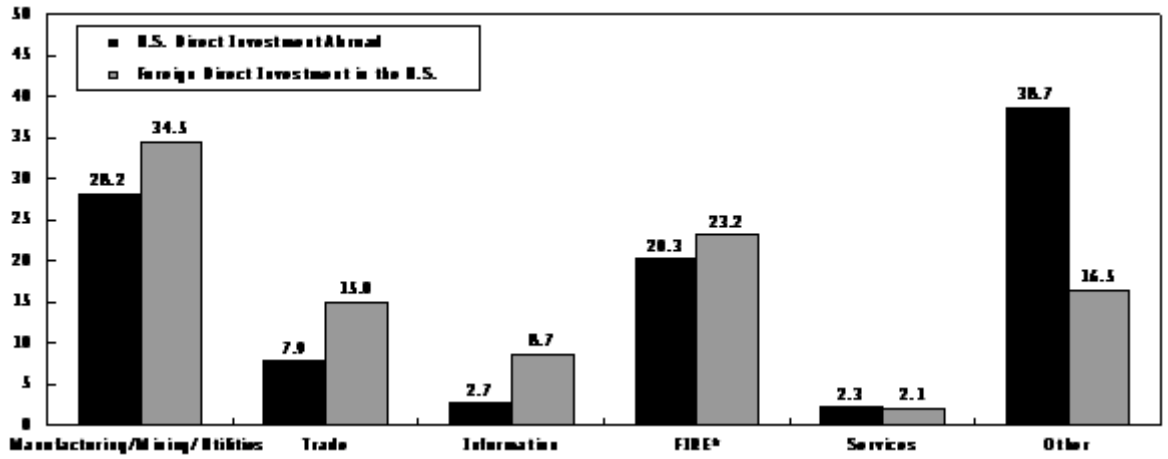
[14] Strictly speaking, in the theory of finance beta refers to"systematic"risk that is thought to be common to all investments in the set being studied, such as the risk of economic recession, or other macroeconomic risks. These risks are notable because they cannot be completely eliminated by increasing the diversity of a portfolio of investments (though diversification does help to minimize risk). Other risks, deemed "idiosyncratic," are those unique to a particular investment and which theoretically can be eliminated through ever greater diversification.

Table 3. Sovereign Credit Risks and Regionally Aggregated Industry Betas of Outward and Inward Direct Investments, Based on 2003 data.

	Share of U.S. Direct Investment	Sovereign Credit-Risk Rating: Numeric Estimate ("letter equivalent")	Industry-weighted Beta
U.S. Direct Investment Abroad:			
Canada	11%	21("AAA")	0.986
Latin America and other Western Hemisphere	17%	11("BB^{+}")	0.916
Europe	54%	20("AA^{+}")	0.897
Asia, Pacific	16%	15("A^{-}")	0.922
Africa	1%	12("BBB^{-}")	1.189
Middle East	1%	14("BBB^{+}")	1.092
Total/weighted average	**100%**	**14("BBB^{+}")**	**0.919**
Foreign Direct Investment in the United States		**21("AAA")**	**0.906**

Sources: Authors' calculations based on data from BEA and Standard & Poor's.

Figure 6. Industry Composition of Inward and Outward Direct Investment Assets, 2003



*Finance, Insurance, Real Estate

Next, we compare the sovereign credit-risk of inward and outward direct investments as one way to help correct for the potential distortion that may exist in the comparison just made

from the assumption that an industry is subject to the same degree of risk no matter where it is located. For this comparison we use sovereign credit-risk ratings available at Standard & Poors. We first convert letter ratings to number ratings by assigning the D rating (in default) the value zero, adding 1 to each ascending letter rating, and ending with assigning the value 21 to the highest rating, AAA.[15] The sovereign credit-risk of inward FDI is assigned the numerical rating of 21 to reflect the sovereign credit rating of AAA for the United States. We then apply a non-linear relationship between Standard & Poor's sovereign ratings and default probabilities to the sovereign risk rating of each host country to derive a numerical estimate of the riskiness of direct investment in that country. The overall sovereign risk of outward direct investment is then the FDI-weighted average of those numerical estimates of (default-probability-adjusted) riskiness of major host countries.[16] That average is converted back to the implied numerical equivalent of sovereign rating, and then to the implied letter rating. We show the weighted average of sovereign risks, along with the weight of each region in Table 3; each region was grouped according to the country-regional pairings used in the international economic accounts of the BEA.[17] A country's weight is its share of U.S. direct investment within that country's region, and

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[15] Both Fitch and Standard & Poor's ratings range from D (for default rating) to AAA with additional, plus and minus ratings for letters CCC through AA. In all, there are 22 letter/plus/minus ratings. Details of Standard & Poor's ratings are available at the web page: http://www2.standardandpoors.com; those for Fitch ratings are at http://www.fitchratings.com. Generally, sovereign credit ratings attempt to gauge the likelihood that governments will honor their financial obligations and, as such, take into account political and economic factors within the country and between the country and the rest of the world.

[16] We wish to thank Ufuk Demiroglu, our colleague at CBO, for pointing out that, given the non-linear relationship between default probabilities and credit ratings, we need to adjust credit ratings with default probability associated with those credit rating to estimate the overall riskiness of outward direct investment.

[17] The table containing the country-industry breakdown of U.S. direct investment abroad is available at the BEA web page: http://www.bea.gov/bea/di/usdpos/pos_03.htm.

a region's weight is its share of total U.S. direct investment. For purposes of comparison, Table 3 also shows the industry-weighted betas for each regional grouping of countries.

On average, U.S. direct investments abroad are subject to higher sovereign risk than foreign direct investments in the United States; such a difference can account about one-third of the return spread shown in Table 2 and Figure 4. The sovereign risk ratings in Table 3 show that the risk of outward direct investment is 14 (equivalent to 14=BBB$^{+)}$. This is considered to be a somewhat low investment-grade rating, with speculative-grade ratings beginning 3 steps lower at 11 or BB^{+}. In contrast, inward direct investment has a rating of 21 (equivalent to AAA), which is considered to be the strongest investment-grade rating. The benchmark spread of long-term corporate bonds rated BBB, slightly below BBB^{+} versus those rated AAA averaged 136 basis points over the past 5 years (1999-2003). By comparison, the difference in average returns between outward and inward direct investment over those years was 409 basis points. Thus, based on the benchmark spread, the difference in the sovereign risk between inward and outward direct investment can explain about one-third of difference in returns (136/409=0.334).

Overall, the above findings suggest that risk-compensation contributed, but only to a limited extent, to the large return gap between outward and inward direct investment. The fact that the return gap in favor of outward FDI assets appears to persist whether the host country has a high or low credit-risk rating also suggests that risk-compensation is far from the main reason for the large and sustained return gap. For example, the return on U.S. direct investment in Canada—which has a 21, or AAA, rating—exceeded the return on Canada's direct investment in the United States by 5.47 percentage points on average over 1999-2002 (Table 4). The return on U.S. direct investment in Latin America—which has a rating of 11, close to BB^{+} (the highest

speculative-grade as opposed to investment-grade ratings)—exceeded the return on Latin America's direct investment in the United States by almost the same amount, 5.27 percentage points, on average over the same period. The average return on U.S. outward FDI assets in each region (shown in column (2) of Table 3) does exhibit a roughly inverse relationship with that region's sovereign risk rating. However, that relationship is not statistically significant.[18]

Table 4. Sovereign Credit-Risk Ratings versus Average Percentage Return on Inward and Outward, Nonbank FDI Assets, 1999-2002

	Sovereign Credit Risk Rating	Return on Outward FDI	Return on Inward FDI	Return Gap
	(1)	(2)	(3)	(4)
All countries		3.63%	-0.09%	3.72%
Canada	21.0	3.62%	-1.86%	5.47%
Europe	20.7	3.44%	0.12%	3.32%
Latin America and Other Western	13.4	4.09%	-1.19%	5.27%
Africa	12.1	5.47%	0.44%	5.02%
Middle East	15.6	6.43%	1.69%	4.75%
Asia and Pacific	17.8	3.60%	-0.30%	3.90%

Sources: Authors' calculations based on data from BEA and Standard & Poor's.

Admittedly, to the extent that the preceding analysis does not include the assessment of currency risk, this conclusion may be biased against the risk-compensating hypothesis. Currency risk is an important risk consideration in investors' mind. Many analysts have observed that the dollar's unique role as the reserve currency and the main medium of international exchange is a

[18] In a least squares regression of outward investment returns (column 2 of Table 3) on regional credit-risk rating(column 1), the negative slope coefficient has a t-statistic of 1.6 (a coefficient of -1.89 and a standard error of 1.18) but the equation's F-statistic of 2.56 is below the critical F(1,4) value of 4.54 at the 10 percent confidence level and, thus, unable to reject the null hypothesis of no relationship.

primary reason that the United States is an attractive location for international investment. The fact that many external debts of foreign companies' and governments are denominated in dollars may also enhance the value they assign to holding assets in the United States. Nevertheless, given that currency risk should matter for portfolio investment as for direct investment, the fact that the return gap in portfolio investments is actually slightly disadvantageous to the United States suggests that currency risk is unlikely to have had a significant effect on the return gap in direct investments.[19]

3.2 The Age-Effect Hypothesis

Until the early 1980s, U.S. direct investment outflows had consistently outpaced foreign direct investment inflows to the United States, even though that pattern has since disappeared (see Figure 7). Based on this observation, the age-effect hypothesis maintains that the return gap favors U.S. affiliates abroad, which on average are older than foreign affiliates in the United States, because young companies tend to be less profitable than mature companies for at least three reasons. First, profits of newly acquired or established companies tend to be dampened by high startup costs such as spending for capital equipment or advertising.[20] These costs may be particularly high for foreign firms that must get to know a market that is outside of their home

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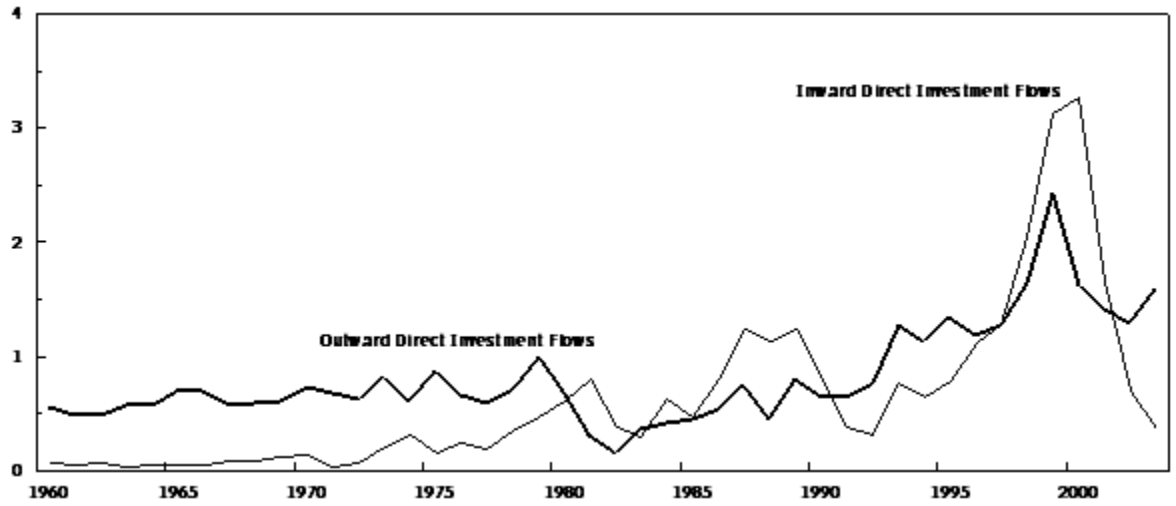
[19] As noted in the Appendix, the return on international portfolio assets (ROA) measured by BEA data is a distorted indicator of the true rate of return. To the extent that the ROA underestimates the return on outward portfolio assets relative to that on inward portfolio assets during most of the 1990s because of the stock market boom both in the United States and abroad (as noted in the preceding section), it could lead to an underestimate of the "risk premium" for the greater risk of outward portfolio investment.

[20] For example, as pointed out by Mataloni (2000), foreign owned nonfinancial companies that acquired or established a US business in the 2 years preceding 1996 had an average capital-spending-to-sales ratio of 8.4 percent, compared with 5.1 percent for other foreign-owned nonfinancial companies.

bases. Second, young companies tend to have a lower return on assets (ROA) than mature companies because they are less experienced; over time, they should become more profitable as they learn to operate in the newer environment (marketing, streamlining, restructuring, etc.). Finally, accounting returns on newly acquired companies also may be depressed because mergers and acquisitions tend to increase the book value of assets initially while operating profits are not yet affected.

Figure 7. Outward and Inward Direct Investment Flows as Percent of U.S. GDP, 1960-2003



On the whole, research has found a significant amount of evidence in support of the age effect. Lupo, Gilbert, and Liliestedt (1978) found a significant age effect among U.S.-owned manufacturing companies abroad. They examined company-level data for 4507 foreign manufacturing affiliates of U.S.-owned companies and found that the average ROA of those affiliates increased steadily with age, at least for the first 10 years. Grubert, Goodspeed and Swenson (1992), using a 1980-87 panel data set, also find that there seemed to be a "maturation"

effect in foreign-owned companies in manufacturing. They find that those companies' profitability increased over time, even though they find no significant tendency for newly acquired foreign-owned companies to be those with low or negative rates of return.

Landefeld, Lawson and Weinberg (1992) find that, for the companies that were newly acquired by foreigners, rates of return were already low or negative: between 1982 and 1990, the rate of return on assets for U.S. companies in the year before their acquisition by foreigners was 1.0 percent, compared with 4.6 percent for all U.S. nonfinancial companies.[21] The authors thus speculate that the return on such newly acquired companies would be lowered further as owners restructured these companies by investing in new plant and equipment and in modernizing older plants, increasing marketing efforts, and aggressively pricing their products to regain market share. Laster and McCauley (1994) find that the low rate of return on foreign-owned companies in the United States was largely due to a late-1980s' surge in foreign acquisition activity. They conclude that the sharp decline in profitability of newly acquired firms in the late 1980s seems to derive largely from a rise in operating costs, and observe that the return on direct investment improves over time as the initial step-up in investment pays off and unsuccessful enterprises are divested.[22]

More recently, Mataloni (2000) also finds an unmistakable age effect in a panel of 749 foreign-owned manufacturing companies that existed throughout 1988-97. The author detects a

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[21] They find that, during the 1980's, three-fourths of all inward FDI was for acquiring existing companies and about one-fourth was for establishing new companies.

[22] The authors also point out several other reasons that helped explain the phenomena: (1) foreigners paid full price for sub-par performers, mainly because takeovers—by foreign or domestic acquirers—tend to require a premium to be paid over usual share prices; (2) foreign-owned manufacturing companies have generally operated with more debt than have U.S. firms; and (3) newly acquired firms sometimes increase their depreciation/amortization expense by revaluing (tangible and intangible) assets.

significant relationship between the age of a foreign-owned manufacturing company and the gap between its ROA and that of U.S.-owned companies in the same industry. For example, for all manufacturing industries combined, the median ROA gap, which was -2.7 percentage points in 1988, had been completely eliminated by 1997. A particularly strong relationship between age and the ROA gap was found in motor vehicles and equipment manufacturing: the median ROA gap was -6.5 percentage points in 1988, but became a positive 3.0 percentage points in 1997 (Table 5). In addition, the author finds that, while the ROA of all foreign-owned nonfinancial companies was consistently below that of U.S.- owned counterparts from 1988 to 1997, that gap narrowed over time, from nearly 2 percentage points in 1988 to 1 percentage point in 1997. He suggests that this narrowing of the gap is related to age effects.

Table 5. The Median Gap between Returns on Foreign-Owned and U.S.-Owned Companies in the United States (percentage points)

	All Manufacturing Industries	Motor Vehicles and Equipment
1988	-2.7	-6.5
1989	-2.6	-6.4
1990	-3.5	-2.2
1991	-3.0	-3.9
1992	-2.0	-1.0
1993	-1.4	-0.7
1994	-0.3	1.5
1995	-1.9	3.5
1996	-0.2	-1.8
1997	1.0	3.0

Source: All data on this table are taken from Table 6 in Mataloni (2000).

The above findings indicate that "age" has a significant and positive effect on a company's profitability. These findings are consistent with the fact that the gap between the ROAs (of U.S.

outward and inward direct investments) widened in the late 1980s, a period with very heavy inward FDI in the United States, narrowed significantly in the second half of the1990s as FDI inflows subsided, then widened again during 1999-2001 as FDI inflows surged (Figures 4 and 7).

3.3 The Profit-Shifting Hypothesis

The profit-shifting hypothesis consists of two sub-hypotheses. The first sub-hypothesis is that multinational corporations have the incentive and ability to minimize their overall tax payments by shifting profits among affiliated companies located in countries with different tax rates through transfer prices (i.e, the price charged by one company for a product or service it supplied to an affiliated company). Although tax regulations generally require that intra-firm transactions be at "arms-length" prices (i.e., prices charged between unrelated companies), cross-country differences in tax rates create incentives for foreign-controlled companies to deviate from this standard, particularly for goods and services that do not have well-established, or market-based, reference prices. Multinational corporations will shift income not only to reduce the tax cost of current operating income but also to lower the cost of repatriating income to the parent companies.[23]

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[23] The tax burden on foreign direct investment is usually determined by three elements: (1) the domestic corporate tax systems of home and host countries, (2) the taxation of cross-border flows of income, and (3) the interaction of tax systems of home and host countries. The host country, besides imposing statutory corporate taxes on a subsidiary's profits, may levy withholding taxes on a subsidiary's payments of dividends or interest to the parent company. The home country may also levy the corporate income tax on the parent firm's receipts of dividends and interest from its foreign subsidiaries. Whether this leads to double taxation on repatriated income depends on whether the home country has adopted an exemption system or a credit system for repatriated income and, in the later case, on whether the tax paid abroad is bigger or smaller than the total tax liability of the parent firm.

The United States generally taxes income from active business operations (as opposed to financial operations) abroad only when it is repatriated. A credit is given for foreign taxes paid, including the underlying foreign corporate tax on direct dividends, but the credit is limited to U.S. taxes on that income.

The second sub-hypothesis is that foreign affiliates in the United States have, on balance, understated their profits through profit-shifting schemes by much more than U.S. affiliates abroad have. Admittedly, both foreign and U.S. multinationals could shift profits into and out of the United States through transfer pricing schemes, and the balance of profit-shifting will depend on the distribution of profits and losses between the parent and affiliates located in different countries as well as the tax rates and the interaction of tax rates among the countries where the affiliates are located; moreover, U.S. affiliates abroad may even have additional (or, non-tax) incentives—such as avoiding capital controls or political instability—to shift profits to their parents in the United States. However, given that some foreign tax havens impose virtually no tax on corporate profits, both U.S. and foreign multinationals have strong incentives and opportunities to shift profits out of the United States. Therefore, on balance foreign affiliates in the United States are likely to under-report profits by more than do U.S. affiliates abroad.

At best, the balance of studies we survey provides only weak and indirect evidence that foreign-controlled companies have been shifting profits abroad.[24] The evidence is somewhat stronger that U.S. multinationals have engaged in shifting profits through transfer prices. However, there is evidence that U.S. subsidiaries shift income to their parents in the United States as well as evidence that U.S. parent companies shift income to their subsidiaries abroad. It thus appears that profit-shifting activities are not likely to be a major reason for the return gap favoring

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[24] So far, efforts to test the profit-shifting hypothesis are generally undertaken to uncover reasons why foreign-controlled companies in the United States tend to have much lower profitability than U.S.-owned companies (in the United States) in the same industries. Since it is difficult to test the hypothesis directly, researchers have generally resorted to testing it indirectly.

U.S. outward direct investment.

Studies ascertaining whether profit-shifting is an important reason of the low profitability of foreign-controlled companies in the United States include Grubert (1997), Laster and MaCauley (1994), and Mataloni (2000). Grubert (1997) tests the hypothesis based on two assumptions. The first is that foreign-controlled companies with higher U.S. profitability have greater incentive and opportunity to shift profits through transfer-pricing schemes without arousing the suspicion of tax authorities. Conversely, unprofitable foreign-controlled companies have the incentive to transfer losses to jurisdictions in which they have positive taxable income. The second is that income shifting is less likely when there are more U.S. shareholders. He finds no evidence in support of the profit-shifting hypothesis based on the second assumption, even though there is some supporting evidence based on the first assumption. [25]

Laster and MaCauley (1994), with an analysis of 19 major manufacturing industries for the period of 1977-92, find that industries in which affiliates import a higher fraction of their sales from their parent group report lower returns on sales. That is, reported profits vary inversely with the opportunity to transfer income. However, the authors caution against relying too much from this finding as an empirical support for the profit-shifting hypothesis, noting that imports from

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[25] Based on the first assumption, Grubert (1997) infers that income shifting would make the distribution of foreign-controlled companies' profitability more concentrated near zero than that of domestic companies. With a panel data from 1987 to 1993, the author finds that the distribution of the return on assets (ROA) of foreign-controlled companies displayed a very clear concentration near a mean of zero, while the distribution of U.S. companies' ROA had a mean higher than zero and was flatter in the central range than the foreign distribution. He interprets this finding to be supportive of the profit-shifting hypothesis. Based on the second assumption, he finds that companies with foreign ownership of between 25 and 50 percent exhibit the same low profitability as those with 100 percent foreign ownership, even though the latter group would be more likely to shift profits out of the United States. The author presents this result as evidence that profit-shifting is not a major factor behind the low profitability of foreign-controlled companies in the United States.

parents may simply proxy for overall imports; in that case, the observed relationship could mean only that a weak dollar crimped the profits of manufacturing industries heavily dependent on imports.

Mataloni (2000) tests the profit-shifting hypothesis based on the assumption that foreign-controlled companies with a higher percentage of their sales accounted for by intra-firm imports have greater opportunities to shift profits through manipulating transfer prices. Under this assumption, a significant relationship detected between the share of sales accounted for by intra-firm imports and the return gap provides an indirect evidence for the profit-shifting hypothesis. However, the author finds no clear relationship between the return gap and the intra-firm-import content of sales at the industry-level.

Studies ascertaining whether U.S. multinationals engage in profit-shifting through transfer prices include Grubert and Mutti (1991), Hines and Rice (1990), Harris, Morck, Slemrod, and Yeung (1993), and Grubert (1998). All of these studies' findings are consistent with the hypothesis that U.S. multinationals engage in profit-shifting to minimize their overall tax cost. Grubert and Mutti (1991) find that multinational firms declare more income in low-tax foreign jurisdictions than in high-tax foreign jurisdictions, suggesting that U.S. affiliates abroad shift income from high-tax jurisdictions to low-tax ones. Hines and Rice (1990) find a negative relation between U.S. multinationals' profits and average tax rates in host countries. Harris, Morck, Slemrod, and Yeung (1993) find evidence suggesting that U.S. multinationals shifted income from the United States to low-tax regions, and shifted income from high-tax regions to the United States. Moreover, they find that multinationals shift income from low-tax regions to the United States, suggesting income shifting could be motivated by non-tax reasons such as avoiding

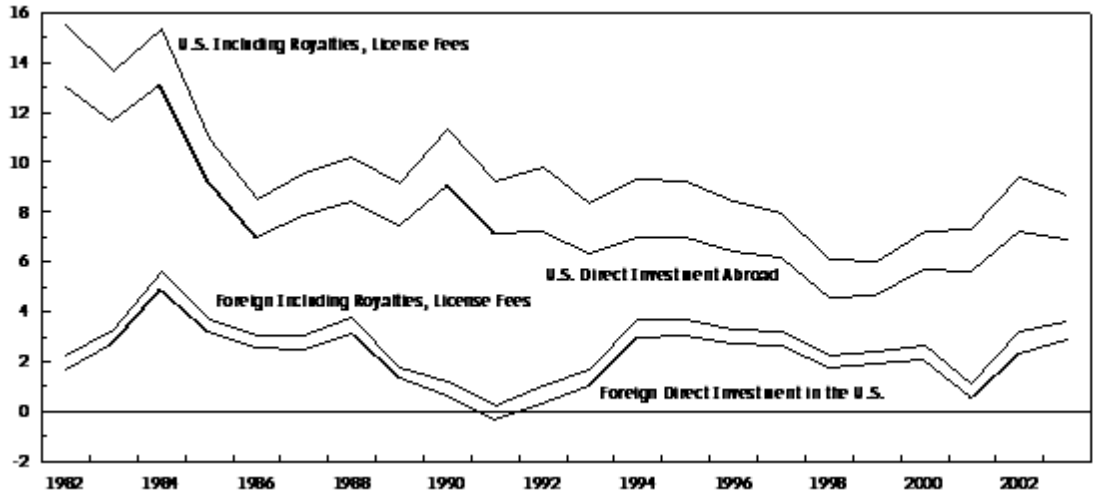
capital controls, currency risk, or political instability. On balance, they do find that income-shifting by U.S. multinationals has a net effect of reducing their tax payments to the United States, even though that net effect cannot be estimated precisely.

Grubert (1998) finds indirect evidence of profit-shifting in a study that tests the effect of dividend taxes on the distribution of U.S. subsidiaries' income among dividend, royalties, interest payments, and retained earnings. He finds that an increase in the U.S. dividend tax rate discourages dividend repatriations from a U.S. subsidiary abroad, but it does not increase that subsidiary's retained earnings. In supplemental regressions, the author finds that a decline in dividend payments induced by a hike in dividend tax rate tends to be made up by increases in interest payment or royalties and license fees. The author interprets this as evidence that U.S. subsidiaries abroad engage in income-shifting (through interest and royalty payments to the parent or to another affiliate in third countries with lower tax rates) to minimize the overall tax cost of repatriations.

In sum, so far there is not sufficient evidence to conclude that profit-shifting schemes, on balance, are an important factor underlying the large gap favoring U.S. outward direct investments. If a U.S. subsidiary abroad under-reports its profits by shifting income via either paying royalties or interest payments to its parent, it would even mean that the return gap would be even bigger than that based on reported data once that under-reporting is corrected. Indeed, the return gap between outward and inward direct investments is amplified if royalties and license fees are counted as investment income, adding about 2 percentage points to U.S. returns and less

than one percentage point to foreigners' returns on average since the mid-1970s (Figure 8).[26] While this piece of data does not prove that on balance U.S. subsidiaries shifted income to their U.S. parents by more than foreign subsidiaries shifted income out of the United States, it does indicate that we are far from being sure that reported data have exaggerated the return gap in favor of outward FDI assets.

Figure 8. Returns on Cross-Border Direct Investments, including Royalties and License Fees, 1982-2003 (percent)

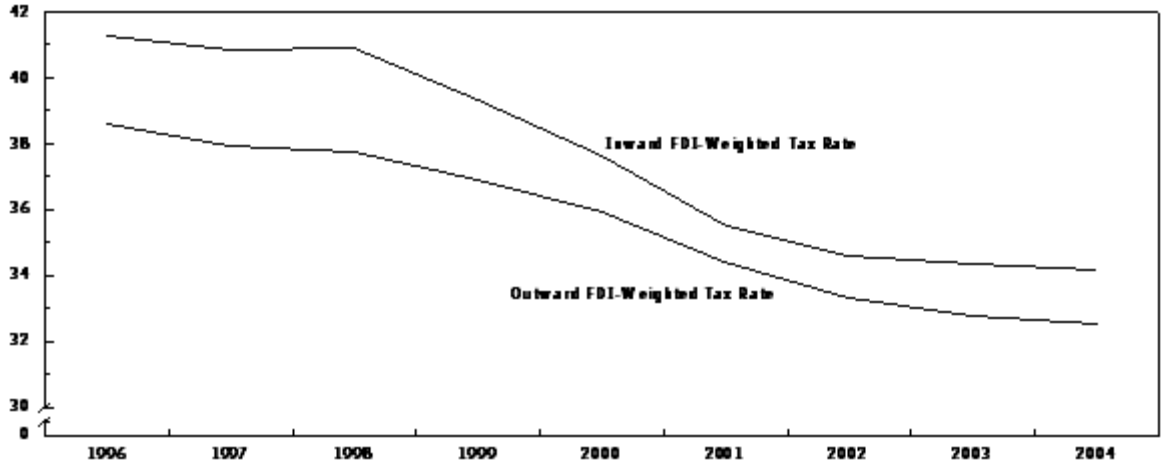


Two possible factors may help explain why the evidence for profit-shifting by foreign subsidiaries appears to be weaker than that for U.S. subsidiaries. First, the studies cited above used data from a time when inward FDI-weighted statutory corporate tax rate of foreign countries was higher than the U.S. rate (about 40%)—that is, a time when foreign-controlled companies in the United States had relatively little incentives to shift income back to their parent companies

[26] BEA treats receipts of royalties and license fees as exports of services, and payments as imports of services.

(Figure 9).[27] Second, on the whole, foreign subsidiaries in the United States are younger and less profitable than U.S. subsidiaries abroad, thus with less incentive to shift income for tax purposes. If these two factors are important reasons why foreign subsidiaries have engaged in profit-shifting by less than U.S. subsidiaries have in the past,[28] then foreign subsidiaries are likely to become more active in profit-shifting schemes in the future as a result of two developments: (1) the inward FDI-weighted foreign corporate tax rate has fallen below that of the United States, and (2) the evidence on the age-effect hypothesis suggests that foreign subsidiaries will become more profitable as they become older.

Figure 9. Statutory Corporate Tax Rates in Foreign Economies, Weighted by Inward and Outward Direct Investment Shares, 1996-2004.



[27] The inward-FDI weighted foreign corporate tax rate is the weighted average of statutory tax rates of 17 foreign countries (namely, Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, New Zealand, and Norway.), with each country's weight being the share of DI assets from that country in total inward DI assets. The outward-FDI weighted foreign corporate tax rate is obtained with each country's weight being the share of DI assets that country received in total outward FDI assets. Foreign corporate tax rates are obtained from various issues of KPMG's corporate tax rate survey.

[28] High statutory tax rates abroad do not necessarily mean that multinationals haves no tax incentives to shift profits out of the United States. This is because (1) statutory tax rates may overstate the effective tax rate for some multinationals, and (2) multinationals can shift profits to low-tax third countries rather than to their parents or affiliates in the high tax-rate countries.

4. Conclusion

The balance of research so far indicates that the positive gap between the return on U.S. direct investment abroad and that on foreign direct investment in the United States is most strongly explained by the age-effect hypothesis, followed by the risk-compensating hypothesis. Most studies find that foreign-controlled companies have been less profitable than U.S.-controlled companies because they are relatively new and it takes time for them to turn a profit. There is some evidence that about one-third of the return gap is compensation for the higher risk of outward direct investment than inward direct investment; but that finding is tempered by other observations that suggest risk-compensation may player an even smaller role than that. There is some evidence that multinational companies engage in profit-shifting activities for tax purposes. However, U.S. multinationals appear to shift profits both into and out of the United States, while the evidence that foreign multinationals shift profits out of the United States is quite sketchy. These findings suggest that profit-shifting activities are unlikely to be a major reason of the return gap favoring U.S. outward direct investment.

The evidence so far suggests that the extent to which the (reported) return gap will remain favorable to the United States in the future will largely depend on the net result of two opposing developments. First, the age effect suggests that foreign-controlled companies' profitability should improve over time, unless the positive age effect is dominated by the negative effect arising from new flows of inward direct investment. Second, the prospect that foreign subsidiaries would become more profitable over time (as they mature) suggests that foreign-controlled companies are likely to become more actively engaged in profit-shifting practices, thereby depressing the reported profits of those companies.

Appendix. Rates of Return on International Investments: Data and Measurement

The rates of return on U.S.-owned assets abroad reported in this paper are the ratios of investment income inflows (i.e., receipts) to U.S.-owned assets abroad. Likewise, the rates of return on foreign-owned assets in the United States are the ratios of investment income outflows (i.e., payments) to foreign-owned assets in this country. All data on investment income flows and cross-border investment positions are obtained from the Bureau of Economic Analysis (BEA). This appendix provides a systematic, though simplified, account of measurements of (1) cross-border assets, (2) cross-border investment income flows, and (3) the rate of return on cross-border assets. (For detailed description of data sources and estimation methods, see BEA [1990].) It then compare the rates of return studied in this paper with the conventional measure of the rate of return.

Cross-Border Assets

In BEA's reporting, U.S. holdings of assets abroad consist of direct investment assets (i.e., U.S. investors' ownership of foreign business which equals or exceeds 10 percent of the value of that business) and portfolio investment assets (i.e., all that are not counted as direct investment assets, such as corporate stocks and bonds, bank loans to foreigners, deposits in foreign banks, and government securities). Foreign-owned assets in the United States follow analogous conventions. The BEA measures the value of U.S. and foreign direct investment by two methods: the current-cost method and the market-value method. The current-cost method measures direct investment assets and liabilities by their current replacement costs, while the market-value method

measures direct investment at the current stock-market value of owners' equity. All non-banking portfolios are reported at their market value, and banking portfolios at their book values. As a result, there are two aggregate measures of cross-border international investment positions: (1) the current-cost measure which adds up the current-cost measure of direct investment assets, the market-value of all non-banking portfolio assets, and the book value of all banking assets; and (2) the market-value measure which adds up the market-value measure of direct investment assets and all non-banking portfolio assets, and the book value of all banking assets. In this paper, we use the market-value measure of direct investment assets for the calculation of the rate of return on direct investment assets.

Cross-Border Investment Income Flows

There is a key difference between portfolio investment income and direct investment income: the former does not include capital gains while the latter does. Portfolio investment income is the sum of dividend and interest income, excluding capital gains. Direct investment income is the sum of dividends (i.e., parent companies' receipt of distributed earnings less foreign withholding taxes on distributed earnings), net interest income (i.e., parents' interest receipts from foreign affiliates net of their interest payments to those affiliates), and (parents' share of) retained earnings and capital gains.

Rate of Return on U.S.-Owned Assets Abroad

The rate of return on outward portfolio investment assets differ from that on outward direct investment assets in two ways: (1) portfolio investment income does not include capital

gains, while direct investment income does, and (2) portfolio investment income does not include retained earnings, while direct investment income does. Both rates of return are not influenced by changes in the exchange rate during the holding period because investment income and investment assets are translated back to dollar terms with the exchange rate that prevailed at the end of the period. If we assume that there is no net purchase or net sell of the stock of assets during period t, then the rate of return on outward portfolio investment (RPI) is expressed as in equation (1), and the rate of return on outward direct investment (RFDI) in equation (2):

$$(1)\quad RPI_t = \left[\frac{(D_t^* + I_t^*)S_1}{(V_0 / S_0)(1+\Delta)S_1} \right]$$

$$(2)\quad RFDI_t = \left[\frac{(V_0 / S_0)\Delta P_t^* \, S_1 + (RE_t^* + D_t^* + I_t^*)S_1}{(V_0 / S_0)(1+\Delta P_t^*)S_1} \right]$$

where, the time subscript ***0*** denotes the beginning of period ***t***, and subscript ***1*** denotes the end of period ***t***, and

$\boldsymbol{D^*_t}$ is the sum of dividend income (in foreign currency terms) during period ***t***,

$\boldsymbol{I^*_t}$ is the sum of interest income (in foreign currency terms) during period ***t***,

$\boldsymbol{RE^*_t}$ is the sum of retained earnings (in foreign currency terms) during period ***t***.

$\boldsymbol{S_0}$ is the exchange rate (dollar/foreign currency) at the beginning of period ***t***,

$\boldsymbol{S_1}$ is the exchange rate (dollar/foreign currency) at the end of period ***t***,

$\boldsymbol{\triangle P^*_t}$ is the proportionate change in the market value of assets (in foreign currency terms) from the beginning to the end of period ***t***,

V_0 is the purchase value of the assets (in dollar terms) at the beginning of period ***t.***

$$(3)\quad RPI_t^* = \left[\frac{D_t + I_t)}{V_0\,(1+\Delta P_t)}\right]$$

As in the case of outward investment, the rate of return on inward portfolio assets differ from that on inward direct investment assets in two ways: (1) portfolio investment income does not include capital gains, while direct investment income does, and (2) portfolio investment income does not include retained earnings, while direct investment income does. From the perspective of BEA, both rates of return are not influenced by changes in the exchange rate during the holding period because both investment income and investment assets are recorded in dollar terms. If we assume that there is no net purchase or net sell of the stock of assets during period t, then the rate of return on inward portfolio investment (RPI^*) is expressed as in equation (3), and the rate of return on inward direct investment ($RFDI^*$) in equation (4):

$$(4)\quad RFDI_t^* = \left[\frac{V_0\,\Delta P_t + (RE_t + D_t + I_t)}{V_0(1+\Delta P_t)}\right]$$

where,

D_t is the sum of dividend income (in dollar terms) during period ***t***,

I_t is the sum of interest income (in dollar terms) during period ***t***,

RE_t is the sum of retained earnings (in dollar terms) during period ***t***.

ΔP_t is the proportionate change in the (dollar) market value of assets from the beginning to the end of period ***t***,

V_0 is the purchase value of the assets (in dollar terms) at the beginning of period ***t.***

Rates of Return on Cross-Border Assets versus Conventional Rates of Return

Rates of return on international assets referred to in this paper differ from conventional rates of return (RPIC) in several ways. To illustrate, compare equation (1) to equation (5) which expresses a simple version of conventional rates of return (RPIC) in period t:

$$(5)\quad RPIC_t = \left[\frac{(V_0 / S_0)\Delta P_t^* S_1 + (D_t^* + I_t^*)S_1}{V_0}\right]$$

Comparing equations (1) and (5) makes clear that, for exactly the same basket of portfolio assets held abroad during period ***t***, the rate of return on that portfolio as calculated in this paper (RPI) will equal the conventionally measured rate of return on that portfolio (RPIC) only when both of the following two conditions are true: (1) there is no capital gains during the holding period (i.e., $\triangle P^*_t = 0$); and (2) there is no change in the exchange rate during the holding period (i.e. $S_1 = S_0$). An increase in capital gains during the holding period lowers RPI (because it raises the denominator but not the numerator), while it increases RPIC (because it raises the numerator but not the denominator). A dollar depreciation (i.e., an increase in S_1 relative to S_0) does not change RPI (because it raises both the numerator and denominator to the same extent), while it increases RPIC (because it raise the numerator but not the denominator).

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