

Taxing across Borders: Tracking Personal Wealth and Corporate Profits[†]

Gabriel Zucman

Globalization is making it increasingly easy for corporations to shift profits to low-tax countries. Modern technology has also made it simpler for wealthy individuals to move funds to undeclared bank accounts in offshore tax havens. Both issues have featured prominently in the news and global economic debates since the financial crisis, but the arguments tend to be based on relatively little empirical evidence.

Measuring the costs of tax havens to foreign governments is fraught with difficulties. However, balance of payments data and corporate filings show that US companies are shifting profits to Bermuda, Luxembourg, and similar countries on a large and growing scale. About 20 percent of all US corporate profits are now booked in such havens, a tenfold increase since the 1980s. This profit-shifting is typically done within the letter of the law and thus would be best described as tax avoidance rather than fraud. I attempt to quantify its cost for government coffers by taking a fresh look at the most recent macroeconomic evidence and combining it in a systematic manner. Over the last 15 years, the effective corporate tax rate of US companies has declined from 30 to 20 percent, and about two-thirds of this decline can be attributed to increased profit-shifting to low-tax jurisdictions.

Wealthy individuals, too, use tax havens, sometimes legally—to benefit from banking services not available in their home country—and sometimes illegally—to evade taxes. A number of changes have sought, with some success, to curb that form of tax evasion over the last years. Yet the available evidence from Switzerland and

■ *Gabriel Zucman is Assistant Professor, London School of Economics, London, United Kingdom. During the 2013–14 year, he was a Postdoctoral Scholar, University of California at Berkeley, Berkeley, California. His email address is g.zucman@lse.ac.uk.*

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Luxembourg, as well as systematic anomalies in the international investment data of countries, show that offshore personal wealth is growing fast and that the bulk of it seems to be evading taxes.

To improve tax enforcement in the global economy of the 21st century, I make the case for a world financial registry. Such a registry would make it possible to both fix the loopholes of the corporate tax and make personal tax evasion much more difficult. I also discuss how some key challenges could, in the meantime, be addressed by reforms involving little to no international cooperation.

Multinational Corporations, Profit-Shifting, and Tax Avoidance

The corporate income tax is a key component of the tax systems of developed countries because it is one of the primary ways of taxing capital. In the United States, about one-third of total tax revenues at all levels of government came from capital taxes in 2013. Close to 30 percent of these taxes came from the corporate income tax (\$350 billion), while the rest is accounted for by property taxes (\$450 billion) and taxes on personal capital income and estates (\$450 billion).¹ In Europe, the average capital share of government tax revenues is 20 percent, which is less than in the United States because consumption taxes play a larger role; but like the United States, Europe's corporate tax accounts for about one-third of its capital taxes (Eurostat 2014). Yet despite its important role, the practicality and enforceability of the corporate income tax is seriously challenged by globalization, and if the current trends are sustained it could well become relatively much less important in the next two or three decades.

The Three Pillars of International Taxation

In most high-income countries, the corporate income tax was born just before or during World War I at about the same time as the personal income tax (Ardant 1972). That correspondence of timing is not a coincidence. Absent corporate taxes, personal taxation could be dodged or greatly postponed by people who would incorporate and shareholders who would keep their income within companies. The easiest way to prevent that scenario is to tax profits directly at the corporate level. The corporate tax is thus fundamentally a backstop, although it has also come to serve other purposes over time (as Bank 2010 shows in the US case). When corporate profits are paid out, the tax authorities recognize that shareholders have already been subject to corporate taxation and thus typically tax income from this source at a lower rate than earned income. In the United States, for instance, the

¹ These round-number figures are calendar year estimates that I computed using data from the Census Bureau, the Bureau of Economic Analysis, the Office of Management and Budget, and the OECD. The \$350 billion corporate tax total includes state taxes (\$53.6 billion) and the federal corporate tax (\$273.5 billion based on estimates for the fiscal year that ended on September 2013, about \$300 billion on a calendar year basis). See the online Appendix to this article for complete methodological details.

top federal income tax rate on capital gains and dividends paid by domestic and qualified foreign corporations is 20 percent, compared to 39.6 percent for ordinary income in 2013. In fact, the recognition that corporate profits are taxed twice was one of the key arguments put forward for reducing dividend taxation in 2003.² The 2003 dividend tax cut was originally set to expire in 2009 but has now been made permanent (Yagan 2014). In a similar vein, in Canada, Australia, and Mexico, when profits are paid out to shareholders as dividends, all corporate taxes previously withheld are credited against the amount of personal income tax owed. Until recently, many European countries had a similar imputation system. However, most of them now have adopted an approach similar to that of the United States: France stopped crediting corporate taxes in 2005, as did Germany in 2001 (for details of how high-income countries have taxed corporate profits since 1981, see OECD 2013a, table C-II-4).

Corporate taxation is relatively straightforward in a closed economy, but it becomes more complicated when companies operate in different countries. US citizens are required to pay US taxes on all income, wherever it comes from. Because the corporate tax is essentially a prepayment for the personal income tax, US-owned corporations should also pay taxes on all their profits, whether they originate from US operations or abroad. But what is to be done when two countries seek to tax the same profits? In the 1920s, concerned with such double taxation, the League of Nations asked four economists to think about how best to avoid it (Bruins, Einaudi, Seligman, and Stamp 1923). They articulated three principles, which since then have been the pillars of international taxation.

First, the corporate tax is to be paid to the source country's government. If a US person owns a Brazilian coffee producer—call it Coffee Rio—then Brazil ought to levy the tax. In formulating that rule, the League of Nations group was heavily influenced by the tax laws of 19th-century Europe, when different sources of income—wages, rents, dividends, and so on—were all subject to what were known as different “*schedular*” taxes. To many economists back in the 1920s, corporate profits were just another type of income to which a tax was attached, and the ultimate bearer of the tax burden did not matter much.

Source-based taxation works fine when a corporation owns a branch in another country that does all of its production and sales in that country. But imagine that Coffee Rio is the subsidiary of Coffee America, a US company whose activity involves importing and distributing Coffee Rio's products in the United States. Where do Coffee America's profits come from, the United States or Brazil? Here the League of Nations experts in the 1920s came up with a second principle known as “*arm's length pricing*.” Both entities must compute their own profits separately, as if they were unrelated. Thus, Coffee Rio must compute its profits as if it sold its coffee at

² For example, here's a comment from President George W. Bush (2003): “The IRS taxes a company on its profit. Then it taxes the investors who receive the profits as dividends. The result of this double taxation is that for all the profit a company earns, shareholders who receive dividends keep as little as 40 cents on the dollar. Double taxation is bad for our economy. Double taxation is wrong.”

the world market price, and the American parent must compute its profits as if it purchased the products of Coffee Rio at the market price for coffee. For decades, arm's length pricing is how the profits of multinationals have been allocated across countries.

Third, the League of Nations group decided that international tax issues ought to be addressed not by a multilateral, global agreement, but at the bilateral level. As a result, since the 1920s countries have signed thousands of bilateral "double-tax treaties" that follow the general League of Nations guidelines of source-based taxation and arm's length pricing, but differ in a myriad of specific ways. While international trade has been governed by a multilateral agreement since 1947—the General Agreement on Tariffs and Trade (GATT)—to date no such multilateral treaty exists for corporate taxes.

The League of Nations experts foresaw many of the deficiencies of their plan. British economists were particularly skeptical (for a prime example, see Coates 1925). But just as the corporate tax principles were agreed upon in the 1920s, globalization retreated. From the Great Depression to the 1960s, foreign profits accounted for roughly 5 percent of total US corporate profits, as shown in Figure 1. So for almost half a century, the decisions of the League of Nations experts turned out to be mostly inconsequential, applying only to this low percentage of corporate profits.

The situation started changing in the 1970s, but slowly. It is only in the 21st century that a surge in international investments brought the problems to the frontlines. Globalization is back on a broader scale than in the late 19th and early 20th century, and the choices made by the League of Nations are coming back to haunt the tax authorities.

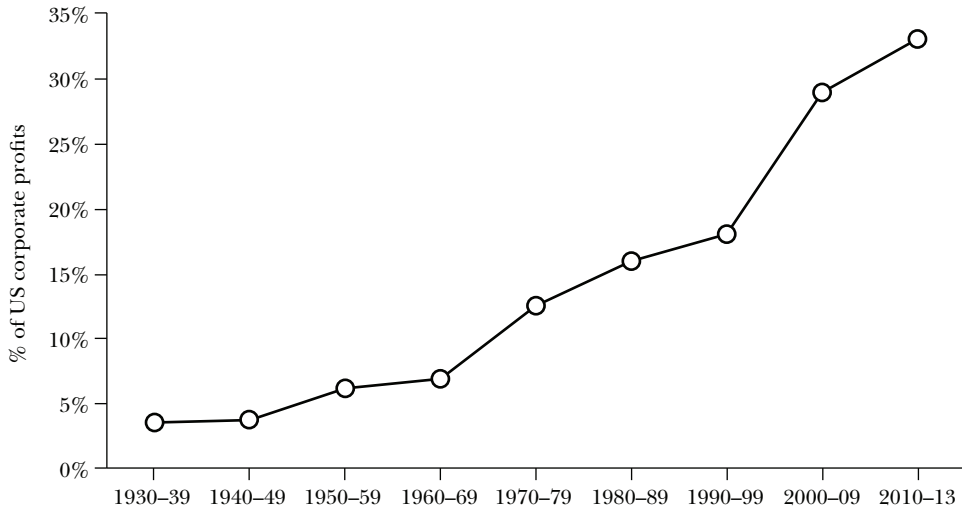
Treaty Shopping and Transfer Pricing

Each of the three core principles for international taxation of corporate earnings agreed upon in the 1920s—source-based taxation, arm's length pricing, and bilateral agreements—raises its own issues.

First, the choice of thousands of bilateral treaties over a multilateral agreement has created a web of inconsistent rules. Multinationals firms can exploit these inconsistencies to avoid taxes by carefully choosing the location of their affiliates—what is known as "treaty shopping."

One prominent example is Google's "double Irish Dutch sandwich" strategy, so named because it involves two Irish affiliates and a Dutch shell company squeezed in between. A similar strategy is used by other multinationals; in the case of Google, it was first analyzed by reporter Jesse Drucker (2010) and then by academics (for example, Kleinbard 2011, p. 707–714) and international organizations (for example, IMF 2013). It starts with Google US transferring part of its intangible capital—specifically, its search and advertisement technologies—to "Google Holdings," which is a subsidiary incorporated in Ireland, but for Irish tax purposes, it is a resident of Bermuda (where its "mind and management" are supposedly located). The transfer took place in 2003, a few months before Google's initial public offering, and at the time presumably generated a taxable income for Google

Figure 1

The Share of Profits Made Abroad in US Corporate Profits

Source: Author's computations using National Income and Product Accounts data.

Notes: The figure reports decennial averages (that is, 1970-79 is the average for years 1970, 1971, through 1979). 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.

in the United States. Google US had an incentive to charge less than the then-current market value of its technologies, but we do not know if it was able to do so or if the arm's length rules were strictly enforced—the purchase price is not public information. In any case, since Google's market value increased enormously after its 2003 initial public offering, it is apparent that Google US was able—whether intentionally or not—to “sell” its intangibles to its offshore subsidiary for what, in retrospect, was a low price.

The Irish/Bermuda hybrid then created another Irish subsidiary, “Ireland Limited,” and granted it a license to use Google's technologies. In turn, this subsidiary puts Google's intangible capital to use by licensing it to all Google affiliates in Europe, the Middle East, and Africa. (A similar strategy, with Singapore in lieu of Ireland, is used for Asia.) Google France, for instance, pays royalties to “Ireland Limited” in order to have the right to use the firm's technologies. At this stage, the bulk of Google's non-US profits end up being taxable in Ireland only, where the corporate tax rate is 12.5 percent.

The next step involves stripping the profits out of Ireland and making them appear to have occurred in Bermuda, where the corporate tax rate is zero percent. This is done by having “Ireland Limited” make a royalty payment to “Google Holdings.” There are two potential obstacles here. Ireland, first, withholds a tax on royalty payments to Bermuda; to avoid this tax, a detour by the Netherlands is necessary.

“Ireland Limited” pays royalties to a Dutch shell company (“Google BV”)—which is a tax-free payment because Ireland and the Netherlands are both part of the European Union. The Dutch shell then pays back everything to the Irish/Bermuda holding—tax-free again because to the Dutch tax authorities the holding is Irish, not Bermudian. The second problem is that the United States, like other high-income countries, has a number of anti-avoidance rules—known as “controlled foreign corporations” provisions—designed to immediately tax income such as royalties paid by Ireland Limited to the Irish/Bermuda holding. However, in the US case, these rules can be avoided by choosing to treat “Ireland Limited” and the Dutch shell company as if they were not corporations but divisions of Google Holdings, a move called “checking the box” because that is all that needs to be done on IRS form 8832 to make this work.

The end result is that from the viewpoint of the United States tax authorities, “Ireland Limited” and “Google BV” do not exist, but for Europe they are real. For Ireland, “Google Holdings” is Bermudian but for the United States it is Irish. Playing tax treaties against each other—and in particular exploiting their inconsistent definitions of residency—Google thus generates stateless income, nowhere taxed in the year it is generated (Kleinbard 2011, 2012, 2013). In recent years, according to Google’s company filings, its effective tax rate on foreign profits has ranged from 2 to 8 percent.

In the United States, contrary to what happens in most other OECD countries, when offshore profits are repatriated, they are taxed; the tax is at a corporate income tax rate of 35 percent with a credit for all foreign corporate taxes previously paid. In practice, the incentives to repatriate are weak because funds retained offshore can be used in various ways. One use is to purchase foreign companies—in 2011, Microsoft bought Skype for \$8.5 billion, and cross-border mergers and acquisitions have been booming since then. Another use is to secure loans—Apple has issued dozens of billions in bonds to finance a large share buyback program. Yet a more extreme move is for a company to shift its head offices overseas by merging with a foreign corporation, what is known as a “tax inversion”—in 2014, Minnesota-based Medtronic announced plans to buy Dublin-based Covidien and convert into an Irish-domiciled entity. All of this makes it possible for US-owned firms to use their unrepatriated offshore profits without incurring US tax liabilities.

The issues raised by treaty shopping are compounded by the growing ability of multinational firms to choose the location of their profits, and thus exploit treaty inconsistencies, irrespective of where they produce or sell. A popular method to shift profits offshore is the use of intragroup loans, whereby subsidiaries in low-tax countries grant loans to subsidiaries in high-tax countries. Another method—and according to a recent meta-analysis of the literature, the most important one (Heckemeyer and Overesch 2013)—is the manipulation of transfer prices, the prices at which companies exchange goods and services internally.

In principle, intragroups transactions should be conducted at the market price of the goods and services traded, as if the subsidiaries were unrelated. In practice, arm’s length pricing faces severe limitations. In the hypothetical earlier example of

Coffee Rio, imagine that it sells its output to Coffee America at artificially high prices to make the profits appear in Brazil (where the corporate tax rate is 25 percent) rather than in the United States (where the corporate tax rate is 35 percent). With billions of intragroup transactions every year, tax authorities cannot conceivably check that they are all correctly priced. Clausing (2003) finds compelling evidence of transfer mispricing by US firms: controlling for other variables that affect trade prices, US firms appear to export goods and services to their low-tax subsidiaries at relatively low prices, and to import from them at high prices.

More important, in many cases the relevant market prices simply do not exist. What was the fair market value of Google's technologies when it transferred them to its Bermuda subsidiary in 2003 before Google was even listed as a public company? The issue is growing in importance, as a rising number of international transactions within international divisions of a single company—such as the sale of proprietary trademarks, logos, and algorithms—are not replicated between third parties. Indeed, for a number of multinational companies, where the profits derive in part from synergies of being present across the globe, the very notion of arm's length pricing is conceptually flawed. In this case, there is no clear-cut way to attribute a portion of its income to any particular subsidiary.

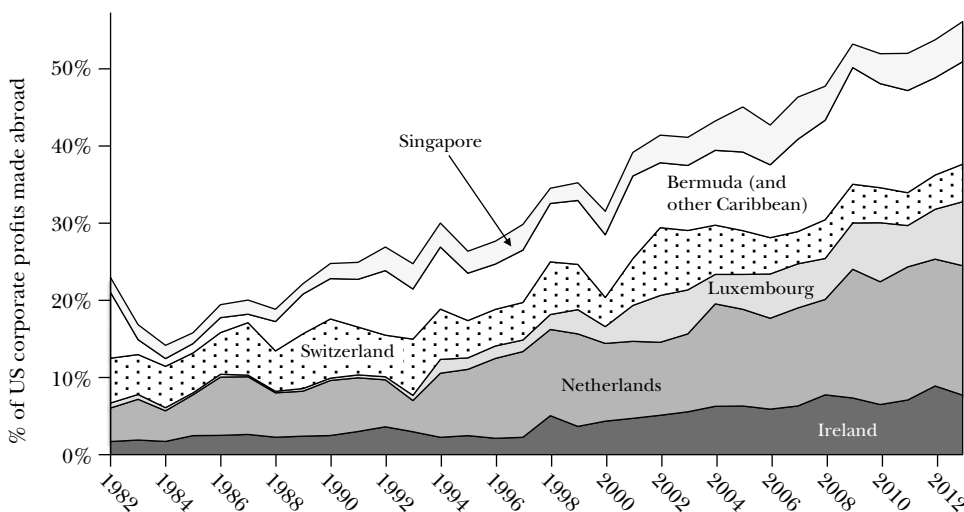
The last core problem of today's international tax environment stems from the rule that profits should primarily be taxed in source countries. Absent that rule, there would be no point in trying to make profits appear as if they were earned in zero-tax Bermuda. Source-based taxation provokes two types of inefficiencies. First, it causes a wasteful expenditure of resources: multinational companies spend billions of dollars in treaty shopping and transfer pricing (the tax department of General Electric employs close to 1,000 individuals), and when tax authorities devote effort to curb avoidance practices, this in turn triggers even bigger corporate expenses. The end result is that non-tax-haven countries have lower tax revenues and welfare (Slemrod and Wilson 2009). Source-based taxation also gives firms incentives to move real activity—factories, headquarters, and workers—to where taxes are low.³ While many analysts worry about the costs of tax competition for real investment, the available evidence suggests that artificial profit-shifting has a much larger effect in reducing corporate income tax payments, and thus the focus on this article is on profit-shifting.

The Revenue Loss Due to Corporate Tax Avoidance by US-Owned Firms

Quantifying the government revenue losses caused by profit-shifting to lower-tax jurisdictions is fraught with difficulties. A number of attempts, in particular by Sullivan (2004) and Clausing (2009), rely on Bureau of Economic Analysis data on US multinational firm operations. Here, I take a different approach by

³ Ironically, in a pure source-based tax environment, artificial profit-shifting and tax competition for real investments cannot be fought simultaneously. Every time the tax authorities attempt to limit shifting financial profits to Bermuda, it becomes more valuable for firms to relocate to Singapore or Dublin (Hong and Smart 2010; Johannesen 2010). This would not be the case in the reform scenario I describe later in the paper.

Figure 2

The Share of Tax Havens in US Corporate Profits Made Abroad

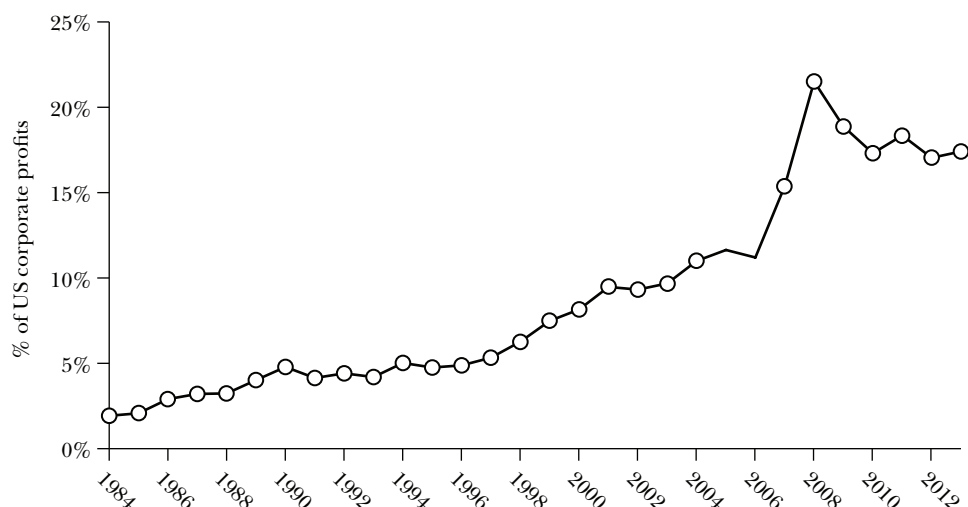
Source: Author's computations using balance of payments data. See online Appendix.

Notes: This figure charts the share of income on US direct investment abroad made in the main tax havens. In 2013, total income on US direct investment abroad was about \$500 billion. Seventeen percent came from the Netherlands, 8 percent from Luxembourg, etc.

drawing on national accounts and balance of payments statistics. One advantage of these data is that they do not suffer from the double-counting issues pervasive in US multinational firm operations data (as discussed in Bureau of Economic Analysis 2013; Hines 2010a). In the balance of payments data, profits that pass through chains of entities in Bermuda, Ireland, and the Netherlands—like in the “double Irish Dutch sandwich” arrangement—are consolidated and counted only once, in such a way that \$1 of foreign profit recorded in the balance of payments directly contributes to US national income.

Consider then the basic macroeconomic aggregates of the US economy in 2013. National income (that is, GDP minus capital depreciation plus net income received from abroad) is equal to \$14.5 trillion. Of this, US corporate profits (net of capital depreciation and interest payments) account for 14.5 percent, or \$2.1 trillion. “US corporate profits” should be understood as the profits of US-owned firms: they include \$1.7 trillion of domestic profits, plus \$650 billion of profits made by foreign firms owned by US residents, minus \$250 billion made by domestic firms owned by foreigners. So 31 percent ($650/2,100$) of US corporate profits were made abroad in 2013. Where do the \$650 billion of foreign profits come from? The balance of payments provides a country-by-country decomposition of this total, indicating that 55 percent are made in six tax havens: the Netherlands, Bermuda, Luxembourg, Ireland, Singapore, and Switzerland (Figure 2). The use of tax havens has steadily increased since the 1980s and continues to rise. Moreover, the trend toward more

Figure 3

The Share of Tax Havens in US Corporate Profits

Source: Author's computations using National Income and Product Accounts and balance of payments data. See online Appendix.

Note: 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).

widespread use of tax havens by US-owned corporations shows no particular sign of slowing down.

As tax havens rose as a share of foreign profits (to 55 percent today) and foreign profits rose as a share of total US corporate profits (to about one-third), the share of tax havens in total US corporate profits reached 18 percent (that is, 55 percent of one-third) in 2013. That is a tenfold increase since the 1980s, as shown by Figure 3. The high level of tax-haven profits is all the more remarkable given that many US-owned companies have no overseas activity at all. (The rapid increase during the financial crisis is due to the relative strength of offshore profits at a time when domestic profits collapsed.)

Considerable care is needed when interpreting balance of payments statistics. These data do not reveal the real source of profits, but mainly the location of the holding companies involved in tax planning. Imagine that a US firm has an affiliate in France but this affiliate is owned through an Irish holding. In the US balance of payments, a lot of the income generated in France will get counted to Ireland, particularly if the French affiliate is a disregarded entity for US tax purposes under the “check the box” rules. One potential reason for having an Irish intermediary is that it can make it easier to avoid French taxes and facilitate deferral of US taxes. But the balance of payments statistics do not

directly tell us how much the increased use of haven-based subsidiaries costs various governments.

To make progress on this issue, we need an estimate of the taxes paid by US-owned firms on the profits recorded in tax havens. Data from the Bureau of Economic Analysis (2013, table II-D-1, p. 46) suggest that US multinationals pay about 3 percent in taxes to foreign governments on the profits booked in the main low-tax jurisdictions displayed in Figure 2. Corporate filings are consistent with this result. In 2014, in Microsoft's 10-K filing with the Securities and Exchange Commission,⁴ the firm disclosed that it had \$92.9 billion of accumulated offshore profits—mostly from its subsidiaries in Puerto Rico, Ireland, and Singapore—and that it would face a \$29.6 billion tax bill in the United States should it repatriate them—that is, a 31.9 percent rate. Since upon repatriation Microsoft would be able to deduct the foreign taxes previously paid from the 35 percent US corporate tax rate, this disclosure implies that the company paid at most 3.1 percent in taxes to foreign governments.

Microsoft also made it clear that it had no intention of repatriating the \$92.9 billion, which it views as being “permanently reinvested outside the United States.” Admittedly, firms sometimes bring back a fraction of their overseas profits; others might do so in the future. But repatriations from low-tax jurisdictions are small today and seem unlikely to increase much in the near future, at least under current law. In 2004, Congress granted a repatriation tax holiday, letting multinationals bring their accumulated foreign profits back home if they paid a rate of 5.25 percent. Most companies used the tax holiday in 2005. Available evidence suggests that the holiday failed to increase domestic employment, investment, or research and development (Dharmapala, Foley, and Forbes 2011). Moreover, it gave a boost to the share of the foreign profits of US-owned firms not only made, but also retained in tax havens (Figure 4). In 2013, 80 percent of the profits made in the key tax havens (that is, 45 percent of all foreign profits) were retained there, with 20 percent brought back to the United States. Expectations of a new holiday may further increase this share in the near future.

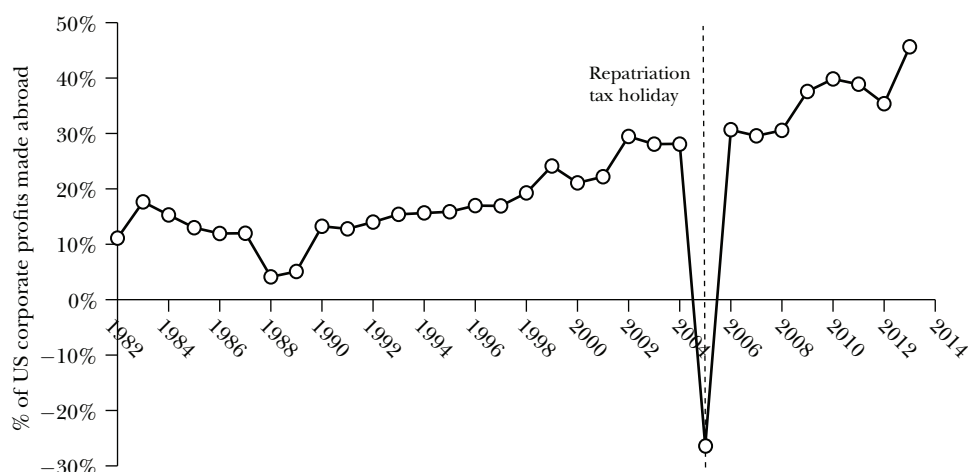
Thus, not only do the profits made in the main havens bear negligible foreign taxes, they also mostly go untaxed by the IRS. Since these profits account for about 20 percent of all US corporate profits, I conclude that profit-shifting to low-tax jurisdictions reduces the tax bill of US-owned companies by about 20 percent.

The Decline in the Effective Corporate Tax Rate of US-Owned Firms

Another way to assess the total government revenue losses is to study the evolution of the effective tax rate on the profits made by US-owned corporations all over the world. I compute the effective tax rate by dividing all the corporate taxes paid by these firms (to US and foreign governments) by US corporate profits, as recorded in the national accounts. (A more comprehensive analysis would take

⁴ Available at <http://www.sec.gov/Archives/edgar/data/789019/000119312514289961/d722626d10k.htm>.

Figure 4

US Corporate Profits Retained in Tax Havens

Source: Author's computations using balance of payments data. See online Appendix.

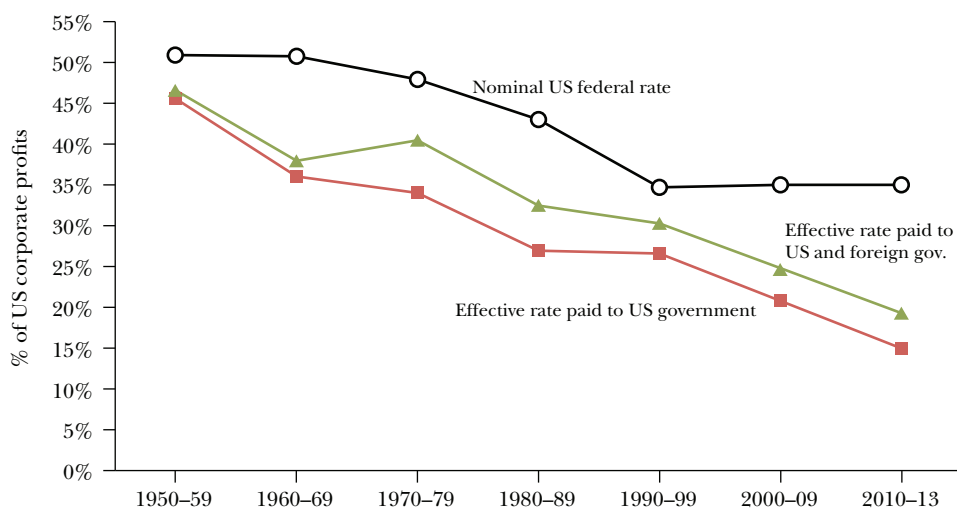
Notes: This figure charts the ratio of US direct investment income reinvested in the main tax havens (Netherlands, Ireland, Switzerland, Singapore, Luxembourg, Bermuda, and other Caribbean havens) to total US direct investment income abroad. The negative amount of reinvested earnings in 2005 means that, out of 2005 production, US firms repatriated more than 100 percent of the 2005 profits of their foreign affiliates (that is, the 2005 data point excludes repatriations from profits made prior to 2005).

account of the taxes then paid by shareholders when profits are distributed, so as to capture the effective rate on capital income).

Figure 5 reports nominal and effective corporate tax rates on US corporate profits by decade since the 1950s. The figure shows that the effective corporate tax rate is always below the US federal nominal rate. Indeed, not all corporate profits are taxable; when they are, the IRS definition of profits is usually narrower than that used in the national accounts; and companies can defer taxes by retaining income abroad. The Tax Reform Act of 1986 attempted to bring the two rates in line—the nominal rate was reduced to 34 percent in 1988 in exchange for a base broadening. For about a decade, that strategy proved successful. But the situation changed in the late 1990s. From 1998 to 2013, the effective tax rate paid by US-owned firms has been reduced by a third, from 30 to 20 percent. If it had stayed constant, these companies would have, all else equal, paid \$200 billion in additional taxes in 2013.

Not all of that decline should be attributed to increased tax avoidance. Although the nominal federal corporate tax rate has remained constant since 1998, tax revenues have been affected in other ways. First, changes in US laws have narrowed the tax base. For example, corporations can deduct 9 percent of manufacturing income (broadly interpreted) from taxable profits since 2004, reducing the effective rate by about 0.4 percentage point (Government Accountability Office 2013a, p. 26).

Figure 5

Nominal and Effective Corporate Tax Rates on US Corporate Profits

Source: Author's computations using National Income and Product Accounts data. See online Appendix.

Notes: The figure reports decennial averages (for example, 1970-79 is the average for years 1970, 1971 through 1979.) In 2013, over \$100 of corporate profits earned by US residents, on average \$16 is paid in corporate taxes to the US government (federal and states) and \$4 to foreign governments.

From 2001 to 2004 and again from 2008 to 2013, “bonus depreciation” was in force, altering the timing of depreciation deductions, although not their amount (Zwick and Mahon 2014). Some loopholes, on the other hand, have been plugged, such as tax cuts for profits derived from exports, which were found to contradict World Trade Organization rules.

Second, part of the large 2007-2010 decline in the effective tax rate owes to a drop in corporations’ realizations of capital gains and a rise in bad debt expenses, in both cases reducing taxable profits but not profits as measured in the national accounts. In recent years, revenues have also been affected by tax loss carryforwards from the 2008-2009 crisis. The net effect of the Great Recession, however, should not be overstated: in 2013, four years after the end of the recession, and despite a surge in profitability, the effective rate (20 percent) is still almost as low as in the 2009 trough (18.4 percent).⁵

Third, the profits made by S-corporations are included in national accounts profits, although they are not subject to corporate taxes, so for these firms, the effective corporate tax rate is zero percent. S-corporations are firms with less than

⁵ This is not apparent in Figure 5 because this figure displays decade averages. Yearly estimates of the effective corporate tax rate are available online in the Excel Data Appendix to this article. Yearly data can be volatile, in particular because of year-to-year swings in capital gains realizations; to analyze long-run trends it is preferable to focus on decade averages as in Figure 5.

100 shareholders that pass their profits through to their owners to be taxed at ordinary individual income tax rates (up to 39.6 percent in 2013). S-corporations' profits have been rising from close to zero in the early 1980s to about 15 percent of US corporate profits in the late 1990s, and have remained at that level since then. Thus, S-corporations account for 2 percentage points of the fall in the effective tax rate from the 1980s to the 1990s, but they do not contribute to the 1998–2013 decline.

Last, foreign corporate taxes have tended to fall, but this reduction does not drive a wedge between the nominal and effective rate because lower foreign taxes are offset by lower tax credits when foreign profits are repatriated to the United States, and unrepatriated profits face almost no foreign taxes at all.

In sum, out of the 10 points decline in the effective tax rate between 1998 and 2013, 2 to 4 points can be attributed to changes in the US tax base and the Great Recession, leaving two-thirds or more of the decline to increased tax avoidance in low-tax countries. The cost of tax avoidance by US firms is borne by both the US government and the governments of other countries. Much of Google's profits shifted to Bermuda are made in Europe; absent tax havens, Google would pay more taxes in France and Germany. On the other hand, some US corporations also use tax havens to avoid taxes on their US-source income. With national accounts data, it is hard to know which government loses most. In both cases, US shareholders win. Since equity ownership is very concentrated, even after including the equities owned by broad-based pension funds (Saez and Zucman 2014), so too are the benefits.

How can we reconcile the sharp decline in the effective corporate tax rate with the widely noted fact that corporate tax revenues have not declined as a share of US national income over the last 30 years—they still amount to about 3 percent today? The answer is that corporate profits have risen as a share of national income over time, from about 9 percent in the 1980s—when interest rates were high, and the capital share of corporate value-added low—to about 14 percent in 2010–2013.⁶ This increase has offset the fall in the effective tax rate. In the United States like in other high-income countries, “capital is back” (Piketty and Zucman 2014)—but capital taxes, not at all.

Corporate Tax Reforms

There is no shortage of plans to fix the corporate tax. Some commentators argue that it should simply be abolished. A repeal would undermine the individual income tax, as people would shift income to companies and try to consume within firms; therefore in its most radical—and coherent—form, this proposal comes along with the suggestion to abolish the income tax as well and to tax consumption instead (Mankiw 2014). Toder and Viard (2014) suggest replacing the corporate tax by increased shareholder taxes: nonpublicly traded businesses would be taxed on a flow-through basis, just like S-corporations today; shareholders of publicly-traded

⁶ See Supplementary Figure S.1 in the online Appendix available with this paper at <http://e-jep.org>.

corporations would be taxed each year on the rise in the value of their shares, even if the gains have not been realized. However, as the authors acknowledge, the reform would raise only half the revenue of the current corporate tax, a tax cut that would primarily benefit rich households at a time when income and wealth inequality are rising; and since equity prices are very volatile, it would result in unpredictable tax bills. In fact, no country in the world has a well-functioning individual income tax and no corporate tax at all.

For those committed to keeping a form of corporate taxation, reform proposals differ in their willingness to reconsider the three pillars of international taxation: decentralized rules through bilateral treaties, arm's length pricing, and source-based taxation.

A first class of reforms pushes for more harmonization of treaty rules. Advocates acknowledge that the thousands of bilateral tax treaties have created scope for treaty shopping and transfer mispricing, but they remain committed to the principles of source-based taxation and arm's length pricing. As one example, the OECD (2013b) has disclosed an ambitious "action plan on base erosion and profit shifting" along those lines. In recent years, one of the main steps taken by governments has been to strengthen existing transfer pricing rules by bringing them in line with OECD guidelines (Lohse and Riedel 2013).

A second class of proposals suggests abandoning arm's length pricing. The profits of multinational companies would instead be apportioned to each country according to some formula, perhaps using some combination of sales, capital, and employment—analogous to the way that corporations are taxed by the states within the United States (Clausing 2014, evaluates the US experience across states with formula apportionment). For instance, if Google makes half of its sales and has half of its capital and workers in the United States, then half of its profits would be taxable there. This method would address the issue of artificial profit shifting. If capital and employment entered the formula, there would remain incentives for firms to move real activity to low-tax countries. A more radical proposal thus allocates a multinational's profits to each country based only on where it makes its sales. After all, a company like Starbucks can easily shift its headquarters to Ireland, but not its customers. Profit apportionment based on sales would therefore address both artificial profit shifting and tax competition. Yet sales, capital, or employment, are only mildly correlated with profits (Hines 2010b). So if one considers that corporate taxes ought to be paid to the countries from which profits originate—the third key League of Nations principle—then formula apportionment would misattribute taxing rights.

A third class of proposals abandons source-based taxation. If the corporate tax is only a prepayment for the personal income tax, profits should not be attributed to the countries from which they originate, or where sales are made, but to the countries where shareholders live. To understand the differences here, imagine that a French resident fully owns a company that has all its capital and employment in Germany but sells all its products in China. In today's tax system, all the taxing rights are allocated to Germany, because that is where production occurs. With formula apportionment based on sales, the corporate taxes would be allocated to

China. If one regards the corporate tax as essentially a prepayment for the French income tax, then with a French owner the profits should be attributed to France. However, the corporate tax is more than a prepayment: it is also a way to tax rents, like in the case of extractive industries; and foreign shareholders (French-owners of a Berlin-based firm, for example) benefit from the public goods provided by Germany, giving Germany a right to tax at least part of the profits made there. Clearly, source-based taxation has some legitimacy.

Rather than abandoning source-based taxation altogether, its pitfalls can be addressed by integrating the corporate and individual income taxes, like European countries used to do and countries like Australia and Canada, among others, still do. In this system, once profits are paid out to shareholders, the government allows any corporate tax previously withheld to be credited against the amount of personal income tax owed. Imagine that Microsoft had managed to avoid taxation entirely: in an imputation system, its shareholders would get no credits and pay up to 48 percent (the combined federal corporate tax and top dividend tax rate on \$1 of corporate profit in 2013) on the dividends they receive. Any dollar paid by Microsoft would reduce the tax bill at the shareholder level. Such an imputation system combines source- and shareholder-based taxation in the most logical way, and, most important, removes incentives for firms to relocate to Ireland or shift profits to Bermuda, since shareholders would recognize that it's a wash.

Shareholders could still eschew taxation by investing in firms paying little or no dividends, and so it would remain important to ensure that large enough amounts of taxes are withheld at the corporate level. A number of multinational companies have low effective tax rates today, but this problem could probably be addressed by abandoning arm's length pricing and using an apportionment formula instead. In an imputation system, it does not matter that sales (or any of the factors entering in the formula) are uncorrelated to profits, since the corporate tax is eventually credited back to shareholders. What matters is that the corporate tax be levied at approximately the same rate for large and small, high-tech, and manufacturing companies alike, and that this prepayment be fairly distributed across countries.

The imputation system worked well in Europe during most of the 20th century, but ultimately failed for two reasons. First, it became apparent that shareholders received credits for taxes that had never been paid in the first place, because credits were given on the assumption that corporations had paid the nominal rate while they often had paid less. This problem could be easily addressed by asking corporations to disclose their effective tax rate at the time they distribute dividends. The more fundamental issue is that governments found it unacceptable to give credits to domestic shareholders for corporate taxes levied by foreign countries, an issue that became important with the surge of cross-border dividend flows in the 1990s and 2000s. In 2004, the European Court of Justice ruled that the uneven treatment of foreign dividends was discriminatory, leading France, among others, to abandon its imputation system in 2005 (Graetz and Warren 2007). Today, a main challenge is to find a way to make an integrated individual–corporate tax work in a globalized world.

A World Financial Registry

The United States could thoroughly reform its corporate taxation system without a lot of international cooperation. For example, the United States could unilaterally abandon arm's length pricing, tax corporations on their global profits (using some apportionment formula), raise the personal dividend tax rate, and credit corporate taxes back to shareholders—and do all of this in a revenue neutral way. In particular, instead of giving a credit to US multinationals for previously paid foreign taxes upon repatriation (at a cost of \$118 billion in 2010), the federal government would give a credit to shareholders receiving foreign dividends. The United States might be reluctant to take such a step if foreign countries do not reciprocate, but this issue could be dealt with through bilateral treaties.

The European Union and the United States—which together account for close to 50 percent of world GDP—are currently engaged in talks to create a transatlantic free-trade area; as part of these talks, they could jointly decide to move to formula apportionment and an integrated individual–corporate tax with reciprocal crediting. During the transition, the United States could also unilaterally tax the stock of unrepatriated offshore profits of US-owned firms, at say a 1 percent rate per year. This tax on corporate wealth would trigger virtuous behavioral responses: at a minimum it would generate extra tax revenues which could be used to cut distortionary taxes or lower the tax burden of the middle class; on top of this, it might also spur employment and investment in the United States.

Many observers believe that taxing rights are badly allocated across countries today; for instance, that Google and Starbucks dodge their tax duties to the UK or French governments, or that both Europe and the United States deprive developing countries from their fair share of revenues. In itself, formula apportionment would not necessarily help, as evidence suggests that the allocation of taxable income across countries is very sensitive to the choice of the apportionment factors (IMF 2014, p. 39–40), and there is no guarantee, therefore, that a fair distribution is achieved. For example, an apportionment based on sales only may be detrimental to developing countries where companies produce goods for export and sale elsewhere. Tax policy in this area needs a benchmark—what would be a fair distribution of corporate tax revenues across countries?—and a tool to assess whether the benchmark is met.

One reasonable benchmark is that governments primarily want to tax the corporate profits—whether originating from domestic or foreign firms—that accrue to resident households, in particular because they attempt to redistribute income from high- to low-income people, like in the canonical model of optimal income taxation. There might be reasons for deviating from this benchmark (in particular for developing countries), but it is a useful and well-defined starting point.

With regard to the tool, a world financial registry would enable countries to assess how the actual distribution of revenues compares to the benchmark allocation. The registry would include information on the residence and nationality of corporate shareholders, thus making it possible for countries to check whether the total taxes they levy on corporate profits—at both the corporate and shareholder level, net of credits—are in line with the corporate profits that indeed accrue to

resident taxpayers. A world financial registry is not necessary to fix some of the most pressing issues, but in the long run it is a transparent way to enforce a fair distribution of corporate tax revenue globally and thus make an imputation system work in a globalized world.

Is a world financial registry workable? There are a number of practical obstacles: toward the end of the paper, I will also touch on some political obstacles like concerns over privacy.

First, a world financial registry would have costs—but such costs should not be overstated. In each country, a central securities depository already keeps track of who owns the equities and bonds issued by domestic firms (the Depository Trust Corporation in the United States, for example, or Clearstream, in Luxembourg). A global registry would merge these partial, privately managed registries to create a comprehensive one.

Second, a large fraction of the world's equities might not initially be attributable to any well-identified beneficial owner. Equities are largely held through intertwined financial intermediaries, like investment funds, pension funds, and the like. To identify the residence of the ultimate owner, it would be necessary to know the relationships of the different entities involved in the wealth-holding chain. Progress has started in this area since the recent financial crisis, under the auspices of a committee of authorities from around the world working to create a global system of legal entity identification: for some details, see the website of the Regulatory Oversight Committee (ROC) of the Global Legal Entity Identifier System at <http://www.leiroc.org>.

Third, a growing fraction of US equities (and equities in other high-income countries) are managed by intermediaries located in offshore financial centers. Figure 6 reports data collected by the US Treasury on the residence of the owners of US equities; the US Treasury International Capital dataset is a high-quality dataset and one of the main pillars of US international statistics (Bertaut, Grier, and Tryon 2006). In 2013, 9 percent of all US-listed equities belonged to tax-haven-based individuals and firms, such as hedge funds in the Cayman Islands, insurance companies in Bermuda, Luxembourg mutual funds, Swiss banks, and so on. Who are the ultimate owners of the shares managed by these intermediaries? Some of them are investors who make legal use of offshore intermediaries. But many, as the next section discusses, are individuals using offshore banks to evade taxes. To pierce this veil of secrecy, international cooperation would be necessary, which might involve sanctions against tax havens that are reluctant to disclose information about foreign customers and their accounts.

Offshore Tax Evasion by Wealthy Individuals

Switzerland, Singapore, Hong Kong, and the Bahamas, among others, have attracted a large offshore private banking industry. Banks located in these countries cater to wealthy individuals from around the world. They provide a variety of financial services to these individuals, many of which are legal and useful to people who

Figure 6

US Equities Held by Tax Haven Firms and Individuals

Source: Author's computations using US Treasury International Capital data. See online Appendix.

Notes: In 2012, 9 percent of the US listed equity capitalization was held by tax haven investors (hedge funds in the Cayman Islands, banks in Switzerland, mutual funds in Luxembourg, individuals in Monaco, etc.)

are sometimes working or living abroad or do not have access to high-quality financial services in their home country. As long as earnings from such bank accounts are reported to tax authorities (in the United States, using the electronic Foreign Bank and Financial Account form if the account value is \$10,000 or more), such accounts are legal. However, the amount of funds in offshore accounts seems far larger than can be accounted for by typical banking transactions. Another service offshore banks can provide is the opportunity to evade taxes.

Eight Percent of the World's Financial Wealth

To understand how offshore banking can affect an individual's tax bill, think of an American businessman, Maurice, who owns a carpet-making company, Dallas Carpet. In order to send funds offshore, Maurice proceeds in three steps. He first creates a shell company, say in the Cayman Islands. Although the Cayman Islands appear often in these kinds of stories, Findley, Nielson, and Sharman (2012) report it is even easier to form anonymous companies in the state of Delaware and in many OECD countries. The Caribbean shell then opens a bank account in Hong Kong, where all the major global banks operate. Last, Dallas Carpet purchases services that are difficult or impossible to observe—like management advice—from the Cayman company and pays for the services by wiring funds to Hong Kong. The bank earns fees, thus making it a good deal for Hong Kong to allow such accounts to exist; incorporation agents in the Caymans also earn fees.

The transaction generates a paper trail that appears legitimate, and in at least some cases actually is legitimate. It is unlikely to trigger any anti-money-laundering alarms inside the banks because there are billions of electronic transfers out of the United States each year, making it almost impossible to distinguish in real time those that are legal (such as payments made to real exporters) from those conducive to tax evasion.

For Maurice, the tax benefits of this arrangement are twofold. By overpaying for actual services, or just paying for false services, he (fraudulently) reduces Dallas Carpet's profits and thus its corporate tax in the United States. Then, once the funds have arrived in Hong Kong, they can be invested in global bonds, equities, and mutual funds and generate interest, dividends, and capital gains. The IRS can only tax that income if Maurice self-reports it, or if Hong Kong banks inform the US authorities. Otherwise, Maurice can evade US federal income tax as well.

How big are the sums held in offshore accounts? Until recently, evidence on that issue was lacking. Tax havens rarely publish informative statistics. There are two exceptions, however. Thanks to an exhaustive, detailed, monthly survey conducted by the Swiss National Bank, we know the amount of wealth held by foreigners in Switzerland. The latest data point, for June 2014, puts the total at \$2.46 trillion.⁷ Luxembourg has also recently released similar information, showing that foreign households have \$370 billion there (Adam 2014, p. 8).⁸ (Luxembourg, a country of half a million inhabitants, has an annual national income of about \$35 billion.) But no other country publishes similar data. The United States, for example, does not disclose the assets held by, say, Latin American residents in Florida banks.

To obtain a sense of the global amount of offshore wealth, one has to use indirect methods. My own attempt relies on the anomalies in global investment statistics caused by offshore fortunes (Zucman 2013a, 2013b). Take the hypothetical case of Elizabeth, a UK resident who owns stock in Google through her Swiss account. In the United States, statisticians observe that a foreign investor owns US securities and record a liability. UK statisticians should record an asset held by a UK resident but they don't, because they have no way to observe Elizabeth's offshore holdings. Because Elizabeth's equity holdings are neither assets nor liabilities for Switzerland, over there nothing is recorded in the investment statistics. In the end, more liabilities than assets show up in global investment data. Strikingly, more than 20 percent of the world's cross-border equities have no identifiable owner.

By analyzing these anomalies, I estimate that 8 percent of the global financial wealth of households is held in tax havens, about \$7.6 trillion at the end of 2013. Other estimates are generally larger. Based on interviews with wealth managers, the Boston Consulting Group (2014) has an \$8.9 trillion figure for 2013. Henry's (2012) estimate is as high as \$32 trillion.

⁷ For details, see Table S1 of the online Appendix to this article.

⁸ This figure understates the true amount of offshore wealth in Luxembourg because it excludes some \$350 billion not directly held by households but through family offices and other intermediaries.

Table 1

The World's Offshore Financial Wealth

	<i>Offshore wealth (\$ billions)</i>	<i>Share of financial wealth held offshore</i>	<i>Tax revenue loss (\$ billions)</i>
Europe	2,600	10%	75
United States	1,200	4%	36
Asia	1,300	4%	35
Latin America	700	22%	21
Africa	500	30%	15
Canada	300	9%	6
Russia	200	50%	1
Gulf countries	800	57%	0
Total	7,600	8.0%	190

Source: Author's computations (see Zucman 2013a, b) and online Appendix.

Notes: Offshore wealth includes financial assets only (equities, bonds, mutual fund shares, and bank deposits). Tax revenue losses only include the evasion of personal income taxes on investment income earned offshore as well as evasion of wealth, inheritance, and estate taxes.

My method probably delivers a lower bound, in part because it only captures financial wealth and disregards real assets. After all, high-net-worth individuals can stash works of art, jewelry, and gold in “freeports,” warehouses that serve as repositories for valuables—Geneva, Luxembourg, and Singapore all have them. High-net-worth individuals also own real estate in foreign countries. Registry data show that a large chunk of London's luxury real estate is held through shell companies, largely domiciled in the British Virgin Islands, a scheme that enables owners to remain anonymous and to exploit tax loopholes (O'Murchu 2014). There is no way yet to estimate the value of such real assets held abroad.

The world's offshore wealth is large enough to significantly affect measures of the inequality of wealth. As shown by Table 1, US residents own about \$1.2 trillion abroad, the equivalent of 4 percent of America's financial wealth. Europe holds \$2.6 trillion offshore, which is about 10 percent of its financial assets. The widespread use of tax havens means that survey and tax data probably underestimate the concentration of wealth substantially (see Roine and Waldenström 2009 for the case of Sweden). In developing countries, the fraction of wealth held abroad is considerable, ranging from 20 to 30 percent in many African and Latin American countries to as much as 50 percent in Russia and Gulf countries.

How is offshore wealth evolving? In Switzerland, foreign holdings are close to an all-time high. They have increased 4.6 percent per year since the Swiss National Bank started publishing data at the end of 1998. The trend does not seem to have been much affected by recent enforcement efforts. In an April 2009 summit, the leaders of the G20 countries declared the “end of bank secrecy” (Johannesen and Zucman 2014). Since then, offshore assets managed in Switzerland have increased 15 percent. Adam (2014) similarly reports a 20 percent growth for Luxembourg offshore wealth from 2008 to 2012 (the latest available data). The growth is

stronger in the emerging Asian centers, Singapore and Hong Kong, so that globally, according to my estimate, offshore wealth has increased 28 percent from end-2008 to end-2013.

The post-2008 growth in offshore wealth reflects both valuation effects—world equity markets have largely recovered from their trough in 2008 and 2009—and also net new inflows. In the case of Luxembourg, the 20 percent growth in offshore assets is despite a 20 percent drop in the EuroStoxx 500, Europe's leading equity index. In Switzerland, the 15 percent growth since April 2009 is comparable to the growth of Europe's financial wealth. Inflows seem to be coming largely from developing countries; as their share of global wealth rises, so too does their share of offshore wealth. More than half of offshore assets still belong to residents of high-income countries (as shown in Table 1), but if the current trend is sustained, emerging countries will overtake Europe and North America by the end of the decade.

Two other recent developments are worth noting. First, while offshore assets are rising, the number of clients is falling, and so the average wealth per client is booming. The main Swiss banks have been refocusing their activities on their "key private banking" clients, those with more than \$50 million in assets. Recent policy changes (discussed below) are indeed making it more difficult for moderately wealthy individuals to use offshore banks to dodge taxes: for them, the era of bank secrecy is coming to an end. But more fundamentally, offshore banks are responding to the increasing concentration of global fortunes.⁹ The banks know that "ultra-high net worth" clients are prospering—a number of them publish annual world wealth reports in which fortunes of dozens of millions of dollars are described as rising much faster than average and are projected to continue to do so in the future (for example, Credit Suisse 2013).

Offshore banking is also becoming more sophisticated. Wealthy individuals increasingly use shell companies, trusts, holdings, and foundations as nominal owners of their assets. This is apparent in Switzerland, where more than 60 percent of foreign-owned deposits "belong" to the British Virgin Islands, Jersey, and Panama—the leading centers for the domiciliation of shell vehicles. In Luxembourg as well, "assets are moving to legal structures such as family wealth-holding companies" (Adam 2014, p. 8).

The revenue costs of offshore tax dodging are sizable. Of course, some taxpayers duly declare their Swiss or Cayman holdings. Yet in Switzerland, about 80 percent of the wealth held by Europeans seems to be evading taxes, according to data published by the Swiss tax authority. On the assumption of a like basis for other tax havens, Table 1 provides estimates of the revenue losses for the main economies. Globally, the reduction in tax revenues amount to about \$200 billion annually. This

⁹ In Saez and Zucman (2014), wealth is estimated by capitalizing flows of capital income. By this measure, the share of US wealth held by the top 0.1 percent—families with more than \$20 million in net wealth in 2012—was 8 percent in 1980; it is now 22 percent and as much as 23 percent when making allowance for unrecorded offshore assets. For the top 0.01 percent (those holding more than \$100 million), the rise has been spectacular, from less than 3 to more than 11 percent of all wealth. By contrast, households between the top 10 percent and the top 0.1 percent have seen their share of total US wealth decrease.

is about 1 percent of the total revenues raised by governments worldwide, and this reduction in tax revenues accrues almost entirely to the wealthiest. In the United States, according to IRS data, the top 0.1 percent highest income earners pay about \$200 billion in federal income taxes (16 percent of all federal income tax revenues, which totaled \$1.3 trillion in 2013). Assuming that all unrecorded offshore wealth belongs to the top 0.1 percent, eradicating offshore evasion (which would yield at least \$36 billion) would raise as much revenues as increasing the top 0.1 percent's federal income tax bill by close to 18 percent. (These computations only include the cost of tax evasion on investment income earned offshore and on inheritances.)

As with any attempt at quantifying unreported aspects of the economy, a margin of error is involved. While it seems clear that global offshore wealth is on the rise, the main uncertainty relates to the fraction of those funds that evade taxes. A couple of US Senate (2008, 2014) reports found that up to 2008, 85 to 95 percent of US-owned accounts at UBS and Credit Suisse were undeclared. Thus, my assumption that 80 percent of offshore funds is undeclared to tax authorities suggests that some improvement has been made in recent years. Some observers believe that enforcement has improved much more dramatically, but this view is inconsistent with the fact that the funds declared to tax authorities in recent years, though not negligible, have been quite modest (Johannessen and Zucman 2014, Section V). The share of offshore wealth that is dodging taxes may decrease more substantially in the future. To compute it, we would ideally like to compare the data published by the Swiss National Bank (and other tax haven authorities) to the assets that taxpayers report to the IRS (and other tax agencies). But very few havens publish any useful statistics and tax authorities do not systematically disclose the amounts declared to them. Filling in these data gaps should be among the highest priorities in this area for researchers and policymakers.

The Automatic Exchange of Bank Information and Beyond

Since the financial crisis of 2008–2009, remarkable progress has been achieved in curbing bank secrecy. Prior to 2008, tax havens refused to share any information with foreign tax authorities. But in 2010, the US Congress enacted and President Obama signed into law the Foreign Account Tax Compliance Act, which compels foreign banks to disclose accounts held by US taxpayers to the IRS automatically each year, under the threat of economic sanctions—a 30 percent tax on all US-source income (Grinberg 2012). Other high-income countries are following suit, as discussed in OECD (2014), and the automatic sharing of bank data is becoming the global standard. Key havens, including Switzerland, Singapore, and Luxembourg, have already indicated they would participate. In 2008, the vast majority of tax experts would have deemed such worldwide cooperation utopian. Apparently, tax havens can be forced to cooperate if threatened with large enough penalties.

The Foreign Account Tax Compliance Act has been criticized on a number of grounds: for example, it asserts US government power over foreign-based financial firms; it invades privacy; and it creates difficulties for ordinary Americans overseas because foreign banks may choose simply not to offer or to sharply limit accounts

to Americans rather than to deal with its requirements. Whatever the merits and demerits of these issues, FATCA has been the starting point toward changing the ground rules that previously governed offshore banking.

However, current enforcement efforts face three main potential obstacles: 1) obtaining compliance from offshore bankers, 2) addressing the opacity of international financial record-keeping, 3) making sure offshore banking does not move to uncovered jurisdictions.

With regard to the first concern, not all bankers in Switzerland, the Caymans, and elsewhere may truthfully report to foreign authorities. For decades, some of them have been hiding their clients behind shell companies, smuggling diamonds in toothpaste tubes, and handing out bank statements concealed in sports magazines, all of this in violation of the law and the banks' stated policies (as reported in US Senate, 2008, 2014). More than a handful of rogue employees were involved: in 2008, over 1,800 Credit Suisse bankers were servicing Swiss accounts for US customers. Can offshore wealth managers now be trusted to assist the tax authorities?

Securing their cooperation will partly depend on the penalties that financiers will face for noncompliance and the rewards that whistleblowers will be able to claim. In the United States, the IRS has paid as much as \$104 million to the employee who denounced wrongdoings at UBS. The Justice Department has imposed fines for abuses of offshore banking, and regulators have threatened to revoke banking charters a number of times over the last years. However, the US approach has also been weak in some ways, according to a bipartisan US Senate staff report (2014). While the US has put pressure on Switzerland, it has largely failed so far to pressure other tax havens.¹⁰ Among the US taxpayers who have voluntarily disclosed previously hidden assets in recent years, 42 percent reported a Swiss account, 8 percent a UK account, but almost no US taxpayers reported any holdings in Hong Kong (3 percent), the Caymans (1 percent), or Singapore (1 percent), where the bulk of US offshore money lies (Government Accountability Office, 2013b, 2014). Only about one-quarter of the funds that left Credit Suisse between 2008 and 2012 have been repatriated to the United States, while half have stayed in Switzerland, and the remaining quarter have moved to other countries (US Senate 2014, p. 114). As for other rich economies, the European Union has about 30 times more wealth hidden in Switzerland than the United States, yet has done much less than the United States to fight this type of evasion.

Looking forward, countries unwilling or unable to impose sanctions on offshore banks and reward informants about systematic legal violations will remain vulnerable—this includes nations with corrupt governments, small economies, most of the

¹⁰ As of August 2014, only two banks (Wegelin and Credit Suisse) had been indicted, and the United States had obtained few names and little account information: Credit Suisse sent less than 1 percent of its 22,000 American accountholders; Wegelin, none. Accounts disclosed have also tended to be small, with a median amount of \$570,000. Overall, just \$6 billion in back taxes, interest, and penalties had been paid with regard to offshore bank accounts by January/February 2014—which pales in comparison to the yearly losses for the IRS.

developing world, and, as it stands, the European Union. Another important factor will be the evolution of the size distribution of banks. Whistleblowing by rational (or moral) employees is more likely to occur in big than small firms (Kleven, Kreiner, and Saez 2009). If tax evasion activities move to small boutique banks, shielded from US outreach, then enforcement might prove increasingly difficult. Even some large banks may straggle in a way that hinders enforcement, if they believe that they are too big to indict—that is, they believe that regulators will hesitate to charge them because it might pose a danger to financial stability. In 2014, Credit Suisse pleaded guilty of a criminal charge of conspiracy to defraud the IRS, yet it was able to keep its US banking license (US Department of Justice 2014).¹¹

With regard to the second concern, there is a fundamental problem that many assets cannot easily be traced to their real owners, so even the automatic sharing of bank information may bump into problems of financial opacity. Take the Hong Kong account of hypothetical Maurice, mentioned earlier: on paper, it belongs to a Cayman corporation managed by nominees with addresses in that country. Imagine that Maurice's Hong Kong bankers enquire about who owns the Cayman shell company. Will they find out? Findley, Nielson, and Sharman (2012) attempted to create anonymous companies by asking 3,700 incorporation agents in 182 countries: in about a quarter of cases, they were able to do so without providing any identification document. But the problems don't stop there. Imagine now that certain documents show that the Cayman company belongs to a Jersey discretionary trust. When asked, the trustees, who were chosen by Maurice, say the beneficial owner is Chang, Maurice's business partner in China. The Hong Kong account, then, does not belong to a foreign person and no information is sent to the IRS. Even that example is much simplified. In the real world, tax evaders can combine countless holding entities in numerous havens, generating *de jure* ownerless assets or effectively disconnecting them from their holdings. The prevalence of derivative financial instruments can also make it difficult to discern the value of financial holdings clearly. Thus, even though the Foreign Account Tax Compliance Act and similar laws are broad in scope, they may prove unable to catch even moderately sophisticated tax dodgers. Evasion opportunities are disappearing for those who do not use more complex administrative structures like shell corporations and trusts, but may remain for those who do.

The third concern is that a crackdown on offshore evasion needs to be global. Cooperative efforts coordinated through the OECD have convinced many offshore centers to share bank information automatically. Yet the more havens agree to cooperate, the bigger the incentives for the remaining ones not to do so (Elsayyad and Konrad 2012). In Johannesen and Zucman (2014), we show that when two countries like Switzerland and France agree to share banking information, French tax

¹¹ In 2012, US authorities decided against indicting HSBC despite evidence the bank enabled Mexican drug cartels to move money through its American subsidiaries in violation of basic anti-money-laundering regulations. Instead, the bank was fined \$1.92 billion. For comparison, HSBC's pre-tax profits were \$22.6 billion in 2013.

evaders move their assets to less-cooperative places like Hong Kong. Such transfers are child's play, because the funds remain within the same banks that have subsidiaries all over the world. A handful of noncooperative financial centers can quickly attract a lot of money.

The obstacles to current enforcement actions are not insuperable, though. Recent experience since the G20 summit in April 2009 shows that diplomacy can go a long way in securing commitments from countries to encourage bank reporting of foreign accounts. A number of tax havens derive a large fraction of their income from illegal activities; at this stage they have little incentive to give up this lucrative business, but global cooperation might be achieved by threatening tax havens with sanctions proportional to the income they generate in abetting tax dodgers. Such incentives may also foster cooperation on the part of the havens that have already promised to implement the automatic exchange of bank information. In addition to fines, criminal charges, and the revocation of banking licenses, credible threats include trade tariffs. A 30 percent tariff jointly imposed by Germany, France, and Italy on Swiss exports, for instance, would cost Switzerland more than what Swiss banks gain by managing the evaded wealth from these three countries (Zucman 2013b).

Progress can also be made in curbing financial opacity by using the world financial registry described above. For enforcing an efficient and fair corporate income tax, the world financial registry only needs to include equities. For tax enforcement purposes concerning individuals, it would be necessary to include other types of financial claims, including bank deposits, bonds, and derivatives. A world financial registry would make it possible for tax authorities to check that taxpayers duly report their assets and income, independently of what information offshore bankers are willing to provide. One common response to proposals for a world financial registry is that it would threaten individual privacy. But countries have public property records for land and real estate and there seems to be little misuse. Anybody, for example, can connect to <http://a836-acris.nyc.gov/> and find out who owns real estate on Park Avenue (although one sometimes stumbles upon faceless corporate titles) or if a particular person owns anything in Brooklyn. Of course, these records about real estate only capture part of people's wealth, but when the records were created, centuries ago (for example, in 1791 in France), land accounted for the bulk of private wealth, so they indeed recorded most of peoples' fortunes. In addition, not all countries have the same attitudes toward transparency, and such attitudes change over time. In some Scandinavian countries, taxpayers' income and wealth is made public (Bø, Slemrod, and Thoresen 2014). Even in the United States, income tax payments were required to be publicly disclosed in 1923 and 1924 (Marcin 2014). But there might be a case for starting such a world financial registry only with those countries sharing similar attitudes toward transparency, or to initially keep the information confidentially in the hands of tax and regulatory authorities.

While progress has undoubtedly been achieved over the last few years in curbing tax avoidance and evasion, much more could be done to illuminate the

dark sides of international capital mobility. The stakes go beyond tax enforcement, as the ability to move large sums of money without leaving a footprint also facilitates money laundering, bribery, and the financing of terrorism.

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