The Exorbitant Tax Privilege:
Online Appendix*

Thomas WRIGHT (HM Treasury)
Gabriel ZUCMAN (UC Berkeley and NBER)

August 13, 2018

Abstract

This Appendix supplements our working paper "The Exorbitant Tax Privilege"

Contents

The goal of this Appendix is to allow the reader to reproduce all the results of the paper starting from readily available public statistics. We describe each of the steps that leads from the published data to the results. The Appendix is supplemented by an Excel file containing all relevant formulas and by a set of Stata files.[1]

The Working Paper summarizes the main steps. The Appendix gives additional details, provides consistency and robustness checks, compares the choices made in this research with those made in other studies, lists all relevant references, and produces additional results excluded from the Working Paper for the sake of conciseness. The Appendix is structured as follows:

- Section A discusses U.S. data (U.S. direct investments abroad, and foreign direct investments in the United States).

- Section B discusses international data (cross-country comparisons of returns on direct investment).

- Section C lists the various data outputs created by this research.

A   U.S. Direct Investments Abroad and Foreign Investments in the U.S.

We exploit three main data sources to study the profitability of U.S. direct investments abroad and foreign direct investments in the United States. The key data source used in the literature is the international macroeconomic accounts. We supplement this source with data from the BEA survey of the activities of multinational enterprises and IRS tabulations of corporate income tax returns. In this section we start by presenting these three data sources, and then discuss how we use them to analyze the profitability of U.S. and foreign multinationals.

A.1   Main Data Sources

A.1.1   International Macroeconomic Accounts

The international macro accounts include the balance of payments and the international investment position of the United States. We used the latest version of the international macro accounts available on the Bureau of Economic Analysis' website as of January 2018.[2] The raw data are collected and organized in the sheets "Assets(BoP)" and "Liabilities" of the file WrightZucman2018Appendix.xlsx. The data generally comply with the 6th edition of the IMF

---

[1]Available online at: http://gabriel-zucman.eu/exorbitant.
[2]https://www.bea.gov/international/

(2009) balance of payments manual, ensuring that meaningful international comparisons are possible (see Section B below for a detailed discussion). Most of the balance of payments and position series available online in BEA's interactive system start in the early 1980s (1982 for U.S. direct investment abroad; 1980 for foreign direct investment in the U.S.); we extended the series to 1966 (and in some cases 1950) by using Department of Commerce paper publications[3] and Excel files made available online by the BEA.[4] Pre vs. post-early 1980s series are not perfectly homogeneous. Consistent with internationally-agreed guidelines, modern series do not treat capital gains as income; by contrast, pre-1980s series include capital gains into reinvested earnings on direct investment. The way we piece the series together is precisely described in the sheets "Assets(BoP)" and "Liabilities" of the file `WrightZucman2018Appendix.xlsx`(see comments and formulas in the relevant columns).

As explained in the Working Paper, the international macroeconomic accounts of the United States do not allow one to study the sectoral composition of U.S. investments abroad properly. More than half of U.S. direct investment abroad is intermediated through holding companies (many of which located in offshore tax havens) in 2015. Following internationally-agreed guidelines, statistics reported in the international macro accounts are allocated to the industries and countries of the affiliates with which the U.S. parent companies have direct transactions and positions, and hence more than half of the foreign direct investment of the United States show up as investments in holding companies today. To study the sectoral composition of U.S. direct investments abroad, one needs to use other data sources, to which we now turn.

A.1.2   BEA Survey of the Activities of Multinational Enterprises

BEA Survey of Foreign Operations of U.S. Multinationals.   The United States has been compiling particularly detailed data on the activities of U.S. multinational companies (and foreign multinationals operating in the United States) since the 1950s. These data are compiled by the Bureau of Economic using mandatory surveys.[5] The first modern survey of the activities of U.S. multinationals was conducted in 1950. Since 1982, a survey is conducted annually; an exhaustive (census) benchmark survey is conducted every five years. The latest benchmark survey was conducted in 2014. These data are richer than the FATS currently compiled by

---

[3]U.S. Department of Commerce (1982), "Selected Data on U.S. Direct Investment Abroad, 1950-76"; U.S. Department of Commerce (1986), "U.S. Direct Investment Abroad: Balance of Payments and Direct Investment Position Estimates, 1977-81"

[4]See `https://www.bea.gov/international/di1usdbal.htm` for U.S. direct investment abroad, and `https://www.bea.gov/international/di1fdibal.htm` for foreign direct investment in the United States.

[5]The data are available at: `https://www.bea.gov/international/direct_investment_multinational_companies_comprehensive_data.htm`.

other OECD countries. In particular and importantly, they contain detailed decomposition of the profits made by affiliates of U.S. multinationals abroad, including foreign income taxes paid.

We downloaded all the online BEA tabulations of the post-1982 and the paper tabulations of the pre-1980s surveys; all the raw data are made available online at `http://gabriel-zucman.eu/exorbitant`. The latest available year was 2015 (preliminary results); the latest benchmark year for foreign affiliates of US multinationals was 2014; and the latest benchmark year for U.S. affiliates of foreign multinationals was 2012. The series are collected in the sheet "Assets(MOFA)" of `WrightZucman2018Appendix.xlsx`; we refer the reader to this sheet for links to the raw data and all relevant details.

A.1.3 IRS Corporate Income Tax Returns

See notes in "Assets(BoP)" of `WrightZucman2018Appendix.xlsx`.

A.2 Profits of U.S. Multinationals Abroad and Foreign Multinationals in the U.S.

A.2.1 Profits of U.S. Multinationals Abroad (Table A.1)

Table A.1[6] reports estimates of the profits made by U.S. multinationals abroad, before vs. after foreign corporate income taxes. We compare and reconcile these profits as recorded in the international macro accounts and in the BEA survey of the foreign activities of U.S. multinationals. Throughout this paper, we work with economic accounting concepts, i.e., internationally agreed concepts of income and wealth defined in the System of National Accounts (United Nations, 2009). Pre-tax profits (or equivalently, pre-tax equity income) are defined as corporate operating surplus net of capital depreciation and after net interest payments. This is typically what governments attempt to tax with the corporate income tax (as depreciation and interest payments are typically tax deductible). Pre-tax profits equal dividends paid, plus reinvested earnings, plus corporate income taxes paid. After-tax profits (or equivalently, after-tax equity income) are defined as pre-tax profits minus corporate income taxes paid.

In col. 1 of Table A.1, we report the after-tax foreign profits of U.S. multinationals as recorded in the international macroeconomic accounts (i.e., the sum of dividends and reinvested earnings on U.S. direct investment abroad—USDIA—without current-cost adjustment: lines 13 plus 15 of Table 4.2, "U.S. International Transactions in Primary Income on Direct Investment" in the international macro accounts). In 2015, after-tax foreign profits amount to $397.3 billion.

---

[6]Appendix Tables are not printed at the end of this document but can be accessed in the file `WrightZucman2018Appendix.xlsx` available at `http://gabriel-zucman.eu/exorbitant`

In col. 4, we report the after-tax profits of the majority-owned affiliates of U.S. multinationals in the BEA survey. We compute these after-tax profits as "profit-type returns" (as reported in the BEA survey Table II.F.1) minus "foreign income taxes" (as reported in the BEA survey Table Table II.D.1). Equivalently, after-tax profits can be computed from the BEA survey table II.D.1 as "net income" (reported in Table A.1, col. 5) minus "income from equity investments" (reported in Table A.1, col. 6) minus "capital gains" (reported in Table A.1, col. 7) minus a small residual category (reported in Table A.1, col. 8) which reflects adjustments needed to convert profits from a financial accounting basis to an economic accounting basis.[7]

The after-tax foreign profits of U.S. multinationals are very similar whether one looks at the international macro accounts ($397.3 in 2015) or at the BEA survey ($390 billion in 2015). Note that the two numbers have no reason to be perfectly equal. The balance of payments (Table A.1, col. 1) considers all affiliates that are more than 10% owned by the United States, and pro-rates profits by the ownership stake of the U.S. parent. By contrast, the BEA survey data reported in col. 4 only consider majority-owned affiliates (i.e., that are more than 50% owned by U.S. parents) and does not pro-rate profits (i.e., all profits are counted, whether affiliates are 51%-owned or 100%-owned by U.S. parents). As shown in col. 12 of Table A.1, the ratio between the after-tax profits recorded in the balance of payments and in the BEA survey is always close to 100%: it has fluctuated between 100% and 120% since 1966.

A key advantage of the BEA survey is that it includes information about foreign income taxes paid, in contrast to the international macro accounts which are on an after-tax basis. In col. 9 of Table A.1, we report the foreign income taxes paid by the majority-owned affiliates of U.S. multinationals ($91 billion in 2015). From there we compute their pre-tax profits (col. 10) as the sum of their after-tax profits and foreign taxes paid; and we compute their average foreign tax rate (col. 11) as foreign taxes divided by pre-tax profits. The average foreign tax rate was 19% in 2015, way below the statutory corporate tax rate of the main countries in which U.S. multinationals have real production activities (e.g., 32% in Japan, 30% in Germany, 34% in France, 30% in Mexico, 26% in Canada, 30% in Australia, etc.[8]). In cols. 2 and 3 of Table A.1, we apply this tax rate to the foreign after-tax profits recorded in the balance of payments (col. 1) to estimate the pre-tax foreign profits of U.S. multinationals on a balance of payments basis.

---

[7]In Table A.0, we summarize the differences between what is measured by each of the three foreign profit measures available in the international macro accounts and in the BEA survey: "net income" (BEA survey Tables II.D), "profit-type return" (BEA survey Tables II.F) and "direct investment income on equity" (International transaction accounts, Table 4.1 line 4).

[8]See Tørsløv, Wier, and Zucman (2018), Appendix Table F.1b.

A.2.2 Profits of U.S. Multinationals Abroad: Oil vs. Other Sectors (Table A.2)

Table A.2 decomposes the foreign profits and taxes of majority-owned affiliates of U.S. multinationals into profits and taxes of affiliates in the petroleum sector (cols. 1 to 3) vs. other sectors (cols. 4 to 6). Throughout this work, the petroleum (or equivalently, oil) sector includes oil and gas extraction, manufacturing of petroleum and coal products, and wholesale trade of petroleum and petroleum products. Data are from the BEA survey Table II.F.2 (for pre-tax profits: column "profit-type return") and Table II.D.2 (for foreign income taxes). In col. 7 we report the share of all majority-owned affiliates' after-profits made by affiliates in the petroleum sector, and in col. 8 we report the same statistic but on a pre-tax basis. The share of petroleum in foreign pre-tax profits was as high as 70% after the first oil shock; but at that time oil-producing countries imposed high tax rates (see col. 10), such that petroleum accounted for a mere 40% or so of after-tax profits. In the 2000s, oil accounted for around 25% of foreign pre-tax profits; because tax rates impose by oil-producing states were much lower than during the first oil shock, on an after-tax basis petroleum accounted for more than 20% of all foreign profits. Col. 9 reports crude oil prices in constant 2014 US$ (using the PCE deflator); the share of oil in the profits of U.S. multinationals is strongly correlated with oil prices.

A.2.3 Profits of U.S. Multinationals Abroad, Excluding Oil: Havens vs. Non-Havens (Table A.3)

Table A.3 decomposes the foreign profits of U.S. multinationals in all sectors other than the oil sector in two: profits made by haven affiliates vs. non-havens affiliates. Throughout this work, our list of tax havens includes Ireland, Luxembourg, the Netherlands, Switzerland, Bermuda and Caribbean havens (i.e., all the countries listed under "other Western hemisphere" in the BEA survey data), and Singapore. This is the same list of tax havens as the one considered in Zucman (2014) and it includes all the countries where the effective tax rate faced by majority-owned affiliates was below 10% in 2015 (plus the Netherlands where the effective rate was 12%).[9] Throughout the 1966-2016 period, the effective tax rate in this group of tax havens has been 20–30 points smaller than in non-haven countries.

---

[9]A borderline case is Hong Kong where the effective tax rate was 14%; including Hong Kong in our list of tax havens would not substantially change any findings of the paper, as the amount of pre-tax profits booked in Hong Kong by U.S. affiliates (e.g., $8.7 billion in 2015) is small compared to the pre-tax profits booked in our group of tax havens ($213 billion in 2015).

A.2.4 Profits of Foreign Multinationals in the United States (Table A.4)

Table A.4 shows the profits made by foreign multinationals in the United States. It is the analogue of Table A.1—but for foreign investments in the United States instead of U.S. investments abroad. Just as in Table A.1, we compare and reconcile the profits as recorded in the international macro accounts and in the BEA survey.

In col. 1, we report the after-tax U.S. profits of foreign multinationals as recorded in the U.S. balance of payments (i.e., the sum of dividends and reinvested earnings on foreign direct investment in the United States—FDIUS—without current-cost adjustment: lines 50 plus 52 of Table 4.2, "U.S. International Transactions in Primary Income on Direct Investment" in the international macro accounts). In 2015, these profits amount to $120.3 billion.

In col. 4, we report the after-tax profits of U.S. affiliates of foreign multinationals recorded in the BEA survey. From 2002 onward the data is for all majority-owned U.S. affiliates; in 2001 and before it is for all non-bank affiliates. We compute after-tax profits as "net income" (as reported in the BEA survey Table II.D.1, see Table A.1, col. 5) minus "capital gains" (as reported in the BEA survey Table II.D.1, see Table A.1, col. 6). We do not subtract income from equity investments (which we report as a memo item in col. 9). Most income from equity investments is received by firms in the petroleum sector and in the holdings sector. One interpretation is that these dividends are paid by non-U.S. affiliates to U.S.-based holding companies (which themselves are ultimately owned by foreign parents). Because foreign intra-group dividends were taxable in the United States before 2018, this income needs to be considered when computing effective U.S. tax rates.[10] Because we do not subtract income from equity investments, the profits figures reported in Table A.4 must be interpreted as profits made in the United States and outside of the United States by U.S. affiliates of foreign multinationals (and not just profits made in the United States).[11]

The after-tax profits of foreign multinationals as recorded in the balance of payments (col. 1; $120.3 billion in 2015) are usually close to the after-tax profits made by U.S. affiliates of foreign multinationals recored in the BEA survey (col. 4; $116.6 billion in 2015). As shown by col. 11, since 2002 the ratio between the two series has been close to 100%.[12] Before 2002, when

---

[10]This is in contrast to income from equity investments earned by foreign affiliates of U.S. multinationals (such as dividends received by Dutch holding companies from their French affiliates), which is typically tax exempt abroad, hence must be disregarded when computing foreign effective tax rates on the foreign profits of U.S. multinationals, as we do in Table A.1.

[11]If one is interested in profits made in the United States only, then one needs to subtract income from equity investments. Subtracting income from equity investments from the pre-tax profits reported in col. 8, one gets a number which is close to the "profit-type returns" reported in Table II.F.1 of the BEA survey.

[12]The only notable exception is 2009, when FDIUS income is about 1.7 times larger than the after-tax profits

col. 4-9 include all non-bank affiliates (instead of majority-owned affiliates only), the profits of U.S. affiliates are higher than FDIUS equity income (which is to be expected since the balance of payments pro-rates profits by ownership shares).

In col. 10; we report the effective tax rate paid in the United States by U.S. affiliates of foreign multinationals. We compute this rate by dividing the corporate income taxes paid by U.S. affiliates (col. 7) by their pre-tax profits (col. 8). A number of results are worth noting. First, on average since 2010 this tax rate has been 27%, below the statutory federal tax rate of 35% (plus State taxes of around 4% on average).[13] By contrast, historically the effective tax rate has been higher than the statutory rate, e.g., 58% on average in the 1990s. Even in years when U.S. affiliates recorded losses on a pre-tax basis (1991) or barely positive pre-tax profits (1990, 1992, 2001), they paid non-negligible taxes to the United States. One possible interpretation is that this is in part the result of anti-shifting rules that limit erosion of the U.S. base.

Just like for U.S. direct investments abroad, the oil sector accounts for a sizable part of foreign investments in the United States. The key difference, however, is that foreign investments in the U.S. oil sector are much less profitable than U.S. investments in the foreign oil sector. As measured by the ratio of pre-tax profits to wages, for instance, there is a one order of magnitude difference in profitability (Appendix Figure A.5). For instance, the pre-tax profits of foreign firms in the U.S. oil sectors amounted to 43% of wages paid in 2013, vs. 972% for foreign affiliates of U.S. multinationals.

A.3 Assets of U.S. Multinationals Abroad and Foreign Multinationals in the U.S. (Table A.5)

Table A.5 reports statistics on USDIA and FDIUS positions at current cost. We decompose positions into equity vs. debt positions. The data are from the international macro accounts (see links in the Excel files to the raw data). Col. 13 and 14 shows that on an asset/liability basis, debt accounts for 30%–50% of U.S. DI liabilities, vs. only 15%–20% of U.S. DI assets. Loans by foreign affiliates to their U.S. parents (which show up as DI liabilities on an asset/liability basis) were particularly high through to the late 1970% (accounting for 30%–40% of all DI

---

of U.S. affiliates. This may in part be due to difference of timing, as the data reported in the BEA survey are on a fiscal year basis (the fiscal year of an affiliate is defined as the financial reporting year that ended in the calendar year) while the international macro accounts are on a calendar year basis. It could also in part be due to other differences between economic and financial accounting concepts.

[13]One possible explanation for this relatively low effective tax rate is that some of the income from equity investments received by U.S. affiliates (which we include in profits) is eligible for the dividend received deduction—the federal tax deduction applicable to certain corporations that receive dividends from related entities.

liabilities). This partly reflects the fact that U.S. firms relied on offshore finance affiliates (e.g., in the Netherlands Antilles) to borrow money abroad to avoid withholding taxes associated with direct borrowing from foreign lenders. Absent this tax, US firms may have borrowed directly abroad, in which case the associated debt would have been classified as portfolio (instead of direct) investments. However, even after the abolition of this tax in 1984 (and the associated decline in borrowing by US parents from foreign affiliates, from $75 billion in 1984 to $58 billion in 1988) the United States has remained characterized by a high share of debts in its DI liabilities (33% in 2016, twice as much as on the asset side).

In Table A.5b, we decompose U.S. DI equity assets into assets in the oil vs. non-oil sector. We compare and reconcile the equity assets recorded in the international macro accounts (equity assets at historical costs, cols. 1 to 3) and in the BEA survey data for majority-owned foreign affiliates (owner's equity minus investments in affiliates: cols. 4 to 9). As shown in col. 11, total equity assets (across all sectors) are similar in the two datasets. However in recent years, equity assets in the oil sector are twice larger in the BEA survey than in the international macro accounts. This owes to the fact that in the BEA survey affiliates are classified in their industry of primary activity, in contrast to the international accounts where they are classified in the sector with which the US parent has an immediate relationship (i.e., increasingly so holding companies). As shown in col. 10, up to the mid-1980s about 25% of U.S. equity DI assets were in the oil sector (but as much as 50% of U.S. DI after-tax equity income). This share has fallen to less than 10% since the mid-1990s (but oil profits have remained large, as much as 25% of U.S. DI after-tax equity income).

In table A.5c, we decompose U.S. DI equity assets into assets in tax havens vs. non-haven countries. Just as in Table A.5b, we compare and reconcile the equity assets recorded in the international macro accounts (equity assets at historical costs, cols. 1 to 3) and in the BEA survey data for majority-owned foreign affiliates (owner's equity minus investments in affiliates: cols. 4 to 9). Because of the growing use of holding companies in tax havens, the international macro accounts somewhat over-estimate the share and the rise of DI assets in tax havens. According to the BEA data (col. 10), 40% of equity assets were in tax havens in 2015 (vs. 55% in the international macro accounts). The share of equity assets in havens rose (as recorded in the BEA data) from 10% in 1966 to 20-25% in the mid-1980 (largely reflecting the rise of holdings in Caribbean affiliates, through to the abolition of the 30% withholding tax on interest paid by U.S. borrowers to foreigners). It stabilized at that level before rising again starting in the late 1990s, as U.S. multinationals retained earnings in their haven subsidiaries. In 2005

the repatriation tax holiday led to one-time decline (reflecting repatriation of earnings, hence a decline in the stock of financial assets held in haven subsidiaries). As shown by Table A.5d, when one excludes the oil sector from both haven and non-haven countries, then the share of tax havens in U.S. DI equity assets rises to 42% in 2015.

A.4 Rates of Returns on Foreign Direct Investment (Tables A.6 to A.9)

Table A.6 decomposes direct investment income (as recorded in the international macro accounts) into equity income vs. interest. Data are from the international macro accounts (see links in Excel to the raw data). To properly analyze rates of returns on DI, it is critical to separate equity income from interest, because profit shifting affects rates of return on equity and rates of return on debt in opposite direction. For instance, if a foreign multinational wants to shift profits out of its U.S. affiliate, it can lend it money at high interest, which will show up as a high rate of return on U.S. DI debt liabilities, and low rate of return on U.S. DI equity liabilities.

Table A.7 show rates of return on direct investments (on an outward/inward and asset/liability basis), for equity and debt separately. Rates of returns are computed by dividing income flows in year t (as reported in Table A.6) by positions at the end of year t (as reported in Table A.5). Equity positions are at current cost but income flows are without current-cost adjustments. In Table A.7b we re-do this computation but adding BEA's current-cost adjustment to DI income flows.[14] We estimate current-cost adjustments before 1982 when no official BEA estimates are available (see Excel formulas). We compare the rate of return on U.S. direct equity investment abroad, foreign direct equity investment in the United States, and U.S. domestic corporate capital in cols. 1, 6, and 11.[15]

Table A.8: Rates of return on direct investment equity assets. To be completed. Table A.9: Rates of return on direct investment equity liabilities. To be completed.

---

[14]BEA defines the current-cost adjustment as follows: "This adjustment converts depreciation charges to a current-cost, or replacement-cost, basis; it adds charges for depletion of natural resources back to income and reinvested earnings because these charges are not treated as production costs in the national income and product accounts; it reallocates expenses for mineral exploration and development across periods, so that they are written off over their economic lives rather than all at once.", see `https://www.bea.gov/scb/pdf/2008/09%20September/0908fdius_usdia_text.pdf`.

[15]To compute rates of returns on U.S. domestic corporate capital, we divide U.S. corporations' net dividends and reinvested earnings with inventory valuation and capital consumption adjustments (NIPA Table 1.14 lines 14+15) by the net stock of current-cost fixed assets of the U.S. domestic corporate sector (BEA's fixed assets Table 6.1 line 2).

A.5 Profitability of U.S. Multinationals Abroad: Details (Tables A.10 to A.18)

Tables A.10 to A.18 provide supplementary details on the capital stocks, compensation, and profits of U.S. multinationals abroad and foreign multinationals in the United States (source is the BEA survey).

B Cross-Country Data

B.1 Cross-Country DI Equity Returns, 2014-2016

B.1.1 Returns to DI Equities for OECD Countries

Table B.1 presents direct investment (DI) returns differentials for OECD countries, and Table B.2 presents estimates of DI equity asset and liability returns for OECD countries, in both cases averaged over the 2014–2016 period. The sample includes all OECD countries, except Slovenia, Iceland, and Greece which incur losses on their DI liabilities in some years (Greece also has negative returns on its DI equity assets in 2015 and 2016). We choose 2014–2016 as the time period for reasons of comparability, as many OECD countries implemented the latest standards for FDI statistics (the OECD fourth benchmark definition of foreign direct investment, BMD4) in September 2014.[16]

Returns are income yields, they do not include capital gains. They are computed by dividing DI equity earnings in period t, by the DI position in $t-1$. For equities, returns are usually identical whether they are measured on an asset/liability basis or on a directional basis, because reverse equity investment (i.e., equity investments by affiliates in parent companies) are either not measured (as in the United States) or negligible (e.g., France). Both income and positions data are extracted from IMF Balance of Payments Statistics (BOPS).[17]

As measured in IMF BOPS, the United States has on average a DI equity return differential of 4.2pp over 2014-2016 (Table B.2, col. 3). No other country has such a large differential, with the exception of the Slovak Republic. The large DI equity differential for the Slovak Republic is driven by uniquely high returns on the asset side (14.0%). One likely interpretation is that the DI equity assets reported by the Slovak Republic are too low and therefore returns are inflated. This is clear from the differences between reported and derived outward equity positions in the IMF's Coordinated Survey on Direct Investment (CDIS). Table T.B7 shows that the Slovak

---

[16]Mexico and Israel currently do not comply with BMD4.
[17]http://data.imf.org/?sk=7A51304B-6426-40C0-83DD-CA473CA1FD52

Republic's derived outward DI equity position is roughly twice the size of its reported position. In no other country is there such a large gap between derived and reported outward equity positions. Disregarding the Slovak Republic, the United States has the largest DI equity yield gap over the period.

The U.S. DI equity differential of 4.2pp recorded in BOPS is based on the BEA's market value estimate of the U.S. DI equity position. To form its market value estimates, BEA estimates the value of liabilities taking DI equity positions at historical cost and revaluing them using the S&P 500. For assets, they revalue using a weighted index of indices for other countries, from Morgan Stanley Capital International (MSCI). For reasons explained in more details below, it may make more sense to compare the United States to other countries using the current cost method to value DI equity positions. When we do this the U.S. differential falls to 3.3pp, which is still the largest return differential in our sample. The BEA also presents DI equity positions on a historical cost basis—when we do this the differential is still 3.3pp. By all measures the U.S. case is exceptional.

The country with the largest negative DI equity yield differential is Ireland (-7.9pp on an asset/liability basis), driven by high returns on the liability (side -11%). As discussed in Tørsløv, Wier, and Zucman (2018), large returns on DI equity liabilities are one of the traces of profit shifting in the balances of payments of tax havens (they are the flip side of the abnormally high trade balances and DI net interest payments caused by intra-group transfer price manipulations and debt shifting). Eastern European countries with relatively low corporate tax rates also have large negative DI equity yield differentials driven by high returns on liabilities (Czech Republic, Poland, Hungary). In addition, two high-tax countries countries—Japan and New Zealand—have surprisingly high recorded returns on their DI equity liabilities.

In New Zealand, there is some evidence that the large returns on the liability side relative to the asset side may partly be driven by the financial sector. NZ does not publish FDI income by sector, but it does publish stocks of inward FDI by sector. From this we can see that Finance and Insurance accounts for over a third of inward FDI. However, it barely contributes to outward FDI at all (less than 7% over 2014-16). Considering NZ's aggregate IIP, for which there is an industry breakdown, we also see that liabilities in finance and insurance earned a return that was 1.4pp higher than all other investments. Finance and Insurance outward investments earn an even higher rate of return compared to other investments (2.2pp). Taken together with the facts that over 2014-16 NZ paid a return of 2.8% on all its international investment liabilities excluding DI equities, but earned an average of 11.2% on DI equity liabilities, it seems that the

large negative DI equity differential was partly driven by the relatively large share of finance and insurance in inward compared with outward FDI. Finance and Insurance are sectors in which the value of unlisted DI equity positions may be underestimated because of their intangible nature, which could rationalize part of the observed returns.

Regarding the case of Japan, we have contacted statistical authorities to learn more about potential explanations but have not heard back yet.

B.1.2 Comparability of DI equity returns differentials across countries

Curcuru et al. (2013) caution against making cross country comparisons of FDI returns, due to the lack of harmonization of FDI compilation methods across countries. A number of points are worth noting about the reliability of the cross-country comparisons presented in Table B.2. First, comparing cross country returns differentials is more sensible than comparing just returns to assets or liabilities. For example, if DI equity positions are measured differently in countries A and B, but both countries apply the same method to their assets and liabilities, then we should not expect this to affect the returns differentials in a way that would make them incomparable.

Second, in recent years there has been a move under the auspices of the IMF and the OECD to make direct investment income and position data more comparable. In September 2014, many OECD countries implemented the OECD's new benchmark definition of FDI (BMD4). It is for this reason that we consider returns over the period 2014–16. One of the objectives of BMD4 is to ensure "an international standard that provides the basis for economic analysis, especially for international comparisons". To assess the progress made in this area, we conducted an exhaustive investigation of the metadata on the methods used to compile FDI statistics, summarized in Appendix Table B.5. We focused our exploration on four key methodological aspects: the identification of direct investment relationships, reverse positions, the measurement of DI equity earnings, and the valuation of DI equity stocks. We discuss each in turn.

Identification of direct investment relationships. According to new international standards (BMD4 and BPM6), Direct Investment (DI) records cross-border investment associated with a resident in one economy having control, or a significant degree of influence, over the management of an enterprise resident in another economy. An immediate DI relationship is defined as owning equity that allows at least 10% of the voting power in the DI enterprise. It is distinct from portfolio investment (PI), where there is a largely anonymous relationship between the issuers and holders of PI equity and debt securities (less than 10% ownership). The relationship between the direct investor and its direct investment enterprises may be complex

13

and bear little or no relationship to management structures.

According to BMD4, direct investment relationships should be identified according to the criteria of the Framework for Direct Investment Relationships (FDIR). FDIR is a generalized methodology: it identifies all enterprises affiliated with a direct investor. In practice, FDI relationships are identified by a few variants of this. One is Direct Influence / Indirect Control (DIIC). It includes in DI all enterprises whose voting power are 10% or more directly owned, plus all enterprises that are controlled by them (ownership of more than 50% of voting power), plus all enterprises in a continuous chain of majority ownership (i.e., the first link can be non-controlling, but all subsequent links are controlling). So DI in DIIC is a subset of FDIR. Another is the Participation Multiplication Method (PMM). Here you multiply voting equity participation down all chains of direct or indirect ownership, and add up to get the total. If over 10% then it is a DI relationship between two entities. The United States uses PMM to identify DI relationships. PMM and FDIR are the most similar methods, whereas DIIC may identify fewer investment relationships as DI. FDIR is by far the most widely used method, so we can say that the United States is comparable to other countries in this sense.

Although there are some minor differences between the methods described above, they represent a significant improvement in the comparability of FDI statistics. Prior to the implementation of the new standards, it was not clear that countries were identifying FDI relationships in the same way. Now, "the 10% rule" is enforced across OECD countries with only minor variations.

Asset/liability vs. directional basis. Another aspect of categorising FDI relationships is the distinction between the asset-liability and directional basis. There are two differences between them, copied from OECD:

"Firstly, under the asset-liability presentation, the asset side includes all assets of both resident parent companies and of resident affiliates, and the liability side includes all liabilities of both resident parents and resident affiliates. In contrast, the outward investment (directional) consists only of resident parents, and the inward (directional) investment side consists only of positions of resident affiliates. The second difference is the treatment of reverse investment. Reverse investment is when an affiliate invests in its parent. Under the directional presentation, reverse investment is subtracted to derive the amount of total outward or inward investment of the reporting country. So, if a resident parent borrows money from one of its foreign affiliates, this is subtracted in calculating the reporting country's outward investment because it reduces

the amount of money that that country's parents have invested in their foreign affiliates. Similarly, if a resident affiliate lends money to its foreign parent, this is subtracted when calculating inward investment because it reduced the amount of money that the foreign parent had invested in that country. While reverse equity investment is to be treated the same way as reverse debt investment, it is so rare that most of the difference between the two presentations is due to differences in the treatment of reverse debt investment."

In practice, FDI equity positions and income flows are very similar whether one uses the asset/liability or directional basis, because reverse equity positions are rare. In the United States, the BEA found in their 2009 Benchmark survey that reverse equity investment was very small and decided to exclude such positions (i.e., to measure DI equity on an asset/liability basis exclusively).

Measurement of DI equity earnings. DI equity earnings are the returns to DI equity positions. They include distributed and reinvested earnings. The specific concerns about comparability of rates of returns outlined by Curcuru et al. (2013) regard the measurement of DI earnings.

Firstly, they noted the differences in measured returns that can occur between countries that measure earnings according to the Current Operating Performance Concept (COPC), and those that did not (and primarily used the "all-inclusive concept"). However, with the latest standards, almost all OECD countries now use COPC. Only Mexico and Turkey are not compliant. "Partially" compliant are Australia, Austria, Chile, Japan, Korea and Spain.

Secondly, Curcuru et al. (2013) noted the effect that the inclusion of earnings from indirectly owned direct investment enterprises can have on measured returns. Looking at the metadata, most countries—including the United States—do include such earnings. Those that do not are Austria, Belgium, France, Germany, Luxembourg, Norway, and Turkey. However, the metadata also shows that these countries (except for Austria) also do not include the equity of indirectly owned enterprises in their DI equity positions, so this should not necessarily affect rates of return. There is little reason to think that returns differentials for indirectly owned enterprises should be different to that of directly owned enterprises, so it seems unlikely that this issue biases cross-country comparisons significantly.

Valuation of DI equity positions. The general principle underlying valuation in BMD4 is that DI equity positions should be at market value. However, most DI equity is not listed, so compilers must use proxy for the market value of unlisted DI equities. BMD4 provides

guidelines on which methods for doing this are recommended: Recent transaction price, Own funds at book value, Net asset value, Market capitalization method, Present value of expected earnings, Apportioning market value of global enterprise group to local operation. But prior to BMD4, countries could have been using a range of methods that would lead to very different estimates of positions and therefore returns.

In practice, almost all countries now estimate unlisted DI equities using Own funds at book value (OFBV). OFBV involves valuing an enterprise at the value in its books following International Accounting Standards (IAS). It is equal to the value of shareholder's equity in the direct investment enterprise's balance sheet, and requires the use of the books of the enterprise. In theory, firms should periodically revalue their assets to market prices from the value on the books previously.

One issue here is that it is up to the discretion of the firm to revalue their assets, so it is not clear that this method always produces a good proxy for market value. However, the metadata shows that each country applies the same methods for estimating unlisted equities to its assets and liabilities, so it is not clear that this renders returns differentials incomparable.

The US DI equity returns differential of 4.2pp as recorded in BOPS comes from a different method than that used by most other countries. Most other countries use market prices for listed equity and OFBV for unlisted equity. The BEA's "market value" measure which produces the 4.2pp differential takes a historical cost measure of all DI equity and revalues it according to stock market indices (S&P500 and MSCI). The differences between this method and OFBV are clear. For this reason, perhaps the more internationally comparable US DI equity differential is the one on a current cost basis. The current cost method revalues DI equity positions from historical cost using a range of methods for different assets—a key one being the BEA's perpetual inventory method for fixed assets. Using current cost estimates, the US differential falls to 3.3pp, which remains uniquely large in our sample of comparable countries. Table B.4 compares returns on DI for the United States using the different measures of positions used by BEA (market value, current cost, and historical cost).

B.1.3 Comparison of DI equity yields

As shown by Appendix Figbre B.2, there is a strong correlation between the statutory corporate tax rate and the measured returns differential on DI equity. In the figure, the data is pooled over 2014-16 and binned by corporate tax rates. Measured returns for Ireland and the United

States are annotated[18]. Positions are measured at current cost for the United States to improve comparability with other countries, as discussed above. The sample is the set of OECD countries excluding Slovenia, Greece, Iceland, Mexico, Israel, Turkey and the Slovak Republic. Slovenia, Greece and Iceland are excluded because of negative rates of return. Slovak Republic is excluded because of the implausibly large returns on its asset side (see section B.1.1). Mexico and Israel are not compliant with BMD4 (OECD). Turkey does not use COPC for the measurement of earnings, which may explain why it has very low returns on its assets and liabilities. As documented by Curcuru et al (2012), the impact of not applying COPC can be large, so we exclude Turkey. The source is the IMF balance of payments statistics (BOPS).[19]

A potential objection to interpreting the correlation shown in Figure B.2 as reflecting profit shifting is that there could be other factors driving returns differentials that are correlated with the corporate tax rate. Previous literature seeks to explain the U.S. DI yield differential by the relative riskiness and maturity of U.S. direct investment abroad compared with foreign direct investment in the United States.[20] Countries with mature, safe businesses might have high corporate tax rates. Corporate taxes might also have a real effect on the business activities of firms. Perhaps high taxes reduce the incentive to earn high profits. If this supply-side effect of taxes was true, then returns on liabilities in high-tax countries would tend to be low.

To assess the plausibility of these concerns, we study equity returns differentials on portfolio investment (PI). Equity PI returns reveal information about real differences in profitability across countries, due, e.g., to differences in risk, maturity, or to supply-side effects of taxes. Remember that income from direct and portfolio equity investment both measure the flows of profits of firms with cross-border ownership. The key difference is that a direct investor has some control over the operations of the enterprise—where "control" is defined as crossing the somewhat arbitrary 10% ownership threshold—whereas a portfolio investor is passive.[21] In direct investment enterprises, foreign parents can affect where profits are reported and try to shift profits out of high-tax places. By contrast, portfolio investors have no control on this.

---

[18]To ensure we have graphs with the US and Ireland annotated on, that are not confusing, we *binscatter* over the sample excluding the US and Ireland, and then plot a line of best fit after adding the US and Ireland back into the series. This does not alter the slope of the line of best fit compared with a *binscatter* on the whole sample, but prevents there being multiple markers around datapoints for the US and Ireland

[19]Series `bxipide_bp6_usd` for income credits, `bmipide_bp6_usd` for income debits, `iade_bp6_usd` for assets, and `ilde_bp6_usd` for liabilities.

[20]Huang and Mascaro (2004), Habib (2010), Lupo et al. (1978), Landefeld et al. (1992), Grubert et al. (1993), Laster and McCauley (1994), Feldstein(1994), Grubert (1997), Mataloni (2000) and McGrattan and Prescott (2010)

[21]There is one other difference: investment income from DI equity includes reinvested earnings, while income from PI equity only includes dividends. In principle the corporate tax has no reason to affect the ratio of distributed to retained profits, since it typically applies to all profits whether distributed or retained.

Reported profits can be decomposed into their real and shifted components. By conditioning on the PI equity differential we should be left with the relationship between the corporate tax rate and the shifted component of DI equity return differentials. Appendix Figure B.2d[22] shows that a positive and significant relationship between DI equity returns differentials and corporate tax rates remains after conditioning on PI equity returns differentials, GDP per capita, and EU membership. This result lends support to the view that there is a causal effect of corporate tax rates on profit shifting and hence recorded DI equity returns. The source for PI income and assets is the IMF BOPS[23]. See Appendix data file for further details on sources and notes.

Figures B.2b and B.2c show rates of returns on DI equity liabilities (OECD countries, 2014-16). Figure B.2b uses the same methodology as in figure B.2, but presents returns on the liability side only. Here we also exclude Japan and NZ as on the liability side these are two countries where returns seem implausibly large, so including them in the sample would make comparisons less meaningful.Figure B.2c compares after-tax and pre-tax returns to DI equity liabilities across countries. To compute the before tax returns earned by foreign multinationals in each reporting country, we divide the after-tax returns reported in BOPS by $(1 - \tau)$, where τ is a proxy for the effective rate of tax that foreign direct investment enterprises (multinationals) pay in each country. We proxy for the effective tax rate using BEA data on majority-owned foreign affiliates (MOFAs). The sample is the same as in figure B.2b, except now we have to exclude some countries where there is not sufficient BEA data to calculate the effective tax rates faced by MOFAs (see below for more details).

BEA survey data reports foreign taxes paid by US MOFAs by country, and using a measure of profits earned in each county we can therefore compute effective corporate tax rates faced by US multinationals in each country. This proxies for the effective tax rates faced by all other multinationals in the reporting country. The assumption is that the effective rate faced by US MOFAs in country i is more representative of the rate that a multinational from any country j would face in country i than an estimate of the effective corporate tax rate across the whole economy of i. We compute effective tax rates over the period 2010-2015 for each country, as at a bilateral level effective tax rates can be volatile from year to year.

The effective tax rate proxy is equal to foreign income taxes paid / (net income + foreign income taxes paid - capital gains - income earned from equity investment). We subtract capital gains and losses from profits to be consistent with balance of payments data in BOPS (which

---

[22]Because we do not annotate the US and Ireland here, the *binscatter* plot does not exclude them.

[23]PI equity income credits: `bxipipe_bp6_usd`, PI equity income debits: `bmipipe_bp6_usd`, PI equity assets: `iape_bp6_usd`, PI equity liabilities: `ilpe_bp6_usd`.

in line with the latest international standards do not treat capital gains as income). Income from equity investments must also be subtracted from net income, as this is mostly (post-tax) dividend flows between affiliated firms which are typically not taxable. When there is missing data for capital gains or income from equity investments, we infer them by assuming that the ratio of the missing data to total net income is the same as at the world level. Table B.3 contains the estimated effective tax rates faced by US MOFAs. The underlying raw data comes from Table II.D 1 of annual BEA surveys called "*Worldwide Activities of U.S. Multinational Enterprises*". These can be found at `https://www.bea.gov/international/usdia2014p.htm`. We compute effective tax rates for OECD countries excluding Slovenia, Greece, Iceland, Estonia, Finland, Hungary, Latvia, Mexico, Portugal, Slovak Republic, Turkey, Israel and Sweden. The remaining are the countries for which there is enough data to estimate the effective corporate tax rates faced by US MOFAs.

Figure B.3 computes after-tax returns on DI equity assets. As the figure shows, there is a small positive correlation between returns on DI equity assets and corporate income tax rates, but this correlation is much smaller than the negative correlation observed for liabilities. One interpretation of the small positive correlation on the asset side is that firms from high-tax countries shift more profits out of their own country to low-tax foreign countries to avoid the high domestic corporate tax rate.

B.2 Do U.S. Multinationals Use Tax Havens More than Others?

B.2.1 Evidence From OECD Bilateral FDI Income Data

Table B.6 shows that over 2014-16, the share of the top five havens (Ireland, Luxembourg, Netherlands, Singapore, and Switzerland) in total USDIA income is 47.5%. This compares with 21.9% for the European countries for whom the data is available to make such a calculation, and 14.5% for other OECD countries. The share of the top 5 havens in total outward FDI income (directional) is the income reported as being earned in the top 5 havens over the three years 2014-2016, divided by the total for the world over the same period. The raw data is extracted from the OECD website:`http://stats.oecd.org/Index.aspx?QueryId=64218`

Of the 18 countries with sufficiently good coverage in their bilateral FDI income data to calculate the share of the 5 havens, the US, Belgium and Hungary had far larger shares than all other countries. How do we interpret this? That the US has a large share of havens is consistent with the view that the 1996 check-the-box regulations facilitated profit shifting by U.S. multinationals from foreign high-tax countries to tax havens. Belgium and Hungary are the

only countries included in our sample that we might consider as havens themselves, so the large reported incomes from other havens in these countries is consistent with funds being channeled through these jurisdictions—both countries have very large shares of havens in their inward equity positions (see table B.7).

C List of files

The following files are available online at `http://gabriel-zucman.eu/exorbitant`:

- `WrightZucman2018.pdf`: text of the Working Paper

- `WrightZucman2018Appendix.pdf`: text of the Online Appendix

- `WrightZucman2018.xlsx`: main tables and figures (included in main paper).

- `WrightZucman2018Appendix.xlsx`: appendix tables (not printed at the end of this document) and appendix figures (printed at the end of this document).

- `WrightZucman2018Programs.zip`: Stata programs and data that allow to reproduce the cross-country figures included in the Appendix Section B

- `WrightZucman2018.zip`: main tables and figures, Stata programs, and appendix tables and figures with links to the raw data.

- The raw data that we used in this research are made available in the form of a Dropbox link directory. The directory includes a large number of raw files downloaded from various data sources (BEA, IRS, etc.).

Figure A.0: The net foreign assets and income of the United States (% of U.S. national income)
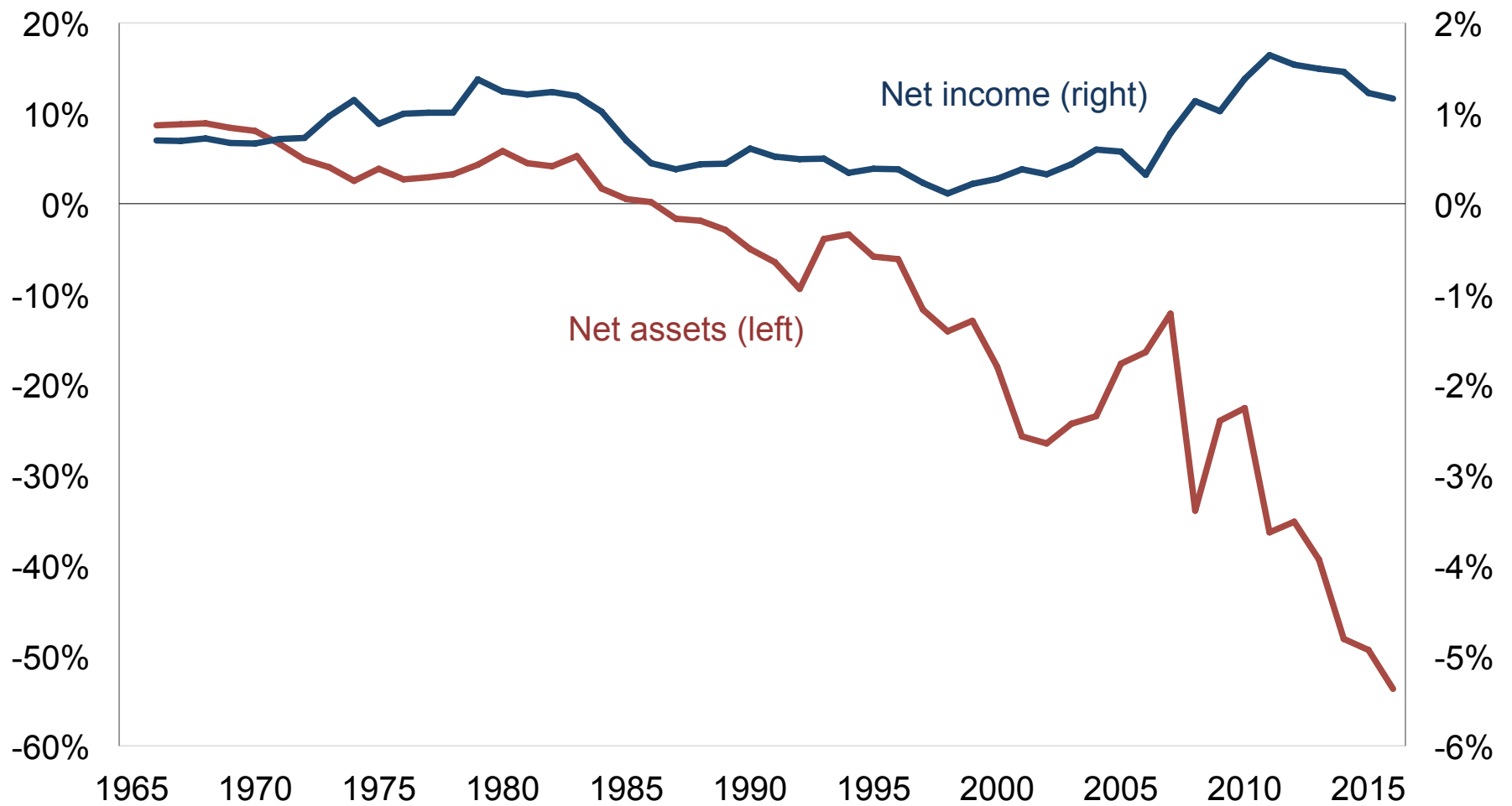
Figure A.1a: The net foreign income of the United States (% of U.S. national income)

FDI income

All income

Portfolio and other income
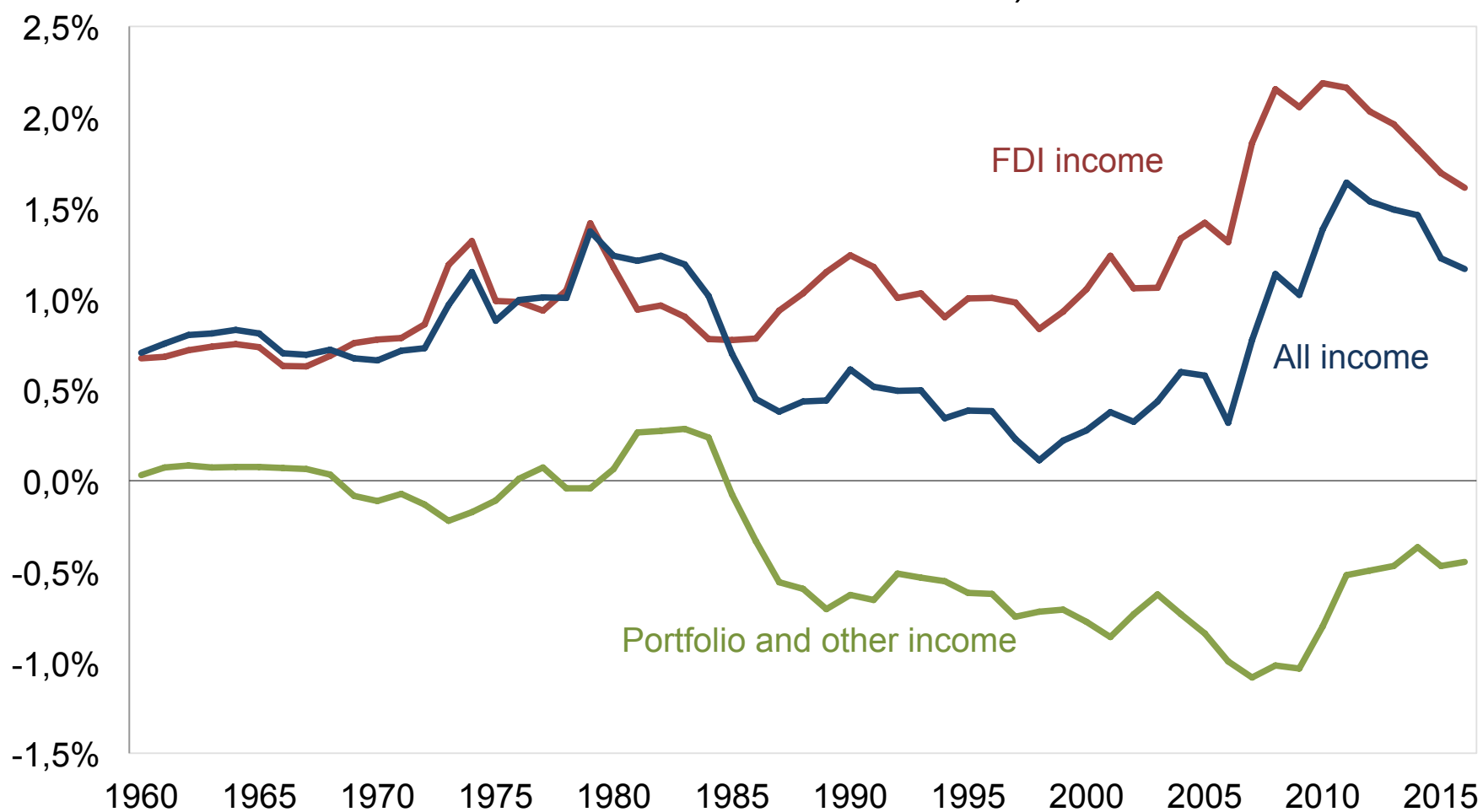
Figure A.1b: Return on US direct investment equity assets & liabilities (no current-cost adjustment for income)
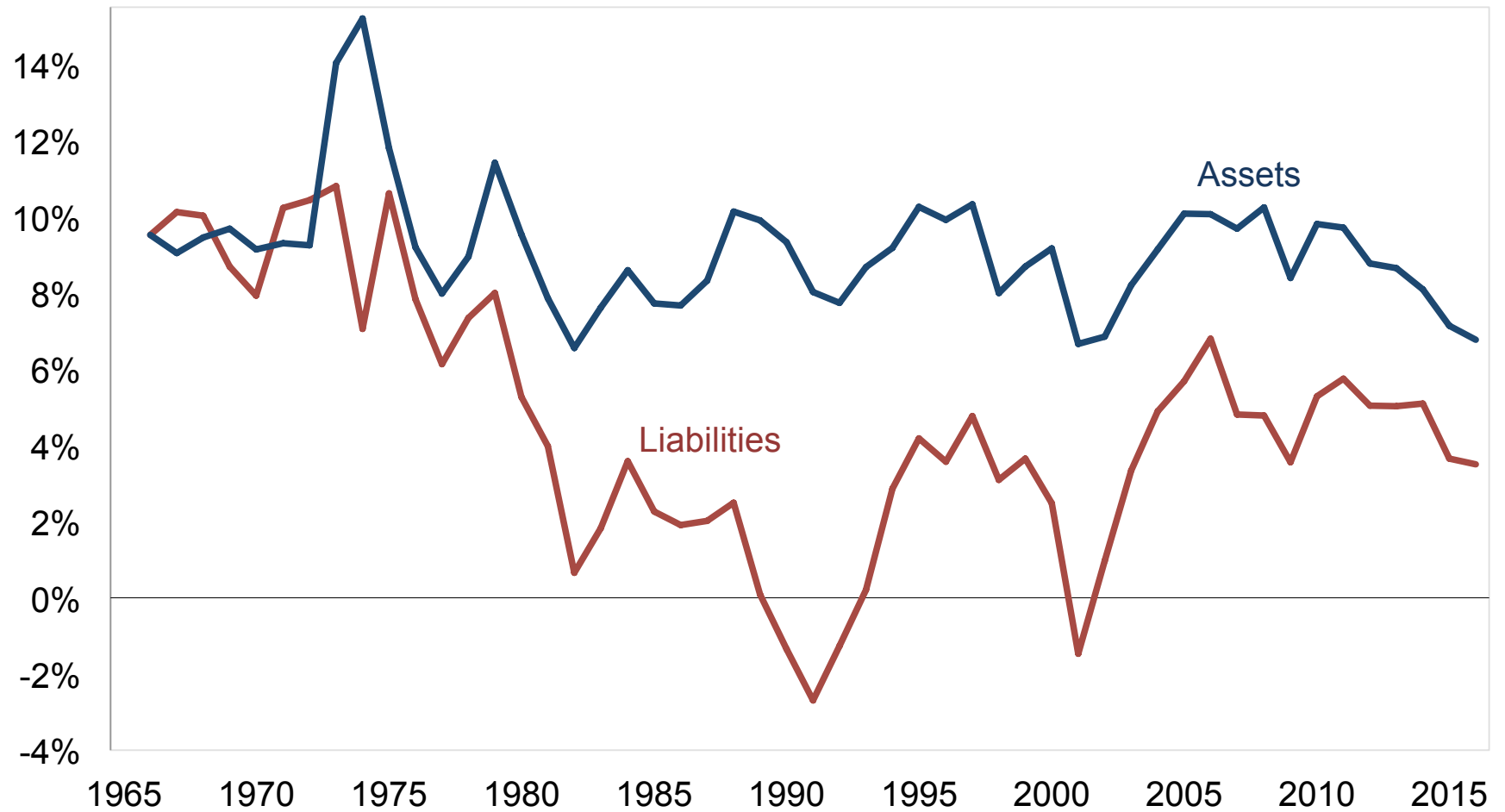
Figure A.1c: Return on US direct investment equity assets & liabilities (with current-cost adjust. for income)
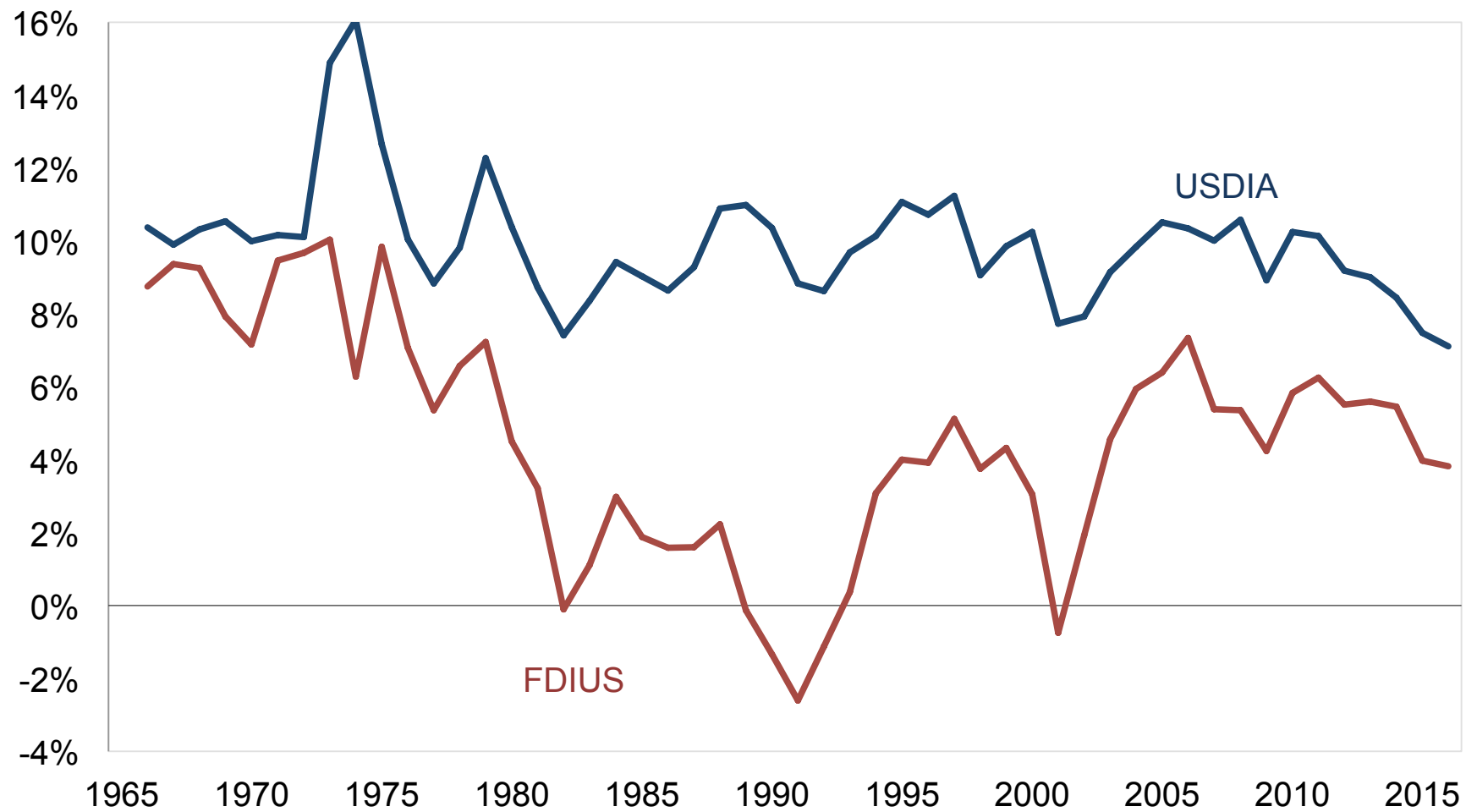
Figure A.1d: Return on US direct investment equity assets & liabilities (with current-cost adjust. for income)
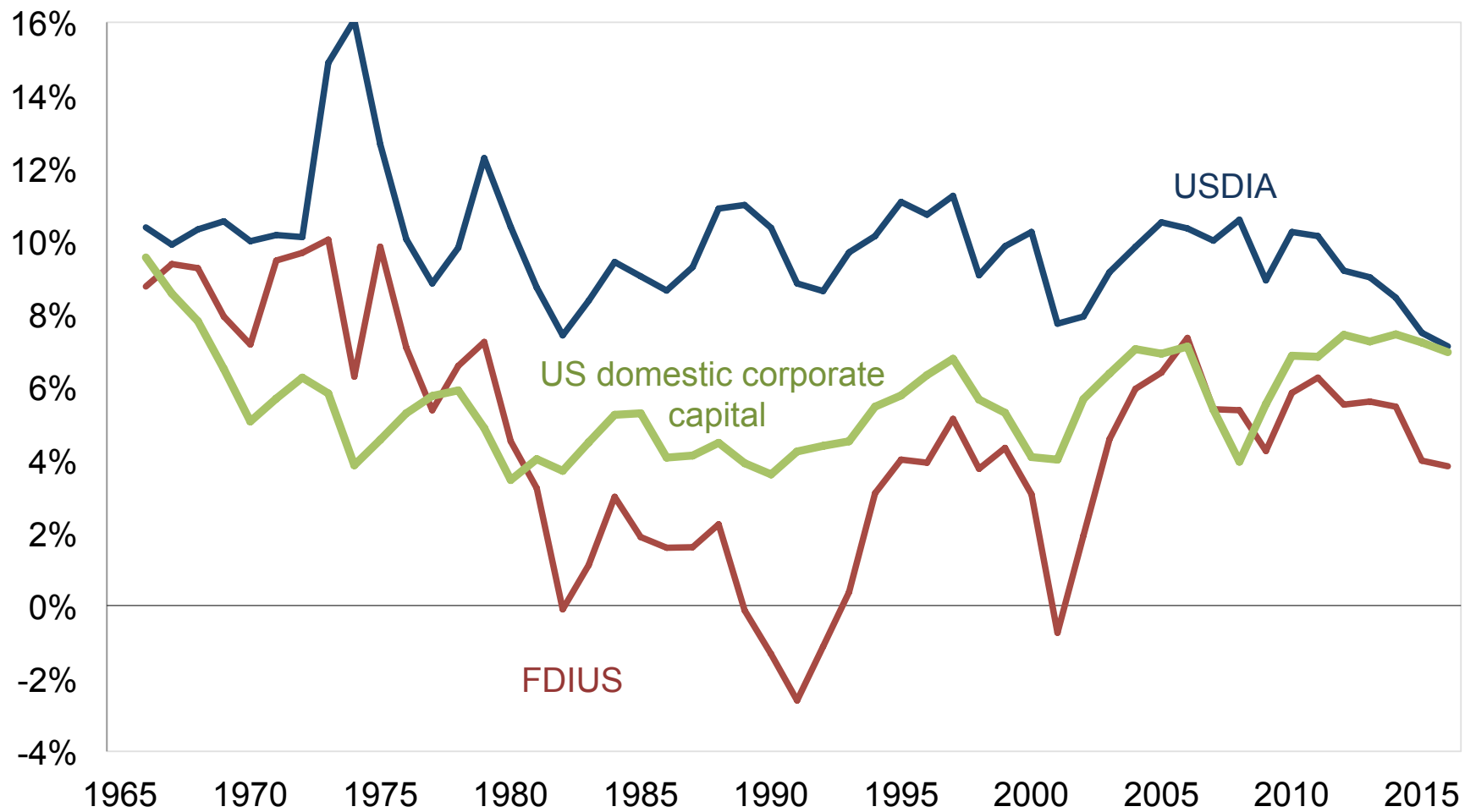
Figure A.2: Profits made abroad by U.S. firms
(% of U.S. corporate profits)
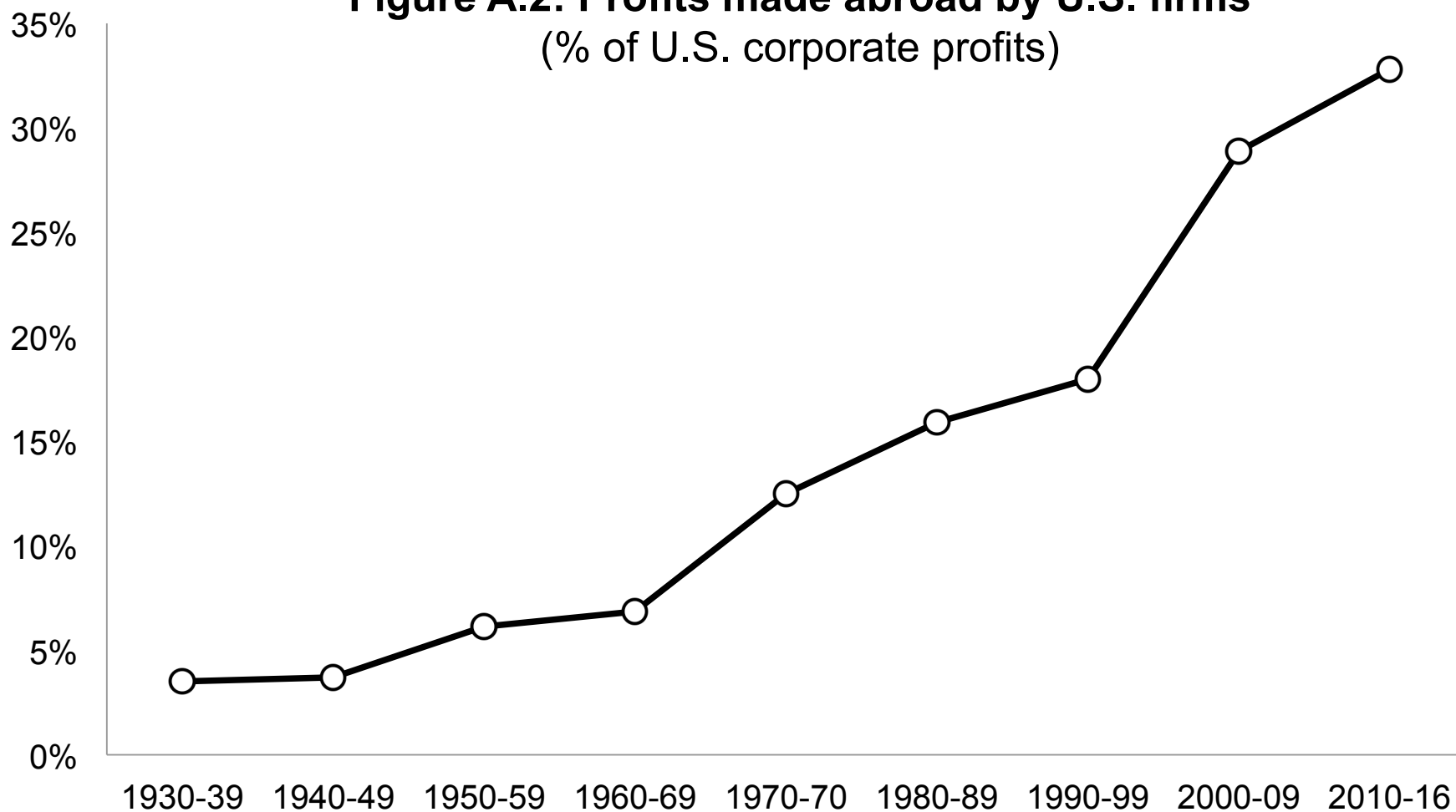
Notes: Foreign profits include dividends on foreign portfolio equities and income on US direct investment abroad (distributed and retained). Profits are net of interest payments, gross of US but net of foreign corporate income taxes.

Figure A.2b: Profits made abroad (% of total U.S. corporate profits) (BoP immediate counterpart basis)
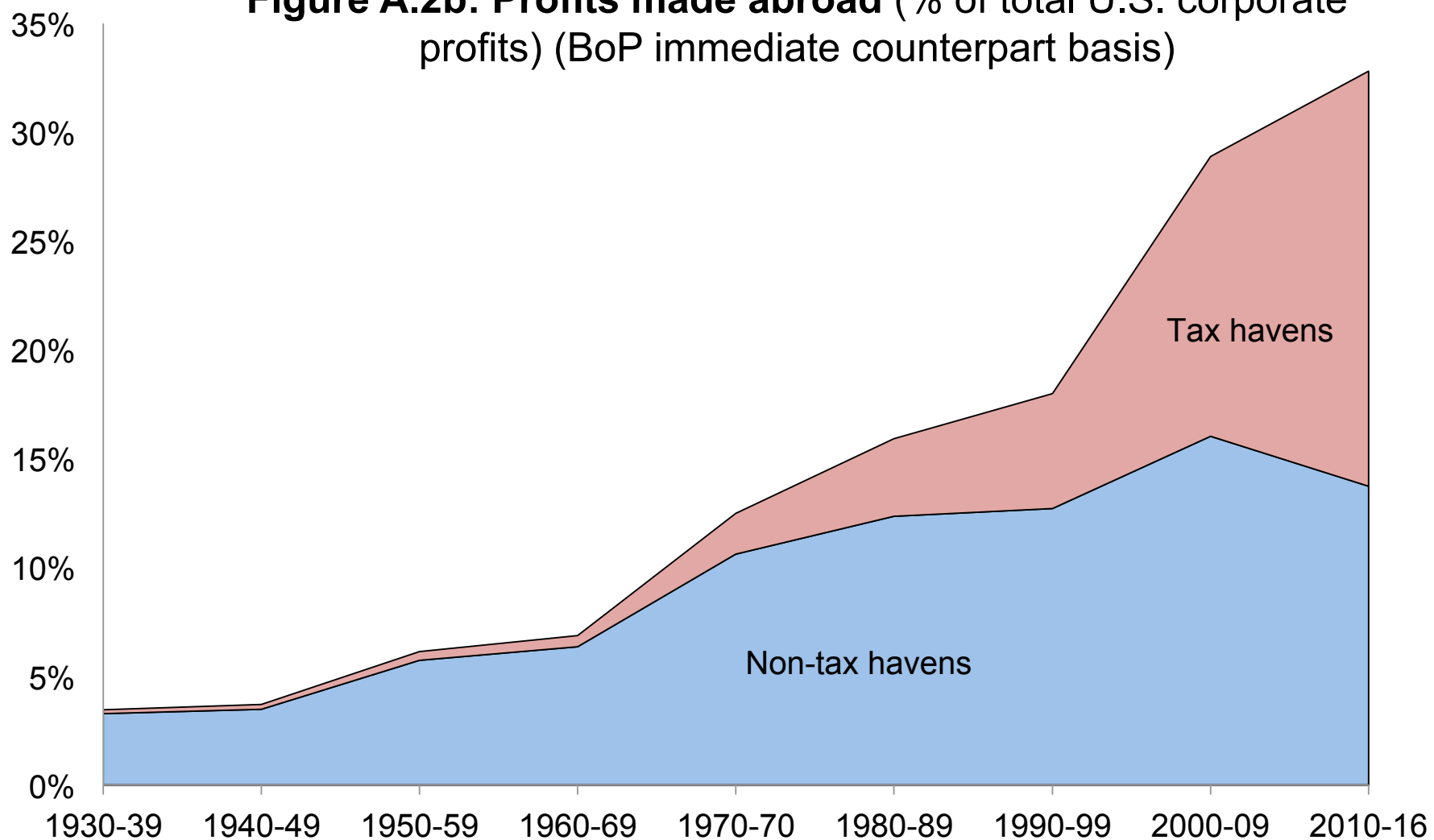
Figure A.2c: Profits made abroad (% of U.S. corporate profits)
(BoP immediate counterpart basis)
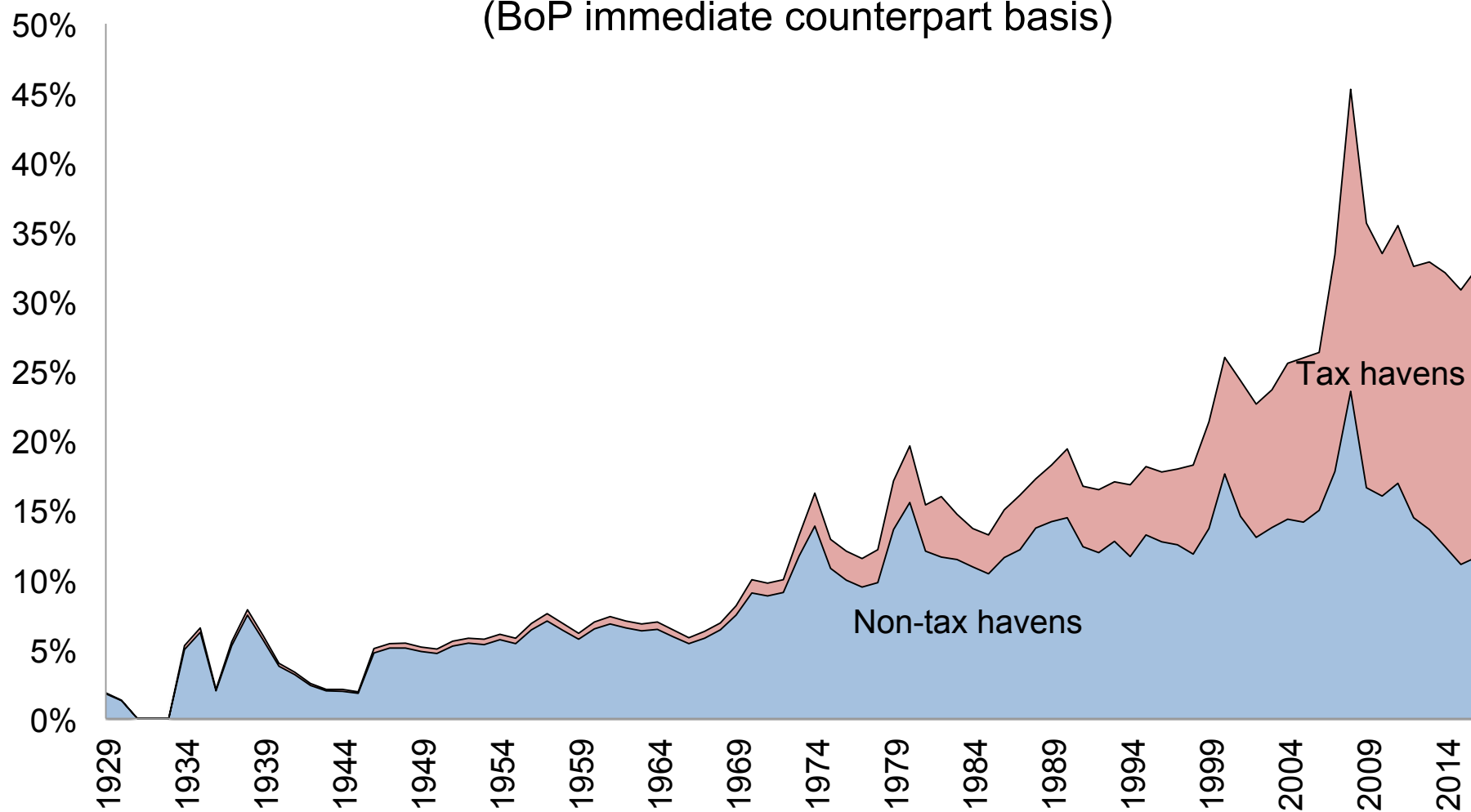
Figure A.2d: Profits made abroad (% of U.S. national income)
(BoP immediate counterpart basis)
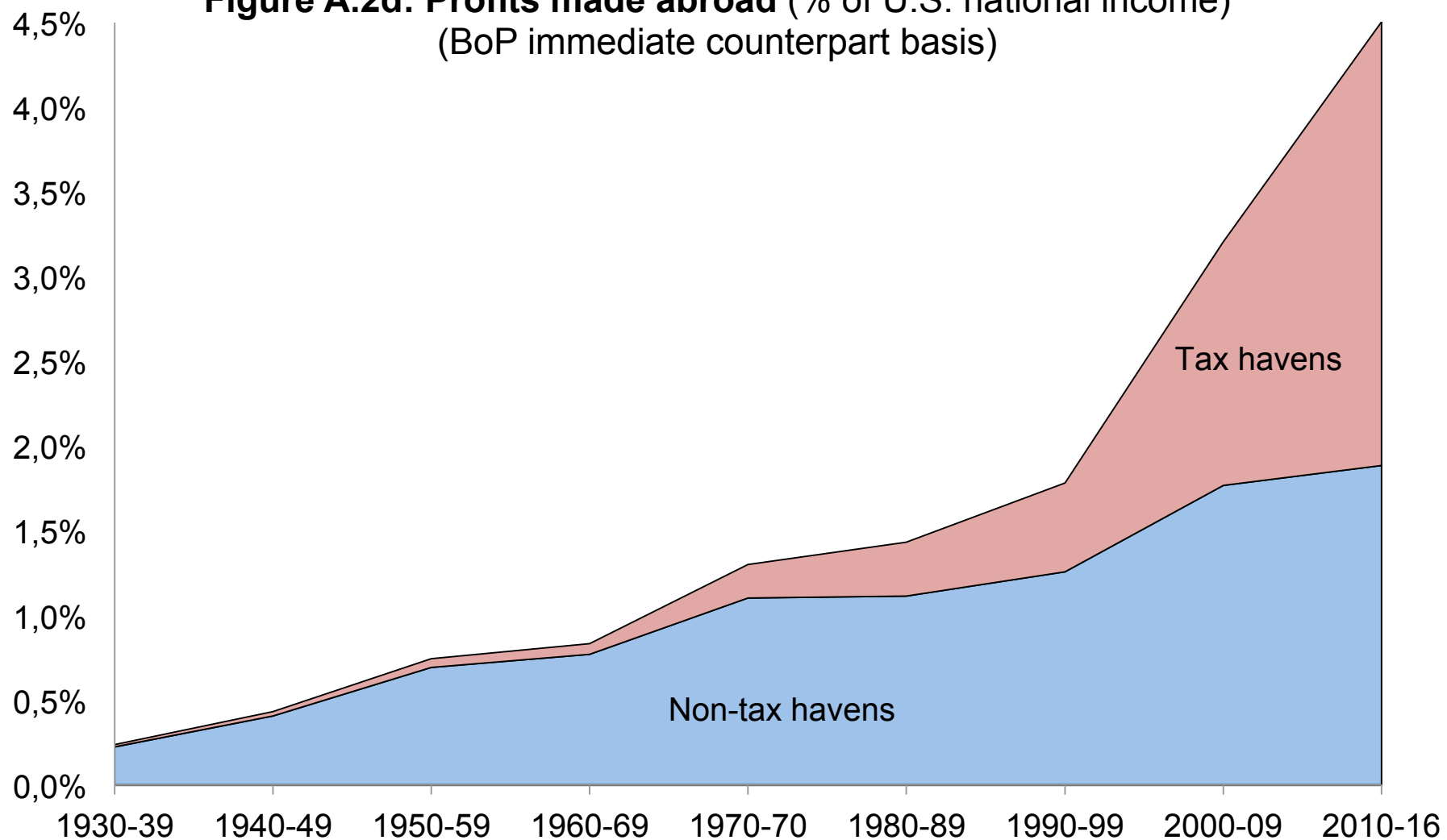
Figure A.2e: Profits made abroad (% of U.S. national income)
(BoP immediate counterpart basis)
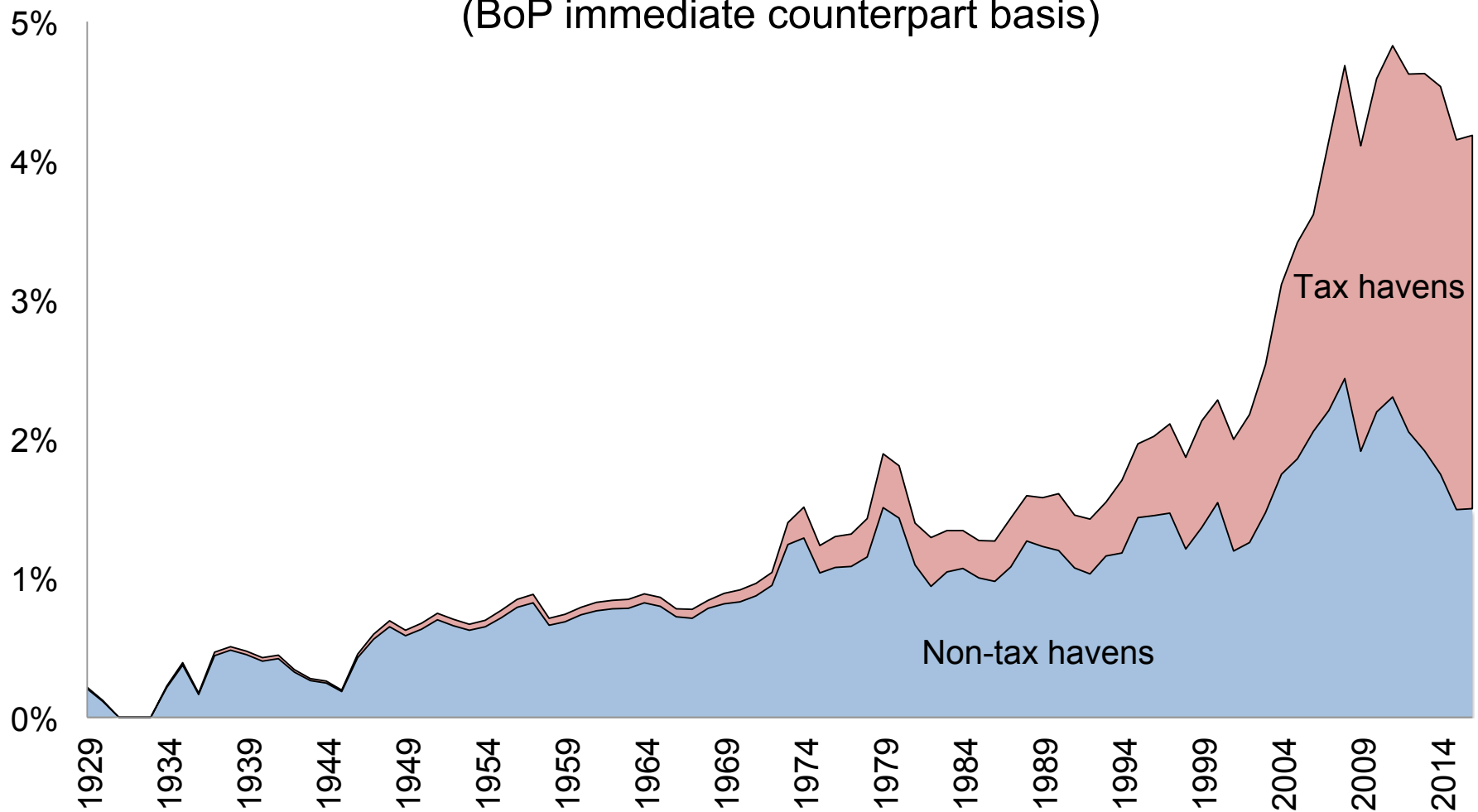
Figure A.2f: Profits made in tax havens (% of U.S. national income) (BoP immediate counterpart basis)
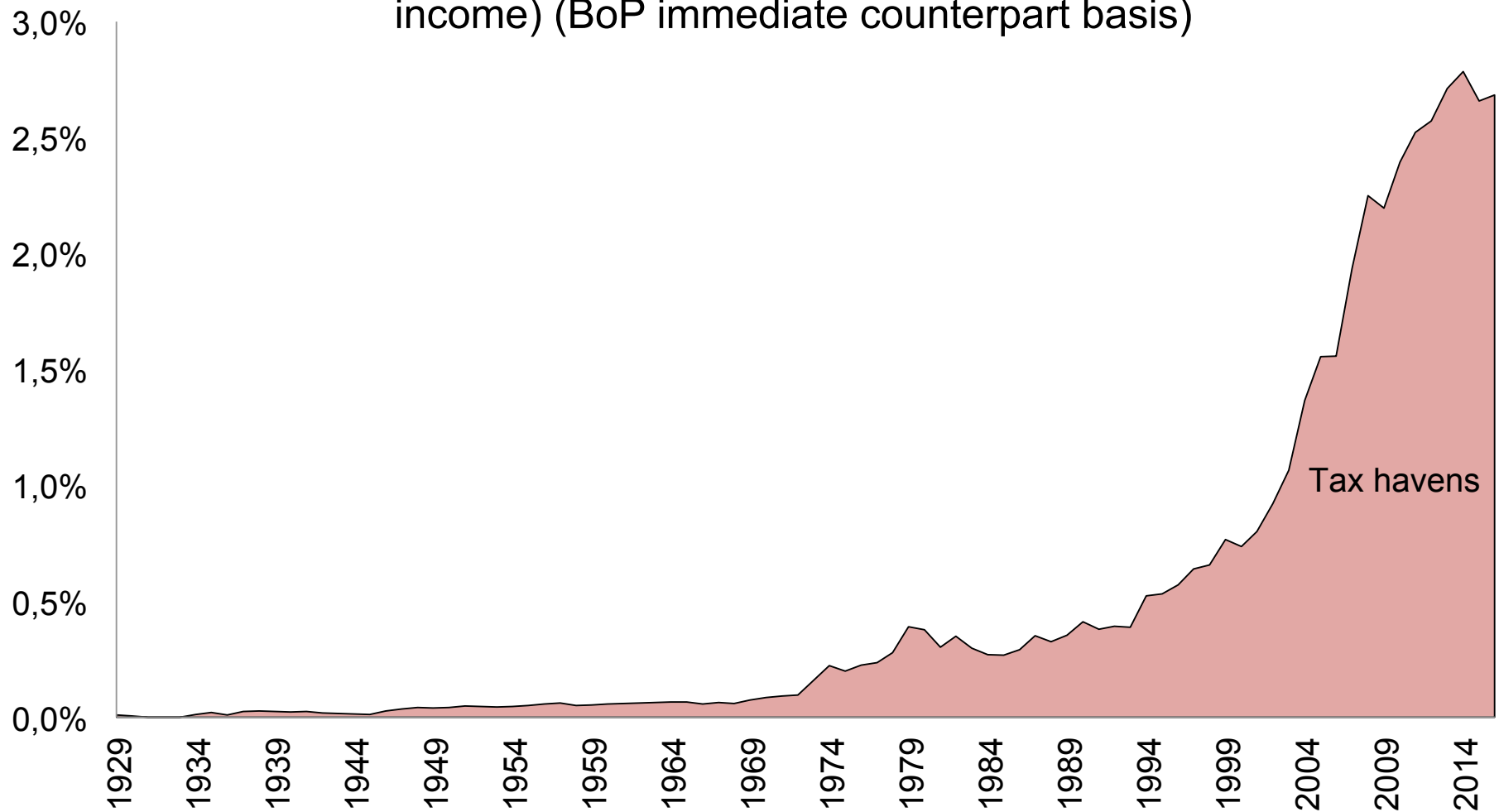
Figure A.3: The share of tax havens in U.S. profits made abroad
(BoP immediate counterpart basis)
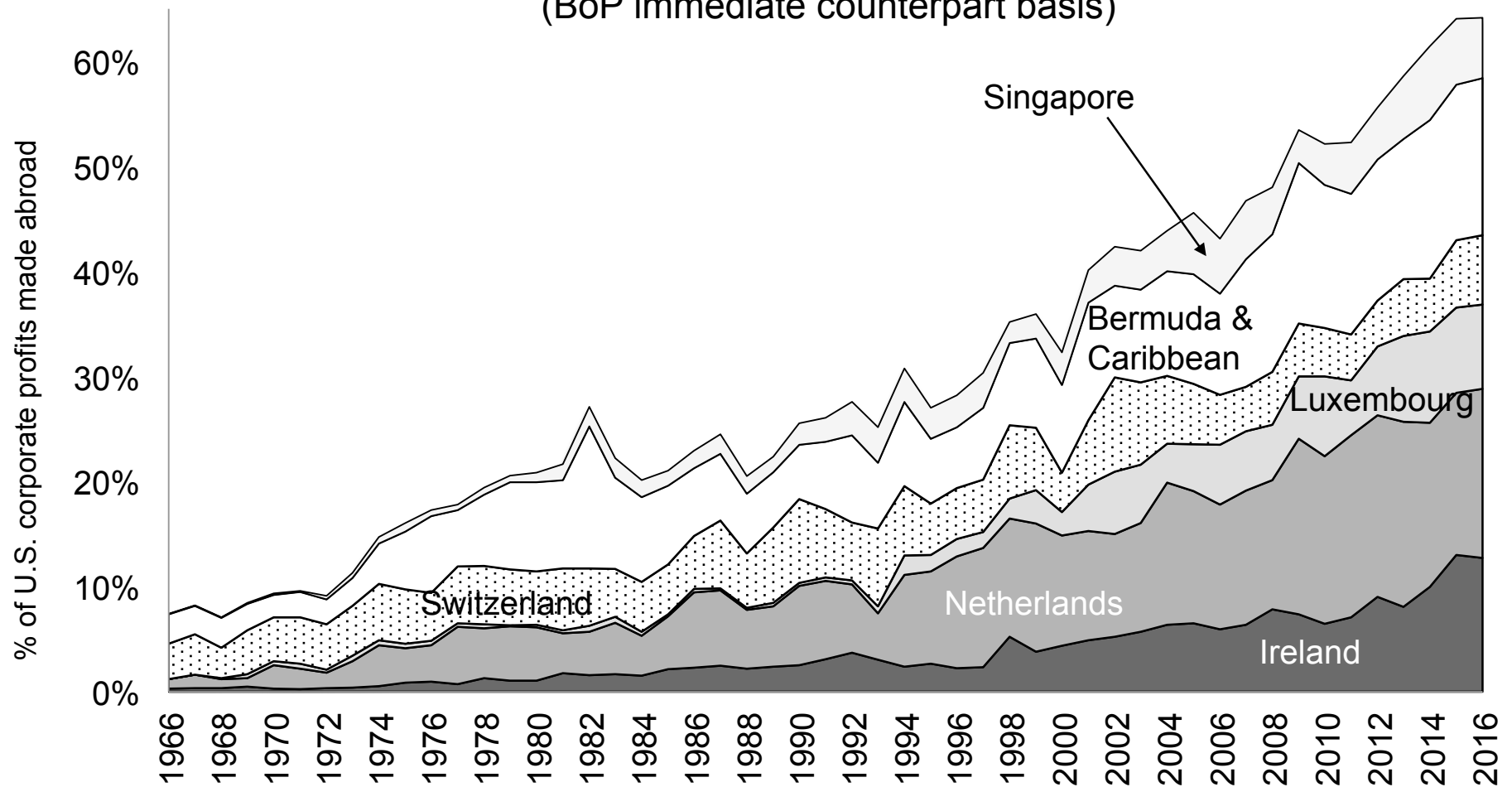
Notes: This figure charts the share of income on U.S. direct investment equity income made in the main tax havens. In 2016, total equity income on U.S. DI abroad was about $420bn. 16% came from the Netherlands, 8% from Luxembourg, etc. Source: authors' computations using balance of payments data.

Figure A.3b: The share of tax havens in U.S. profits made abroad
(BoP immediate counterpart basis)
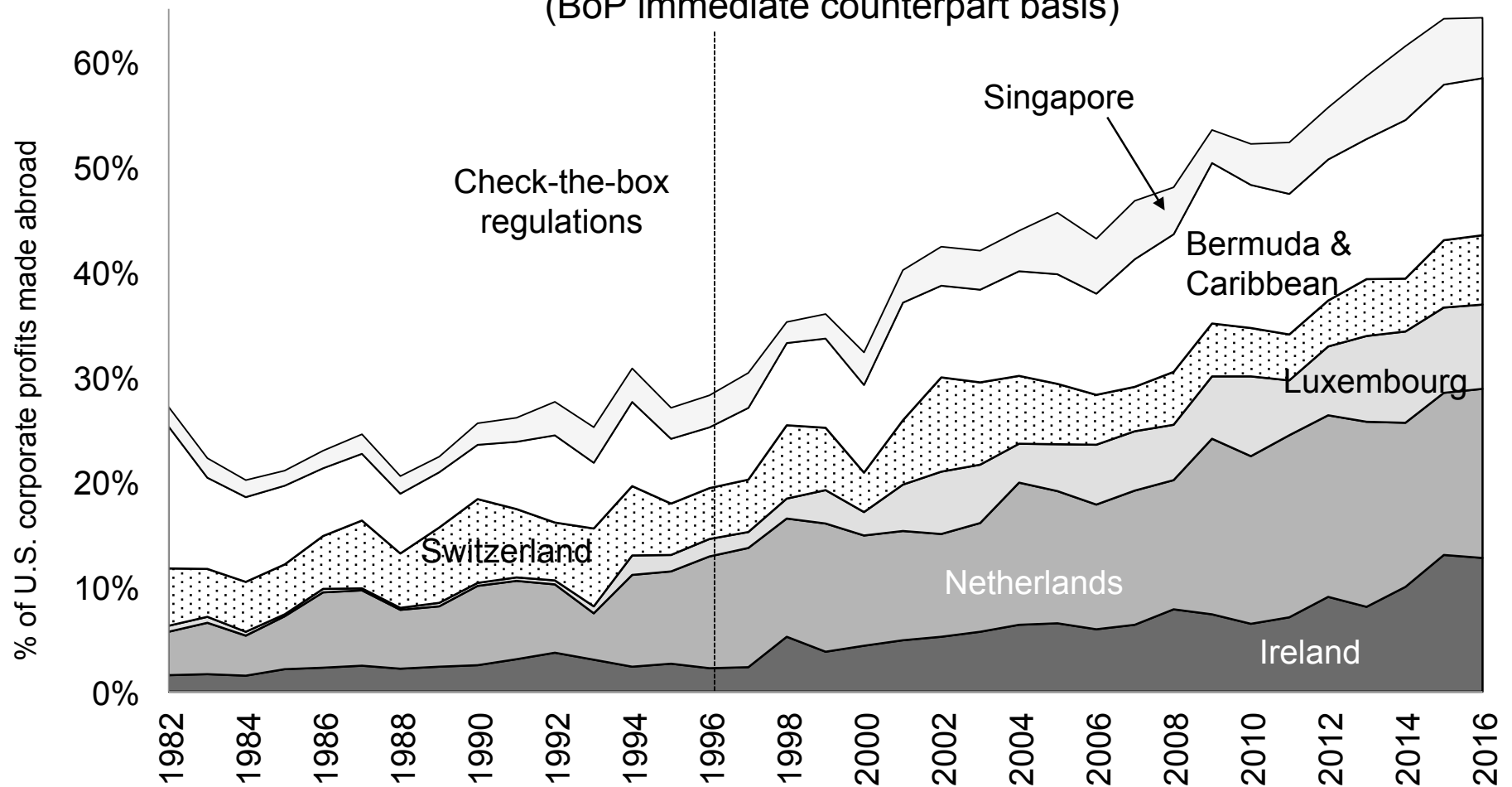
Notes: This figure charts the share of income on U.S. direct investment equity income made in the main tax havens. In 2016, total equity income on U.S. DI abroad was about $420bn. 16% came from the Netherlands, 8% from Luxembourg, etc. Source: authors' computations using balance of payments data.

Figure A.3c: The share of tax havens in U.S. direct equity investments abroad (IIP immediate counterpart basis)
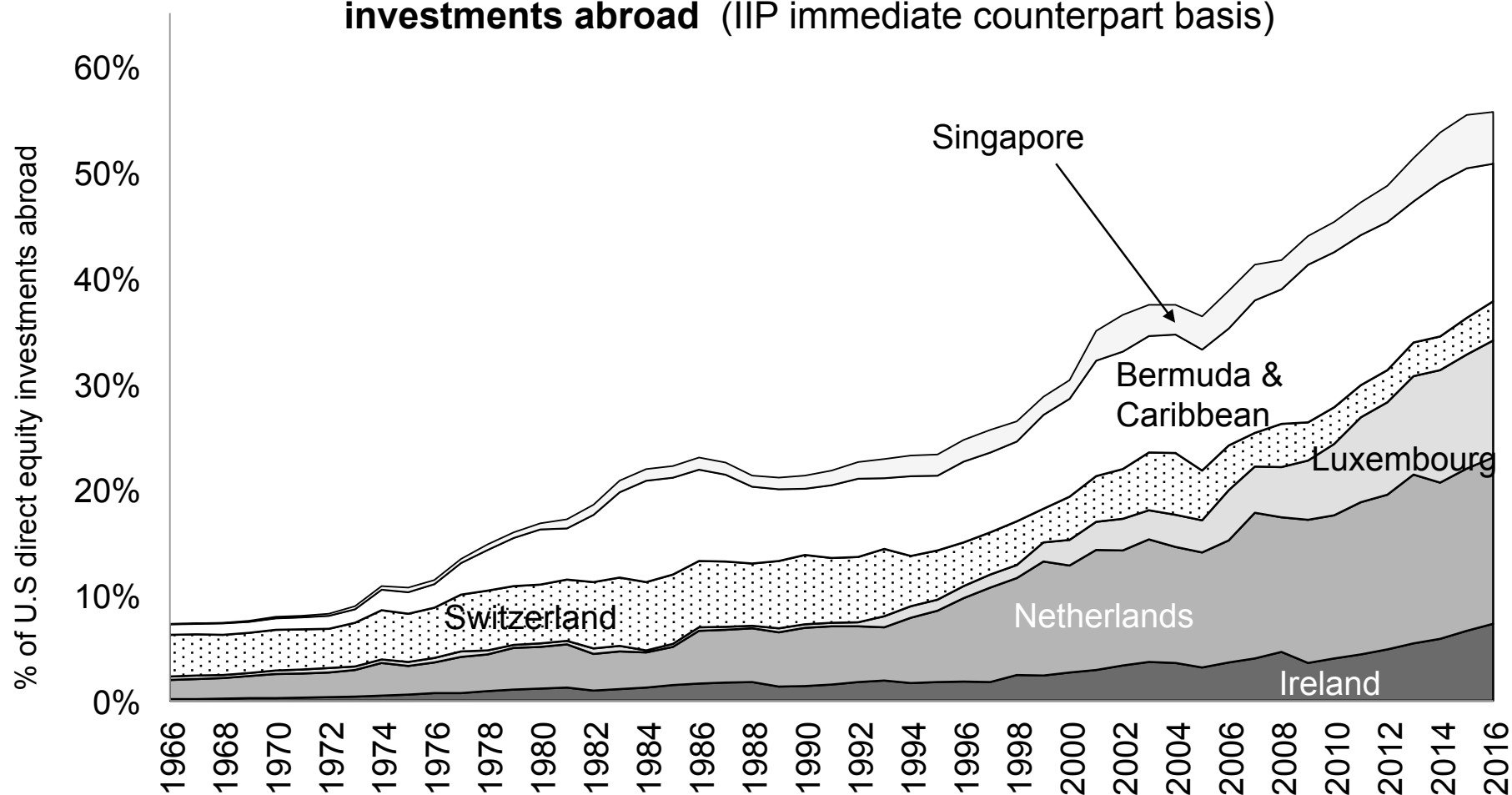
Notes: This figure charts the stock of U.S. direct equity investments abroad in the main tax havens. In 2016, total US direct investment equity assets reached about $5,100bn at historical cost. 16% were in the Netherlands, 11% in Luxembourg, etc. Source: authors' computations using IIP data.

Figure A.3d: The share of tax havens in U.S. DI income abroad
(dividends + retained earnings + interest from USDIA, BoP basis)
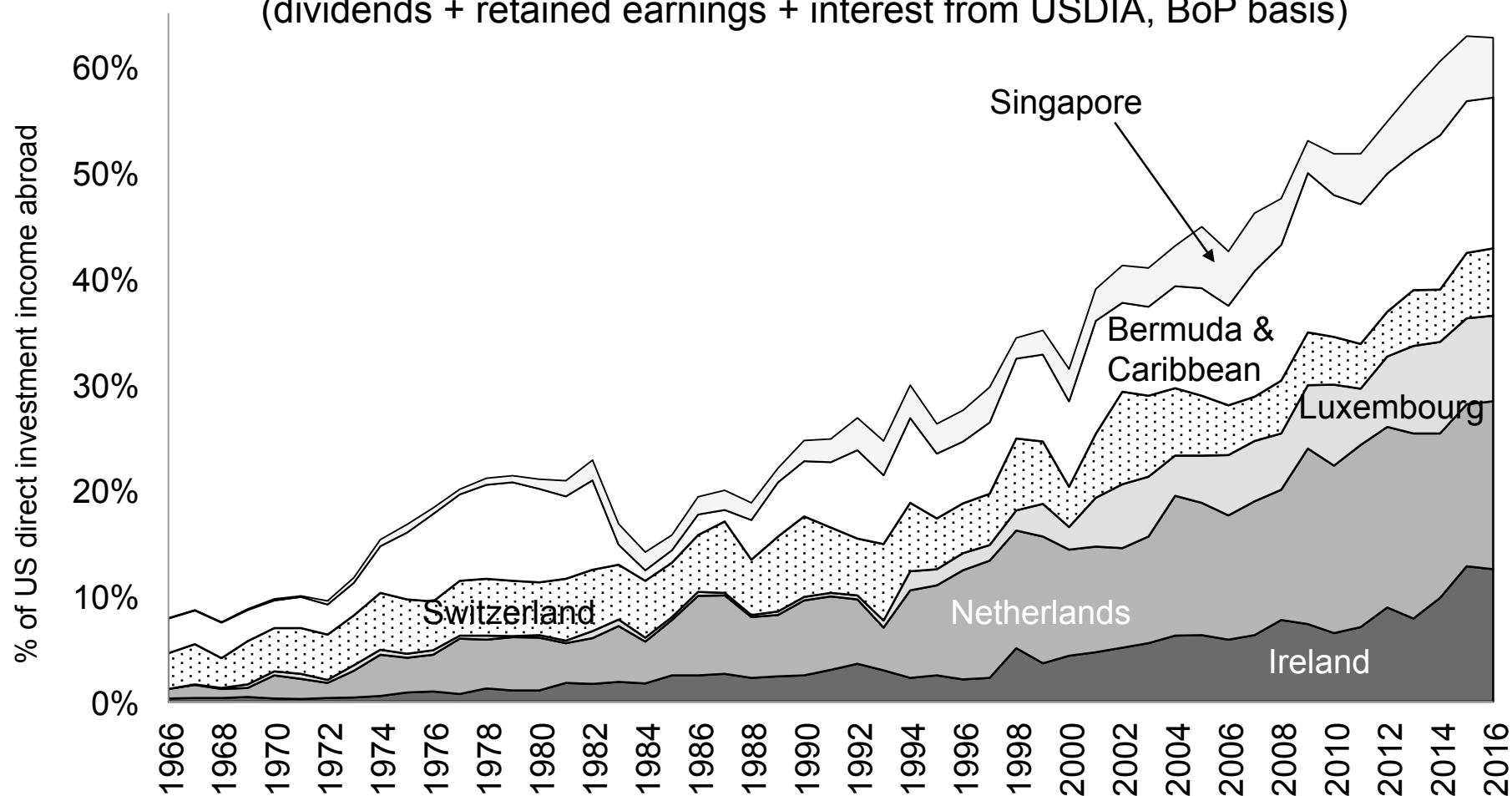
Notes: This figure charts the share of income on U.S. direct investment income made in the main tax havens. In 2016, total equity income on U.S. DI abroad was about $430bn. 16% came from the Netherlands, 8% from Luxembourg, etc. Source: authors' computations using balance of payments data.

Figure A.3e: The share of tax havens in U.S. DI assets abroad (FDI assets, equity + debt, IIP immediate counterpart basis)
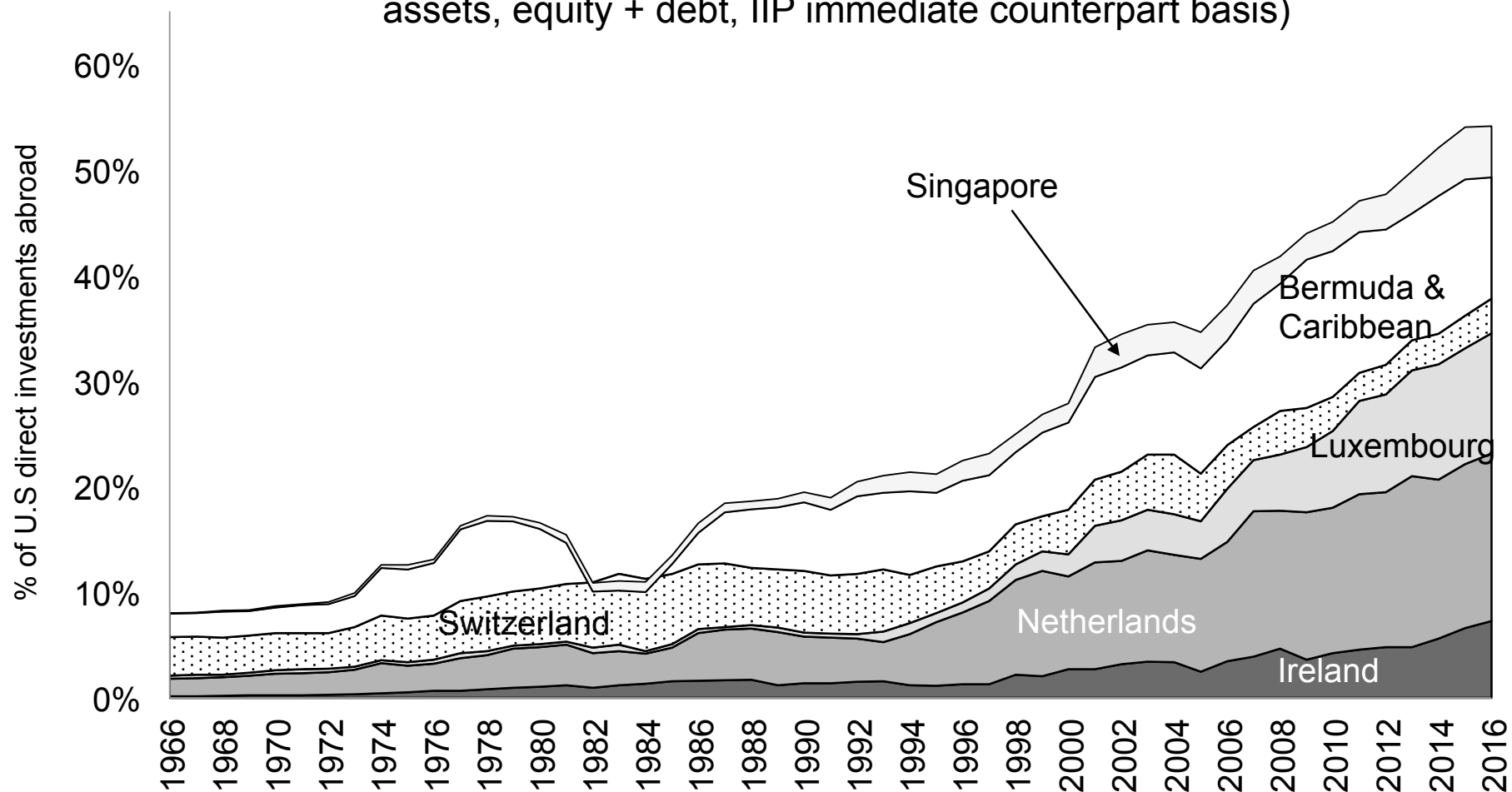
Notes: This figure charts the stock of U.S. direct investments abroad in the main tax havens. In 2016, total US direct investments assets reached reached about $5,300bn at historical cost. 16% were in the Netherlands, 11% in Luxembourg, etc. Source: author's computations using BEA data.

Figure A.3f: The share of tax havens in U.S. direct equity investments abroad (IIP immediate counterpart basis)
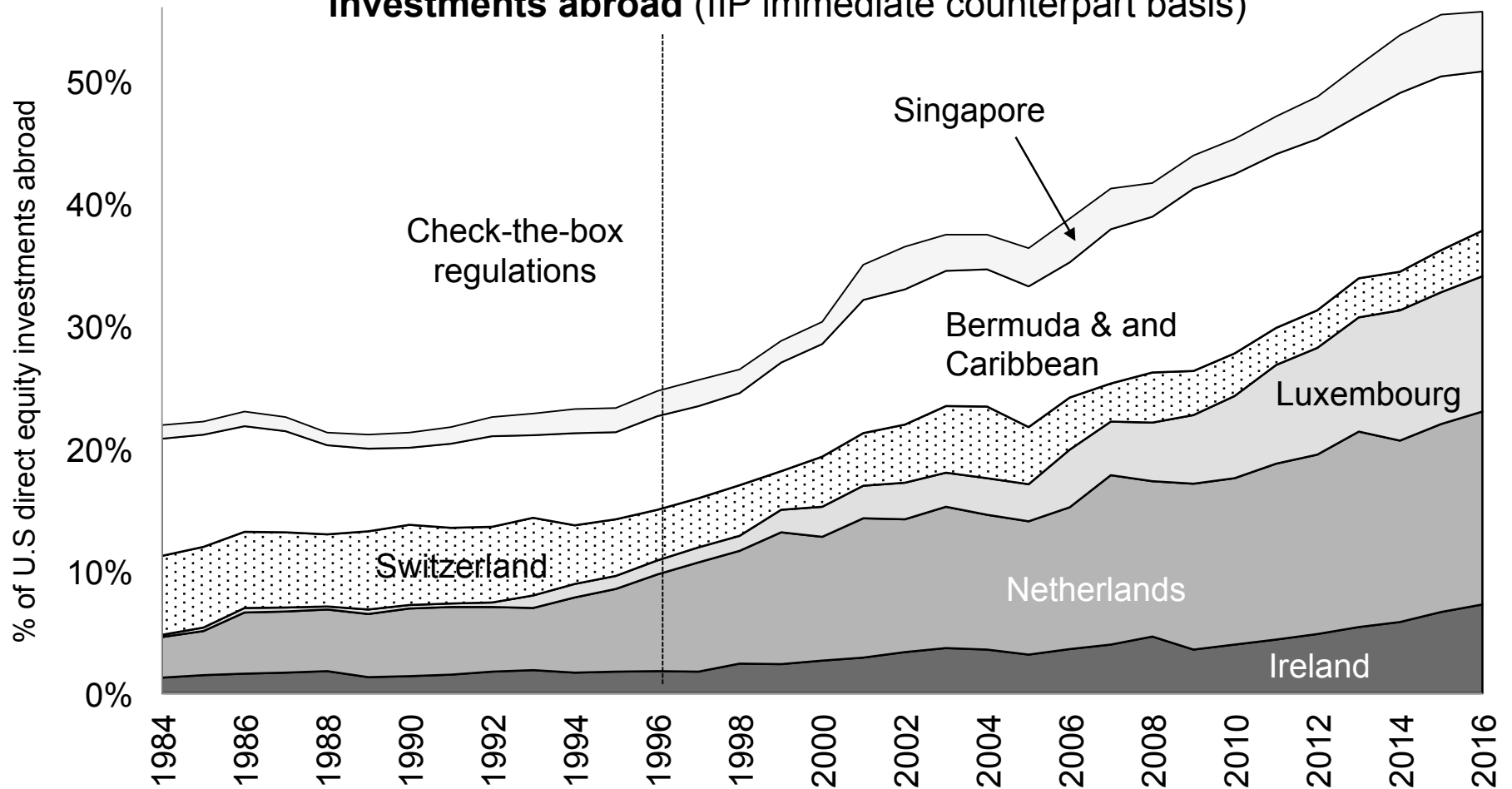
Notes: This figure charts the stock of U.S. direct equity investments abroad in the main tax havens. In 2016, total US direct investments assets reached reached about $5,100bn at historical cost. 16% were in the Netherlands, 11% in Luxembourg, etc. Source: authors' computations using IIP data.

Figure A.4: The share of tax havens in U.S. corporate profits
(BoP immediate counterpart basis)

Check-the-box regulations

% of US corporate profits
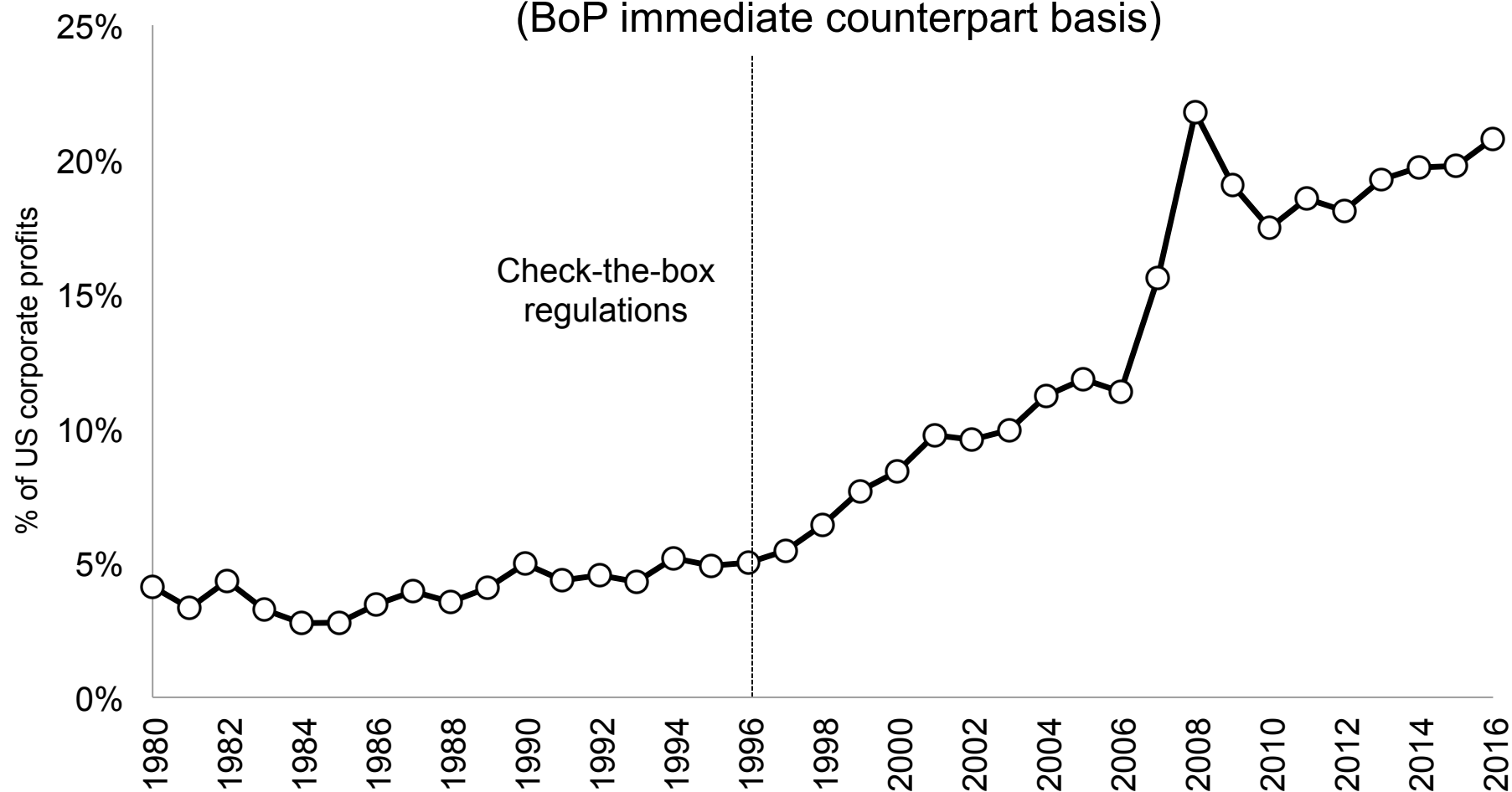
Notes: This figure charts the ratio of profits made in the main tax havens (Netherlands, Ireland, Switzerland, Singapore, Luxembourg, Bermuda and other Caribbean havens) to total US corporate profits (domestic plus foreign). Source: authors' computations using NIPA and balance of payments data.

Figure A.5: Share of U.S. direct investment equity assets in tax havens (BEA survey data)

Rising profit shifting across the board

Rising profit shifting to Caribbean

1984: Deficit Reduction Act

2005: repatriation tax holidy

1996: check-the-box regulations
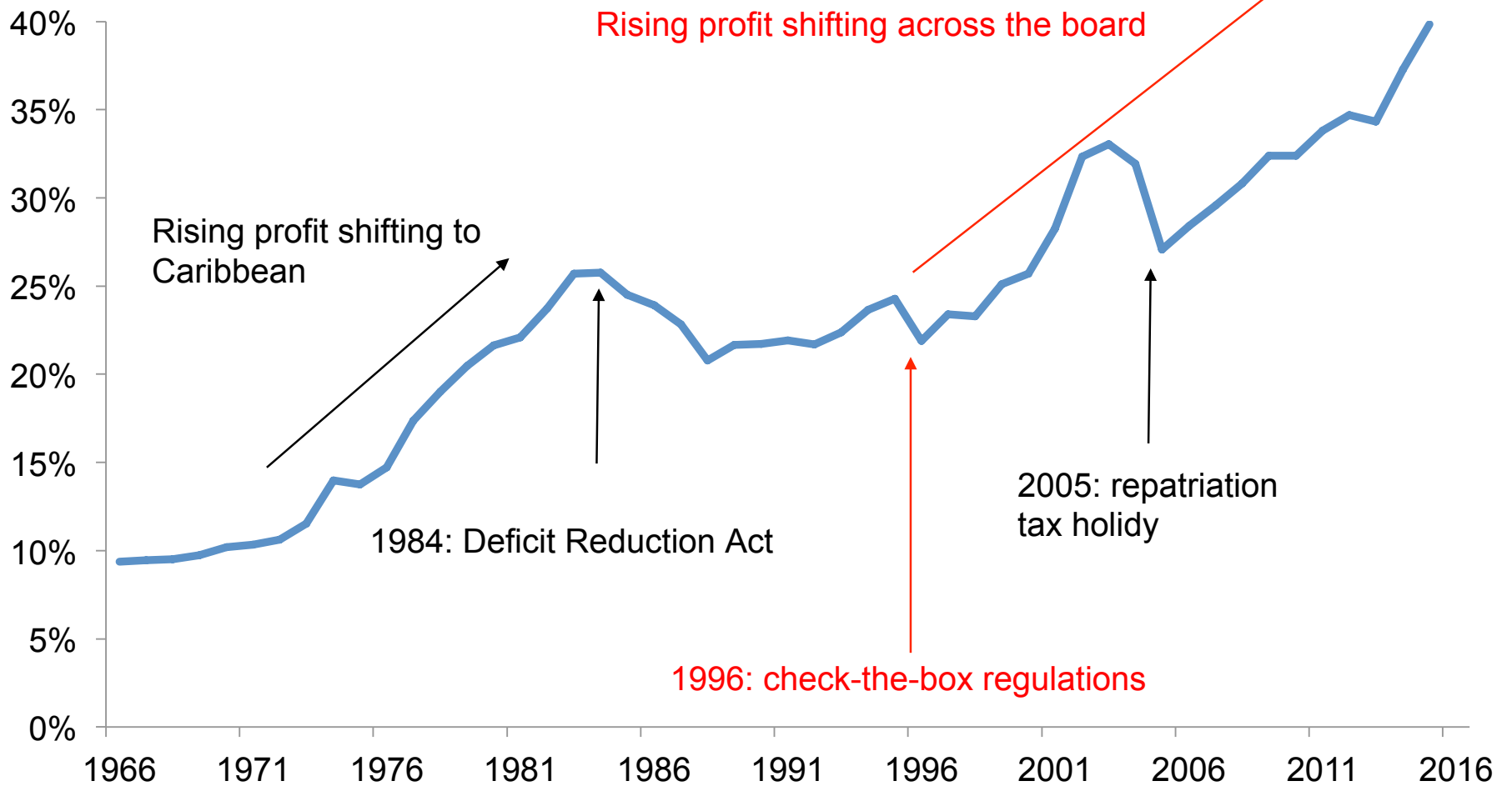
Figure A.6: Interest rate on loans within U.S. multinationals: Parent to affiliates vs. affiliates to parent

Loans by foreign subsiadiries to U.S. parent

Loans by U.S. parents to foreign subsidiaries
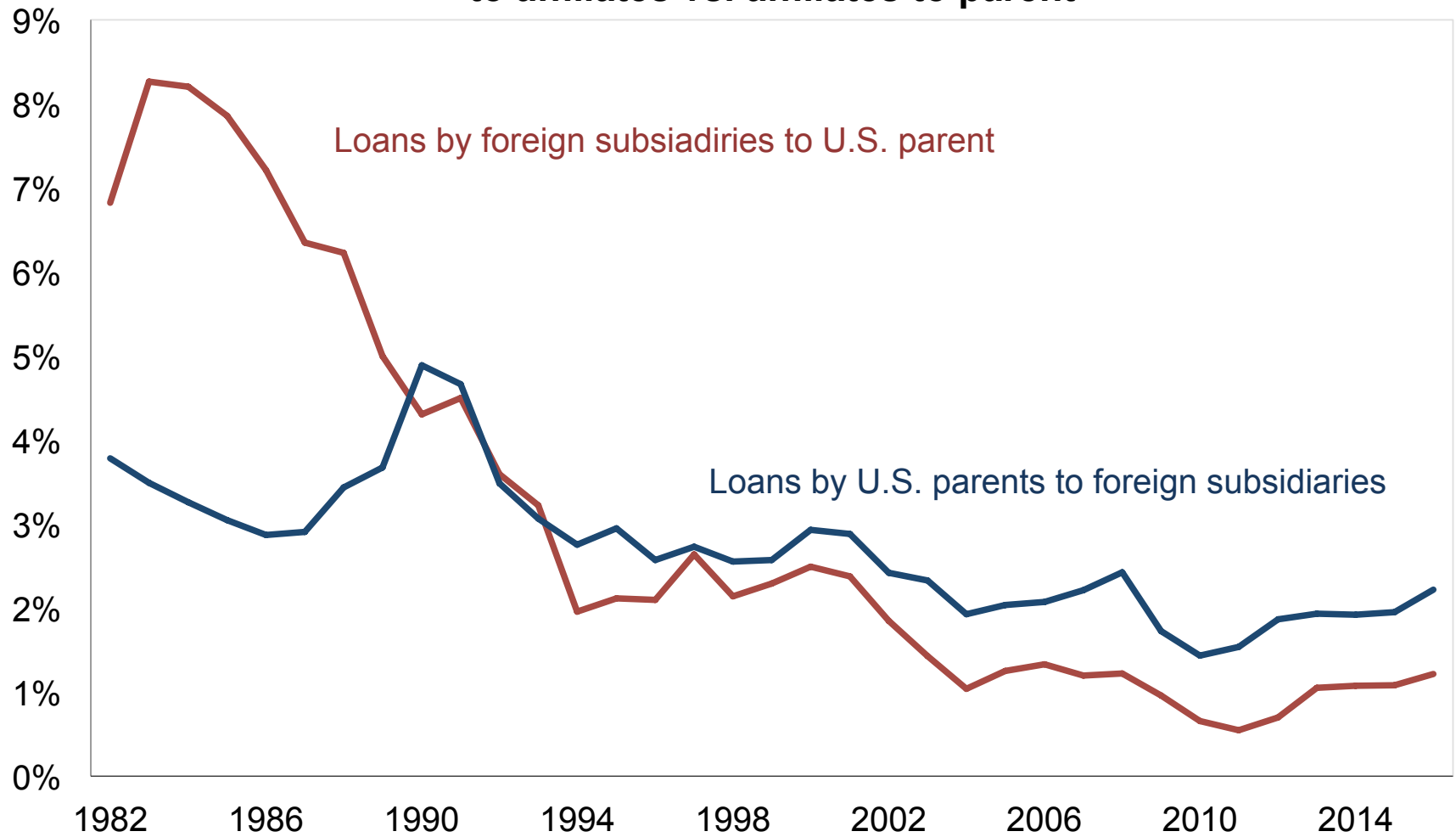
Figure A.7: Foreign tax rates: haven v. non-haven affiliates
(U.S. multinationals, excluding oil)

Tax rate in non-havens

Tax rate in tax havens
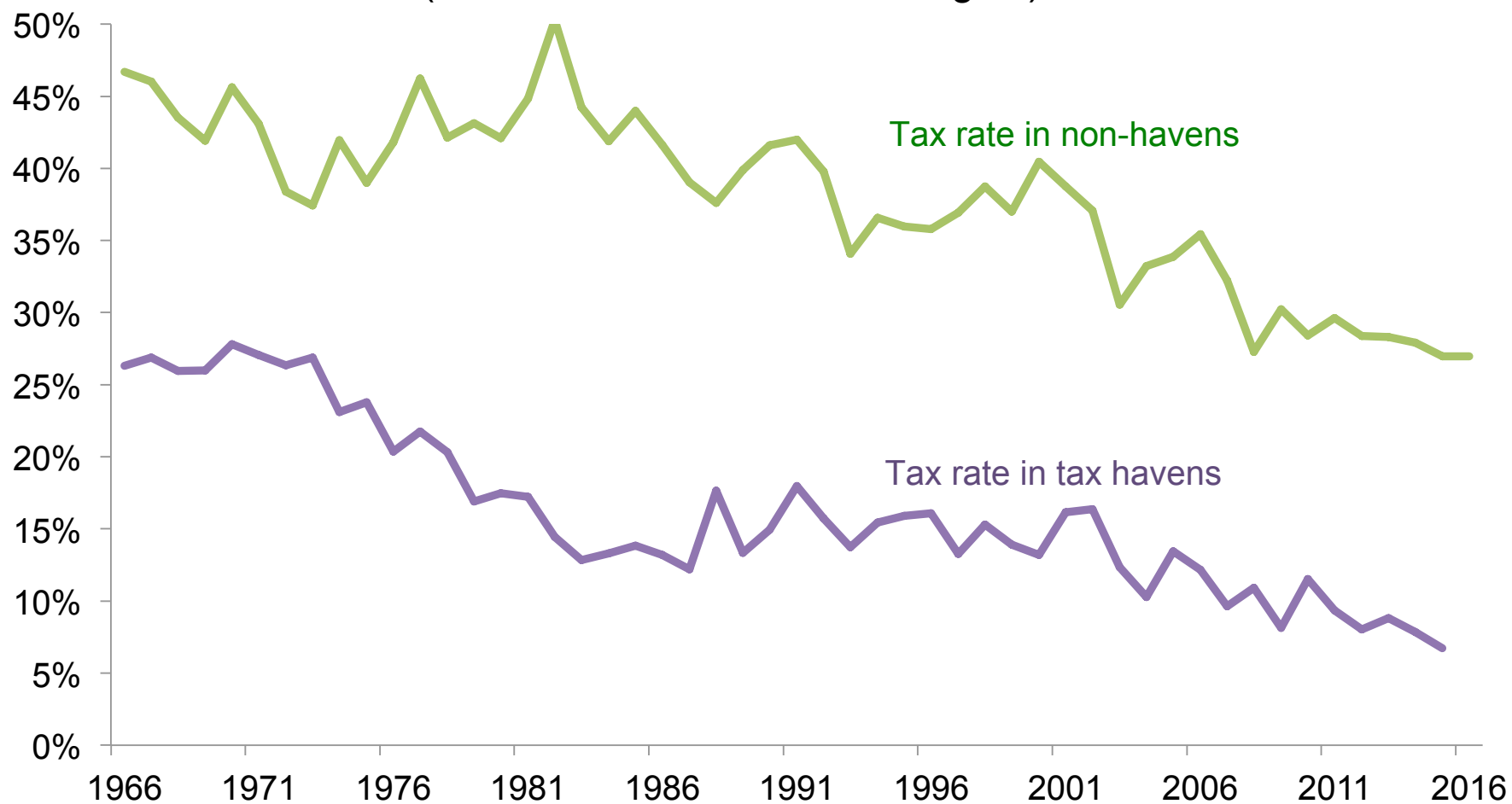
Figure A.8: Statutory corporate tax rates in OECD countries
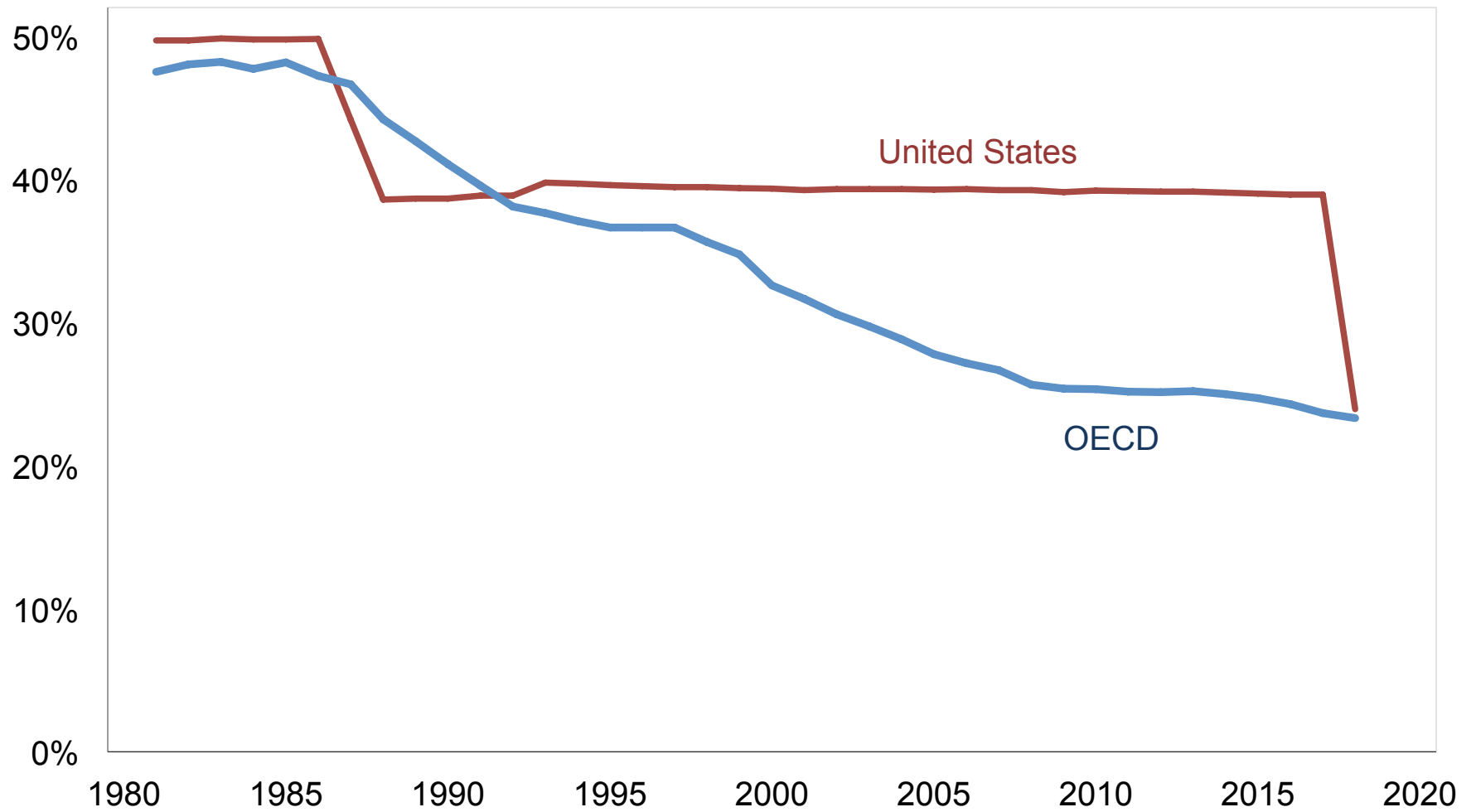
Figure A.9: US oil multinationals' pre-tax profits in OPEC
(% of US oil multinationals' pre-tax foreign profits)

OPEC share
(pre-tax)
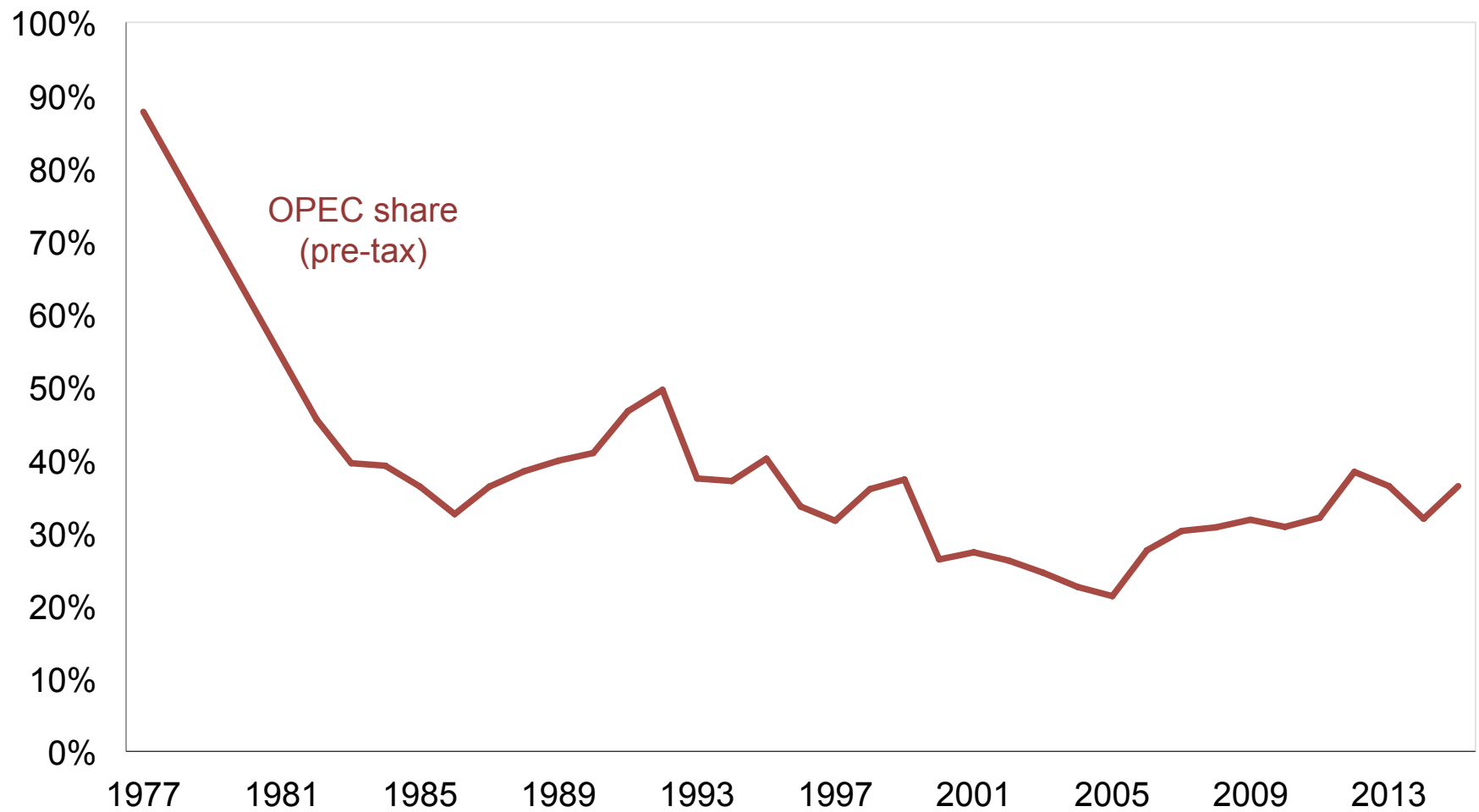
Figure A.9b: US oil multinationals' profits in OPEC
(% of US oil multinationals' foreign profits)
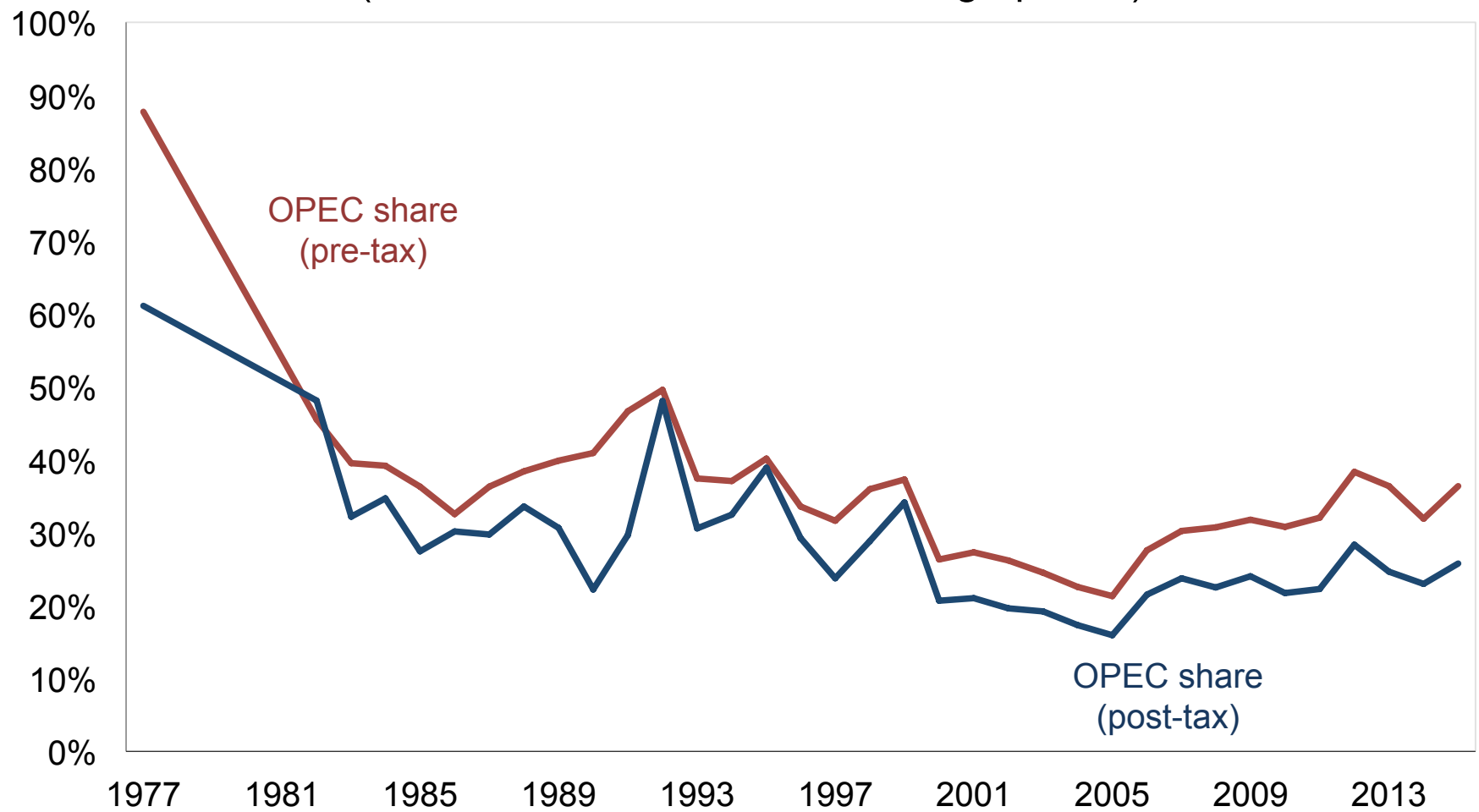
Figure A.10: US oil multinationals' profits in OPEC
(% of US oil multinationals' foreign profits)

Tax rate OPEC countries

Tax rate non-OPEC
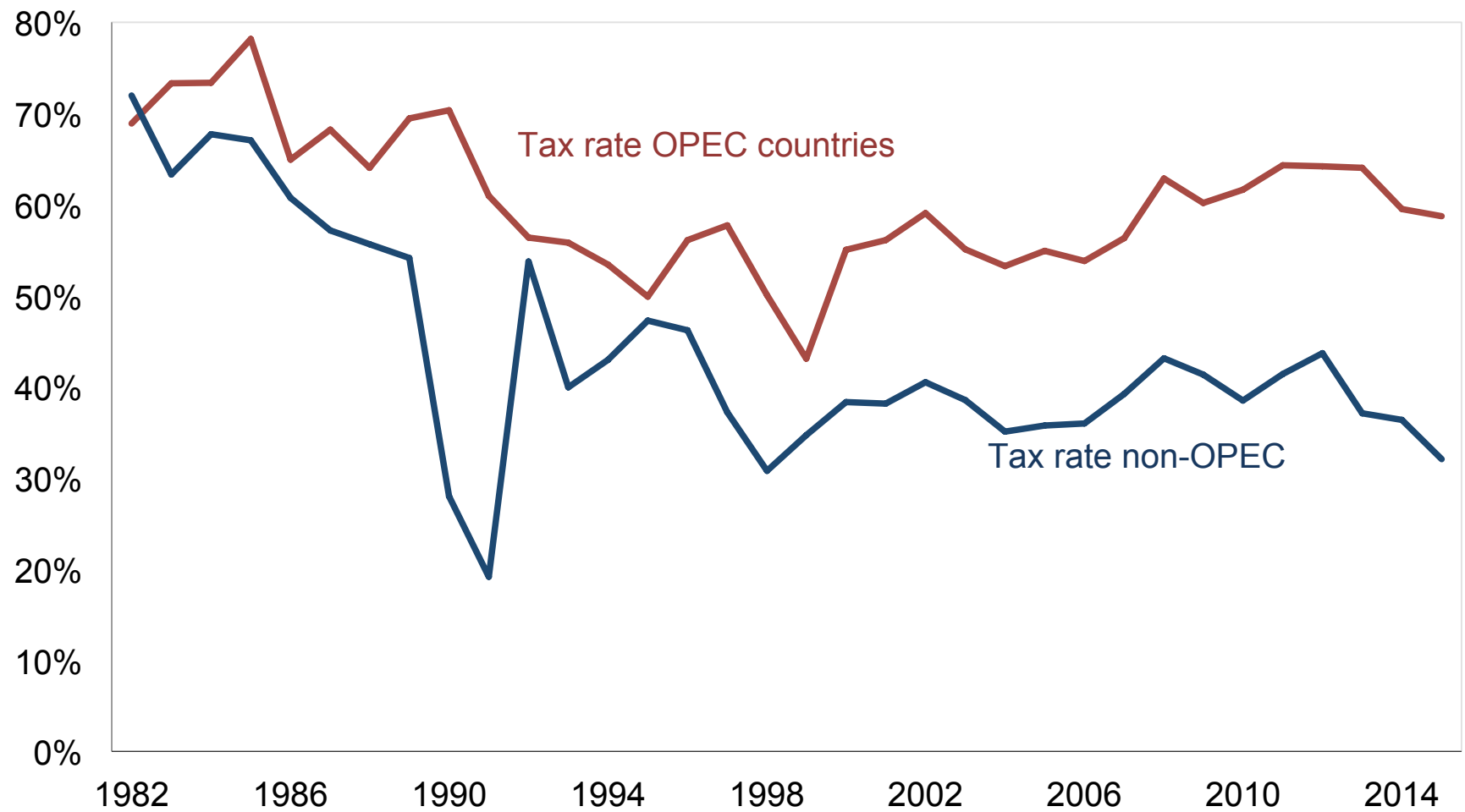
Figure A.11: Pre-tax rates of return on US direct equity investments (Equity positions at current cost)

Oil affiliates

Non-oil affiliates
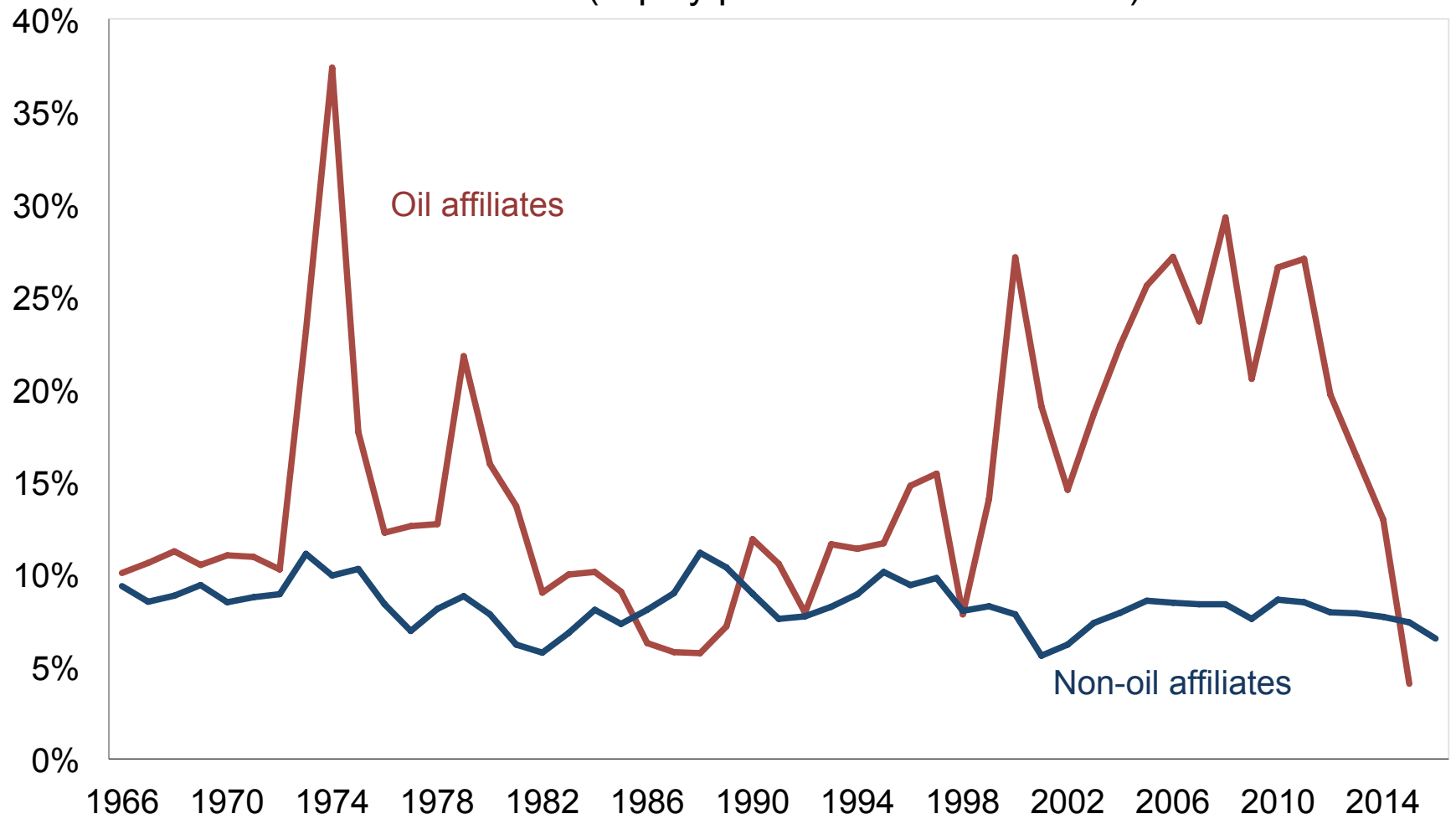
Figure A.11b: Pre-tax profits in the oil sector
(% of compensation of employees paid)

U.S. investments in foreing oil

Foreign investments in U.S. oil
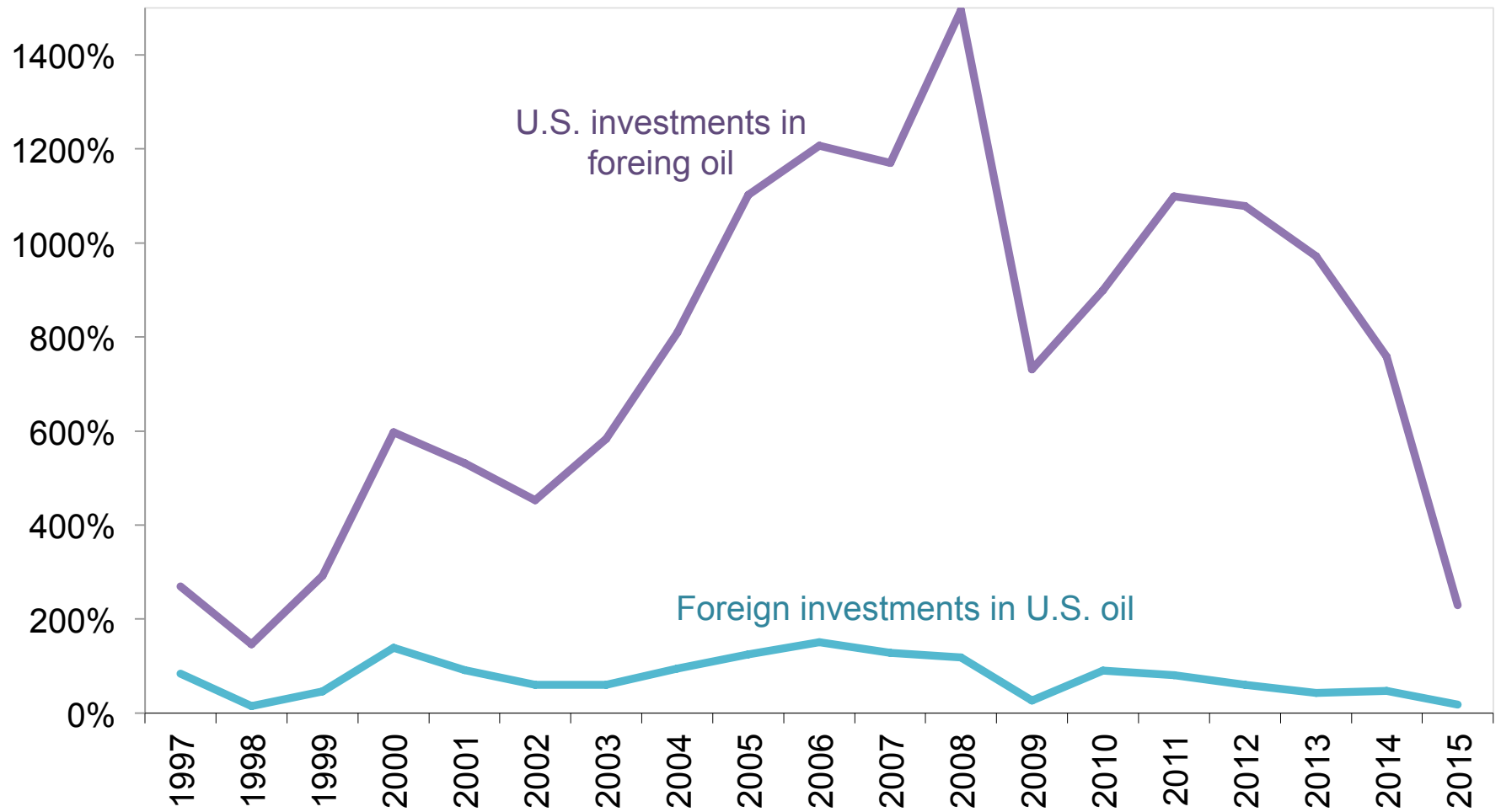
Figure A.12: Pre-tax profits of foreign affiliates of US multinationals (% of compensation of employees paid)
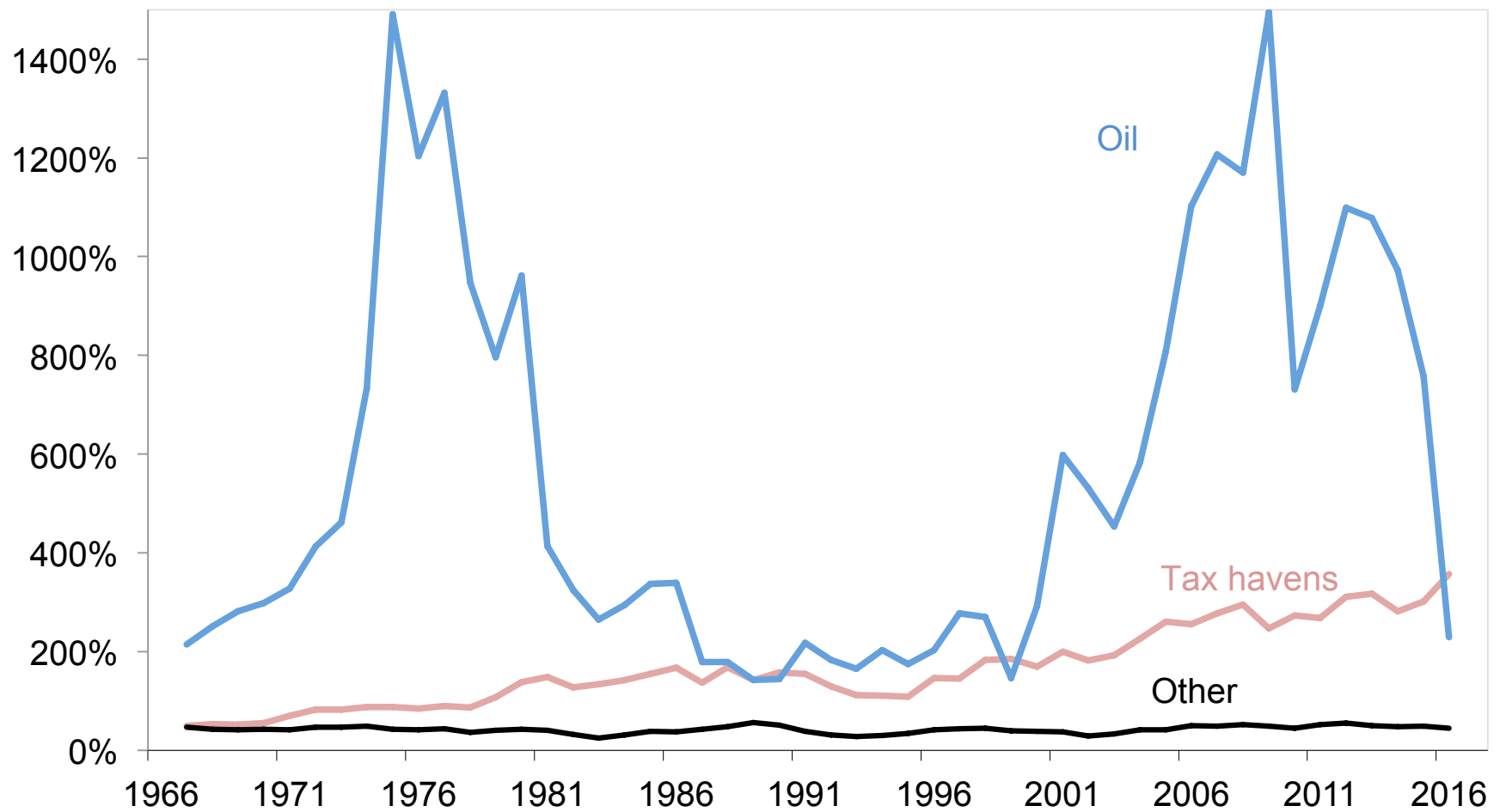
Figure A.12b: Profits of foreign affiliates of US oil multinationals (% of compensation of employees paid)
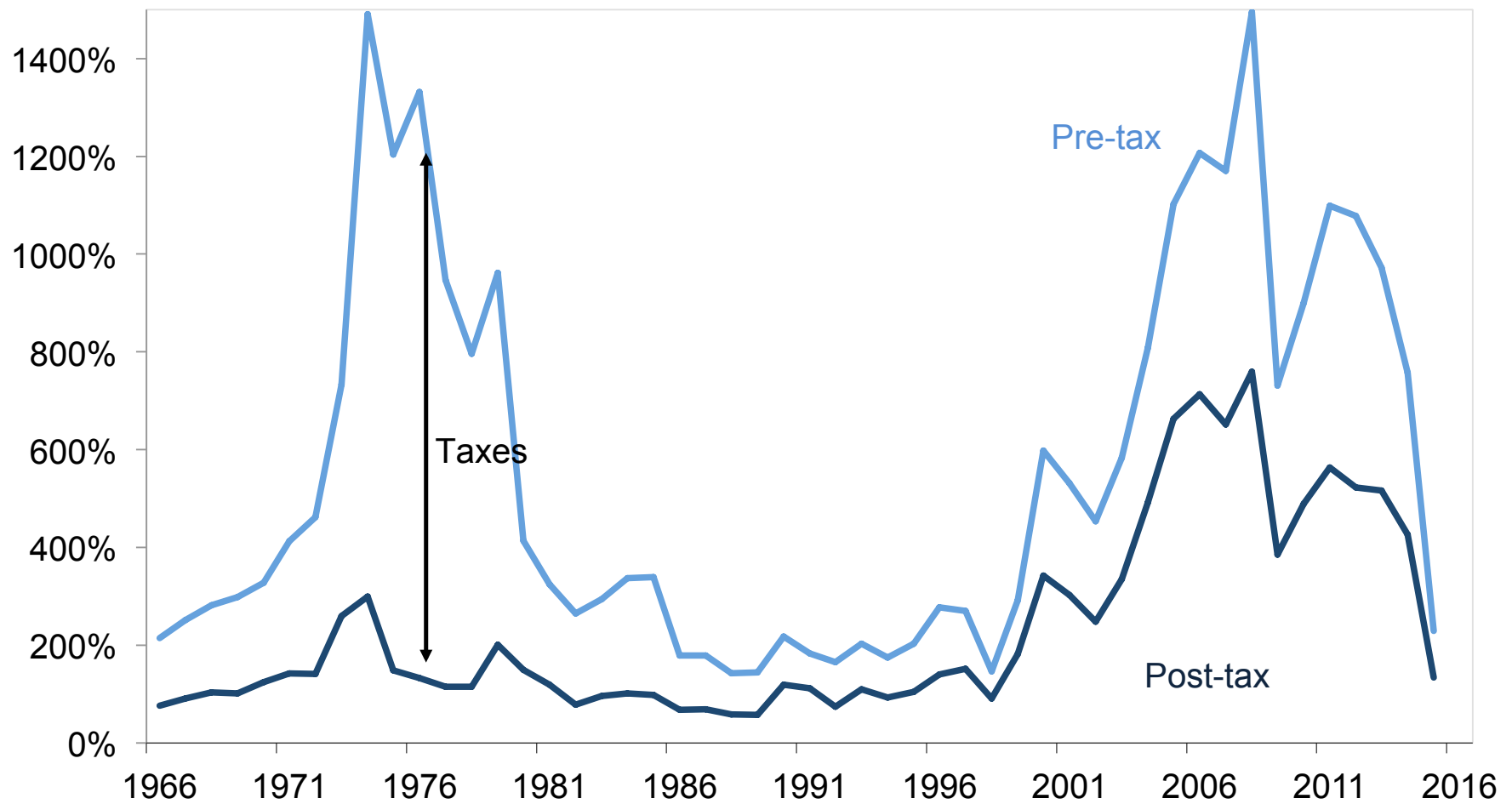
Figure B.1a: Returns to DI equity assets, 2014-2016

Sources: Raw data and underlying computations in tab 'BOPS and IIP'. Data is extracted from IMF BOPS (in Feb 2018) for countries other than the US. For the US we use the more comparable current cost measure for DI equity positions (see appendix for more detail). These come from BEA table 2.1 lines 36 and 41. US DI equity income flows includes a current cost adjustment (BEA Table 4.2, lines 2 and 39).
Notes: Returns are income yields, they do not include capital gains. Yields are computed by dividing DI equity earnings (dividends plus reinvested earnings, IMF code: bxipide_bp6_usd, bmipide_bp6_usd) in year t by positions (IMF code: iade_bp6_usd, ilde_bp6_usd) at the end of year t-1. Returns are after foreign taxes paid and net of depreciation.

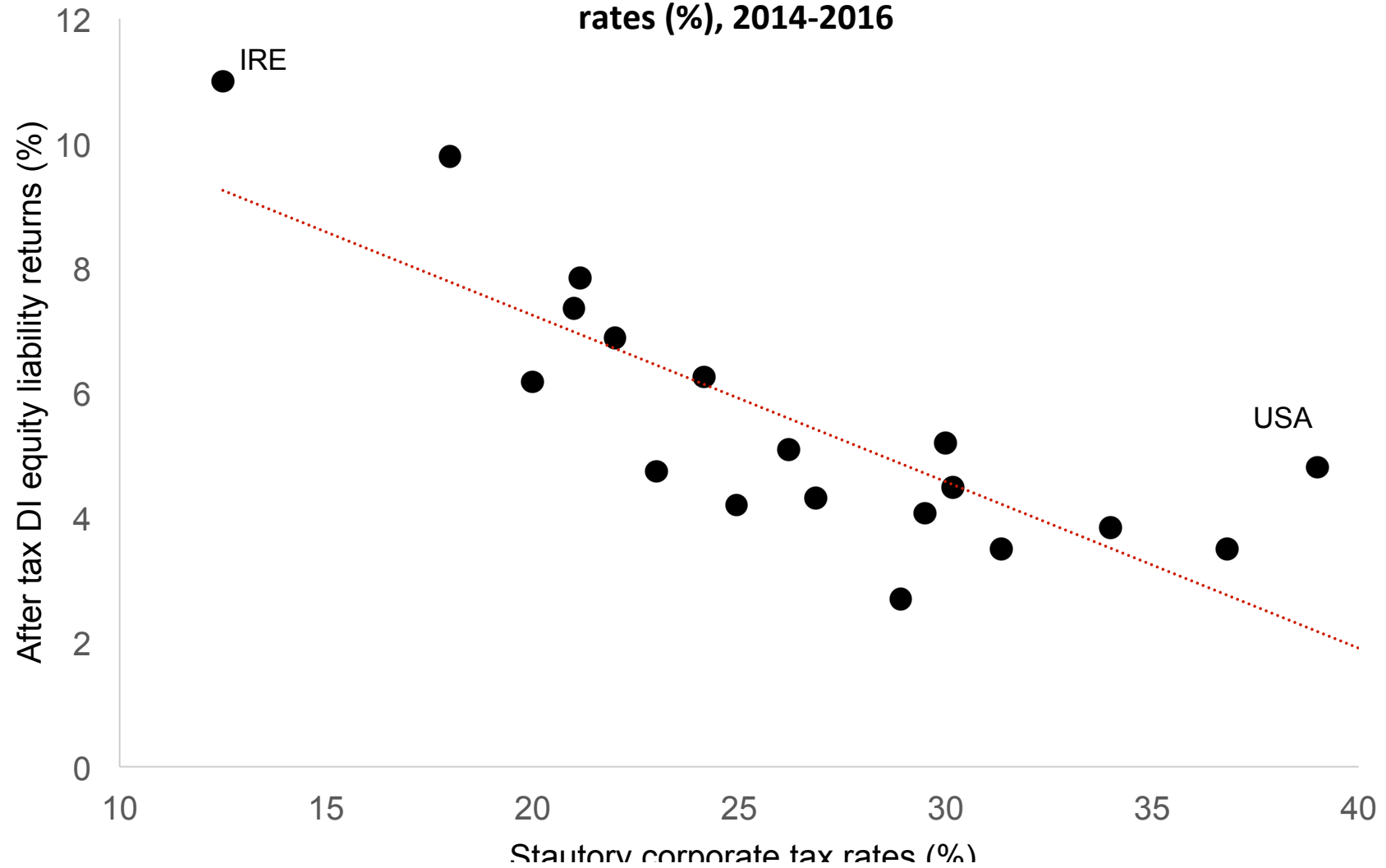# Figure B.1b: Return to DI equity liabilities, 2014-2016

Sources: Raw data and underlying computations in tab 'BOPS and IIP'. Data is extracted from IMF BOPS (in Feb 2018) for countries other than the US. For the US we use the more comparable current cost measure for DI equity positions (see appendix for more detail). These come from BEA table 2.1 lines 36 and 41. US DI equity income flows includes a current cost adjustment (BEA Table 4.2, lines 2 and 39). **Notes:** Returns are income yields, they do not include capital gains. Yields are computed by dividing DI equity earnings (dividends plus reinvested earnings, IMF code: bxipide_bp6_usd, bmipide_bp6_usd) in year t by positions (IMF code: iade_bp6_usd, ilde_bp6_usd) at the end of year t-1. Returns are after domestic taxes paid and net of depreciation.

Figure B.1c: DI equity returns differentials, 2014-2016

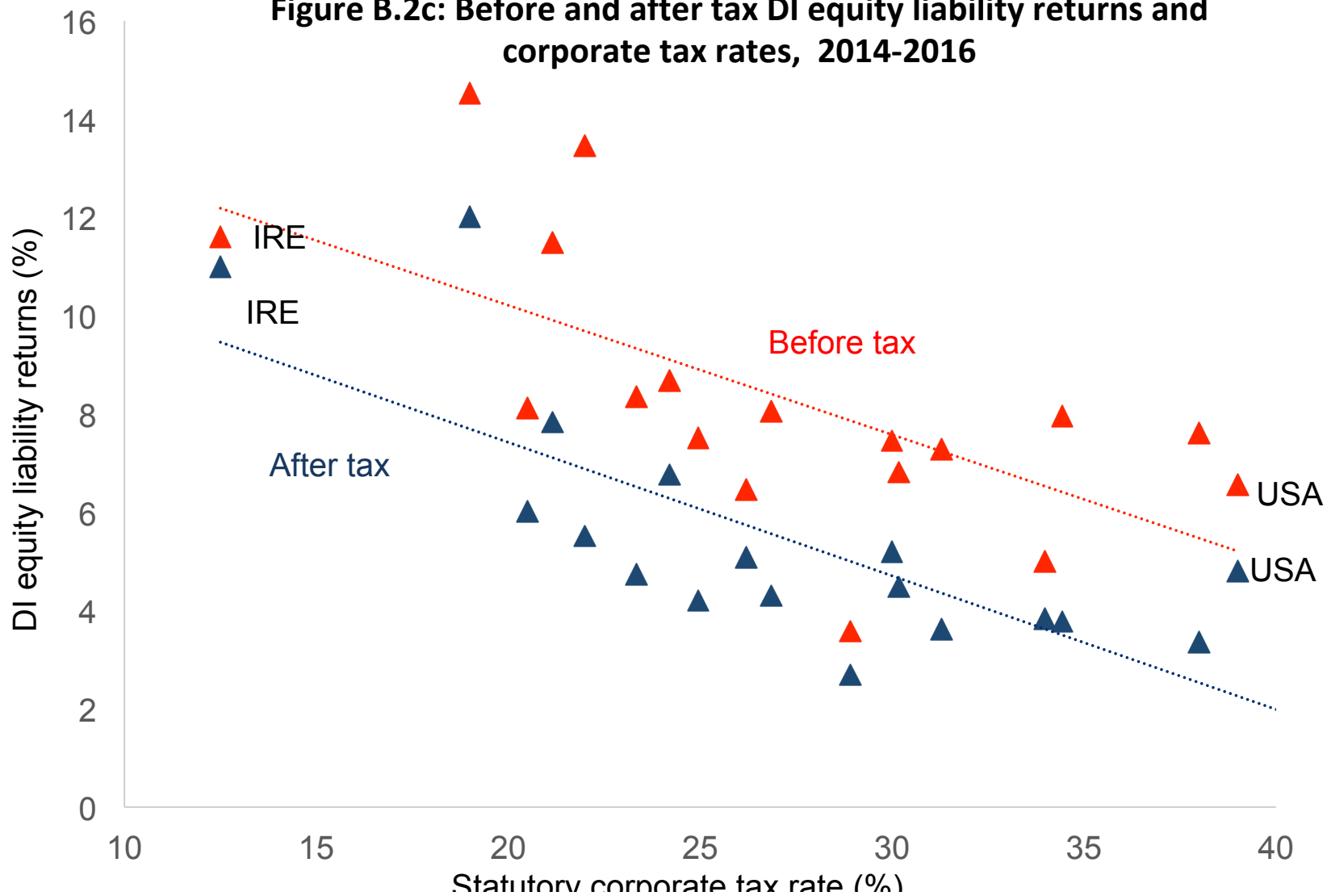Figure B.2: DI equity return differential and corporate tax rates, 2014-2016
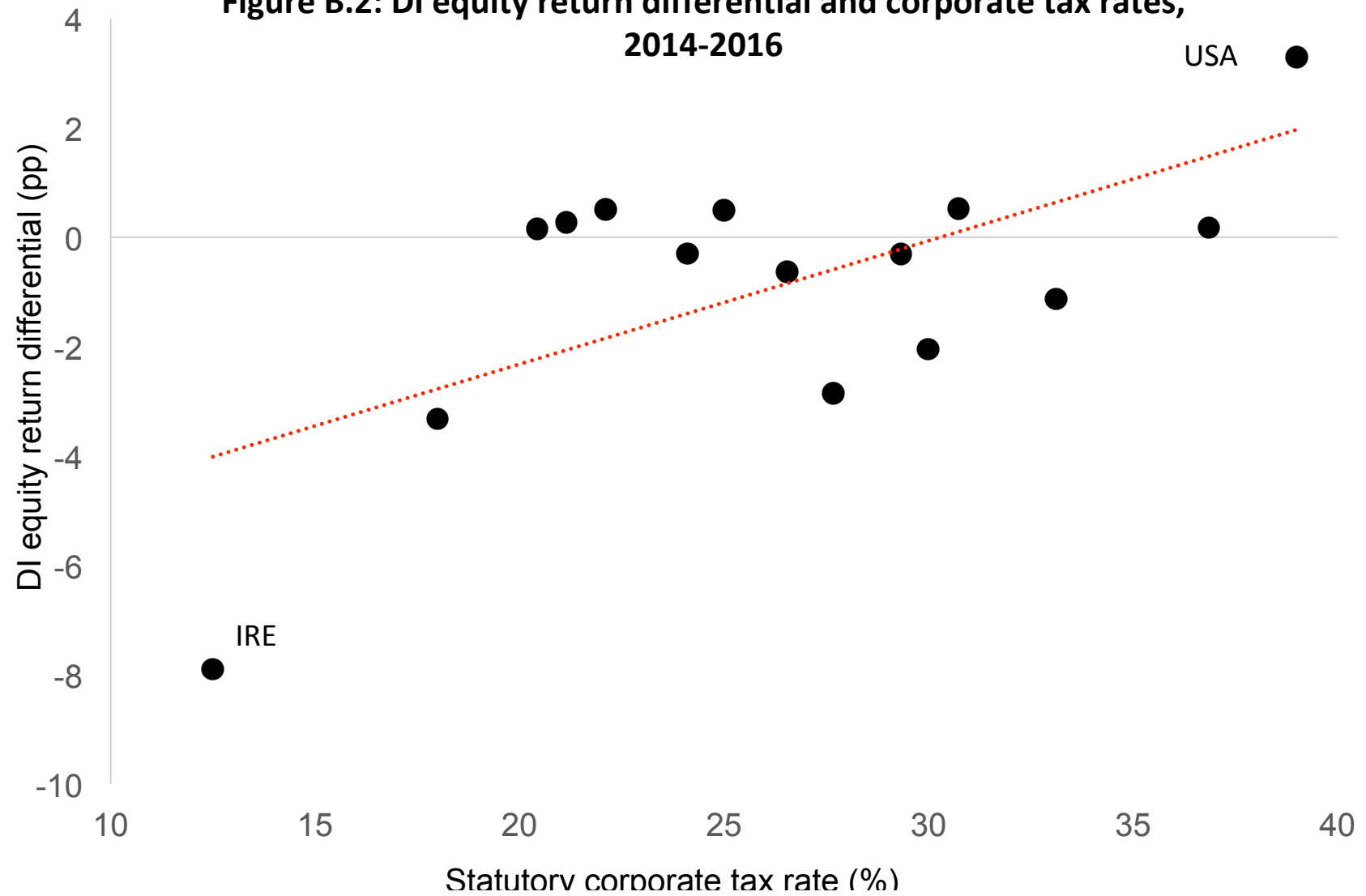
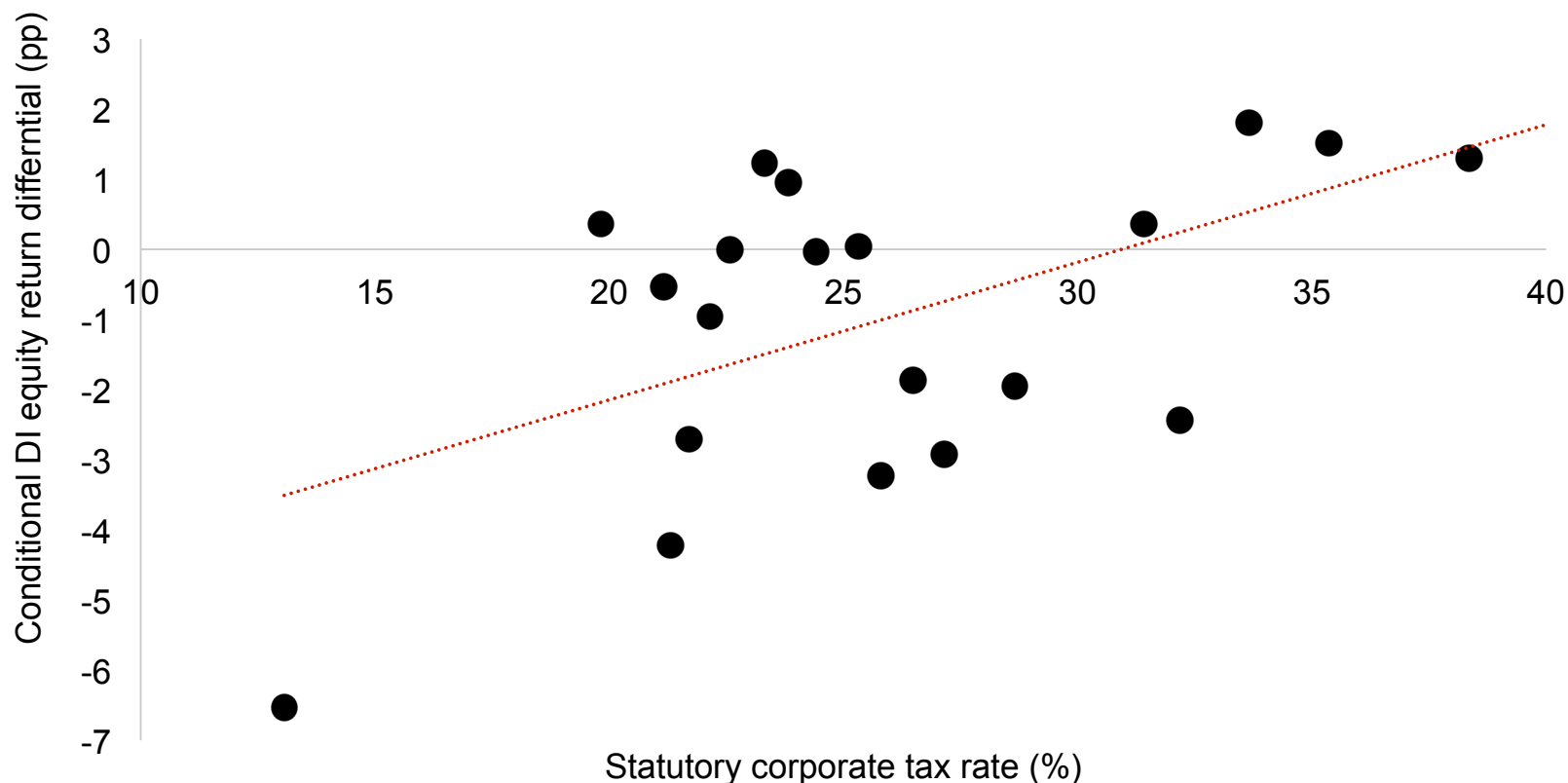Figure B.2b: After tax DI equity liability returns (%) and corporate tax rates (%), 2014-2016

Figure B.2c: Before and after tax DI equity liability returns and corporate tax rates, 2014-2016

Figure B.2d: Conditional DI equity return differential and corporate tax rate, 2014-2016
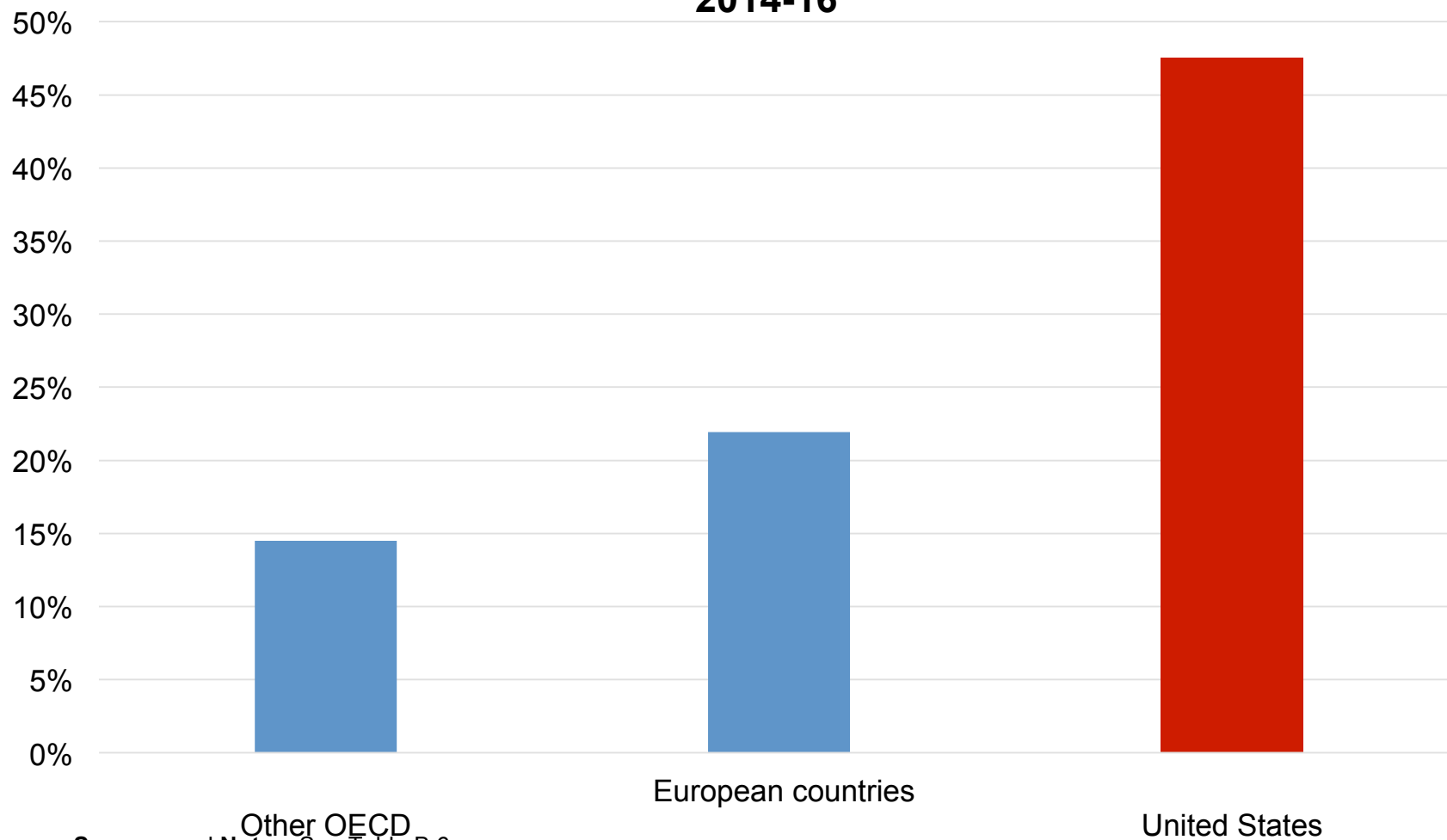

Notes: Same as figure 2, except here the slope is conditional on the PI equity rate of return differential, GDP per capita and membership of the EU. The PI equity differential is computed analagously to the DI equity differential. Earnings (IMF code: bxipipe_bp6_usd, bmipipe_bp6_usd) in period t, over positions (iape_bp6_usd, ilpe_bp6_usd) in t-1. **Sample** is same as in F.B2a. Slope coefficient is 0.21 with a p-value of 5.5% (pooled OLS with errors clustered at country level).

Figure B.3: After tax DI equity asset yields and corporate tax rates, 2014-2016

Figure B.4: Share of top 5 havens in outward FDI income, 2014-16

Sources and Notes: See Table B.6.