

Global Profit Shifting, 1975-2019

December 2022

Ludvig Wier

Ministry of Finance, Denmark

Gabriel Zucman

UC Berkeley

EU Tax Observatory

This study is reproduced here with full acknowledgement of UNU-WIDER, Helsinki. The study was originally commissioned under the UNU-WIDER project Detecting and countering illicit financial flows which is which is part of the Domestic Revenue Mobilization programme. The programme is financed through specific contributions by the Norwegian Agency for Development Cooperation (Norad).

The views expressed here are those of the author(s) and not those of the EU Tax Observatory. EU Tax Observatory working papers are circulated for discussion and comment purposes. They have not been subject to peer-review or to the internal review process that accompanies official EU Tax Observatory publications.

Title: Global profit shifting, 1975–2019

Author(s): Ludvig Wier and Gabriel Zucman

Author's email address: ludvig.wier@econ.ku.dk and zucman@berkeley.edu

All affiliations: Wier: Ministry of Finance, Denmark; Zucman: UC Berkeley and NBER

Abstract: This paper constructs time series of global profit shifting covering the 2015–19 period, during which major international efforts were implemented to curb profit shifting. We find that (i) multinational profits grew faster than global profits, (ii) the share of multinational profits booked in tax havens remained constant at around 37 per cent, and (iii) the fraction of global corporate tax revenue lost due to profit shifting rose from 9 to 10 per cent. We extend our time series back to 1975 and document a remarkable increase of multinational profits and global profit shifting from 1975 to 2019.

multinationals, profit shifting, factor shares, taxation

H26, E25, F23

Acknowledgements: The views expressed in this paper are those of the authors, and do not necessarily reflect the views of the Ministry of Finance of Denmark, UNU-WIDER, the United Nations University, nor its programme/project donors. All data are available online at <https://missingprofits.world>. Zucman acknowledges financial support from the Stone Foundation, the Carnegie Foundation, the European Research Council, and the European Commission grant TAXUD/2020/DE/326.

Note: tables and figures at the end

1 Introduction

A body of evidence suggests that multinational companies shift profits to tax havens (e.g., Bolwijn et al. 2018; Clausing 2016; Crivelli et al. 2015; Tørsløv et al. 2022a). This phenomenon has attracted considerable attention from economists and policy-makers. In 2015, the OECD launched the Base Erosion and Profit Shifting process to curb tax avoidance possibilities stemming from mismatches between different countries' tax systems. In 2017, the United States cut its corporate tax rate from 35 to 21 per cent and introduced measures to reduce profit shifting by US multinational companies. In 2021, more than 130 countries and territories agreed to a minimum tax of 15 per cent on the profits of multinational firms, with implementation scheduled to begin in 2024 in some countries.

Yet despite these developments, we do not currently have a good sense of the dynamic of global profit shifting. Have corporations reduced the amounts they book in tax havens since 2015, or have they found ways to eschew the new regulations? A number of studies provide estimates of global profit shifting, but they typically do so for just one reference year. Moreover, because these studies rely on different raw sources and methodologies, their estimates are not directly comparable, making it hard to construct consistent time series by piecing different data points together. This limits our ability to study the dynamics of profit shifting and to learn about the effects of the various policies implemented to curb it.

This paper attempts to overcome this limitation by creating global profit shifting time series constructed following a common methodology. Our series allow us to characterize changes in the size of global corporate profits, the fraction of these profits booked in relatively low-tax places, and the cost of this shifting for governments of each country.

Our starting point is the estimates of Tørsløv, Wier, and Zucman (2022a), which are for 2015. Building on the same sources and applying the same methodology, we first extend the Tørsløv et al. (2022a) estimates to cover the years 2015 to 2019, a period that includes the Base Erosion and Profit Shifting (BEPS) process and the US tax reform of 2017. We then construct pre-2015 series back to 1975, which allows us to capture the financial and trade liberalization decades that saw a dramatic rise of multinational profits. Due to the lack of some of the input data required to implement the full Tørsløv et al. (2022a) methodology, these pre-2015 series are based on additional assumptions and have some margin of error. However the main quantitative patterns that emerge from these series are likely to be reliable.

Our main findings can be summarized as follows. First, global corporate profits have grown much faster than global income between 1975 and 2019. The share of profits in global income has increased by a third over this period, from about 15 per cent to close to 20 per cent. This increase is due both to the rise of the share of global output originating from corporations (as opposed to, e.g., non-corporate businesses) and the rise of the capital share of corporate output. The fast growth of corporate profits means that if the effective global corporate income tax rate had stayed constant, global corporate tax revenues (as a fraction of global income) should have increased by about one third since 1975. In reality, corporate tax collection has stagnated relative to global income—that is, the global effective corporate income tax rate has declined by about a third.

Second, there has been a large rise in multinational profits, defined as profits booked by corporations in a country other than their headquarters. The share of multinational profits in global profits has more than quadrupled since 1975, from about 4 per cent to about 18 per cent. This evolution reflects the rise of multinational firms, a well known development but for which a global quantification was lacking so far. The rise has been particularly pronounced since the beginning of the 21st century. This evolution may explain why the issue of how to tax multinational firms has become more salient in the first two decades of the 21st century. When foreign profits accounted for only about 5 per cent of global profits

(as was the case from the 1970s through to the late 1990s), the tax revenues implications of properly taxing these profits were relatively small. With the rise of multinational profits, the revenue implications are significantly larger.

Third, there has been an upsurge in the fraction of multinational profits shifted to tax havens. By our estimates, this fraction has increased from less than 2 per cent in the 1970s to 37 per cent in 2019. Because multinational profits themselves have been rising much faster than global profits, the fraction of global profits (multinational and non-multinational) shifted to tax havens has risen from 0.1 to about 7 per cent. Consistent with these findings, we estimate that the corporate tax lost from global profit shifting has increased from less than 0.1 per cent of corporate tax revenues in the 1970s to 10 per cent in 2019.¹

Fourth, in 2019—four years into the implementation of the BEPS process and two years after the Tax Cuts and Jobs Act—there was no discernible decline in global profit shifting or in profit shifting by US multinationals (which according to our estimates account for about half of global profit shifting) relative to 2015. Of course, it is possible that absent BEPS and the Tax Cuts and Jobs Act profit shifting would have kept increasing; we do not argue these initiatives had no effect. However, their effect seems, so far, to have been insufficient to lead to a reduction in the global amount of profit shifted offshore. This finding suggests that there remains scope for additional policy initiatives to significantly reduce global profit shifting.

The rest of this paper is organized as follows. Section 2 presents our methodology. Section 3 analyses the dynamic of global profit shifting over the 2015–19 period, while Section 4 presents our series back to 1975.

2 Definitions and methodology

2.1 Definition: multinational profits

We follow the conceptual framework laid out in Tørsløv et al. (2022a). Using standard national accounts definitions and notations, we denote by Y the corporate output (or value added) of a country, which is obtained by combining effective labour AL and capital K . The corporate sector includes all resident corporations, both non-financial and financial. Part of corporate output is paid to workers; the rest, operating surplus, accrues to the owners of capital: $Y = F(K, AL) = rK + wL$. The capital share of corporate output (which we will often refer to as ‘the capital share’, for brevity) is $\alpha = rK/Y$. Corporations pay p per cent of their operating surplus rK in net interest. We define (pre-tax) corporate profits as $(1 - p) \cdot rK$.

Within each country, all corporations can be classified as either ‘local’ or ‘foreign’. Following international guidelines, foreign firms include all firms where foreign investors own more than 50 per cent of shares with voting rights. This condition is sufficient but not necessary: there are a few other ways firms can be classified as foreign (see Eurostat 2012).² ‘Local firms’ are all corporations incorporated in a given country that are not classified as foreign. In addition to firms with purely domestic operations,

¹ The tax loss is slightly higher than the fraction of profits shifted to tax havens globally because the marginal rate on shifted profits is higher than the average rate.

² The notion of control is used to classify firms as foreign in Eurostat (2012) guidelines. Control is ‘the ability to determine the general policy of an enterprise by choosing appropriate directors, if necessary’ (Eurostat 2012: 13). The ownership of more than 50 per cent of shares ensures control. In some cases, control can be exerted with a less than 50 per cent ownership, for instance if certain shares have more voting power than others.

local firms include domestic multinationals. For example, foreign firms in Germany include the German affiliates of Microsoft; local firms in Germany include Siemens (a German multinational company) and German companies with no activity outside of Germany.

We define as multinational profits the profits booked by corporations outside of their headquarter country. In the preceding examples, profits booked by Microsoft in Germany and profits booked by Siemens outside of Germany are multinational profits, while profits booked by Microsoft in the United States are domestic profits. To be clear, multinational profits are not the same thing as multinationals' profits, which include both the profits booked by multinational companies in their headquarter country and outside of it. One of our main statistics of interest in this paper is the fraction of global corporate profits which are multinational profit, an important measure of financial globalization.

2.2 Definitions: shifted profits and tax havens

We define profit shifting as a tax-motivated and artificial transfer of paper profits within a multinational firm from high-tax countries to low-tax locales. Based on this definition we measure profit shifting to tax havens as the amount of multinational profits booked by companies in these havens above and beyond what can be explained by real economic activity (such as capital, labour, country characteristics, industry composition, and research and development [R&D] spending).

There are three forms of profit shifting (see Beer et al. 2020; Brandt 2022; or Heckemeyer and Overesch 2017 for a survey). First, multinational groups can manipulate intra-group exports and import prices: subsidiaries in high-tax countries can try to export goods and services at low prices to related firms in low-tax countries, and import from them at high prices.³ Second, multinationals can shift profits using intra-group interest payments (see, e.g., Huizinga et al. 2008): affiliates in high-tax countries can borrow money (potentially at relatively high interest rates) from affiliates in low-tax countries. Last, multinationals can move intangibles—such as trademarks, patents, logos, algorithms, or financial portfolios—produced or managed in high-tax countries to affiliates in low-tax countries, which then earn royalties, interest, or payments from final customers.⁴ In theory, all of these channels of profit shifting could be curbed by rigorous enforcement of the so-called 'arm's length principle'. This principle states that all transactions within the multinational firms should be priced as they would have been in a transaction with an external third party. In practice, capacity-constrained tax agencies struggle to enforce the arm's length principle (see Tørsløv et al. 2022b), and in the case of intangible transactions the principle is often not conceptually well defined (Devereux and Vella 2017).

The literature on profit shifting suggests that profit shifting between countries with moderate tax differentials is of second order compared to profit shifting from highly or moderately taxed countries to tax havens (see, e.g., Davies et al. 2018). Our work therefore focuses on profit shifting to tax havens solely. Tørsløv et al. (2022a) define tax havens as countries having excessive profitability of foreign firms (elaborated below) and an effective corporate tax rate below 15 per cent.⁵ Albeit a series of Eastern European countries have emerged with low effective corporate tax rates since their study, none of

³ See, e.g., Bernard et al. (2006); Cristea and Nguyen (2016); Liu et al. (2020); Hebus and Johannesen (2021); Vicard (2015); Wier (2020). Wier (2020) includes a survey of the literature

⁴ See Faulkender et al. (2017) for evidence suggestive of profit shifting by US multinationals through the relocation of intangibles in low-tax countries. See Langenmayr and Reiter (2017) for evidence of profit shifting by German banks through the strategic relocation of financial portfolios in tax havens.

⁵ These tax jurisdictions are Andorra, Anguilla, Antigua and Barbuda, Aruba, The Bahamas, Bahrain, Barbados, Belgium, Belize, Bermuda, the British Virgin Islands, the Cayman Islands, Cyprus, Gibraltar, Grenada, Guernsey, Hong Kong, Ireland, the Isle of Man, Jersey, Lebanon, Liechtenstein, Luxembourg, Macau, Malta, Marshall Islands, Mauritius, Monaco, Netherlands, the Netherlands Antilles, Panama, Puerto Rico, Samoa, Seychelles, Singapore, St. Kitts and Nevis, St. Lucia, St. Vincent & Grenadines, Switzerland, Turks and Caicos, Vanuatu.

these show excessive profitability amongst foreign firms (yet), and we therefore keep the tax haven list from Tørsløv et al. (2022a) constant in the following.

2.3 Methodology to estimate global profit shifting

To estimate the amount of profit shifted to tax havens globally, we build on the methodology of Tørsløv et al. (2022a) and update it to more recent years. Tørsløv, et al. (2022a) estimate profit shifting in 2015, proceeding as follows. They compute the profits-to-wage ratio of foreign vs. local firms in tax havens, in non-haven OECD countries, and in large developing countries. The basic finding is that in tax havens, the profits-to-wage ratio is much higher for foreign firms than for local firms. In Ireland for example, the profits-to-wage ratio is around eight for foreign firms (reflecting profit shifting by foreign multinationals into Ireland) vs. about 0.5 for local firms. By contrast, foreign firms are slightly less profitable than local firms in non-haven countries. The top panel of Figure 1 reproduces this key result.

The amount of profits shifted into each haven is obtained by assuming that, absent profit shifting, the profits-to-wage ratio of foreign firms would be equal to the profits-to-wage ratio of local firms. For example, the amount of profit shifted into Ireland is obtained by assuming that the profits to wage ratio of foreign firms in Ireland would be around 0.5 if there was no profit shifting (instead of the recorded value of eight). Tørsløv et al. (2022a) discuss the conditions under which this methodology delivers accurate estimate and validate this approach in the case of US multinationals. In particular, they show that the excess profitability of foreign firms in tax havens relative to local firms in these havens cannot be explained by differences in capital intensity, sector composition, or R&D expenditures. They also show that this methodology does not double count profits, because the underlying data (national accounts and foreign affiliates statistics) do not. In 2015 data, they estimate that \$616 billion in profits (corresponding to 36 per cent of global multinational profits) were shifted to tax havens.

In a second step of the methodology, Tørsløv et al. (2022a) use bilateral balance of payments data to allocate the shifted profits to source countries. They show that above-normal intra-group transfers from high-tax countries to tax havens in the form of royalty payments, management fees, and interest payments can fully explain the excess profitability of foreign haven firms relative to local haven firms. Using bilateral data capturing the origin of these intra-group payments, the excess haven profits are allocated to their origin country, making it possible to estimate the tax losses caused by profit shifting for each country. Overall, high-tax countries are found to lose the equivalent of 9 per cent of their corporate tax receipts in 2015 as a consequence of profit shifting. The full methodology is described step-by-step in the Replication Guide of Tørsløv et al. (2022a).

We update the Tørsløv et al. (2022a) estimates as follows. First, thanks to the availability of more data, we are able to add eight countries to the database from 2016 on: Argentina, Egypt, Indonesia, Malaysia, Nigeria, Thailand, Venezuela, and Uruguay. With the addition of these countries, the database now covers 78 countries accounting for 92 per cent of the world economy and 70 per cent of the world population. Second, to ease the updating process, we moved many of the computations from the original paper from Excel to Stata. Our plan is to keep updating our estimates annually, as soon as statistical agencies publish the required input data. The updated annual estimates are posted at missingprofits.world.

3 Global profit shifting since 2015

This section analyses the updated series and estimates. We start by studying changes in the pattern of differential profitability found in 2015. As shown by the bottom panel of Figure 1, in 2019 foreign firms in tax havens are still much more profitable than local haven firms, while foreign firms in non-haven countries are still slightly less profitable than non-haven local firms—the original pattern uncovered

in Tørsløv et al. (2022a) for the year 2015. Among tax havens, Puerto Rico still stands out with an exceptionally high profits-to-wage ratio of about 1,600 per cent for foreign firms. In Ireland, the profits-to-wage ratio of foreign firms dropped from about 800 per cent to less than 500 per cent over the 2015–19 period, while in Luxembourg it increased from about 450 per cent to 600 per cent. In absolute terms, as reported in Table A, Singapore narrowly surpasses Ireland as the world’s largest recipient of shifted profits in 2019, with \$132 billion in shifted profits compared \$130 billion for Ireland.

Using this updated database, we estimate that \$969 billion in profits were shifted to tax havens globally in 2019, the equivalent of 37 per cent of global multinational profits. In Table 1 we can see that global profit shifting did not decline between 2015 and 2019. The amount of shifted profits remained nearly constant as a share of multinational profits, increasing very slightly from 36 to 37 per cent. In other words, shifted profits grew at the same pace as multinational profits. As multinational profits grew by 52 per cent in nominal terms (compared to 17 per cent for global GDP), the absolute amount of profits shifted to tax havens increased by slightly more than 52 per cent, from \$616 billion in 2015 to nearly \$1 trillion in 2019. The growth in multinational profits also outpaced the growth in global corporate profits, and as a result, the share of multinational profits in corporate profits rose from 15 to 18 per cent.

The stability of global profit shifting (relative to multinational profits) is surprising, since 2019 was the third year of implementation for the BEPS project (OECD 2015). Our results thus suggest that so far this initiative has not been enough to lead to a reduction in profit shifting. The same appears to be true for the US corporate tax reform enacted at the end of 2017; see Garcia-Bernardo et al. (2022) for a detailed analysis of the effect of the Tax Cuts and Jobs Act on profit shifting by US multinational companies.

According to our estimates, the tax loss resulting from profit shifting increased slightly, from the equivalent of 9 to 10 per cent of global corporate tax receipts. This increase was driven by the rising share of multinational profits in global profits. Figure 2 and Table B detail the updated loss estimates for high-tax countries. While there are some national differences in the estimated tax loss, countries generally have seen a moderate increase in this loss. Two cases are worth highlighting. First, despite the reduction in the corporate tax rate (from 35 to 21 per cent) and the introduction of specific provisions aimed at reducing shifting out of the United States (e.g. the Base Erosion and Anti-Abuse Tax), the Tax Cuts and Jobs Act was not followed by a decline in the cost of profit shifting for the United States. In fact, we estimate a small increase in the tax loss for the United States, from 14 per cent of corporate tax collections in 2015 to 16 per cent in 2019. Second, in the United Kingdom, we estimate a gradual increase in profit shifting over the period 2015–19. Understanding the reasons for this increase (e.g. the potential role of Brexit) is a fruitful avenue for future research.

4 Global profit shifting back to 1975

This section presents our historical estimates of global profit shifting prior to 2015, back to 1975. To construct these series, we proceed as follows. We first collect available historical national accounts data on corporate profits and GDP to compute the share of global profits in global income. Second, we estimate multinational profits by using the global balance of payments compiled by the International Monetary Fund (IMF), which reports global direct investment equity income (i.e. profits made by firms more than 10-per-cent-owned by a foreign owner, which is close to our definition of multinational profits).⁶ We assume that global multinational profits followed the evolution of (pre-tax) global direct investment equity income. Last, to estimate the fraction of multinational profits shifted to tax havens,

⁶ Direct investment equity income is net of corporate income taxes paid, in contrast to multinational profits as defined in Section 2; therefore we gross up global direct investment equity income with an estimate of corporate taxes paid.

we assume that the global annual growth rate in shifted profits has been equal to the global growth rate of profits shifted to tax havens by US multinational companies, for which long-run time series back to the 1960s exist (Wright and Zucman 2018). That is, we assume that the share of US multinationals in the amount of globally shifted profits has remained constant, at about 50 per cent. While this assumption introduces a margin of error, the main patterns we obtain are so marked that they are not significantly affected by relaxing it (i.e. by allowing for a falling or declining fraction of profits being shifted by US multinationals).

Figure 3 shows the evolution of global corporate profits (as a fraction of global income, i.e. global GDP minus capital depreciation) and of global multinational profits (as a fraction of global corporate profits) back to 1975. A number of patterns are worth noting. First, the share of corporate profits in global income has increased from 14 per cent in 1975 to 19 per cent in 2019. This reflects the fact that a growing fraction of global economic activity takes place in the corporate sector (as opposed to, e.g., non-corporate businesses) and that the capital share of corporate value added has been rising globally (see, e.g., Bachas et al. 2022). Second, the share of multinational profits in global profits has been multiplied by a factor of more than four over that period. The increase was particularly fast in the late 1990s and early 2000s. Interestingly, the share of multinational profits has kept rising after 2015: by that metric, globalization keeps happening.

It is often noted that although statutory corporate tax rates have been cut in half between 1980 and the late 2010s globally (e.g. Tørsløv et al. 2022a), corporate tax revenues as a fraction of GDP have remained fairly stable (OECD 2021). One explanation sometimes put forward for this disconnect is that base broadening may have offset the effect of falling statutory rates, so that effective corporate tax rates might not have declined much. Our findings suggest that this explanation is quantitatively insufficient and highlight the importance of another factor: the rise in the share of corporate profits in global income. When this share rises, a constant (or even rising) ratio of corporate tax revenues to GDP can disguise a declining effective corporate tax rate. Bachas et al. (2022) estimate that the global effective corporate tax rate was 23 per cent in 1975, which compares to 17 per cent in 2019, a decline of roughly a third. This implies that any broadening of the corporate income tax base has not been large enough to offset the decline in statutory rates. Below we discuss how profit shifting has contributed to the decline in effective tax rates.

In Figure 4, we report our estimates of the amount of profit shifted to tax havens back to 1975. The patterns are striking. In the late 1970s, there was virtually no profit shifting. The seminal work by Hines and Rice (1994) on profit shifting uses US data for the year 1982, when only 5 per cent of global multinational profits were shifted to tax havens. Then in the early 1980s, a trend of sustained and gradual increase in profit shifting begins; the share of multinational profits shifted to tax havens increases from 2 per cent in 1980 to 20 per cent in 1998. This increase can partly be explained by the rise of the tax avoidance industry in the 1980s (e.g. Saez and Zucman 2019) and US policies adopted in the mid-1990s that facilitated shifting from foreign high-tax countries to tax havens, known as check-the-box regulations (e.g. Wright and Zucman 2018). Importantly, the rise of profit shifting as a share of multinational profits did not mean much for corporate tax revenues, as multinational profits were still small until the late 1990s. By our estimates, corporate tax revenue losses stayed below 2.5 per cent of corporate tax receipts throughout the 1975–99 period.

In the 2000s profit shifting as a share of multinational profits plateaus at roughly 20 per cent, but the loss of corporate tax revenue more than doubles from 2.6 per cent in 2000 to 5.8 per cent. This leap is caused by the fast growth of multinational firms in the first decade of the 21st century documented in Figure 3. The next leap occurs in the first half of the 2010s, when profit shifting as a share of multinational profits increases from roughly 19 per cent in 2010 to 36 per cent in 2015. One possible explanation for this jump is the fast growth in the profits of giant US tech companies, which, as documented in the literature, are known to use tax havens extensively, although this issue would deserve to be further investigated in

future research. Corporate tax losses moved in tandem—as the share of multinational profits in global profits remained fairly constant—rising from 5.6 per cent in 2010 to 9.0 per cent in 2015.

Finally, from 2015 to 2019 profit shifting as a share of foreign profits stagnates at just below 40 per cent. Seen in the light of the dramatic increase in profit shifting in the four preceding years, the lack of growth in profit shifting could be the result of the BEPS project and the US Tax Cuts and Jobs Act. That is, these initiatives may have been insufficient to reduce the fraction of multinational profit shifted to tax havens each year but might have stopped the growth of this fraction.

We estimate that absent profit shifting, corporate tax receipts would be 10 per cent higher in 2019 but nearly unchanged in 1975. Bachas et al. (2022) estimate that the global effective corporate tax rate fell 5 percentage points since 1975. The direct impact of profit shifting, according to our estimates, can explain 2 percentage points, i.e. about 40 per cent of this decline, keeping everything else constant. Of course, if there had been no profit shifting, then countries may have chosen other policy paths, e.g. some might have been less likely to cut their corporate tax rate and engage in the ‘race to the bottom’: our 40 per cent estimate neglects the indirect impact profit shifting may have had on global tax competition. It illustrates, however, that the revenue losses caused by profit shifting are a quantitatively important aspect of the decline in effective corporate income tax rates globally since the 1970s.

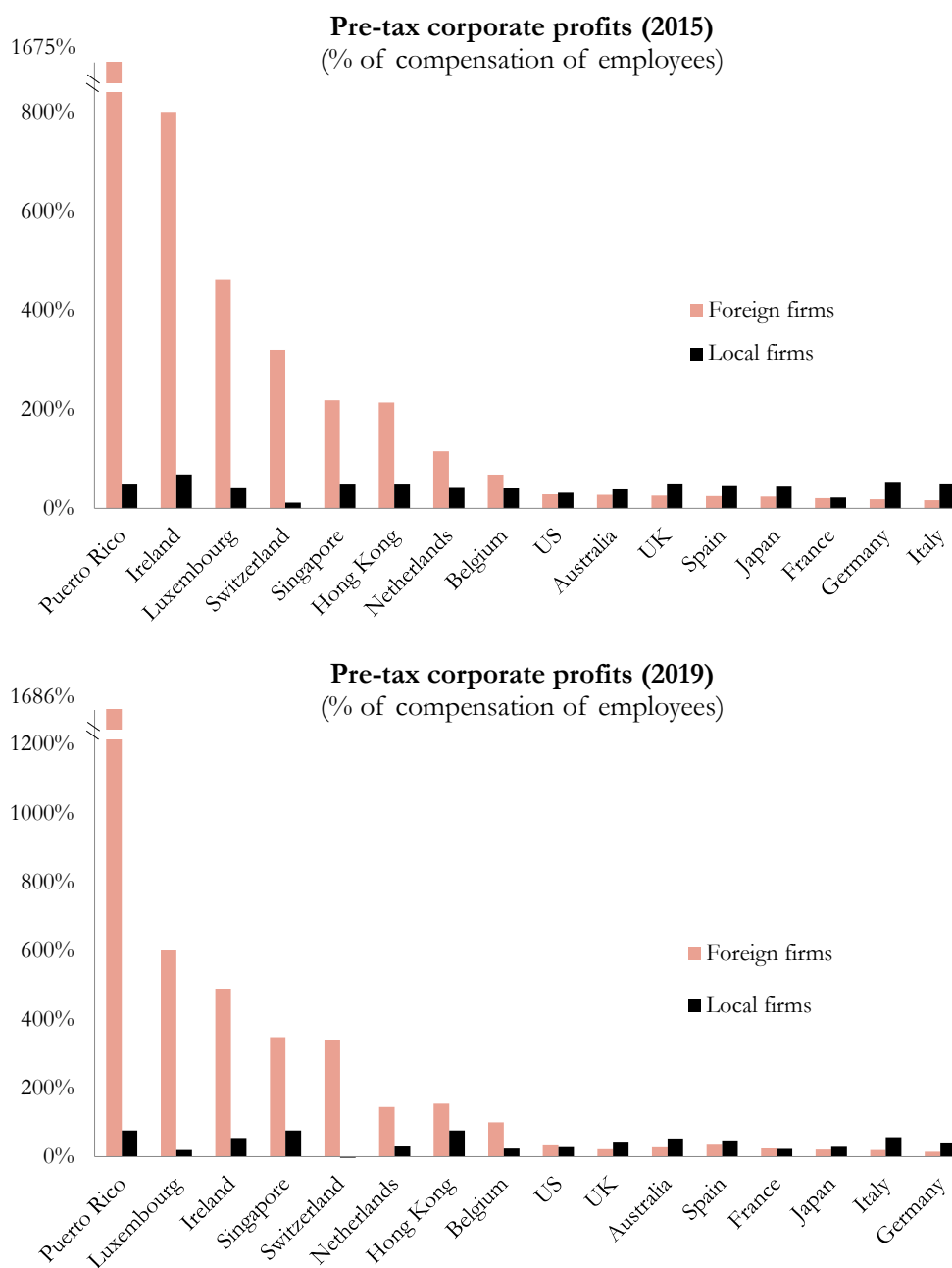
References

- Bachas, P., M. Fisher-Post, A. Jensen, and G. Zucman (2022). ‘Globalization and Factor Income Taxation’. NBER working paper 29819. Cambridge, MA: National Bureau of Economic Research. <https://doi.org/10.3386/w29819>
- Brandt, K. (2022). ‘Illicit Financial Flows and Developing Countries: A Review of Methods and Evidence’. *Journal of Economic Surveys*, early view. <https://doi.org/10.1111/joes.12518>
- Beer, S., R. De Mooij, and L. Liu (2020). ‘International Corporate Tax Avoidance: A Review of the Channels, Magnitudes, and Blind Spots’. *Journal of Economic Surveys*, 34(3): 660–88. <https://doi.org/10.1111/joes.12305>
- Bernard, A.B., J.B. Jensen, and P.K. Schott (2006). ‘Transfer Pricing by U.S. Based Multinational Firms’. NBER working paper 12493. Cambridge, MA: National Bureau of Economic Research. <https://doi.org/10.3386/w12493>
- Bolwijn, R., B. Casella, and D. Rigo (2018). ‘An FDI-Driven Approach to Measuring the Scale and Economic Impact of BEPS’. *Transnational Corporations*, 25(2): 107–43. <https://doi.org/10.18356/c4f9fd3c-en>
- Cristea, A.D., and D.X. Nguyen (2016). ‘Transfer Pricing by Multinational Firms: New Evidence from Foreign Firm Ownerships’. *American Economic Journal: Economic Policy*, 8(3): 170–202. <https://doi.org/10.1257/pol.20130407>
- Clausing, K.A. (2016). ‘The Effect of Profit Shifting on the Corporate Tax Base in the United States and Beyond’. *National Tax Journal*, 69(4): 905–34. <https://doi.org/10.17310/ntj.2016.4.09>
- Crivelli, E., R. de Mooij, and M. Keen (2015). ‘Base Erosion, Profit Shifting and Developing Countries’. IMF Working Paper 2015/118. Washington, DC: International Monetary Fund. <https://doi.org/10.5089/9781513563831.001>
- Davies, R.B., J. Martin, M. Parenti, and F. Toubal (2018). ‘Knocking on Tax Haven’s Door: Multinational Firms and Transfer Pricing’. *Review of Economics and Statistics*, 100(1): 120–34. https://doi.org/10.1162/REST_a_00673
- Devereux, M.P. and J. Vella (2017). ‘Implications of Digitalization for International Corporate Tax Reform’. Working paper 17/07. Oxford: Oxford University Centre for Business Taxation.
- Faulkender, M.W., K.W. Hankins, and M.A. Peterson (2017). ‘Understanding the Rise in Corporate Cash: Precautionary Savings or Foreign Taxes’. NBER Working Paper 23799. Cambridge, MA: National Bureau of Economic Research. <https://doi.org/10.3386/w23799>
- Eurostat (2012). *Foreign Affiliates Statistics (FATS) Recommendations Manual*. Luxembourg: Publications Office of the European Union.
- Garcia-Bernardo, J., P. Janský, and G. Zucman (2022). ‘Did the Tax Cuts and Jobs Act Reduce Profit Shifting by US Multinational Companies?’ NBER Working Paper 30086. Cambridge, MA: National Bureau of Economic Research. <https://doi.org/10.3386/w30086>
- Hines, J.R. Jr, and E. Rice (1994). ‘Fiscal Paradise: Foreign Tax Havens and American Business’. *Quarterly Journal of Economics*, 109(1): 149–82. <https://doi.org/10.2307/2118431>
- Hebous, S., and N. Johannesen (2021). ‘At Your Service! The Role of Tax Havens in International Trade With Services’. *European Economic Review*, 135: 103737. <https://doi.org/10.1016/j.euroecorev.2021.103737>
- Heckemeyer, J.H., and M. Overesch (2017). ‘Multinationals’ Profit Response to Tax Differentials: Effect Size and Shifting Channels’. *Canadian Journal of Economics*, 50(4): 965–94. <https://doi.org/10.1111/caje.12283>
- Huizinga, H., L. Laeven, and G. Nicodeme (2008). ‘Capital Structure and International Debt Shifting’. *Journal of Financial Economics*, 88(1): 80–118. <https://doi.org/10.1016/j.jfineco.2007.05.006>
- Langenmayr, D., and F. Reiter (2017). ‘Trading Offshore: Evidence on Banks’ Tax Avoidance’. CESifo Working Paper 6664. Munich: Society for the Promotion of Economic Research - CESifo. GmbH. <https://doi.org/10.2139/ssrn.3057458>

- Liu, L., T. Schmidt-Eisenlohr, and D. Guo (2020). 'International Transfer Pricing and Tax Avoidance: Evidence from Linked Trade-Tax Statistics in the United Kingdom'. *Review of Economics and Statistics*, 102(4): 766–78. https://doi.org/10.1162/rest_a_00871
- Saez, E., and G. Zucman (2019). *The Triumph of Injustice: How the Rich Dodge Taxes and How to Make Them Pay*. New York: W.W. Norton & Company.
- OECD (2015). *Base Erosion and Profit Shifting, Final Report*. Paris: Organization for Economic Co-operation and Development.
- OECD (2021). *Corporate Tax Statistics - Third Edition*. Available at: <https://www.oecd.org/tax/beps/corporate-tax-statistics-database.htm> (accessed 1 September 2022). Paris: Organization for Economic Co-operation and Development.
- Tørsløv, T., L. Wier, and G. Zucman (2022a). 'The Missing Profits of Nations'. *The Review of Economic Studies*, rdac049. <https://doi.org/10.1093/restud/rdac049>
- Tørsløv, T., L. Wier, and G. Zucman (2022b). 'Externalities in International Tax Enforcement: Theory and Evidence'. *American Economic Journal: Economic Policy* (forthcoming).
- Vicard, V. (2015). 'Profit Shifting through Transfer Pricing: Evidence from French Firm Level Trade Data'. Banque de France Working Paper 555. Paris: Banque de France. <https://doi.org/10.2139/ssrn.2614864>
- Wier, L. (2020). 'Tax-Motivated Transfer Mispricing in South Africa: Direct Evidence Using Transaction Data'. *Journal of Public Economics*, 184: 104153.
- Wright, T., and G. Zucman. (2018). 'The Exorbitant Tax Privilege'. NBER Working Paper 24983. Cambridge, MA: National Bureau of Economic Research. <https://doi.org/10.3386/w24983>

Figures and tables

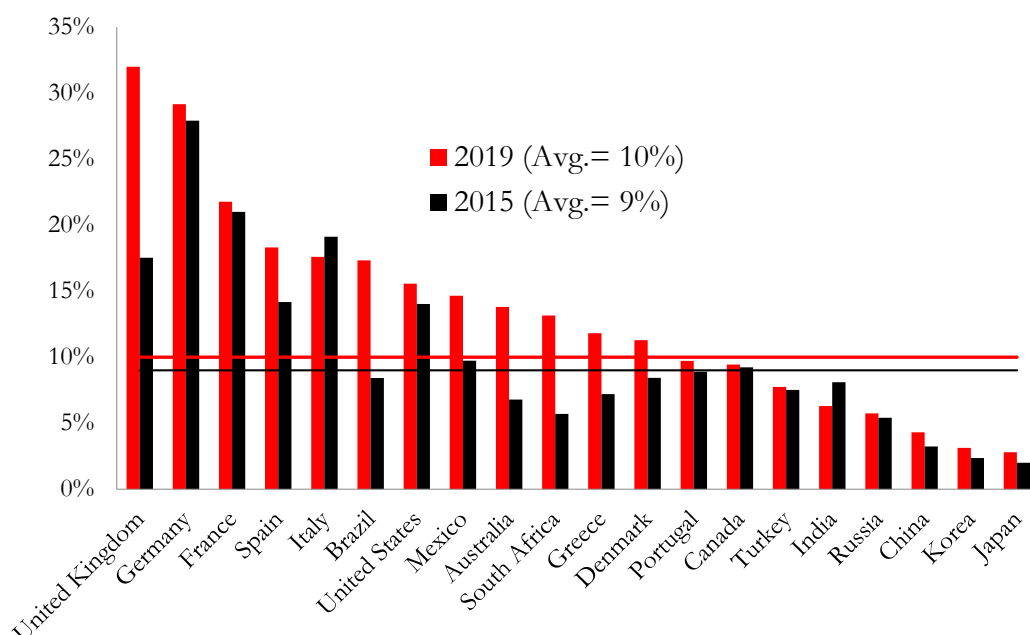
Figure 1: Profitability in foreign vs. local firms in 2015 and 2019



Note: this figure updates Figure 4 of Tørsløv et al. (2022a). The pink bar shows the ratio of pre-tax corporate profits (after net interest payments and depreciation) to compensation of employees for foreign firms (firms more than 50%-owned by a foreign investor, i.e. typically affiliates of foreign multinational companies). The black bar shows the same ratio but for local firms—defined as all domestic firms that are not classified as ‘foreign’.

Source: top panel is taken from Tørsløv et al. (2022a), Figure 4 (data in Data Appendix online, Tables A7 and C4D); bottom panel data is from Data Appendix online, Backup Tables U1 and C4D.

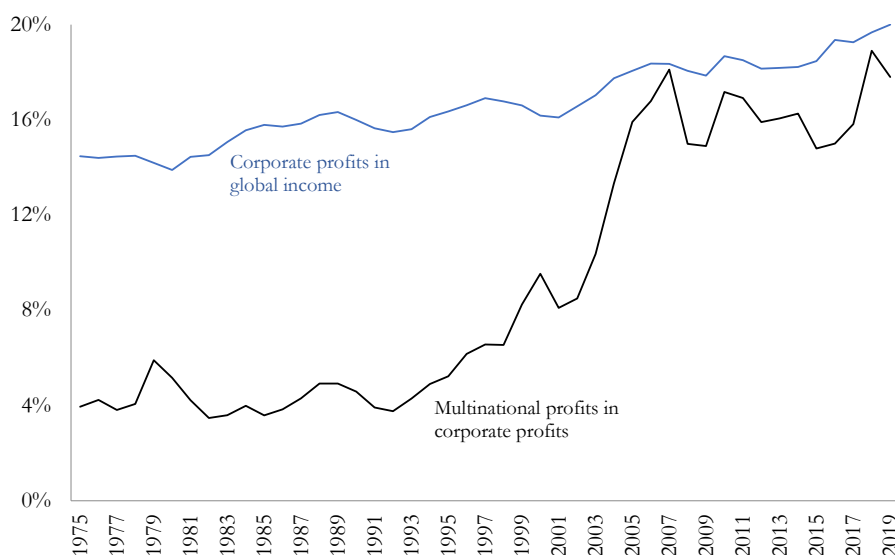
Figure 2: Corporate tax revenue lost: 2015 vs 2019 (% of corporate tax revenue collected)



Note: this figure shows our estimate of the amount of corporate taxes lost due to profit shifting, as a share of corporate tax revenue collected. The black bar shows the estimated loss in 2015 and the red bar shows the estimated loss in 2019.

Source: 2015 figures from Tørsløv et al. (2022a), Table C4D in Data Appendix online; 2019 figures from Data Appendix, Backup Table C4D.

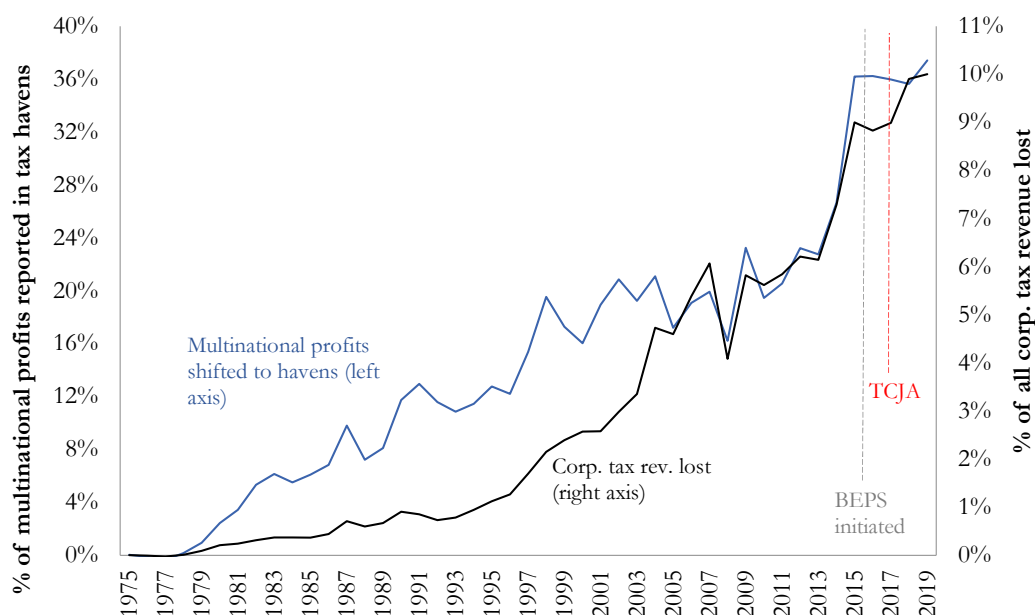
Figure 3: Global corporate profits and multinational profits, 1975–2019



Note: the blue line shows the evolution of the share of global corporate profits in global income (defined as global GDP minus global depreciation). The black line shows the share of global multinational profits (as defined in the text) in global corporate profits.

Source: for 1975–2015: Tørsløv et al. (2022a), Data Appendix Table C7; for 2016–19 figures: Data Appendix, Table 1.

Figure 4: Multinational profits shifted to tax havens and corporate tax loss, 1975–2019



Note: the blue line (left axis) shows the share of multinational profits (as defined in the text) shifted to tax havens. This share increased from about 2% in the late 1970s to about 37% in 2019. The black line (right axis) shows our estimate of the amount of corporate tax revenue lost due to profit shifting globally, expressed as fraction of global corporate tax receipts.

Source: for 1975–2015: Tørsløv et al. (2022a), Data Appendix Table C7; for 2016–19 figures: Data Appendix, Table 1.

Table 1: Global profits: comparing 2015 and 2019 estimates

\$Bn., current values	2015	2016	2017	2018	2019	Relative change ('19 - '15)
Global GDP	75,179	76,466	81,404	86,413	87,653	17%
Corporate profits	11,515	12,275	13,022	14,068	14,472	26%
Multinational profits	1,703	1,841	2,061	2,655	2,590	52%
Profits shifted	616	667	741	946	969	57%
Profits shifted (% of multinational profits)	36.2%	36.2%	36.0%	35.6%	37.4%	1.2 p.p.
Tax loss	188	195	212	243	247	31%
Tax loss (% of corp. tax rev.)	9.0%	8.8%	9.0%	9.9%	10.0%	1.0 p.p.

Note: this table updates Table 1 of Tørsløv et al. (2022a). It reports the global totals in our database each year from 2015 to 2019. 'Multinational profits' include all the profits made by companies more than 50% owned by a foreign country.

Source: for 2015 figures: Tørsløv et al. (2022a), Data Appendix Tables A7, C4D, and C7; for 2019 figures: Data Appendix, Tables U1 and C4D.

Appendix

This appendix provides supplementary tables showing estimates of profit shifted and corporate tax revenue loss by country each year over the 2015–19 period.

Table A: Country estimates: profit shifting 2015–19

	Shifted profits (\$Bn.)					Difference ('19-'15)
	2015	2016	2017	2018	2019	
OECD countries						
Australia	12.0	15.2	17.8	25.2	30.2	15.1
Austria	3.6	4.3	4.4	5.3	4.7	0.5
Canada	17.2	15.2	15.6	20.9	25.8	10.6
Chile	4.7	5.3	5.5	7.1	9.1	3.8
Czech Republic	1.8	2.2	2.4	3.0	2.8	0.6
Denmark	3.0	4.5	4.8	6.1	5.6	1.1
Estonia	0.2	0.3	0.3	0.4	0.4	0.1
Finland	2.7	3.2	4.0	5.2	4.8	1.5
France	32.1	36.0	40.0	46.7	42.6	6.6
Germany	54.9	65.4	65.9	83.2	75.6	10.2
Greece	1.0	1.7	1.8	2.2	1.9	0.2
Hungary	2.4	3.7	4.2	6.3	5.8	2.1
Iceland	0.4	0.5	0.5	0.6	0.7	0.1
Israel	0.6	2.4	2.5	4.1	4.9	2.5
Italy	22.7	24.0	26.5	31.7	28.9	4.9
Japan	9.0	11.8	13.8	17.3	17.6	5.8
Korea	4.4	4.7	6.2	8.4	10.0	5.4
Latvia	0.2	0.3	0.3	0.4	0.4	0.1
Mexico	12.1	11.1	11.0	16.7	20.4	9.3
New Zealand	1.4	1.9	2.0	2.7	3.2	1.2
Norway	5.0	6.2	5.9	7.2	8.1	1.9
Poland	3.7	4.2	4.3	5.9	5.4	1.1
Portugal	2.6	3.3	3.2	3.8	3.4	0.2
Slovakia	0.6	0.9	0.9	1.1	1.0	0.2
Slovenia	0.2	0.9	0.4	0.5	0.4	-0.5
Spain	14.4	14.7	17.0	23.1	21.1	6.4
Sweden	8.5	10.3	11.7	13.7	12.6	2.3
Turkey	4.6	3.9	3.7	5.0	5.7	1.9
United Kingdom	61.5	80.5	96.0	120.1	109.6	29.1
United States	142.0	152.1	161.9	186.4	165.3	13.2
Main developing countries						
Argentina		2.5	3.2	4.3	4.9	2.4
Brazil	13.2	17.3	19.7	22.0	26.8	9.5
China	54.6	50.4	51.4	71.2	92.7	42.3
Colombia	1.3	1.0	1.4	1.9	2.2	1.3
Costa Rica	1.0	0.9	1.2	1.7	1.9	1.0
Egypt		3.0	3.4	4.6	5.5	2.5
Indonesia		7.0	7.5	9.9	12.0	4.9
India	8.7	9.6	11.3	15.6	19.1	9.5
Malaysia		3.8	4.2	5.8	7.0	3.2
Nigeria		3.1	2.4	3.5	4.3	1.2
Russia	11.3	12.7	13.8	17.3	20.3	7.6
India	3.8	4.0	11.3	15.6	19.1	15.0
South Africa	3.8	4.0	5.0	6.8	7.9	3.9
Thailand		4.7	6.4	8.9	11.0	6.3
Uruguay		1.0	0.9	1.5	1.7	0.7
Venezuela		0.9	0.9	0.9	1.1	0.2
Tax havens						
Belgium	-13.1	-15.2	-20.5	-45.7	-37.8	-22.6
Ireland	-106.3	-117.1	-126.2	-126.4	-129.6	-12.5
Luxembourg	-46.8	-50.1	-66.0	-56.7	-64.4	-14.3
Malta	-12.3	-10.8	-11.1	-12.4	-10.2	0.6
Netherlands	-57.4	-90.3	-79.3	-105.9	-110.9	-20.7
Caribbean	-96.7	-92.8	-95.0	-110.0	-159.2	-66.4
Bermuda	-24.0	-17.3	-12.8	-84.4	-58.5	-41.2
Singapore	-70.4	-77.6	-98.0	-132.3	-132.3	-54.7
Puerto Rico	-41.7	-38.3	-38.3	-36.4	-31.9	6.5
Hong Kong	-39.0	-18.2	-18.3	-42.9	-62.4	-44.2
Switzerland	-58.2	-73.2	-98.0	-102.3	-111.9	-38.7
Other	-50.6	-66.0	-77.8	-90.9	-60.2	5.9

Source: for 2015 figures: Tørsløv et al. (2022a), Tables A7 and C4D in Data Appendix online; for 2019 figures: Data Appendix, Backup Tables U1 and C4D.

Table B: Country estimates: profit shifting 2015–19

Corp. tax revenue loss/gain (% of collected)						
	2015	2016	2017	2018	2019	Difference ('19-'15)
OECD countries						
Australia	7%	8%	7%	10%	14%	7%
Austria	11%	11%	11%	11%	10%	-1%
Canada	9%	8%	7%	9%	9%	0%
Chile	11%	12%	12%	13%	18%	7%
Czech Republic	5%	6%	6%	7%	6%	1%
Denmark	8%	12%	10%	13%	11%	3%
Estonia	10%	16%	15%	14%	14%	4%
Finland	11%	12%	12%	15%	14%	3%
France	21%	24%	22%	26%	22%	1%
Germany	28%	28%	26%	29%	29%	1%
Greece	7%	10%	13%	15%	12%	5%
Hungary	21%	24%	13%	31%	25%	4%
Iceland	22%	20%	16%	18%	26%	4%
Israel	2%	6%	5%	8%	9%	7%
Italy	19%	19%	15%	20%	18%	-2%
Japan	2%	2%	2%	3%	3%	1%
Korea	2%	2%	2%	3%	3%	1%
Latvia	7%	8%	9%	23%	144%	137%
Mexico	10%	9%	8%	12%	15%	5%
New Zealand	5%	6%	6%	7%	11%	6%
Norway	8%	10%	7%	6%	8%	0%
Poland	8%	9%	8%	9%	8%	0%
Portugal	9%	11%	9%	10%	10%	1%
Slovakia	5%	6%	6%	7%	7%	2%
Slovenia	21%	21%	8%	8%	7%	-14%
Spain	14%	13%	14%	16%	18%	4%
Sweden	13%	16%	17%	18%	17%	4%
Turkey	8%	5%	5%	7%	8%	0%
United Kingdom	18%	22%	25%	28%	32%	14%
United States	14%	17%	19%	23%	16%	2%
Main developing countries						
Argentina		5%	7%	9%	12%	
Brazil	8%	10%	12%	14%	17%	9%
China	3%	3%	3%	3%	4%	1%
Colombia	2%	1%	2%	4%	5%	3%
Costa Rica	19%	17%	22%	28%	32%	13%
Egypt		4%	5%	7%	13%	
Indonesia		8%	9%	11%	14%	
India	8%	5%	5%	6%	6%	-2%
Malaysia		5%	6%	6%	7%	
Nigeria		24%	18%	25%	26%	
Russia	5%	6%	5%	5%	6%	0%
India	6%	7%	5%	6%	6%	1%
South Africa	6%	7%	8%	10%	13%	7%
Thailand		5%	7%	8%	9%	
Uruguay		16%	15%	22%	26%	
Venezuela		15%	15%	16%	20%	
Tax havens						
Belgium	16%	16%	19%	55%	38%	22%
Ireland	58%	65%	67%	61%	59%	-7%
Luxembourg	50%	54%	58%	49%	56%	2%
Malta	90%	88%	88%	36%	29%	-59%
Netherlands	32%	30%	39%	28%	19%	-10%
Caribbean	100%	100%	100%	100%	100%	0%
Bermuda						
Singapore	41%	42%	30%	37%	29%	-13%
Puerto Rico	79%	25%	35%	72%	30%	5%
Hong Kong	33%	24%	24%	56%	40%	16%
Switzerland	20%	28%	38%	39%	39%	11%
Other						

Note: the large percentage tax loss of Latvia is driven by a collapse of their recorded corporate tax revenue in 2019 (declining by 90% compared to the year before)—implying the effective corp. tax rate in Latvia was 1% in 2019.

Source: for 2015 figures: Tørsløv et al. (2022a), Data Appendix Tables A7 and C4D; for 2019 figures: Data Appendix, Backup Tables U1 and C4D.