Cayman Finance

TJN's State of Tax Justice: A Critical Review

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Table of Contents

The State of Tax Justice: A Critical Review

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Executive Summary

The State of Tax Justice 2020 (**SOTJ 2020**), a report produced by Tax Justice Network, purported to provide "comprehensive estimates of the huge sums of tax each country in the world loses every year to corporate and private tax abuse – and what this means in terms of countries' health spending." The State of Tax Justice 2021 (**SOTJ 2021**), "updates the findings" of that report.

In SOTJ 2020, TJN claimed that "the world is losing over $427 billion (USD) in tax a year to international tax abuse" of which "nearly $245 billion is lost to multinational corporations shifting profit into tax havens" and "$182 billion is lost to wealthy individuals hiding undeclared assets and incomes offshore." In SOTJ 2021, TJN claims to "find annual tax losses of $483 billion worldwide" of which $312 billion are alleged to come from profit shifting by corporations and $171 billion from tax evasion by individuals.

Furthermore, in SOTJ 2020, TJN claimed that the Cayman Islands is the "biggest contributor to other countries tax losses," allegedly contributing a tax loss to other countries of $70.4 billion, of which $22.8 billion is a result of "corporate tax abuse," while $47.6 billion is due to "offshore financial wealth." In SOTJ 2021, TJN again claims that Cayman is the single biggest cause of tax losses, allegedly responsible for a total of $83.1 billion in tax losses, of which $37.7 billion are due to profit shifting by corporations and $45.4 billion of tax losses from evasion.

These latter claims immediately raise suspicions regarding the plausibility of TJN's numbers for two reasons. First, Cayman does not have any double tax treaties and so cannot directly facilitate tax avoidance. Second, Cayman's laws make it extremely difficult for individuals, companies or other entities to hide money from foreign tax authorities.

A careful analysis of SOTJ 2020 shows that TJN's estimates of the extent to which specific jurisdictions facilitate tax avoidance and evasion are extremely distorted. The estimates for Cayman, in particular, lack any grounding in reality and are contradicted by other, more credible estimates. A quick analysis of SOTJ 2021 suggests that in spite of some methodological changes, the underlying deficiencies of the original report remain.

More broadly, TJN's claim that the world is "losing" hundreds of billions of dollars as a result of tax avoidance by companies and evasion by individuals simply does not stack up against the evidence. Overall, government revenue as a percentage of GDP in Organisation for Economic Cooperation and Development (**OECD**) countries has grown considerably over the past five decades, even as corporate income tax rates have fallen. Meanwhile, government revenue from individual income tax (including social security contributions) as a percentage of GDP has grown—and the proportion from high earners has increased.

In addition, over the past decade governments across the world have implemented major programs aimed at identifying and preventing both tax avoidance and evasion, in no small part goaded by organisations such as TJN. If the scale of these problems remains as bad as TJN claims, maybe it is time to review the effectiveness of these programs.

Significant points raised by the analysis include:

1. TJN uses an inappropriate methodology to evaluate tax losses relating to profit shifting by corporations. Among other things, TJN's estimates are based on a methodology it calls "profit misalignment," which violates fundamental economic principles and is inconsistent with 30 years of economic research on profit shifting.
2. TJN also fails to address problems with the data it uses: in calculating "misaligned" profits, TJN uses data that has significant double-counting problems that TJN failed to address in SOTJ 2020 and addresses inadequately in SOTJ 2021. TJN's dataset also excludes numerous jurisdictions with small numbers of reporting entities. Its attempt to overcome this is unsuccessful and results in very significant errors.
3. While TJN's estimate of the global scale of profit "misalignment" appears to be in the same ballpark as some estimates of profit shifting, other credible estimates are much lower. There are good reasons to believe that the lower estimates are more accurate.
4. Even if TJN's overall implied estimate of profit shifting is in the correct ballpark, its methodology results in an allocation of shifted profits that is inconsistent with the literature. Among other things, compared to a better estimate, using more accurate data, it overestimates the profit shifted *from* Germany by a factor of five. It also overestimates by a very large margin the amount of profit shifted *to* other jurisdictions, including Cayman.
5. More credible analyses find that Cayman is not a major jurisdiction to which corporate profits are shifted. Indeed, in contrast to jurisdictions that have tax treaties with high-tax jurisdictions, Cayman simply cannot directly facilitate profit shifting. This is because Cayman is a pure tax neutral jurisdiction, which means it has no direct taxes on corporate or personal income and has no double tax agreements that allocate taxing rights. As such, all taxing rights are automatically retained by the other jurisdictions in which multinational enterprises (**MNEs**) have entities.
6. TJN's estimates of tax evasion by individuals are built on similarly shaky premises. TJN asserts that Cayman is a "secrecy jurisdiction" and that as such it facilitates tax evasion, but TJN's own metrics for banking secrecy, used in SOTJ 2020, show that Cayman is not a secrecy jurisdiction (in spite of TJN's procrustean attempt to claim that it is).
7. In SOTJ 2021, TJN has moved from the inappropriate use of a metric that had some intuitive appeal – searching for allegedly secret bank accounts - towards the use of a composite metric only one component of which directly relates to banking secrecy. Several of the remaining components have serious problems, as documented in a previous Cayman Finance analysis [citation].
8. Contrary to TJN's assumptions, Cayman's verified beneficial ownership registry combined with its tax information exchange agreements strongly disincentivizes individuals from attempting to use the jurisdiction to engage in tax evasion.
9. TJN asserts that jurisdictions with "abnormal" bank deposits are more likely to facilitate tax evasion. But TJN's criteria for "abnormal" captures about 40% of all foreign bank deposits in the

world, including over 99% of deposits in Cayman. Given the very large scale of Cayman's entirely legitimate financial industry, this is simply ludicrous.

10. One of TJN's own founders, Richard Murphy, concedes that
    a. TJN uses BIS data that does not differentiate personal and corporate deposits;
    b. TJN fails to recognise "that there may be commercial reasons for some of these deposits despite this being referring to the fact in the methodology note"; and
    c. offshore holding is not necessarily for the purposes of tax abuse.

    As a result of these and other errors, TJN's estimates are highly unreliable.

11. In the case of Cayman, it is likely that a considerable proportion of the deposits identified as "abnormal" by TJN are in fact perfectly normal and legitimate. Many are likely held by corporations of various kinds. Some are no doubt held by individuals, households, and family offices—whose beneficial owners pay taxes where they are due.
12. It is impossible to prove a negative and thus impossible to prove that no individuals use Cayman to evade taxes. While Cayman's laws discourage the establishment of entities and bank accounts in Cayman for tax evasion purposes, no system can prevent all crime. However, the scale of tax evasion estimated by TJN especially as allegedly facilitated by Cayman seems completely out of touch with reality.
13. TJN's contentions regarding the alleged effects of tax avoidance on government revenue are contradicted by the evidence. Put simply, there has been no race to the bottom: over the past half century, tax revenue as a percentage of GDP has increased in OECD countries even as GDP has risen dramatically
14. Meanwhile, TJN's observation that "the ability of wealthy elites to abuse their tax responsibilities is also likely to be associated with weaker governance and political accountability" may be true. But the evidence suggests that it is weak governance and political accountability that enables wealthy elites to avoid taxes, not the other way around. As such, tax neutral jurisdictions such as Cayman are not the cause of the problem.

Introduction

In November 2020, the Global Alliance for Tax Justice, Public Services International, and Tax Justice Network (**TJN**) published the "State of Tax Justice 2020: Tax Justice in the Time of COVID-19" (**SOTJ 2020**).[1] The authors claim SOTJ 2020 is, "the first piece of research to present comprehensive estimates of the huge sums of tax each country in the world loses every year to corporate and private tax abuse – and what this means in terms of countries' health spending."[2]

This review assesses these claims, with a primary focus on the claims regarding tax losses but some consideration also given to the claims regarding spending on healthcare.

The Introduction to the SOTJ 2020 outlines TJN's headline numbers for tax revenue losses:

> "The State of Tax Justice 2020 reports that the world is losing over $427 billion (USD) in tax a year to international tax abuse. Of the $427 billion, nearly $245 billion is lost to multinational corporations shifting profit into tax havens in order to underreport how much profit they actually made in the countries where they do business and consequently pay less tax than they should. The remaining $182 billion is lost to wealthy individuals hiding undeclared assets and incomes offshore, beyond the reach of the law."[3]

In SOTJ 2021, TJN claims to "find annual tax losses of $483 billion worldwide," of which $312 billion are alleged to come from profit shifting by corporations and $171 billion from tax evasion by individuals.[4]

Furthermore, TJN claimed that the Cayman Islands is the "biggest contributor to other countries tax losses," allegedly contributing a tax loss to other countries of $70.4 billion,[5] of which $22.8 billion is a result of "corporate tax abuse,"[6] while $47.6 billion is due to "offshore financial wealth"[7] In SOTJ 2021, TJN again claims that Cayman is the single biggest cause of tax losses, allegedly responsible for a total of $83.1 billion in tax losses, of which $37.7 billion are due to profit shifting by corporations and $45.4 billion of tax losses from evasion.

The methods TJN adopts to calculate these numbers are detailed in part in the subsequent chapters (specifically Chapters 1 and 4) and, in more detail, in separate methodological notes. This review focuses primarily on TJN's estimates of tax revenue losses and comprises two main sections:

- Section 1 assesses TJN's calculation of tax revenue losses from corporations. It contrasts TJN's methodology with the methodologies developed by economists and accountants to assess the extent of profit shifting. It also considers the broader effects of profit shifting and associated tax competition on economic growth and net government revenue.

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[1] Tax Justice Network, *The State of Tax Justice 2020: Tax Justice in the time of COVID-19*, November 2020, Chesham, UK: Tax Justice Network (TJN). While three organisations co-sponsored the publication, the report itself was produced primarily by TJN, so this review refers to TJN as the author and publisher.
[2] SOTJ 2020, at p.4.
[3] ibid
[4] Tax Justice Network, The State of Tax Justice 2021, November 2021, Chesham, UK: Tax Justice Network (TJN), at p. 5. As for SOTJ 2020, SOTJ 2021 was co-published by three organisations but for the same reasons noted above, this review refers to TJN as both author and publisher.
[5] SOTJ 2020, at p. 68. The exact figure given by TJN is $70,441,676,611.
[6] SOTJ 2020, at p. 19. The exact figure given by TJN is $22,819,899,267.
[7] SOTJ 2020, at p. 48. The exact figure given by TJN is $47,621,777,344 (on p. 73).

- Section 2 assesses TJN's calculation of tax revenue losses from individuals. It critically evaluates TJN's methodology and compares the resultant estimates with available data from other sources.

In addition, a set of Appendices provides more detail on the assessment of TJN's calculation of tax revenue losses and includes, in Appendix A1, a review of the literature on the economics of profit shifting and, in Appendix A2, a statistical review of TJN's methodology for calculating tax evasion.

1. Evaluating TJN's Estimates of Tax Revenue Losses from Multinational Corporations

Tax experts have long recognized the potential for companies to use legally permissible mechanisms that have the effect of reducing the amount of corporate income tax (CIT) they pay.[8] Some of these mechanisms, such as tax expenditures, are available to purely domestic firms, while others are available only to multinational enterprises (MNEs).[9] This section focuses mainly on the effects of mechanisms available to MNEs, including:

- related-party debt instruments, whereby an affiliate in a low-tax jurisdiction makes loans to an affiliate in a higher-tax jurisdiction, thereby reducing the taxable profit of the affiliate in the higher-tax jurisdiction;
- non-market pricing of transactions between entities, whereby an affiliate in a low-tax jurisdiction sells goods, services, or intellectual property (IP – e.g. trademarks, patents, or copyrights) to an affiliate in a high-tax jurisdiction at a price sufficient to reduce the taxable profit of the entity in the high-tax jurisdiction;
- tax treaty shopping, whereby variation in withholding tax rates in double taxation treaties (DTTs) - of which there are more than 3,000 - creates opportunities to shift profits to jurisdictions within the network of DTTs that have lower withholding taxes;[10] and
- hybrid mismatches, whereby for example definitions of a tax domicile vary from jurisdiction to jurisdiction, enabling a subsidiary to be considered tax domiciled in jurisdiction A under the tax laws of its parent's jurisdiction, B, but not under the tax laws of jurisdiction A. In combination with DTT rules of apportionment, such hybrid mismatches can create situations in which subsidiaries avoid taxation (but their profits are taxable when income is repatriated to the parent entity).

As these techniques became better known and more commonly used, governments have put in place policies that are intended to limit the potential for companies to use them. These include:

- controlled foreign company (CFC) rules, which require companies to pay tax on income from subsidiaries under specified conditions;
- thin capitalization ("thin-cap") rules, which place limits on the amount of interest that a company can deduct for tax purposes; and
- arms' length transfer pricing rules, which require MNEs' subsidiaries to charge prices as though they were selling products to third parties.

The effectiveness of such rules is, however, limited by at least three factors. First, there has traditionally been a collective action problem: when one jurisdiction imposes anti-profit shifting rules, companies

[8] For a summary of various mechanisms, evidence of their application, and changes over time see: Scott Dyreng, Michelle Hanlon, Edward Maydew and Jacob Thornock, "Changes in corporate effective tax rates over the past 25 years," *Journal of Financial Economics*, Vol 124 (3), June 2017, pp. 441-463.

[9] The term multinational enterprises (MNEs) is interchangeable with multinational companies (MNCs) and multinational corporations (MNCs). MNE is used here by convention except where quoting from a source that uses a different term.

[10] Francis Weyzig ("Tax treaty shopping: structural determinants of Foreign Direct Investment routed through the Netherlands," International Tax and Public Finance, Vol 20, 2013, pp. 910–937) shows how DTTs have facilitated the routing of FDI through the Netherlands.

have incentives to move entities to jurisdictions that do not impose such rules.[11] As a result, rules against profit shifting have not been as aggressive as they otherwise might be. Second, arms' length pricing works well for products that are also traded in markets but much less well for products for which there is no market. Since many of the items transferred between entities within an MNE, such as intellectual property, are not traded on markets, it may not be possible to ascertain a comparable "market" price. Third, onerous thin-cap rules may make it more difficult for companies to finance their operations, putting MNEs domiciled in a jurisdiction with such rules at a disadvantage compared to MNEs domiciled elsewhere.

In addition, as discussed in section 1.3.3 below, at least until the introduction of new rules in 2017, many U.S. MNEs shifted profits from high tax to low tax foreign jurisdictions in order to defer the payment of US taxes. While these strategies may have reduced the amounts of taxes paid to foreign governments, they plausibly increased the amounts of tax paid to the U.S. government (at a later date). As such, historically, the U.S. has plausibly been a net beneficiary of profit shifting.[12] Moreover, the evidence unambiguously shows that profit shifting reduces the cost of capital in all countries, thereby increasing investment, innovation and economic growth.[13]

Since 2008, the development of anti-profit shifting rules has been coordinated at an international level by the OECD under the auspices of its Base Erosion and Profit Shifting (BEPS) program.[14] This has helped overcome the collective action problem. However, the other problems remain. As such, while CFC rules, thin-cap rules, and arms-length pricing rules can limit the extent to which MNEs shift profits to low-tax jurisdictions, they cannot eliminate the practice. As a result, some opponents of profit-shifting have called for more aggressive measures, such as the introduction of a global minimum tax. Among the most vocal proponents of such measures has been TJN.

By asserting that "nearly $245 billion is lost to multinational corporations shifting profit into tax havens in order to underreport how much profit they actually made in the countries where they do business and consequently pay less tax than they should," TJN aims to advance its agenda for more aggressive measures against profit shifting by MNEs. In making this assertion, TJN makes several implicit assumptions:

First, it assumes that its own model of "profit misalignment" by MNEs is correct.

Second, it assumes that it would be both possible and desirable to reduce dramatically the amounts of profit that MNEs shift to low-tax jurisdictions.

Third, it assumes that the existence of profit shifting mechanisms leads directly to a significant net loss and that in the absence of those mechanisms there would be no other response by MNEs and the wider economy, and thus that a dramatic reduction in the amounts of profit shifted to low-tax jurisdictions would lead to a proportionate increase in the amount of tax raised by high-tax jurisdictions.

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[11] See: Andreas Haufler, Mohammed Mardan and Dirk Schindler (2018) "Double Tax Discrimination to Attract FDI and Fight Profit Shifting: The Role of CFC Rules" *Journal of International Economics*, Vol. 114, 25-43.
[12] James R. Hines, Jr. and Eric M. Rice, "Fiscal Paradise: Foreign Tax Havens and American Business," *The Quarterly Journal of Economics,* Vol. 109 (1), 1994, pp. 149-182.
[13] Alexander Klemm and Li Liu, *The Impact of Profit Shifting on Economic Activity and Tax Competition*, IMF Working Paper WP/19/287, December 2019.
[14] https://www.oecd.org/tax/beps/

This section critically reviews the plausibility of these assumptions. It begins with a review of TJN's assessment of taxes lost to profit shifting.

1.1 TJN's "Profit Misalignment" Model

TJN's estimate of the taxes "lost to multinational corporations shifting profits into tax havens" is based on what it calls "profit misalignment", which is related to, but different from, profit shifting. TJN does not define profit misalignment in SOTJ 2020, but notes in the methodology that such "a profit misalignment method … typically starts from a given relationship between real profit (p) and a combination of labour (measured using wages and employees), capital (often approximated with tangible assets) and revenue. Profit misalignment is then calculated as the difference between reported profits (π) and theoretical profits (p)."[15]

TJN notes that to calculate the "theoretical profits" for SOTJ 2020, "We give 50 per cent of the weight to labour (25 per cent wages and 25 per cent to employees) and 50 per cent of the weight to unrelated party revenues."[16] This appears to be based loosely on a formulary apportionment model somewhat similar to that used by Canadian provinces to allocate the taxable profits of corporations that have permanent establishments in more than one province (see Appendix A2.1). Using this approach to identify profit shifting and associated revenue losses results in estimates of profit shifting in individual jurisdictions that are inconsistent with and dramatically different from estimates that are grounded in solid economic analysis.

In SOTJ 2021, TJN adopts a "profit misalignment" model that is exclusively dependent on the location of employees, as it notes: "In our version of this method, we allocate 50% of the weight to employees, and 50% of the weight to wages."[17]

From an economic perspective, profit arises from the difference between revenue and costs. One way to model this is to consider output as a function of capital, labour and other factors. As noted in Appendix A1.1, models of this kind enable economists to identify broadly how much of the profit derives from capital inputs (which include investments in physical property such as land and machinery, as well as intangible property, such as trademarks and patents) and how much derives from labour inputs (i.e. the number of workers, the hours that they work, and their wages and other benefits). More importantly for our purposes, by properly accounting for these and other factors, such models make it possible to identify the extent to which profits have been reported in a jurisdiction in response to the difference in CIT rates.

By contrast, in SOTJ 2020, TJN simply *assumes* that labour is the primary source of productivity; to the extent that capital is given any weight it is via the sales in a jurisdiction, which seems a weak proxy at best. And as noted, SOTJ 2021 drops even this weak proxy. Moreover, rather than attempting to identify the appropriate parameter value for the components of productivity through a regression or other econometric modelling technique, TJN simply assumes the parameter values.

The particular apportionment chosen by TJN would appear to be heavily biased towards jurisdictions where firms have large numbers of workers. While it seems reasonable to exclude intangibles from the

[15] SOTJ Methodology 2020, at p. 3.
[16] SOTJ 2020, at p. 22.
[17] SOTJ Methodology 2021, at p. 3. See also SOTJ 2021, at p. 34.

measure (on the grounds that intangible assets are presumed to be a major source of profit shifting), it is odd that TJN chose to exclude tangible assets from its method for calculating misaligned profits in SOTJ 2020 and SOTJ 2021.

The apportionment chosen by TJN in SOTL 2020 is also heavily biased towards jurisdictions in which the MNE has sales. Half the weight in the apportionment is allocated to the jurisdiction where sales are made. While MNEs may have sales offices in the jurisdictions in which they sell goods and services, the assets deployed in furtherance of sales may well be small relative to total assets, making sales a weak proxy for assets. In many cases, products are developed in one country, manufactured in another, and sold in a third; in such cases, the assets deployed in the jurisdiction of sale will likely be diminutive compared to the assets deployed in the jurisdiction of development and manufacture. Since decisions concerning the location of product development and manufacture are motivated by many things other than tax rates, the large weight allocated to jurisdiction of sale is inappropriate.

By apportioning theoretical profit between jurisdictions where there are large numbers of employees and, in SOTJ 2020, jurisdictions where there are sales, *TJN seems intentionally to create "misalignment"* for firms that have employees and assets in jurisdictions other than where they make sales.

Consider a hypothetical business, AppCo, that produces smartphone apps. AppCo is domiciled in Germany and owned by the software architects, who are not employees but simply share in the profit. AppCo employs 1,000 software engineers (who develop the software under direction from the owner-architects) and 9,000 support staff (who field queries, process payments, etc.) in a subsidiary in India. Meanwhile, 50% of the sales of AppCo occur in the US, 25% in the UK, and 25% in Germany. Under TJN's "profit misalignment" model, it would appear that 87.5% of AppCo's profits are "misaligned" and should be reallocated as follows: India, 50%; the U.S., 25%, the UK, 12.5%, and Germany, 12.5%. But how can this be correct? After all, 100% of AppCo's shareholders reside in Germany and 100% of AppCo's intellectual capital is developed in Germany. While the US and India could make a case for taxing sales of AppCo's apps, which might affect revenue and thence profits, it seems quite peculiar to assert that the profits are inherently "misaligned."

In SOTJ 2021, the implied allocation of profit in this example is even worse, since none—0%—of the profit would be attributed to Germany according to TJN's misalignment model. Yet, literally ALL the actual profit—100%—is attributable to the entrepreneurs in Germany who have risked their human and financial capital to make the investment in the business.

1.2 Other Problems with TJN's Calculation of Tax Losses

In addition to the inappropriate use of the formulary apportionment-based "profit misalignment" model, there are several other problems with the way that TJN calculates tax revenue losses, including:

1.2.1 Use of Macro Data

TJN uses macro (aggregate) country-by-country reporting (**CbCR**) data, which tends to result in high and likely excessive estimates of profit shifting because it is not possible to account for any characteristics specific to individual MNEs and so cannot properly differentiate which profits should be allocated to which jurisdictions (see Appendix A1.1.4).

1.2.2 Double Counting due to Intra-Company Dividends in SOTJ 2020 and SOTJ 2021

Many estimates of profit shifting suffer from significant bias due to double counting of intra-company dividends. While TJN acknowledges the potential for such double counting in SOTJ 2020, it does not make any adjustments to account for it. Indeed, it asserts that "Significantly, there do not seem to be incentives for double counting profits in tax havens by MNCs (since they know this data is to be used for assessing transfer pricing risk)."[18]

It is true that MNEs might have incentives to avoid giving the impression that they report more profit in low-tax jurisdictions than they actually do. That, however, is not necessarily the same as avoiding double counting in CbCR reports. In its early guidance for CbCR, which would have applied to the CbCRs produced for 2016 and 2017, the OECD failed to address the exclusion of subsidiaries' intra-company dividends from parents' pre-tax profits.[19] As a result, various different approaches were taken, with the result that in some jurisdictions, including the U.S., there was considerable double counting.[20] One credible estimate put the extent of double counting in the U.S. at $260 billion, or 14.4% of the $2.02 trillion in CbCR reported pre-tax profits (see Appendix A1.1.6).[21] Meanwhile, the government of the Netherlands undertook an evaluation of Dutch MNEs, comparing the CbCR filings with filings submitted to the Dutch tax administration as well as company annual reports and found that profit as implied by CbCR filings had been overstated by nearly 50%.[22]

Intriguingly, TJN seems to have changed its tune in SOTJ 2021 and has explicitly addressed the double counting issue, asserting that "We correct explicitly for double counting of dividends, and exclude stateless income, another potential source of double counting."[23] However, TJN does so in a rather erratic and inconsistent manner, thus:

> "We correct the domestic profits of multinational corporations using the reports provided by the governments. Sweden (where 52 per cent of profits are double counted), the United Kingdom (51 per cent), Italy (35 per cent), and the Netherlands (16 per cent) provide their own analysis. Moreover, we use the analysis by Garcia-Bernardo, Jansky & Zucman to correct the data for the United States (44 per cent of profits are double counted). For Belgium, Singapore, Isle of Man and Singapore we remove 50 per cent of the profits. For all other countries we remove 35 per cent of the profits, except Mexico and Slovenia, where double-counting does not seem to be an issue.
>
> We correct the foreign operations of multinational corporations using the analysis by Garcia-Bernardo, Jansky & Zucman on US multinational corporations. There, the authors find that 10

[18] SOTJ Methodology 2020, at p.2.
[19] This has now been corrected. See: OECD, *Guidance on the Implementation of Country-by-Country Reporting BEPS ACTION 13*, Updated December 2019, at p. 13. https://www.oecd.org/ctp/guidance-on-the-implementation-of-country-by-country-reporting-beps-action-13.pdf
[20] Thomas Horst and Alex Curatolo, "Assessing the Double Count of Pretax Profit In the IRS Summary Of CbC Data for Fiscal 2017," Tax Notes International, Volume 98 (4), April 27, 2020, pp. 427-432.
[21] Ibid.
[22] Government of the Netherlands, *Note on Country-Specific Analysis: The Netherlands*, No Date, https://www.oecd.org/tax/tax-policy/netherlands-cbcr-country-specific-analysis.pdf
[23] SOTJ Methodology 2021, at p. 3.

per cent of profits in tax havens are double-counted. We thus remove 10 per cent of foreign profits in all tax havens."

Why are 50% of profits assumed to be double counted in the Isle of Man (which has a corporate tax rate of 0% for most businesses[24]) but only 10% in "tax havens"? Why did TJN assume that only 16% of profits in the Netherlands were double counted when the Netherlands' own report states that they are overstated by nearly 75% in 2017?[25] It is all rather mysterious.

1.2.3 Extrapolating from a Small Sample of Jurisdiction Pairs

Another significant problem with TJN's methodology is the way it addresses missing data. This begins with its use of data from only 11 jurisdictions for the parameterization of its model, of which only six reported on Cayman. The use of such a small sample is almost certain to lead to biases of various kinds and in particular selection bias. The OECD notes that some Ultimate Parent Entity (UPE) reporting jurisdictions aggregate information on partner jurisdictions when the number of MNE subsidiaries in those jurisdictions is small (in order to protect the confidentiality of those MNEs).[26] As such, the UPE jurisdictions that report on individual partner jurisdictions are more likely to be those that are host to larger numbers of MNE subsidiaries in their jurisdiction.

This means that the selection of jurisdictions that provide data on Cayman as a partner jurisdiction likely have a larger number of UPEs that have subsidiaries in Cayman than do other UPE jurisdictions. So, extrapolating from the sample of such jurisdictions will almost certainly exaggerate the scale of MNE subsidiaries in Cayman.

1.2.4 Extrapolations to Address Missing Data from non-reporting NMEs

TJN notes that the raw data from CbCR are incomplete. Specifically, it notes that the number of reporting MNEs in some jurisdictions is lower than the number of MNEs with group revenues of at least €750 million in the Orbis database. To address this, TJN multiplies "all reported financial information" by the ratio of [the number of in-scope companies in the Orbis database in jurisdiction] to [the number of CbCR reporting MNEs in jurisdiction].

As discussed in detail in Appendix A1.2.3, it is highly likely that the missing data is biased towards smaller companies. A such, simply extrapolating amounts in proportion to the apparent under-reporting

[24] https://www.gov.im/categories/tax-vat-and-your-money/income-tax-and-national-insurance/business-and-corporations/#:~:text=The%20standard%20rate%20of%20corporate,and%20any%20subsequent%20accounting%20periods.

[25] https://www.oecd.org/tax/tax-policy/netherlands-cbcr-country-specific-analysis.pdf

[26] According to the OECD, "The term "Ultimate Parent Entity" means a Constituent Entity of an MNE Group that meets the following criteria:
(i) it owns directly or indirectly a sufficient interest in one or more other Constituent Entities of such MNE Group such that it is required to prepare Consolidated Financial Statements under accounting principles generally applied in its jurisdiction of tax residence, or would be so required if its equity interests were traded on a public securities exchange in its jurisdiction of tax residence; and
(ii) there is no other Constituent Entity of such MNE Group that owns directly or indirectly an interest described in subsection (i) above in the first mentioned Constituent Entity." See: https://www.oecd.org/ctp/transfer-pricing/beps-action-13-country-by-country-reporting-implementation-package.pdf

of CbCRs based on a comparison of Orbis and CbCR data would lead to potentially significant upward bias.

Precisely how TJN's use of extrapolation affects Cayman's numbers is not entirely clear but it seems likely to increase the amount of profit shifting allegedly facilitated by Cayman, possibly very significantly.

1.2.5 Inferring the Jurisdiction of Subsidiaries that are Aggregated in CbCRs

In their public macro CbCR reports, some jurisdictions report aggregates by region rather than for each country (in some cases, i.e. where the number of entities in a jurisdiction is small, this is done for reasons of confidentiality). TJN uses a machine learning algorithm to fill in the gaps. Unfortunately, the algorithm is out on average by 50% for each variable, which means that in some cases it is probably out by much more, others by much less. Without crosschecking with the underlying data (which is not publicly available), it is impossible to know which jurisdictions are out by 20% and which are out by 80%. As such, as a predictor of profit shifting to specific jurisdictions it is essentially useless.

1.2.6 Inferring missing data

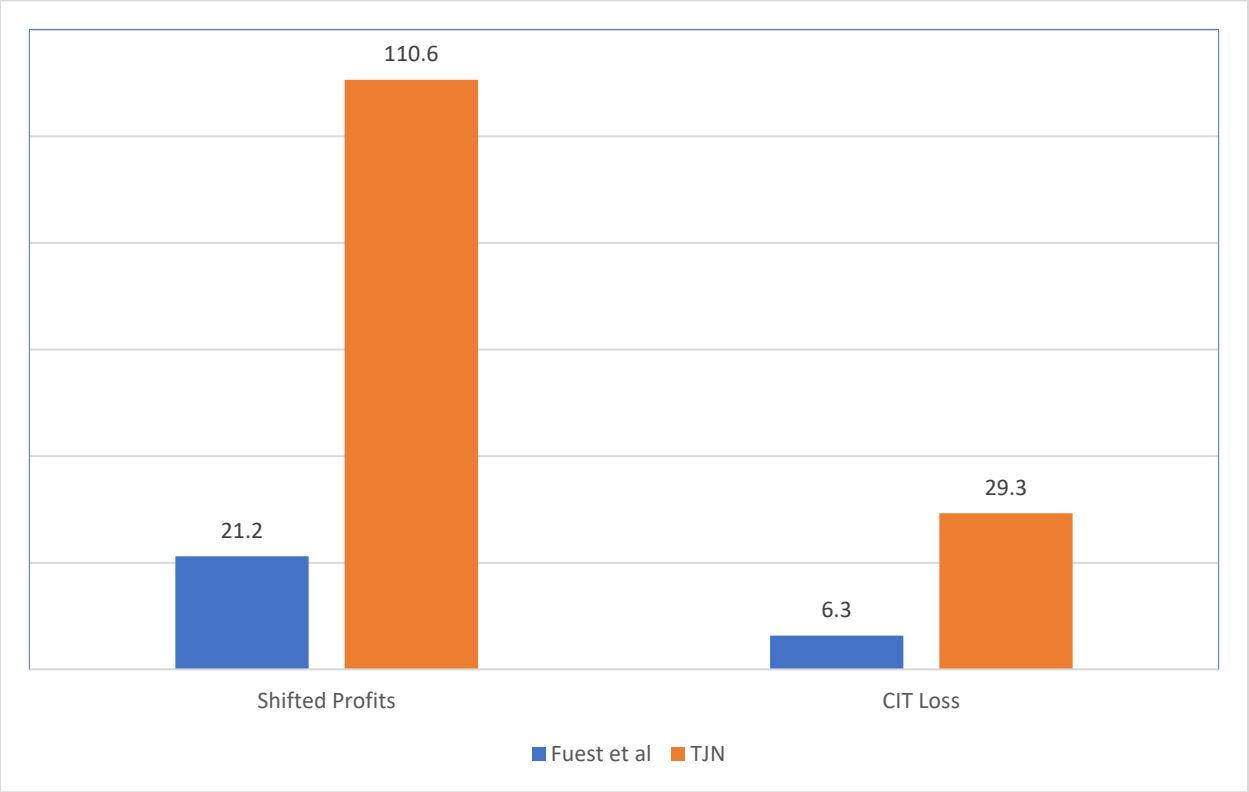
TJN notes that data is missing for some important jurisdictions, including Germany, the UK and Spain. It notes that it addresses this, "by estimating the number of domestic employees and revenue for all non-reporting countries." Unfortunately, comparisons with assessments based more directly on data for Germany suggest that TJN's estimates are very wide of the mark.

A group of highly regarded German economists, including the Director of the Center for Economic Studies, Dr Clemens Fuest, assessed the extent of both profit shifting and tax losses for Germany using micro-CbCR data.[27] Fuest et al's estimates of tax losses can be directly compared with those produced by TJN. And Fuest et al's estimates of profit shifting can be compared with amounts of profit shifting implied by TJN's estimates of tax losses. Figure 1 shows TJN's and Fuest et al's estimate of tax-related profit shifting and CIT losses for the years 2016 and 2017. As can be seen, TJN's estimates of profit shifting are more than five times those of Fuest et al. and TJN's estimate of tax losses are nearly five times those of Fuest et al's.[28]

[27] Clemens Fuest, Felix Hugger, and florian Neumeier, *Corporate Profit Shifting and the Role of Tax Havens: Evidence from German Country-by-Country Reporting Data*, CESifo Working Paper No. 8838, January 2021. Available at SSRN: https://ssrn.com/abstract=3770460

[28] The reason the ration for CIT losses is lower than for profit shifting is that Fuest et al. use the statutory tax rate (30%) to calculate tax losses, whereas TJN uses the effective tax rate (22.9%).

Figure 1: Estimates of annual average tax-related profit shifting and associated revenue losses in Germany for 2016-2017 (US$ billions)



Sources: SOTJ 2020, SOTJ 2021, Fuest et al. (2021), and author's estimates.

Since Fuest et al's analysis uses micro CbCR data from Germany, it is without a doubt far more accurate than TJN's, which is based on the edifice of inferences described above. As such, it seems that TJN's strategy for inferring missing data is not a spectacular success. Indeed, *TJN's estimates for this important jurisdiction are so far from those calculated by a group of eminent German economists, using reliable data, that it is evident that TJN's inference approach is responsible for considerable distortion to its overall estimates.*

1.2.7 How did TJN calculate the effective tax rates it uses?

Once TJN has estimated the extent of profit shifting, it then seems to use its calculations of effective CIT rates in each jurisdiction to calculate the amount of tax that has been "lost".[29] Precisely how TJN calculates its effective tax rate ("ETR") is unclear: In SOTJ 2020, it lists 4 different rates for each jurisdiction in the methodology and yet another one in the main report. The one listed in the main report, which is presumably the one that it applied to calculate tax losses, seems unrelated to the other four. For example, the ETRs for Italy in the Methodology are 12.6%, 13.6%, 14.3% and 15.4%, while the ETR for Italy given in the main report is 18.55%.[30] A team of economists in Italy's Ministry of Finance, by

[29] TJN does not explicitly assert that it uses effective CIT rates in calculating the tax losses. It is possible that it uses statutory rates. But it does list effective tax rates in SOTJ 2020, so it seems reasonable to infer that those are the rates it uses.

[30] SOTJ Methodology 2020, at p.4; SOTJ 2020 at p. 20.

contrast, calculate an ETR for Italy of 20.2%.[31] Given the importance of ETRs for calculating tax losses, the lack of transparency regarding how these losses were computed and why different ETRs seem to have been used in the calculation of tax losses than are given in the methodology seems rather odd.

1.2.8 Comparing TJN's Estimates with Other Estimates

TJN's global estimates of CIT revenue losses are broadly in the same ballpark as some other macro estimates.[32] They are also in line with a recent micro estimate produced by the economists at Italy's Ministry of Finance—Barbara Bratta, Vera Santomartino, and Paolo Acciari (hereinafter, Bratta et al.)—that used confidential CbCR data.[33] However, there are reasons to think both the macro studies and Bratta et al. have overestimated the global scale of profit shifting (see Appendix 1.1), possibly by as much as 50%. There are also good reasons to question the claim that the imputed revenue "losses" are net losses (see Section 1.3 below).

Even if we accept the global estimates of CIT revenue losses, TJN's estimates of the distribution of those losses is quite another matter. Its methodology for allocating tax losses is fundamentally at odds with the entire economic literature (see Appendix A1 for a thorough evaluation). The consequences can be seen in the resulting 'rankings' by jurisdiction. Under the TJN analysis, the top 7 jurisdictions for profit misalignment are:

Rank	SOTJ 2020	SOTJ 2021
1	United States	United States
2	Germany	Germany
3	United Kingdom	France
4	France	United Kingdom
5	Brazil	India
6	Italy	Mexico
7	Singapore	Japan

By contrast, Bratta et al's rankings for profit shifting match only in the number one spot:

1. United States
2. Japan
3. India
4. Algeria
5. France
6. South Africa
7. China

[31] Barbara Bratta, Vera Santomartino, and Paolo Acciari, Assessing profit shifting using Country-by-Country Reports: a non-linear response to tax rate differentials, Rome: Ministry of Economy and Finance, Dipartimento della Finanze, Working Paper, DF WP n.11 Febraury 2021, https://www.finanze.gov.it/export/sites/finanze/.galleries/Documenti/Varie/Assessing-profit-shifting-using-Country-by-Country-Reports-Bratta-Santomartino-Acciari-2021-19-02.pdf (Hereinafter Bratta et al. 2021a). Bratta et al., 2021b, at p. 79.

[32] See Appendix 1.1

[33] Bratta et al. Supra note 31

Indeed, in SOTJ 2020, apart from the U.S., which is ranked first by both, and France, which is fourth on TJN's ranking and fifth on Bratta at al's, the remaining jurisdictions in the top 7 are entirely different. In SOTJ 2021, both lists also contain India and Japan, though their ranking is lower on TJN's list than on Bratta et al's. The absence of Germany from Bratta et al's top seven is particularly notable, given that it is ranked second by TJN, and reinforces the finding discussed above that TJN has significantly overestimated the amount of profit shifted out of Germany.

A similar contrast can be seen when comparing Bratta et al's top 8 jurisdictions to which profits are shifted with TJN's estimates of "tax avoidance harm". TJN's top 8 jurisdictions by amounts of "tax avoidance harm" are:

Rank	SOTJ 2020	SOTJ 2021
1	Netherlands	United Kingdom
2	Cayman Islands	Cayman Islands
3	China	Singapore
4	Hong Kong	Netherlands
5	United Kingdom	Switzerland
6	Singapore	Hong Kong
7	Switzerland	Canada
8	Bermuda	Luxembourg

Meanwhile, Bratta et al's top 8 jurisdictions to which profits are shifted are:

1. British Virgin Islands
2. Bermuda
3. Singapore
4. Switzerland
5. Ireland
6. United Kingdom
7. United Arab Emirates
8. Hong Kong

While these rankings are not directly comparable (since Bratta et al's is based on estimates of profit shifting and TJN's on estimates of the effect of "profit misalignment" on other jurisdictions that is then imputed to the jurisdiction to which profit is "misaligned"), it is notable that TJN's top three jurisdictions for SOTJ 2020 do not even appear in Bratta et al's top eight. Meanwhile, compared to SOTJ 2021, neither of Bratta et al's top two jurisdictions are included on TJN's top 8. Given that Bratta et al's analysis is based on micro-CbCR data and adopts an approach that is well grounded in economic theory and generally consistent with the economic literature, it is likely far more accurate than TJN's.[34]

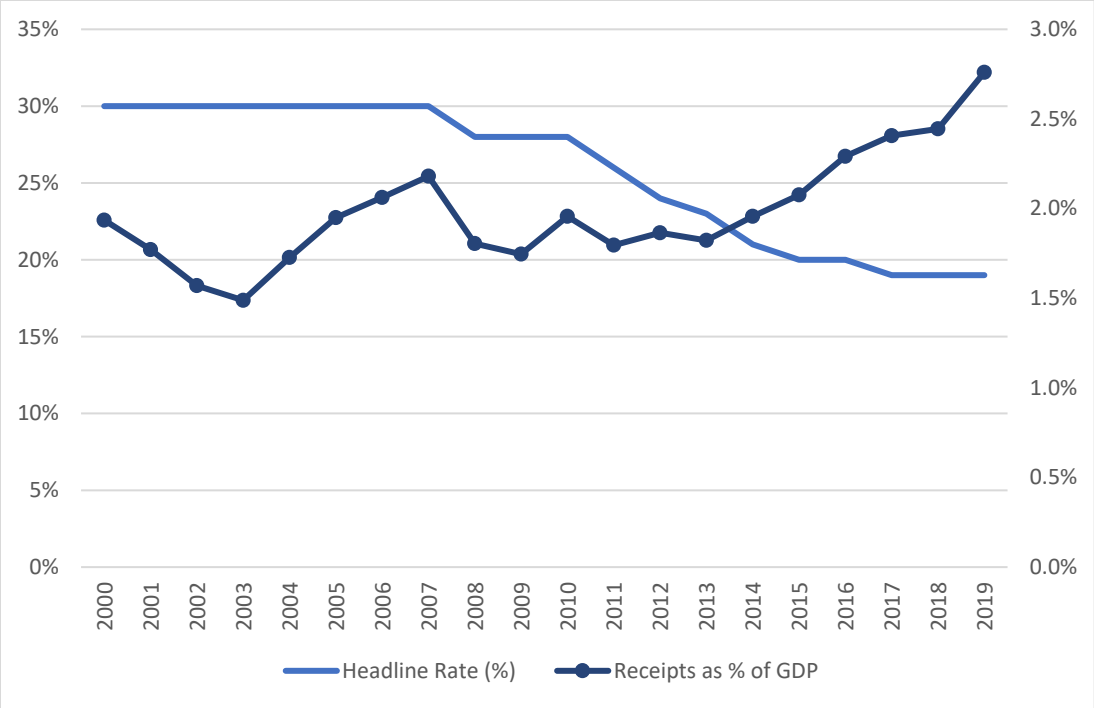
Bratta et al's top eight jurisdictions account for 80 percent of globally shifted profits and the eighth-ranked jurisdiction, Hong Kong, accounts for 5%. This means that all lower-ranked jurisdictions must account for less than 5% of shifted profits. This is noteworthy because in SOTJ 2020 TJN claims that its top three jurisdictions, Netherlands, Cayman and China, account for 11.2%, 9.7% and 8.5% of "tax losses

[34] We are not saying that Bratta et al's analysis is perfect! The appendix contains a much more detailed analysis of that study, which identifies several potential problems. We are simply saying that it is much more plausible and likely more accurate.

inflicted on other countries by enabling corporate tax abuse". In other words, TJN's top three account for 29.4% of these "tax losses"; yet they are not in the top 80% of jurisdictions contributing to profit shifting according to Bratta et al. Similarly, in SOTJ 2021 TJN alleges that Cayman is the jurisdiction responsible for facilitating the second largest amount of tax losses, yet its absence from Bratta et al's top 8 indicates that this just isn't so.

In addition, it is worth noting that in Bratta et al's analysis, the UK is a net beneficiary of profit shifting (implying a net revenue gain of about $10 billion at an effective average tax rate of 18.9%), while in TJN's analysis the UK suffers a loss of $10 billion in SOTJ 2020 and $26.5 billion SOTJ 2021 (though in SOTJ 2021, TJN estimates that profits shifted into the UK are about $3.5 billion larger than those shifted out, which would imply a net gain of just under $1 billion at an effective tax rate of 18.9%, so it is unclear why TJN asserts that the UK suffers a tax loss).[35] Over the past decade, CIT revenue in the UK has increased while the statutory CIT rate has fallen, suggesting that the UK may well have benefited from profit shifting as indicated by Bratta et al.

Figure 1: UK Headline CIT Rate (left axis) and CIT receipts as a % of GDP (right axis)



Source: HMRC

1.3 The Effect of Restrictions on Profit Shifting on Investment, Growth and Tax Revenue

While there is disagreement in the empirical literature regarding the scale of profit shifting, there is general agreement that profit shifting can be beneficial not only for the firms that undertake it but also for the wider economy. Nonetheless, TJN and others have raised concerns about the effect of profit

[35] SOTJ 2021 at p. 40.

shifting on government revenue both directly and indirectly, as a result of inducing reductions in CIT rates in other jurisdictions. Are those concerns warranted?

1.3.1 Effect on Consumers, Capital Stocks and Cost of Capital

By lowering MNEs' effective tax rates, profit shifting enables MNEs to invest more in innovation and/or to reduce the cost of goods and services provided to consumers. To the extent that prices of goods and services supplied by these MNEs fall, consumers have more to spend on other goods and services — which is good news for other businesses.

Profit shifting also leads to an increase in investment in the UPE jurisdiction. Michael Overesch of the Center for European Economic Research used micro data on foreign direct investment (FDI) into Germany from 1997 to 2005 and found that lower rates of foreign CIT led to higher levels of FDI into Germany. [36]

In addition, MNEs higher profits leads to an increase in total capital available for investment, globally. As IMF economists Alexander Klemm and Li Liu observe:

> One of the strong insights from the analysis is that profit-shifting opportunities unambiguously reduce the cost of capital in all countries—irrespective of whether they charge higher or lower taxes than the global average (for countries charging exactly the global average rate, there is no impact). Hence profit-shifting raises global capital stocks.[37]

1.3.2 The Effect of Profit Shifting on Economic Growth and Tax Revenue: No Race to the Bottom

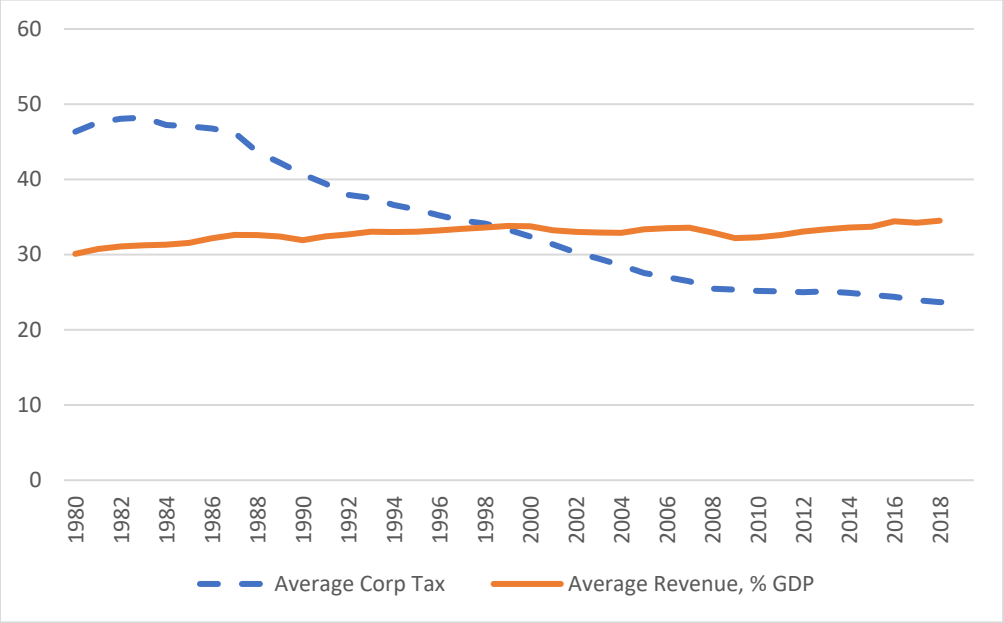
By increasing global capital stocks, profit shifting lowers the *cost* of capital. All other things equal, that results in an increase in global investment, which leads to an increase in innovation, which translates into higher rates of economic growth - and that means increased income from both capital and labour.

To some extent, the higher corporate profits that result from lower effective tax rates due to profit shifting will offset lower effective CIT rates. However, unless the lower CIT rates results in a significant shift in corporate domicile, a reduction in CIT rates will lead to a reduction in CIT revenue. But what happens when we include the effects on *total* tax receipts (from CIT and other taxes)?

Figure 7 shows that since 1980 headline CIT rates in the OECD have fallen from an unweighted average of over 45% to below 25%. Over the same period, government revenue as a proportion of GDP has risen from about 30% to about 35%. Clearly, the decline in CIT rates has not led to a fall in government revenue. In part this is likely due to the growth-enhancing effects of lower CIT rates; in part, it is due to a shift away from CIT and towards forms of taxation that have a less detrimental effect on investment and economic growth.

[36] Michael Overesch, *The Effects of Multinationals' Profit Shifting Activities on Real Investments*, ZEW Discussion Paper No. 07-071, 2007.
[37] Klemm and Liu, supra note **Error! Bookmark not defined.**.

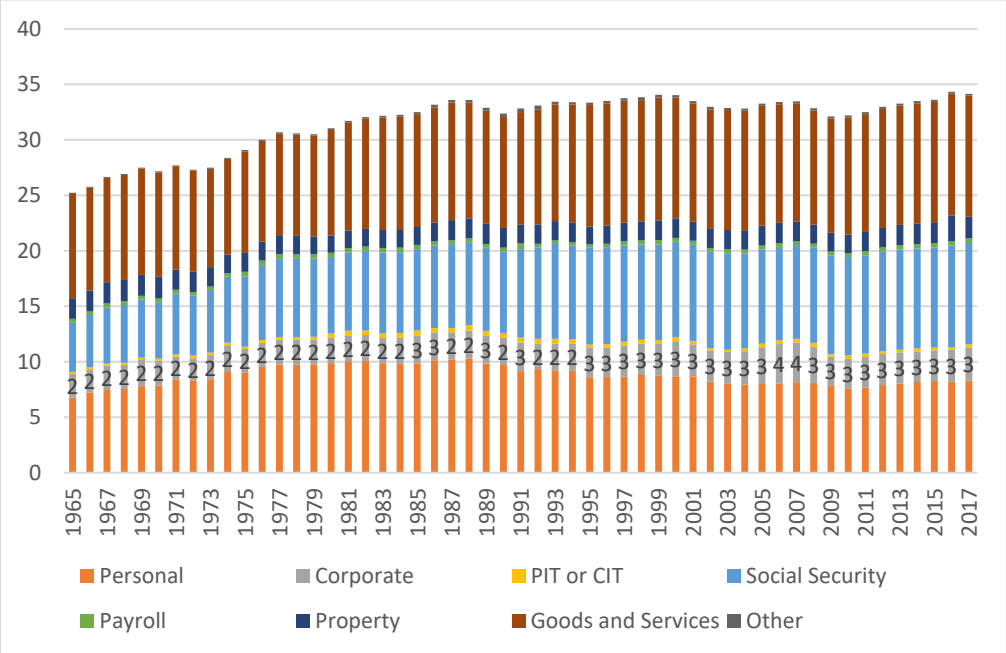
Figure 7: Headline CIT Rates and Government Revenue, OECD Countries



Source: OECD

Meanwhile, as figure 8 shows, looking over a longer period – from 1965 to 2017, government revenue has risen considerably and CIT as a proportion of GDP has also risen.

Figure 8: Government Revenue as a percentage of GDP, OECD Average, by Source.



Source: OECD

Practically any way one looks at it, therefore, the decline in CIT rates in the OECD has not resulted in a "race to the bottom."

1.3.3 Tax Deferrals are Not (necessarily) Tax Losses

Jurisdictions vary in their approach to taxing income from foreign subsidiaries. Of particular relevance here is the approach of the U.S. with regard to the deferral of taxation. Until 2017, the U.S. operated a worldwide tax system; that is to say, all income earned by U.S. companies anywhere in the world was subject to federal corporation tax. Prior to 1962, however, corporations could defer the payment of tax on all foreign income until that income was repatriated. In 1962, with the introduction of Subpart F of the Internal Revenue Code, certain kinds of specified foreign income were excluded from such deferrals. However, it was still possible to defer tax payments on many types of foreign-sourced active business income, including income derived from intangibles such as trademarks, copyrights and patents (as long as that income was genuinely sourced from overseas). In 2017, Congress passed the Tax Cuts and Jobs Act (TCJA), which among other things exempted most foreign-sourced income from tax, effectively shifting the U.S. to a territorial tax system. But the TCJA included a provision called the Global Intangible Low-Tax Income (GILTI) rule that applies a tax of 11.5% to foreign-sourced income derived from intangibles.[38]

So, at least until (and including) 2017, U.S. companies had strong incentives to defer the payment of taxes on foreign-sourced intangible income, especially if they were able to utilize double taxation treaties to shift taxable profits from high tax countries to low-tax countries. But the operative word in the previous sentence is *defer*. Moreover, from the perspective of the U.S. government, the lower the foreign taxes paid by U.S. companies the better, for two reasons: First, because the payment of foreign taxes reduces profits and thus reduces the amount of taxable income a company has available to repatriate. Second, because until 2017, the U.S. generally offered credit against foreign taxes paid on income from dividends from foreign subsidiaries.[39] In a seminal 1994 paper, James Hines and Eric Rice investigated the effect of profit shifting by U.S. corporations and concluded that "since low tax rates encourage American companies to shift profits out of high-tax foreign countries, it is possible that low foreign tax rates ultimately enhance U. S. tax collections."[40]

So, to the extent that U.S. corporations shift profits from high-tax to low-tax countries and then eventually repatriate those profits, it is inaccurate to characterize the temporarily shifted profits as causing a tax "loss" to the U.S. Indeed, if Hines and Rice are correct, the shifted profits may cause a tax gain! At the very least, regardless of the effects discussed in sections 1.3.1 and 1.3.2, it is incorrect to assume that the shifting of U.S. companies' profits results in tax losses.

1.4 Conclusions

This section has reviewed TJN's estimates of the extent of tax losses resulting from the "misalignment" of multinational companies' profits as documented in SOTJ 2020. It began with a critical assessment of TJN's methodology, which was found to be based on dubious premises. When empirical cross-checks are

[38] For a succinct explanation of GILTI, see: https://taxfoundation.org/tax-basics/global-intangible-low-tax-income-gilti/ In combination with the Foreign Derived Intangible Income rule and the Base Erosion Anti-Abuse Tax, GILTI created strong incentives for companies to shift the domicile of intangible assets back to the U.S. See also: https://taxfoundation.org/tax-basics/foreign-derived-intangible-income-fdii/ and https://taxfoundation.org/tax-basics/base-erosion-anti-abuse-tax-beat/

[39] See: https://www.irs.gov/newsroom/tax-cuts-and-jobs-act-a-comparison-for-large-businesses-and-international-taxpayers

[40] Hines and Rice, supra note 12.

applied, TJN's estimates of profit misalignment are shown to be wholly inconsistent with estimates of profit shifting. Moreover, TJN's use of these estimates to calculate tax "losses" ignores both the function of profit shifting, which at least in the case of the U.S. is to defer rather than entirely avoid taxes, and its effects on the cost of capital, which results in higher rates of growth and thereby at last partially mitigates any losses of tax revenue.

Second, TJN assumes that it would be both possible and desirable dramatically to reduce the amounts of profit that MNEs shift to lower-tax jurisdictions. While the evidence suggests that it is *possible* to reduce profit shifting, there are almost certainly diminishing returns to such action. As noted, profit shifting tends to lower the cost of capital, resulting in higher rates of investment and growth, which all else equal is beneficial. Moreover, to the extent that the threat of profit shifting acts as an incentive for jurisdictions to lower harmful corporation taxes, some degree of profit shifting is likely economically beneficial.

Contrary to TJN's claims, economic analysis finds no evidence to suggests that Cayman facilitates profit shifting by corporations. Indeed, in contrast to jurisdictions that have tax treaties with high-tax jurisdictions, Cayman cannot directly facilitate profit shifting. This is because it is a pure tax neutral jurisdiction (PTNJ). Among other things, that means it has no direct taxes on corporate or personal income and has no double tax agreements that allocate taxing rights. As such, all taxing rights are automatically retained by the other jurisdictions in which MNEs have entities. That means Cayman does not cause "tax harm" of the sort claimed by TJN.

2. Assessing TJN's Claims Regarding "Offshore Tax Evasion"

Chapter 4 of SOTJ 2020 is titled "The scale of offshore tax evasion." The chapter begins with a series of assertions regarding the implications of "financial secrecy." In particular, TJN asserts:

> "To facilitate private offshore tax evasion, secrecy laws and lack of transparency requirements are coded into tax havens' legislation, allowing wealthy individuals, including criminals, to hide their wealth from the rule of law. These tax havens are often referred to as "secrecy jurisdictions". Financial secrecy doesn't just enable individuals to abuse their tax responsibilities and launder money - it keeps drug cartels bankable, human trafficking profitable and terrorist financing feasible.
>
> Financial secrecy also limits the ability to address inequalities through progressive taxation of top incomes and wealth and weakens the social contract. The (accurate) perception that tax and regulation do not apply equally to all can have a corrosive effect on trust and compliance throughout society; and the ability of wealthy elites to abuse their tax responsibilities is also likely to be associated with weaker governance and political accountability. Identifying jurisdictions that host the private wealth of other countries, the scale of that wealth and the likely tax revenue losses, is therefore of great importance to prioritising national and international policy responses."[41]

SOTJ 2021 contains very similar language.[42]

TJN goes on to assert that "the world is losing over $182 billion in tax a year to private offshore tax evasion …" And it asserts that the largest contributor to this alleged tax loss is the Cayman Islands, which it claims is responsible for $47.6 billion of the $182 billion.

This section reviews TJN's claims regarding tax evasion both in general and as they related to the Cayman Islands. Specifically, it addresses the following series of claims TJN makes:

(1) TJN claims that Cayman is a "tax haven" and a "secrecy jurisdiction." Per the assertion made above, TJN conjectures that the Cayman Islands' legislation encodes "secrecy laws and lack of transparency requirements" that facilitate tax evasion;
(2) TJN claims, on the basis of a convoluted methodology, that Cayman facilitates tax evasion to the tune of $47.6 billion per year;
(3) TJN claims that financial secrecy provided by Cayman and other jurisdictions limits governments' ability to redistribute wealth via progressive taxation;
(4) TJN claims that financial secrecy erodes trust and weakens governance and political accountability?

We address each of these claims in turn.

[41] Tax Justice Network, State of Tax Justice 2020 (hereinafter SOTJ 2020), at p. 39.
[42] SOTJ 2021, at p. 42.

2.1 Does Cayman Islands legislation encode "secrecy laws and lack of transparency requirements"?

Ignoring the grammatical horror of TJN's sentence, the implicit assertion that "secrecy laws and lack of transparency requirements are coded" into Cayman's legislation is simply ludicrous. Consider the following facts:

- Cayman has a verified beneficial ownership registry, which means that it is next to impossible to set up an anonymous shell company in Cayman.
- Cayman has implemented 36 tax information exchange agreements, of which 32 are in force (the other four have not been implemented by the counterparties).[43] Cayman has also ratified the Mutual Convention on Mutual Assistance in Tax Matters, which has been ratified by 141 jurisdictions.[44] Under these agreements, tax-relevant information (such as the beneficial ownership of companies) is shared with other governments.

To look at a practical case study, if a criminal gang in Germany was looking to establish a Cayman Islands entity for the laundering of drug money, it would have to engage a registered and licensed corporate service provider to do so. It would then need to provide the names of all ultimate beneficial owners behind the proposed company, along with their proof of residence and government-issued photographic identification. This information would be cross-checked by trained and qualified compliance professionals working for the corporate service provider, and those compliance professionals invariably consult not only sanctions lists issued by governments around the world but also external compliance database services, such as World Check. The names of the instructing person, the beneficial owners, the proposed directors and any other relevant controllers of the proposed entity are run through these databases and any potentially positive hits are checked against the photo ID. In addition, the applicant for business must provide proof of the source of funds being used to establish the entity, and proof of the source of wealth behind it. In the event that a problem is identified, the corporate service provider files a 'suspicious activity report' which triggers further investigation and reporting.

If the gang is somehow able to get past all of these checks, its next challenge is establishing a bank account to receive and distribute the funds, where they will have to go through a similar, and even more robust, process with the bank. The reason that so few criminals are found in the records of Cayman entities is because it is nigh impossible for them to get in.

Criminals also need to be aware that Cayman corporate service providers and financial institutions will assist in the criminal and tax investigations of competent authorities around the world, so if the German police come calling, they are going to be provided with all the relevant information (including copies of passports and proof of residence). In addition, Cayman financial institutions report financial information to foreign authorities under the Common Reporting Standard (CRS) automatically, no request required.

Nonetheless, TJN claims that Cayman is the world's top secrecy jurisdiction! But TJN's methodology for identifying "secrecy jurisdictions" is deeply flawed. As this author documented in a detailed critique, when biases and inaccuracies in TJN's Financial Secrecy Index (FSI) are addressed, Cayman doesn't even

[43] https://www.ditc.ky/wp-content/uploads/2020/06/International_Exchange_of_Information_Instruments.pdf
[44] https://www.oecd.org/tax/exchange-of-tax-information/Status_of_convention.pdf

rank in the top 100 on its "secrecy score."[45] Even when the score is "weighted" by the size of Cayman's financial services exports, to generate the FSI, Cayman is ranked only 26th.

2.2 Is there Any Evidence that Cayman facilitates tax evasion?

As noted above, Cayman is not a "secrecy jurisdiction." Indeed, in many respects Cayman's legislation makes it harder to hide assets in Cayman than in most other jurisdictions. That does not mean it is impossible, but it makes it unlikely that criminals would seek to use Cayman for the simple reason that there are so many better (more secret, easier, less costly) alternatives available to them.

With that in mind, it behooves us to take a skeptical look at TJN's estimates of the scale of tax evasion allegedly facilitated via Cayman. TJN's methodology for calculating the extent of losses arising from tax evasion comprises four steps:

Step 1: Identify jurisdictions with "abnormal [bank] deposits"

Step 2: Attribute these "abnormal deposits" to their "origin countries" to derive the share of total abnormal deposits attributable to each jurisdiction.

Step 3: Apply country shares identified in step 2 to existing estimates of total global offshore wealth to calculate amounts of total offshore wealth attributable to each jurisdiction.

Step 4: For each jurisdiction, assume the total offshore wealth achieves an annual return of 5% and multiply this annual return by the tax rate applicable in the jurisdiction to calculate the loss per jurisdiction. Then sum these losses to calculate the global loss. The amount of losses attributable to a specific jurisdiction is then calculated in proportion to the abnormal deposits identified in Step 1.

2.2.1 TJN's Criteria for Jurisdictions with "abnormal" bank deposits is highly questionable

TJN uses two criteria to determine whether a jurisdiction has "abnormal" bank deposits.

- First, it must be a jurisdiction that offers "strong bank secrecy laws."
- Second, the jurisdiction must have foreign bank deposits "that are higher than would be expected based on the size of these jurisdictions' economies."[46]

While TJN applied these criteria in both SOTJ 2020 and SOTJ 2021, its methodology changed significantly, so each will be considered in turn.

Abnormal bank deposits in SOTJ 2020

In SOTJ 2020, the first criterion, "strong bank secrecy laws," is defined as scoring over 20/100 on TJN's own bank secrecy indicator (KFSI 1 from its Financial Secrecy Index). But that is not really a criterion at all since it is met by all but 5 of the jurisdictions assessed by TJN. If TJN were to use a criterion of this sort as a means of identifying "abnormal" jurisdictions, logically it should apply to considerably less than half of all jurisdictions. The statistician's definition of "abnormal" would typically mean the jurisdictions whose scores fall in the 10% tail. In this case, between 10 and 18 jurisdictions would qualify (see Appendix). Cayman is not among those jurisdictions. In fact, in 2018 Cayman was not in the 50% of

[45] Julian Morris, *A Review of TJN's Financial Secrecy Index*, Cayman: Cayman Finance, 2021. https://caymanfinance.ky/wp-content/uploads/2021/09/A-Review-of-TJNs-FInancial-Secrecy-Index-September-2021_FINAL-9356284.pdf

[46] SOTJ Methodology 2020, p. 10.

jurisdictions according to TJN's own score. As such, Cayman should not be considered a jurisdiction of interest in the analysis. (Since 2018, Cayman's score has fallen from 40 to 27, meaning that it is even further from being considered a jurisdiction with "strong bank secrecy laws" according to TJN's own indicator.)

The second criterion appears to be based on a misunderstanding of the relationship between foreign bank deposits and economic activity. As documented in the Appendix, TJN begins by automatically determining that any jurisdiction with foreign bank deposits in excess of 15% of GDP is deemed to have abnormal bank deposits. TJN offers no explanation as to why it sets the cutoff at 15% of GDP. It seems entirely arbitrary. However, some insight may be gleaned from the list of jurisdictions that meet TJN's criterion:

> "The list of these countries contains most of the important offshore financial centres. The full list is as follows: Andorra, Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Curacao, Cyprus, Finland, Gibraltar, Guernsey, Hong Kong, Ireland, Isle of Man, Jersey, Liberia, Luxembourg, Malta, Marshall Islands, Mauritius, Netherlands, Panama, Samoa, Seychelles, Singapore, St. Vincent and the Grenadines, Switzerland, Turks and Caicos Islands, United Arab Emirates, and the United Kingdom."[47]

In other words, TJN seems to have explicitly designed its 15% of GDP criterion to target "offshore financial centers." Presumably, TJN thinks that jurisdictions should not specialize in banking and other forms of financial intermediation that necessitate deposits by foreign persons. What underpins this peculiar prejudice is not entirely clear. Perhaps TJN thinks that any jurisdiction that has so specialized is doing so primarily in order to facilitate tax evasion. If so, then it is clearly wrong.

TJN then goes on to identify a slew of other jurisdictions with "abnormal" deposits using a "model" in which the foreign percentage of a jurisdiction's bank deposits is presumptively *caused* by the size of the jurisdiction's economy. TJN cleverly excludes the 31 financial centres when it parameterizes this model, thereby ensuring that those centres become outliers. As explained in the appendix, this is statistical sophistry with no solid economic foundation.

TJN inadvertently concedes that its measure is nonsense when it states: "We find that 39.3% of global bank deposits can be considered abnormal as per our definition, meaning that they are located in individual jurisdictions in quantities that are higher than would be expected based on the size of these jurisdictions' economies."[48] When nearly 40% of something is "abnormal," the question naturally arises: what is "normal"? Moreover, it asserts in relation to "Table 1: Countries with abnormal deposits," that:

> "While some of the jurisdictions that appear in Table 1 are not routinely considered to be important destinations of offshore wealth (such as Italy or France) and their scores on the Banking secrecy indicator (column 2) are correspondingly relatively low we choose not to exclude these countries from our consideration as destinations of offshore wealth. For such countries, the large abnormal deposits could be explained by other factors than financial secrecy offered by the destination country – such as unusually intense cross-border economic activity – but we do not see a way accurately to estimate the size of these effects. In the light of this

[47] Ibid.
[48] Ibid.

> caveat, our estimates of inflicted loss by countries with low secrecy scores may be somewhat overstated, while those by countries with high secrecy scores are likely to be understated."[49]

So, TJN considers France's "relatively low" score on the banking secrecy indicator because France is not an "important destination for offshore wealth". France's score is 54. On that basis, Cayman's even lower score (40) is also presumably an indicator that the jurisdiction is not an important destination for offshore wealth. Moreover, as detailed below, Cayman also has "unusually intense cross-border economic activity." As such, it is rather odd that TJN ranks Cayman as the number one jurisdiction for tax evasion.

Abnormal bank deposits in SOTJ 2021

In SOTJ 2021, it changes the definition of a jurisdiction with "strong bank secrecy laws" to those with a score of either over 50 or over 70 on a composite of the first five KFSIs from TJN's 2020 Financial Secrecy Index. That in itself is a peculiar change because the previous metric was actually specific to bank secrecy, whereas the new metric is more focused on ownership registration (indeed, TJN refers to the KFSIs as such). Moreover, several of the metrics are rather arbitrary, as noted in the analysis of the FSI.[50] The determination as to whether 50 or 70 is used for the hurdle is based on the proportion of inward bank deposits: if a jurisdiction has inward bank deposits of over 30% of GDP, then a hurdle rate of 50 is used; if a jurisdiction has inward bank deposits of over 15% of GDP then a hurdle rate of 70 is used.

On first blush, this looks like it would be a more discriminating measure. However, it turns out that 54 jurisdictions out of 133 scored more than 70 on that composite and 118 jurisdictions scored more than 50. Meanwhile, the list of jurisdictions that satisfies the criteria is very similar to the list of those that satisfies the criteria in SOTJ 2020 – namely international financial centres, as TJN notes:

> The list of these countries contains most of the important offshore financial centres. The full list is as follows: Bahamas, Barbados, Belize, Bermuda, British Virgin Islands, Cayman Islands, Curacao, Cyprus, Gibraltar, Guernsey, Hong Kong, Ireland, Isle of Man, Jersey, Liberia, Liechtenstein, Luxembourg, Malta, Marshall Islands, Mauritius, Netherlands, Panama, Qatar, Samoa, Seychelles, Singapore, St. Vincent and the Grenadines, Switzerland, Turks and Caicos Islands, United Arab Emirates, United Kingdom.

As such, the same criticisms apply here as to the methodology for SOTJ 2020.

TJN then proceeds to use essentially the same methodology as applied in SOTJ 2020 to identify additional jurisdictions with "abnormal deposits." In totally, TJN claims in SOTJ 2021 that "40.5% of global bank deposits can be considered abnormal as per our definition."[51] As before, this stretches the meaning of "abnormal" beyond breaking point.

2.2.2 Cayman is not a Secrecy Jurisdiction, it is a Financial Centre

According to TJN, total foreign deposits in Cayman banks were $1,391.8 billion in 2018 and $1,627.7 billion in 2019.[52] But according to the Cayman Islands Monetary Authority (CIMA), total deposits (foreign

[49] Ibid at p. 12.
[50] See Julian Morris, supra note 45.
[51] SOTJ Methodology 2021, at p. 16.
[52] SOTJ Methodology 2020, Table 1.; SOTJ 2020 at p. 42 rounds the number up to $1,392 billion; SOTJ Methodology 2021, Table 2.1, at p. 17.

and domestic) in Cayman banks were $520.4 billion at the end of 2018 and $492.7 billion at the end of 2019.[53] TJN says that it obtains its statistics from the Bank for International Settlements Locational Banking Statistics, however the BIS data on cross-border deposits for 2018 and 2019 would appear to be consistent with those from CIMA.[54]

One possible explanation for the discrepancy in these numbers is that most deposits in Cayman banks are transitory and so amounts recorded as "deposits" mainly reflect temporary differences between inflows and outflows, which vary considerably depending on the time-period chosen. In its 2019 Banking Digest, CIMA reports on cash inflows to and outflows from Cayman in 2018 and 2019. As can be seen in Table 1, in 2018, Cayman banks experienced inflows of $76,911 billion and outflows of $77,617 billion. By contrast, in 2019, Cayman banks experienced inflows of 55,623 and outflows of 50,355. Thus, over the calendar year 2018, there was a net outflow of $706 million, while over the calendar year 2019 there was a net inflow of $5,268 billion. But "deposits" in Cayman did not decrease by $706 million in 2018 or increase by $5.3 trillion in 2019.

Table 1: Inflows to and Outflows from Cayman Banks, 2018 and 2019 (US$ billions)

	Type of Bank	**2018**	**2019**
Inflows	Cat A Retail	66	46
	Cat A Non-Retail	278	303
	Cat B Subsidiary	183	64
	Cat B Branch	76,384	55,210
	Total	**76,911**	**55,623**
Outflows	Cat A Retail	76	31
	Cat A Non-Retail	347	320
	Cat B Subsidiary	173	103
	Cat B Branch	77,021	49,901
	Total	**77,617**	**50,355**
Net flows		**-706**	**5,268**

Source: CIMA Banking Statistics, 2019

The reason for the very large flows of funds into and out from Cayman is that the jurisdiction is the domicile of choice for non-US hedge funds and other collective investment vehicles (CIVs), as well as an important jurisdiction for insurance captives, subsidiaries of multinational companies, joint ventures, and special purpose vehicles.[55] According to CIMA, as of the end of September 2021 there are over

[53] CIMA, Banking Digest 2018, Cayman Islands Monetary Authority, Table 2, p. 16; CIMA, Banking Digest 2019, Cayman Islands Monetary Authority, Table 2, at p. 13.
[54] See BIS LBS Table 5-S. https://stats.bis.org/statx/srs/table/A5?c=KY&p=20184
[55] Julian Morris, *Cayman: Engine of Growth and Good Governance*, Cayman Islands: Cayman Finance, 2021;

12,500 mutual funds domiciled in Cayman and over 14,000 private funds.[56] Meanwhile, as of 2018, mutual funds domiciled in Cayman alone held over $3.9 trillion in net assets.

TJN claims that of the (alleged) $1,391.8 billion in foreign deposits in Cayman in 2018, $1,391.4 billion, or 99.97%, are "abnormal" – as area similar proportion of the (alleged) $1,627.7 billion in 2019.[57] But if the vast majority of foreign deposits in Cayman are made by investment funds, multinational companies and the like, as part of their normal business practices, they clearly have nothing whatsoever to do with tax evasion. As such, they should not be considered "abnormal."

Similarly, Cayman's tax neutrality and well-developed laws make it an attractive choice for domiciling private entities (companies, trusts) that pool funds on behalf of families whose members are dispersed across different jurisdictions because it ensures that income is only taxed in the jurisdictions of beneficiaries (if the jurisdiction imposes income tax). Again, there is nothing abnormal about such deposits.

The same criticisms likely apply to many other jurisdictions, especially those that have significant financial services industries, such as the US, UK, Luxembourg, the Netherlands, Ireland, the British Virgin Islands, and Hong Kong – which, with Cayman, are the eight countries with the largest amounts of "abnormal deposits" according to TJN.

2.2.3 A Founder of TJN Agrees

TJN co-founder Richard Murphy made similar points in his critique of the SOTJ, noting:

> "There are numerous problems with using this methodology.
>
> First, it uses Bank of International Settlement data that does not differentiate personal and corporate deposits. The report, which suggests that all the losses result to wealth, does not make that clear. This is simply wrong: some of the losses are not due to those with wealth.
>
> Second, the estimation of tax losses does not recognise that there may be commercial reasons for some of these deposits despite this being referring [sic] to the fact in the methodology note. Some sectors that use the jurisdictions noted may have reasons to hold high cash deposits e.g. the reinsurance sector. There may be good reason to suggest that this might involve profit shifting, but to then include the cash deposits held in a second calculation risks double counting.
>
> Third, if some of the excess bank deposits relate to genuine (rather then [sic] shell company) the use of personal tax rates to estimate all the losses is wrong. Corporate tax rates should be used in some cases, and these are almost invariably lower than top marginal personal income tax rates as used in the SOTJ calculations.
>
> Fourth, it is wrong (and historically the Tax Justice Network recognised this) to assume that all offshore holding is for the purposes of tax abuse. Such deposits can be held for other reasons e.g. for commercial confidentiality, or to hide money from creditors and spouses to prevent claims being settled, or to shield assets from taxes other than those on income, which is now

[56] https://www.cima.ky/upimages/commonfiles/NumberofMutualFundsandPrivateFundsandMutualFundAdministrator-30September2021_1634071773.pdf

[57] SOTJ Methodology 2020, Table 1.

thought to be particularly commonplace in offshore tax planning. None of these give rise to any reason to not declare income for tax purposes."[58]

Murphy also notes that

> "…implicit in the methodology is the assumption that the success that tax justice campaigning has had in requiring automatic information exchange from tax havens has had no impact on taxpayer behaviour. … [Yet] it is highly likely that aware taxpayers are not now taking the risk of not disclosing bank deposit assets in offshore locations to their domestic tax authorities when those domestic authorities are likely to receive data upon them direct from the source banks with which they are held. … To presume that all excess offshore bank deposits remain undeclared despite that success is a very surprising assumption that either undermines the credibility of all previous tax justice campaigning, or is wrong."

In short, TJN's measure of "abnormal" bank deposits is either woefully ill-informed or deliberately misleading.

2.2.4 The Rest of TJN's Steps are Largely Irrelevant but Some are Nonetheless Troubling

Given that TJN's methodology for identifying "abnormal deposits" is fundamentally misconceived, the remaining steps in its process for calculating tax losses are largely irrelevant. Nonetheless, a few observations are worth making:

First, Step 2, which seeks to attribute "abnormal deposits" to their "origin countries" is heavily biased for the same reasons that calculation of the scale of "abnormal deposits" in each jurisdiction are biased. It simply fails to recognize the legitimate movement of funds in a globalized economy.

Second, in SOTJ 2020 Step 3 relies on what it describes as, "the most widely cited estimate of global offshore financial wealth of 11.6 per cent of global GDP, or $10.9 trillion in 2018, as provided by Alstadsaeter, Johannesen, and Zucman (2018)." This is an odd statement for several reasons:

- In their 2018 paper, Annette Alstadsaeter, Niels Johannesen, and Gabriel Zucman did not construct a new estimate of global offshore wealth.[59] Rather, they relied on a 2013 study by one of the authors, Gabriel Zucman, which estimated that "8% of global financial wealth of households is held in tax havens." In that 2013 paper, Zucman cites an estimate that global wealth is approximately 120% of GDP, which would explain why in their 2018 paper he and his coauthors asserted that "10% of world GDP is held in tax havens" (120% of 8 is 9.6, which rounds up to 10). It does not explain how TJN arrived at its 11.6% figure.
- After some sleuthing, it would appear that this 11.6% figure comes from an update to Zucman's 2013 paper that was published as an appendix to another paper in 2017.[60]
- However, to the extent that this missing wealth in part reflects wealth that has been hidden by tax evaders, it seems likely that the actions of various governments over the past decade,

[58] Richard Murphy, *The State of Tax Justice – a review*, Tax Research UK, July 2021. At p. 16. https://www.taxresearch.org.uk/Blog/wp-content/uploads/2021/07/TJN-SOTJ-721.pdf

[59] Alstadsaeter, Annette, Niels Johannesen, and Gabriel Zucman. 2018. "Who Owns the Wealth in Tax Havens? Macro Evidence and Implications for Global Inequality." *Journal of Public Economics* 162: 89–100. https://doi.org/10.1016/j.jpubeco.2018.01.008

[60] https://gabriel-zucman.eu/files/AJZ2017bAppendix.pdf

including the introduction of FATCA by the US, the Common Reporting Standard by other OECD jurisdictions, and a wide network of tax information exchange agreements, would have led to a substantial reduction in the proportion of wealth that is subject to evasion.

- The novel component of Alstadsaeter et al. primarily consisted in allocating offshore wealth among jurisdictions using data from the Bank for International Settlements, which they correlated with data on fiduciary bank accounts held in Switzerland. Yet, as they concede:

> "The main limitation of the BIS data is that deposits only account for a fraction of total offshore wealth, so we need to make assumptions. We assume that if Indians own 10% of the deposits belonging to foreign non-banks in Hong Kong, then they also own 10% of the household offshore wealth held there—i.e., that the distribution of deposits is the same as that of offshore wealth. In practice, the correlation between the two distributions is likely to be high but imperfect. For instance, U.S. corporations may own the bulk of the bank deposits in the Cayman Islands, while U.S. households might own a smaller fraction of the total offshore wealth in the Caymans."[61]

In SOTJ 2021, TJN uses an estimate of offshore wealth produced by Ecorys for the European Commission.[62]

Third, with regard to Step 4, Richard Murphy observes:

> "[T]he assumption that cash deposits pay 5% interest might be best described in a number of ways, including 'heroic', 'optimistic', 'unaligned with real world experience' or just 'highly unlikely to be correct' when real world rates on cash deposits have rarely been much above zero for a considerable period of time, whichever currency is used to hold accounts in. This rate is likely to be substantially overstated as a result and, as a consequence, so too are the tax losses likely to also be seriously overstated."[63]

Indeed, from 2009 to 2017 central bank base rates in the US, UK and Euro area were continuously below 1 per cent.[64] While a few banks were offering higher rates of interest for term deposits, even the most generous such deposits in the US paid only about 1% during the relevant period.[65] As such, TJN's assumed returns on bank deposits are *about* 5 times the likely returns on such deposits. Hence, even if all the other steps in TJN's analysis were correct, its estimate of tax losses due to individuals evading taxes by hiding money in undetected foreign deposit accounts is at least 5 times the amount of actual tax losses (and that is being extremely conservative).

In addition, TJN assumes that if the alleged tax evaders had not hidden their money in offshore accounts, they would have paid tax at the top marginal rate. But that seems extremely unlikely. In most jurisdictions, governments offer numerous legitimate means by which individuals are able to reduce

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[61] Ibid. at p. 94.
[62] https://op.europa.eu/en/publication-detail/-/publication/0f2b8b13-f65f-11eb-9037-01aa75ed71a1/language-en/format-PDF/source-225280727
[63] *Supra* note 58.
[64] See: https://www.bankofengland.co.uk/boeapps/database/Bank-Rate.asp, https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html, https://fred.stlouisfed.org/series/FEDFUNDS
[65] https://www.bbvaresearch.com/wp-content/uploads/2018/09/180911_US_BankDeposits.pdf

their effective tax rates. These range from lower tax rates for certain kinds of investments to rebates for buying electric vehicles. For example, in the UK, the top marginal tax rate is 45% but taxpayers in the highest bracket pay an average effective rate of around 40%.[66] Likewise, in the US the top marginal federal tax rate is 37%, but many higher-income earning individuals are remunerated in stock, which is subject to capital gains tax at a much lower rate (for those with taxable income between $80,000 and $441,450, the tax rate is 15%; for those earning more, it is 20%). As such, the effective tax rate for many high earners is closer to 20% (and may be less for those who are able to utilize one or more of the many deductions in the U.S. tax code). 2.2.5 What Do Other Data Tell Us about Tax Evasion?

According to Alstadsaeter, Johannesen, and Zucman, "The use of shell companies increased after 2005, when in the context of a law known as the Saving Tax Directive, the European Union introduced a tax on interest income earned by E.U. residents in Switzerland and other tax havens."[67] This offers us a testable hypothesis: Had there been a significant switch toward the use of "shell companies" to hide money in Cayman, we would expect the number and size of individual accounts held by Europeans to decline significantly after 2005.

In 2013, the European Parliament published a study entitled "European initiatives on eliminating tax havens and offshore financial transactions and the impact of these constructions on the Union's own resources and budget."[68] As the title suggests, the study was not a paean to the wonders of offshore finance. However, contained within the report was a rather interesting assessment of the role of the Cayman Islands:

> "Certainly for the case of the Cayman Islands, media exemplar for a tax haven, there were far fewer individual bank accounts in the name of EU Member State residents than anticipated. In the report for the first six months of the Directive (1 July – 31 December 2005) the Cayman Islands Tax Information Authority listed 8,886 accounts with US$10.96 million in covered interest payments while in the report covering calendar year 2009, there were 7,397 accounts with US$12.2 million in covered interest payments. Similarly, for 2010 (the most recent available data) the figures were 7,161 accounts with US$6.95 million in covered interest payments. To put this into the larger context, the Bank for International Settlements reports in their Quarterly Review (Table 6A: External positions of reporting banks vis-à-vis all sectors) that total foreign assets on deposit with the Cayman Islands in December 2009 was US$1,733,082 million and in December 2010 it was US$1,726,006. For the case of the Cayman Islands this situation reflects the fact that its financial centre works predominantly with corporate accounts (mutual funds, hedge funds and other financial firms) rather than individual natural persons."[69]

The tiny number of bank accounts held by European nationals in Cayman bank accounts in 2005 and modest amounts of interest paid to them (an average of little more than $1,000 per account), as well as

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[66] See section 2.3 below.
[67] *Supra* note 59 at 93.
[68] European Parliament. *European initiatives on eliminating tax havens and offshore financial transactions and the impact of these constructions on the Union's own resources and budget.* Brussels: European Parliament. IP/D/CONT/IC/2012-071 15/04/2013
https://www.europarl.europa.eu/RegData/etudes/etudes/join/2013/490673/IPOL-JOIN_ET%282013%29490673_EN.pdf
[69] *Ibid* at 77.

the relatively modest change in number of accounts and interest payments between 2005 and 2009 indicates that we can reject the hypothesis that individuals were or are using Cayman to evade taxes.

It is also possible to compare TJN's estimate of the amount of tax evasion facilitated by Jersey with a more careful study undertaken by Capital Economics in 2016.[70] In that analysis, Capital Economics estimated that the theoretical maximum amount of evasion of UK income tax perpetrated though Jersey at £95 million per year but noted that the total was almost certainly much lower. UK-resident taxpayers held about 4% of total assets in Jersey at the time of the analysis (about £50 billion). Meanwhile about £800 billion of the total £1.3 trillion in assets held via entities in Jersey was held on behalf of corporations and institutions (and hence not plausibly related to tax evasion). If we assume that the rate of tax evasion in the remaining £450 billion is the same as that among British taxpayers, the maximum possible amount of tax evasion at the time would have been around £950 million. In reality, it was almost certainly much lower. And since the implementation of CRS, FATCA and associated TIEAs it is probably negligible. But let us suppose for a minute that the £950 million figure ($1,235 million at the prevailing exchange rate in 2017) is accurate—as an upper limit. How, then, did TJN come up with a figure of $3,445,160,889?[71] It implies that the amount of tax evasion occurring there is nearly three times the *theoretical* maximum *before the implementation of CRS and FATCA*. That seems wholly implausible.

2.3 Does "financial secrecy" limit the ability of governments to redistribute wealth via progressive taxation?

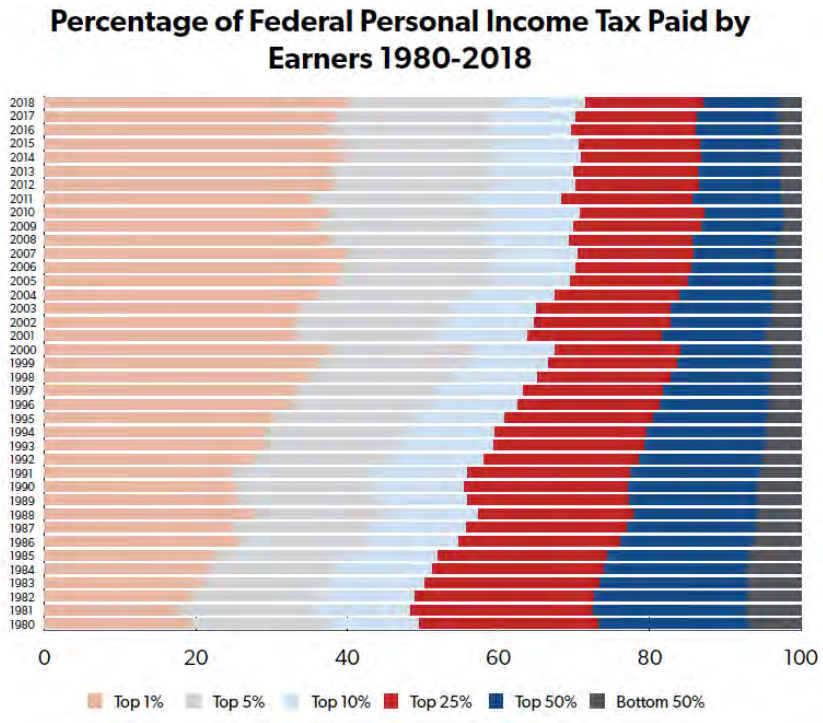
TJN offers no evidence in support of this assertion. Perhaps they think it is axiomatic. If it *were* true, then we would have seen a decline in redistributive policies and a reduction in the proportion of taxes paid by those that earn the most. What we see is exactly the opposite, even in the United States. Figure 1 shows the percentage of federal personal income tax paid by different groups of taxpayers. Between 1980 and 2018, the proportion of all income tax paid by the top 1% of earners has approximately doubled from about 20% to about 40%. Meanwhile, the proportion paid by the top 10% has risen from around 50% to around 70%. And the proportion paid by the bottom 50% of earners has fallen from about 7% to about 3%.

In the UK, the picture is broadly similar, as can be seen in Figure 2. The top 50% of income earners pay more than 90% of all income tax. Meanwhile, the top 10% now pay over 60% of all taxes, up from just over 50% in 1999-2000, while the top 1% pay nearly 30%, up from just over 20% in 1999-2000.

[70] Capital Economics, *Jersey's Value to Britain*, 2016.

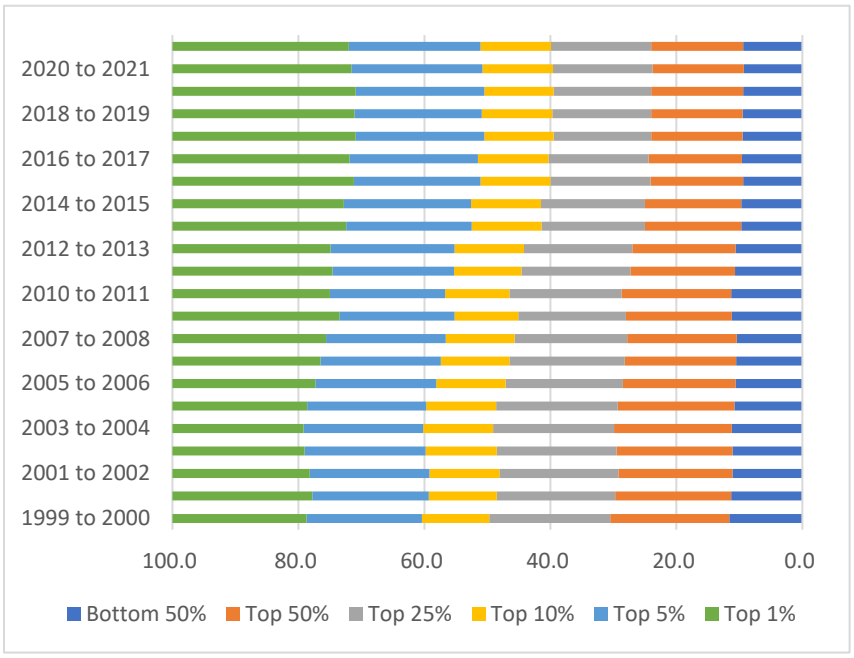
[71] This is the figure given for "tax evasion harm" caused by Jersey in the SOTJ 2020 Country Data spreadsheet. https://taxjustice.net/wp-content/uploads/2020/11/SOTJ_2020_country_data.xlsx

Figure 1: Proportion of Federal U.S. Personal Income Tax Paid by Income Groups.



Source: National Taxpayers Union https://www.ntu.org/foundation/tax-page/who-pays-income-taxes

Figure 2: Proportion of U.K. Personal Income Tax Paid by Income Groups.



Source: UK HMRC National Statistics, Table 2.4.[72]

[72] https://www.gov.uk/government/statistics/shares-of-total-income-before-and-after-tax-and-income-tax-for-percentile-groups

Given that the U.S. and, to a lesser extent, U.K. are frequently described as having less redistributive policies than many other OECD jurisdictions, especially those in the EU, the progressivity of the tax systems of these two countries may come as a surprise. More important for our purposes, it is clear that the tax systems of the two jurisdictions have become substantially more progressive over time, with the burden of income tax increasingly falling on the wealthy. Finally, it is clear that US federal income tax is significantly more progressive in its effect than is the UK's, even though the top rate of income tax is higher in the UK. One reason for this may be that the lower tax rates in the U.S. generate stronger incentives to innovate, resulting in companies that are more profitable and which therefore generate greater shareholder value.

Relatedly, the evidence from the UK and US would appear to contradict TJN's claim that "The tax systems of most if not all countries around the world have been programmed to prioritise the interests of the wealthiest corporate giants and the super-rich, unbounded by geography, over the needs of all members of society." At least as regards individuals, the tax system imposes a far greater burden on the wealthy than it does on poorer members of society. This can perhaps be seen more clearly in Table 1, which shows the amounts of tax paid by individuals in different tax brackets in the UK. Those earning over £500,000 paid an average rate of around 40%, which is higher than for all other groups.

Consider also that in total the 6,000 taxpayers who earned over £2 million paid nearly twice as much in taxes (£11.5 billion) than the 9.76 million taxpayers who earned less than £20,000 (£6.4 billion).

Table 1: Taxes paid by UK taxpayers in different brackets.

Range of total income (lower limit)	Total number of Income Tax payers ('000s)	Total income (£million)	Total Income Tax liability (£million)	Average rate of Income Tax	Average amount of Income Tax (£)
£12,500	3,230	44,200	718	1.6%	222
£15,000	6,530	114,000	5,740	5.0%	879
£20,000	9,260	227,000	20,300	9.0%	2,200
£30,000	8,090	311,000	37,800	12.2%	4,670
£50,000	3,550	235,000	45,000	19.2%	12,700
£100,000	610	73,300	21,600	29.4%	35,400
£150,000	188	32,000	10,800	33.6%	57,400
£200,000	205	59,200	22,300	37.6%	108,000
£500,000	38	26,000	10,400	40.0%	272,000
£1,000,000	13	17,300	6,940	40.2%	544,000
£2,000,000+	6	29,000	11,500	39.8%	1,920,000
All Ranges	31,700	1,170,000	193,000	16.5%	6,080

Source: HMRC

2.4 Do Cayman's laws erode trust and weaken governance and political accountability?

TJN asserts that "The (accurate) perception that tax and regulation do not apply equally to all can have a corrosive effect on trust and compliance throughout society; and the ability of wealthy elites to abuse their tax responsibilities is also likely to be associated with weaker governance and political accountability." TJN does not supply any evidence to support this claim, though to the extent that it is true that the wealthy elite are able to avoid their tax responsibilities, it has some intuitive appeal. However, the relevant questions are: (1) how and in what ways are wealthy elites are able "to abuse their tax responsibilities"? and (2) what if anything does this have to do with Cayman (and other tax neutral jurisdictions)?

As regards the first question, as noted in section 2.3, the evidence suggests that in societies such as the US and UK, the wealthy pay the vast majority of all income taxes, so it is not at all clear that the wealthy are abusing their tax responsibilities. As such, there does not seem to be much evidence that tax evasion in those societies is weakening governance or political accountability.

As regards the second question, the evidence simply does not support the contention that Cayman facilitates tax evasion or otherwise enables the wealthy "to abuse their tax responsibilities." Indeed, as noted in section 2.1, Cayman goes to great lengths to assist tax authorities in other jurisdictions. As a result, it is extremely difficult to undertake such abuses in Cayman. For example, under FATCA and the Common Reporting Standard, financial institutions in Cayman automatically share financial and personal information of account holders with relevant competent authorities in the jurisdictions where those individuals are tax resident. Meanwhile, in the unlikely event that such an abuse is facilitated in Cayman, routine checks on transactions are likely to pick up any suspicious activities, which are then reported to competent authorities.

2.5 Conclusions

This critique shows that TJN's analysis of the extent to which jurisdictions facilitate tax evasion is fundamentally flawed. In the case of Cayman (especially) and many other jurisdictions, TJN simply assumes that a vast proportion of foreign bank deposits are illegitimate when in fact there is no evidence to support this assumption. Indeed, while it is impossible to prove a negative, in Cayman's case there is no good reason to think that any of the deposits are illegitimate. The fact is that the vast majority of money flowing through Cayman is associated with Cayman's entirely legitimate financial industry.

Appendix

A1: Evaluating TJN's Estimates of Tax Revenue Losses from Multinational Corporations

Appendix 1 assesses TJN's estimates of tax losses arising from profit shifting by MNEs and in so doing it questions these implicit assumptions. It begins, in section A1.1, with a review of the evidence for profit shifting from the academic literature. Section A1.2 review's the model used by TJN to estimate the extent of taxes "lost to multinational corporations." Section A1.3 considers the economic effect measures to reduce profit shifting—and the consequences for tax revenue. Section A1.4 discusses the implications for Cayman and concludes.

A1.1 Evidence of Profit Shifting

The existence of profit shifting by MNEs has been demonstrated in numerous empirical studies. However, there is considerable disagreement regarding the scale of such profit shifting, as well as its effects. This section briefly reviews the empirical studies, considers evidence of changes in the extent of profit shifting over time, and addresses concerns regarding the interpretation of data used in the studies.

A1.1.1 Hines-Rice

One of the most influential studies of profit shifting was undertaken by James Hines and Eric Rice.[73] The study was formally published in the prestigious Quarterly Journal of Economics in 1994, and has since been cited over 400 times, putting it in the top 1% most cited economic studies of all time.[74]

Hines and Rice start with the assumption that an MNE will shift profits from affiliates in high-tax jurisdictions to affiliates in low-tax jurisdictions if so doing increases group net profits, taking into account not only tax differentials but also the cost of shifting profits.[75] To estimate the extent of shifted profits, Hines and Rice perform an econometric analysis in which the key (independent) variables are: productivity (proxied by per capita income), tangible capital input (property, plant and equipment), labour input (total employee compensation), and the CIT rate in the foreign (i.e. non-US) jurisdiction. It is worth noting that Hines and Rice used a log transformation because the underlying relationships are assumed to be multiplicative, so taking logs enables the investigators to perform a linear regression that otherwise would not have been possible. It also, conveniently, means that the coefficient on the foreign CIT rate term is the "semi-elasticity" of the CIT rate, i.e. the percentage change in reported profits associated with a percentage change in the CIT rate in the other jurisdiction.

Hines and Rice used aggregate data on the net book value of foreign entities of U.S. MNEs from the U.S. Department of Commerce's Bureau of Economic Analysis (BEA) to estimate the effect of foreign jurisdiction CIT rates on amounts of profit shifted. They found that for foreign jurisdictions with very low CIT rates, small changes in the CIT rate had a very large effect on profits reported in those jurisdictions,

[73] James R. Hines & Eric M. Rice, "Fiscal Paradise: Foreign Tax Havens and American Business," The Quarterly Journal of Economics, vol. 109(1), 1994, pp. 149-182. https://academic.oup.com/qje/article-abstract/109/1/149/1850027 . (An working paper version was published by the NBER in 1990.)
[74] https://ideas.repec.org/top/top.item.nbcites.html
[75] Output is assumed to be a function of inputs, which are capital and labor. And costs include: the rate of interest (the cost of capital), wages (the cost of labor), tax rates, and the cost of establishing and maintaining corporate entities.

such that a reduction in the foreign CIT rate from one to zero percent would lead to a 20% increase in profits reported in that jurisdiction, and the marginal effect of increases in foreign CIT rates falls to zero as the foreign CIT rate approaches 43% (reflecting that this is close to the highest effective CIT rate in the US at the time, so there would be no benefit from shifting profit to a jurisdiction with a rate of 43%).[76]

Hines and Rice also observed that (under the then-prevailing CFC regime and CIT rates in the U.S.), an increase in CIT rates by foreign low-tax jurisdictions could lead to an increase in foreign tax payments by U.S. MNEs and hence a reduction in tax revenue to the U.S. government.

A1.1.2 Extensions to Hines-Rice – and "Consensus Estimates" of Tax Semi-Elasticities

Numerous researchers have developed and empirically estimated extensions to and variants of the Hines-Rice model. For example, in 2005 Harry Huizinga (Tilburg University) and Luc Laeven (then at the World Bank, now Director-General of the Research Division of the European Central Bank) extended Hines-Rice to allow for profit shifting between subsidiaries.[77] Some of these studies have, like Hines and Rice, used macro data – that is, data aggregated at the level of the jurisdiction. Others, such as Huizinga and Laeven, have used micro data—that is data from individual MNEs—from various sources. Surveys of this literature show that estimates of the extent profit shifting vary considerably depending on various factors, including: the type of data used (macro or micro), the source of the data, the treatment of the data (e.g. whether it was adjusted to account for double counting), and the specification of the model (especially the functional form of the relationship between tax differentials and incentives to shift profits – see below).

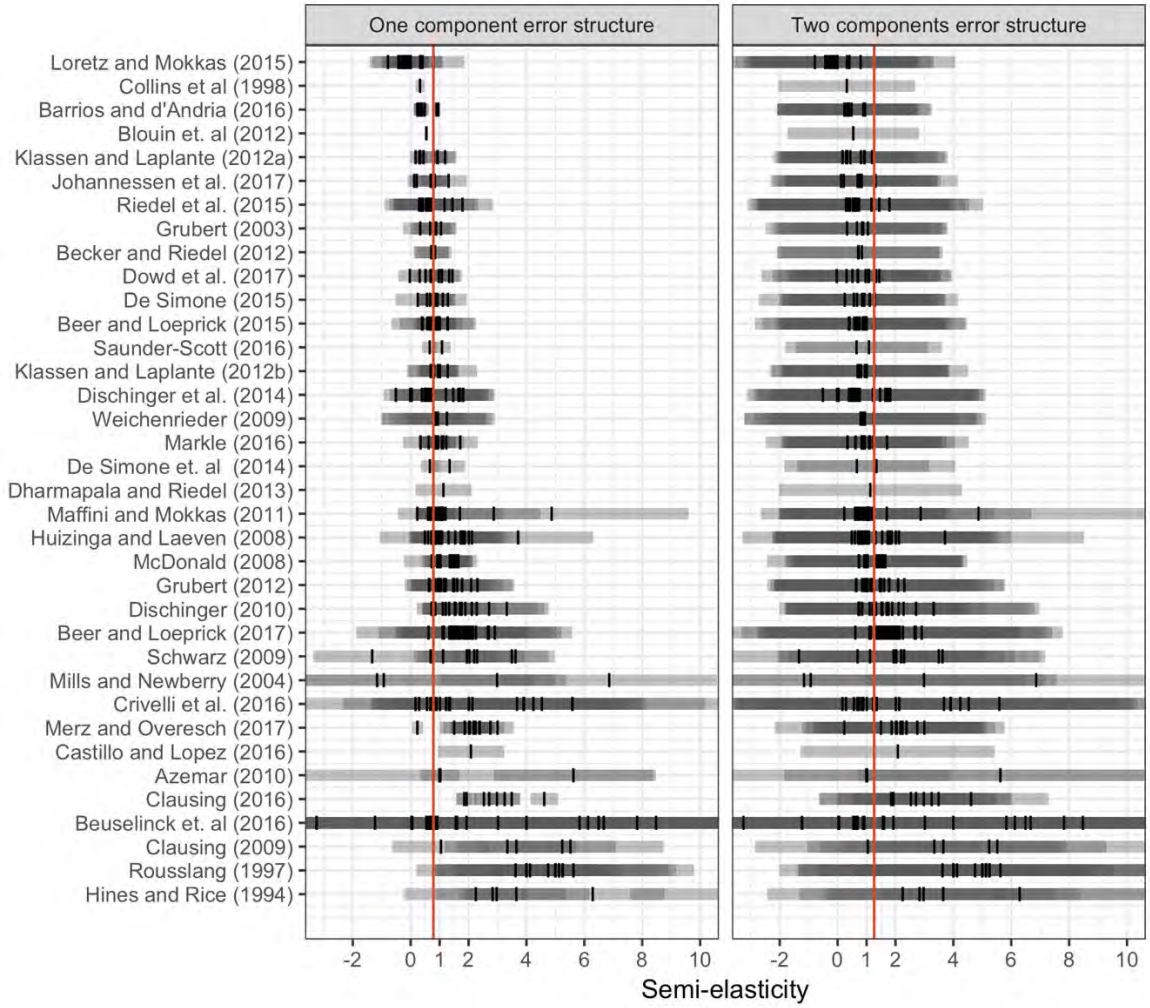
In the past decade, two groups of researchers have produced surveys and meta-analyses of numerous studies of profit shifting. From these, they derived "consensus" estimates of semi-elasticities and implied profit shifting. In 2013, Jost H. Heckemeyer, of the University of Mannheim, and Michael Overesch, of the University of Cologne, analysed 25 studies and concluded that the "consensus" semi-elasticity for profit shifting in response to tax, based on their meta-regression, was "about 0.8". [78] In other words, a 10% increase in the tax differential between two jurisdictions would result in an 8% increase in profits shifted from the high tax to the low-tax jurisdiction. In 2018, Sebastian Beer, Ruud de Mooij, Li Liu from the International Monetary Fund, found that a "consensus estimate" of tax semi-elasticity of about 1, implying that a 10% increase in the tax differential between two jurisdictions would result in a 10% increase in profit shifting (but as noted below, they also found that this estimate rises over time).[79]

At first sight, the similarities in these consensus estimates seem to offer reassurance that they are "correct." But as can be seen from figure A1, the range of estimates is enormous. Indeed, most studies typically identify several different semi-elasticities. Even the same model can produce different

[76] Hines and Rice at p. 168.
[77] Harry Huizinga and Luc Laeven, International Profit Shifting within European Multinationals, CEPR Working Paper, May 2005. Final version published as: Harry Huizinga and Luc Laeven, "International profit shifting within multinationals: A multi-country perspective," *Journal of Public Economics*, 2008, Vol. 92 (5-6), pp. 1164-1182
[78] Jost H. Heckemeyer and Michael Overesch, "Multinationals profit response to tax differentials: Effect size and shifting channels," *Canadian Journal of Economics*, Vol. 50(4), pp. 965-994, 2017.
[79] Sebastian Beer, Ruud de Mooij, Li Liu, *International Corporate Tax Avoidance: A Review of the Channels, Magnitudes, and Blind Spots*, CESifo Working Paper, 2018.

estimates depending on the method adopted for undertaking the estimation, as can also be seen in the figure: the left hand column lists estimates using one methodology (weighted least squares), while the right hand column lists estimates using another methodology (generalized least squares).[80] Subsequent subsections explore some reasons for these differences.

Figure A1: Estimates of Tax Semi-Elasticities



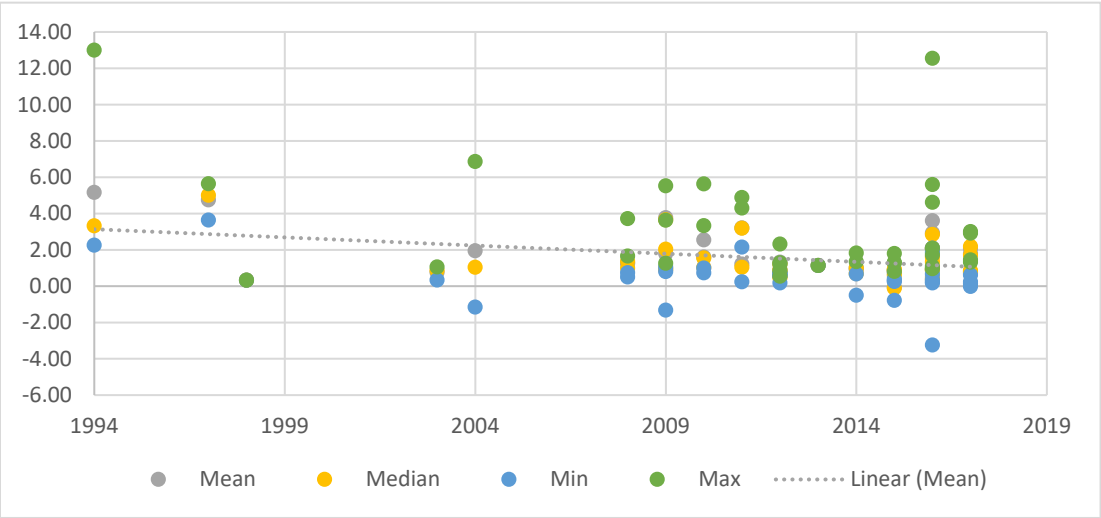
Source: Beer et al., 2020.

A1.1.3 How has Profit Shifting Changed Over Time?

In their initial analysis, Beer et al. found that published estimates of tax semi-elasticities have been falling over time. However, as can be seen in Figure A2, any trend is weak—and the range of estimates large. Beer et al. also suggest that the apparent decline may be due to publication bias and when they attempt to correct for possible publication bias due to "p-hacking", their trend reverses.

[80] WLS has a one-component error structure, while GLS has a two-component error structure – hence the column headers.

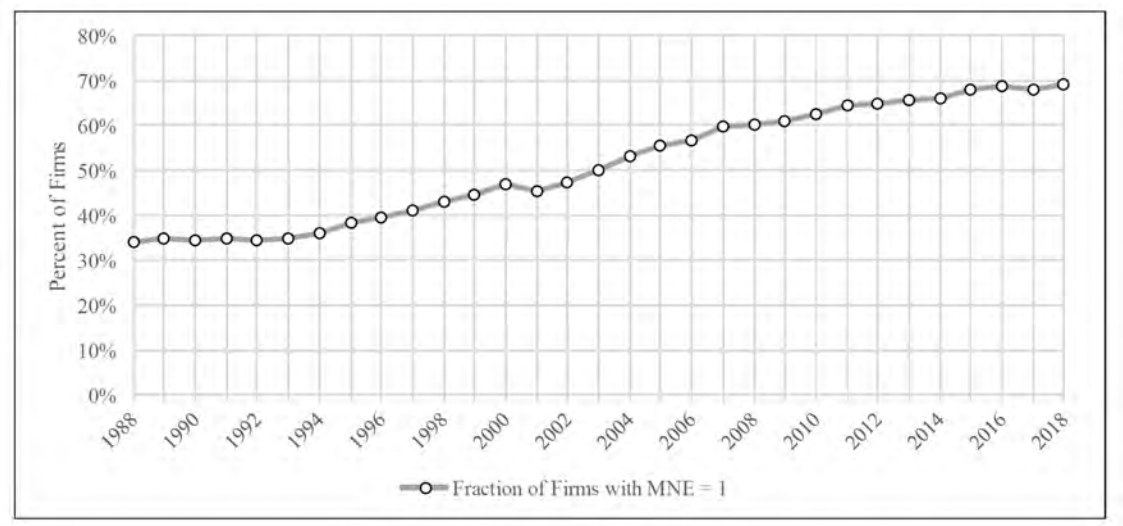
Figure A2: Change in Estimates Tax Semi-Elasticities, 1994-2017



Source: Beer et al. 2018, adapted by author

Several factors have been driving changes in the extent of profit shifting:

First, over the past three decades, business has become increasingly international, as can be seen for US firms in figure A3. This has created greater opportunities for and incentives to engage in profit shifting.



Source: Dyreng and Hanlon, 2020.

Second, in the US, the "check-the-box" (entity election) rules, introduced by the IRS in 1996, created opportunities for hybrid entities through which US MNEs were able considerably to reduce the tax they paid on non-repatriated foreign-source income.[81] This created incentives for MNEs both to expand their

[81] Congressional Research Service, Issues in International Corporate Taxation: The 2017 Revision (P.L. 115-97). Washington, DC: Congressional Research Service. https://sgp.fas.org/crs/misc/R45186.pdf

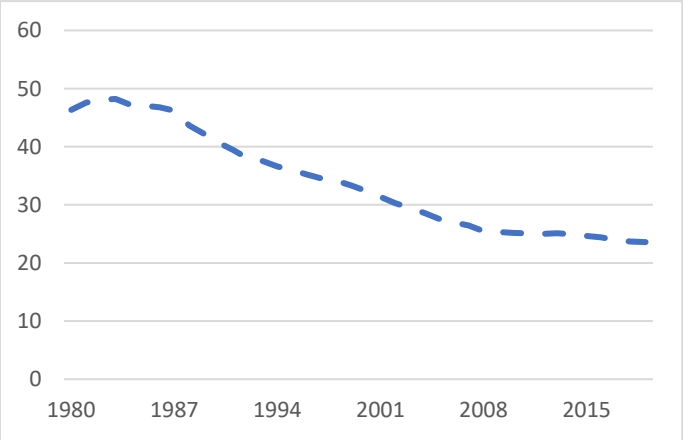
non-US operations and to keep foreign-source income offshore. Moreover, as Scott Dyreng (Duke University) and Michelle Hanlon (MIT) note in a recent paper regarding tax avoidance prior to the reforms that occurred following the 2017 Tax Cuts and Jobs Act (TCJA):

> "the data suggests that tax avoidance begets more tax avoidance. Once a company sets up a tax avoidance structure, future behavior generally must fit within or support the structure. In addition, one consequence of tax avoidance in the pre-TCJA time period for a multinational firm was 'trapped cash' in foreign subsidiaries that led to more U.S. borrowing, more investment (capital expenditures and M&A) in foreign locations, and at times a higher likelihood of having the subsidiary acquired by a foreign company."[82]

Third, at the same time, statutory CIT rates have been falling – indeed rates in the OECD have fallen by about 50% since 1980—thereby reducing the incentive to shift profit at the margin (see figure A4). And, likely more importantly, effective CIT rates have also been falling, as documented in several studies:

- Using publicly available financial information on over 10,000 firms across 85 jurisdictions, Kevin Markle and Douglas Shackleford of the University of North Carolina found that effective CIT rates fell by an average of about 20% between 1988 and 2007.[83]
- In a 2017 paper, Scott Dyreng, Michelle Hanlon, Edward L. Maydew (University of North Carolina) and Jacob R. Thornock (Brigham Young University) investigated changes in effective CIT rates for US domestic and MNEs from 1988 to 2012 – and concluded that both had been falling at similar rates of about 0.4% per year.[84]

Figure A4: Average Statutory CIT Rate, OECD



Source: OECD

Fourth, effective CIT rates and statutory CIT rates have converged in the EU but not in the US, as documented in a 2018 paper by Martin Thomsen and Christoph Watrin of the Institute of Accounting

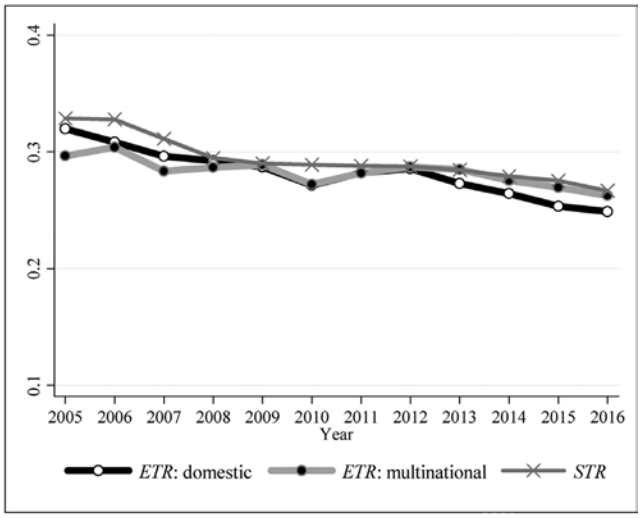
[82] Scott Dyreng and Michelle Hanlon, Tax Avoidance and Multinational Firm Behavior, Washington DC: Brookings, 2019. https://www.brookings.edu/wp-content/uploads/2019/12/Dyreng-Hanlon-12.14.19.pdf

[83] Kevin S. Markle and Douglas Shackelford, *Do Multinationals or Domestic Firms Face Higher Effective Tax Rates?* NBER Working Paper No. 15091, June 2009

[84] Scott Dyreng, Michelle Hanlon, Edward L. Maydew, and Jacob R. Thornock, "Changes in Corporate Effective Tax Rates Over the Past Twenty-Five Years," *Journal of Financial Economics,* Vol 124 (3), June 2017, pp. 441-463

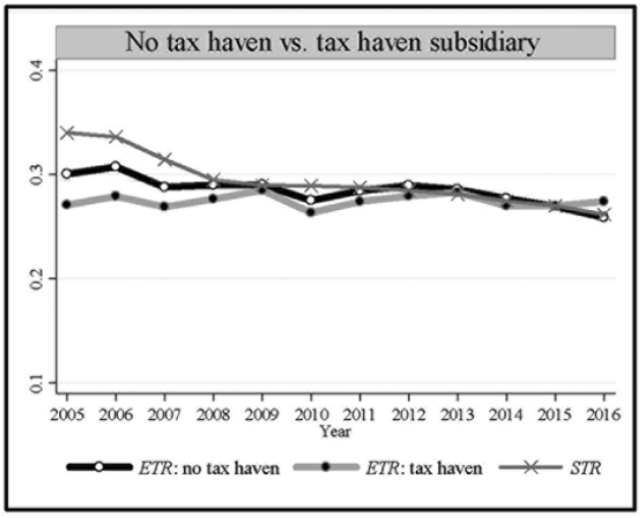
and Taxation at the University of Muenster (Germany). [85] The authors used Compustat data on pre-tax profits and taxes paid by companies in the US and 12 EU countries to calculate statutory CIT rates (STR) and effective CIT rates (ETR) for the period 2005 to 2016. Figure A5 shows how statutory and effective CIT rates have converged, especially for European multinationals. They argue, plausibly, that this is evidence that tax avoidance (including through profit shifting) has fallen in the EU but not the US. Indeed, as can be seen in figure A6, the average effective CIT rate for EU MNEs with subsidiaries in low tax ("tax haven") jurisdictions gradually rises above the rate for purely domestic companies until it is more-or-less equal to the statutory CIT rate.

Figure A5: Statutory and Effective CIT Rates for European Companies, 2005-2016.



Source: Thomsen and Watrin, 2018

Figure A6: Effective CIT Rates of European Companies with and without subsidiaries in low-tax jurisdictions



[85] Martin Thomsen and Christoph Watrin, "Tax avoidance over time: A comparison of European and U.S. firms." *Journal of International Accounting, Auditing and Taxation,* Vol. 33, 2018, pp. 40-63

Source: Thomsen and Watrin, 2018.

Fifth, since 2015, jurisdictions across the world have implemented the Actions developed as part of the OECD's Inclusive Framework on Base Erosion and Profit Shifting (BEPS).[86] These included the introduction of "country by Country Reporting" (CbCR) of key financial data for MNEs with revenue of at least €750 million. The primary motivation for CbCR is to identify instances of tax-motivated profit shifting, which is precisely the issue of concern to us. Several studies have investigated the effect of CbCR on profit shifting, of which two are of particular relevance:

- Preetika Joshi of McGill University investigated the effect of the 2016 introduction of CbCR on European-headquartered non-financial MNEs.[87] She found that from 2018 onwards (i.e. two years after the reporting requirement began), the effective tax rate of in-scope MNEs increased by between 1% and 2%. And Joshi also found that evidence that this increase in ETR was a result of a reduction in tax-related profit shifting.
- Felix Hugger of the University of Munich investigated the effect of CbCR reporting requirements on profit shifting by comparing the profitability and effective CIT rate of in-scope non-financial MNEs with out-of-scope MNEs with turnover of at least $100m.[88] Comparing the period before the introduction of CbCR (2009-2014) with the period immediately afterwards (2016-17), Hugger found that the CbCR reporting requirement increased the effective CIT rate of the in-scope MNEs by about 0.8%, while out-of-scope entities were not affected.
  Hugger found that the main driver of this change was a reduction in the amount of profits shifted to low tax jurisdictions outside the OECD. Of note, however, Hugger also found that in spite of the increase in effective tax of in-scope MNEs, revenue from CIT did not rise, which he suggests is due to a reduction in the tax base resulting from an increase in leverage and associated tax-deductible interest payments.

From these two studies, it would appear that MNEs adapted to the CbCR requirements by reducing the amount of profit they shift to non-OECD jurisdictions and by using alternative channels to reduce pre-tax profit, namely by increasing debt. This is consistent with earlier research that finds that restrictions on profit shifting leads to an increase in the use of related-party debt.[89]

In sum, the overall picture that emerges is that profit shifting likely increased globally during the 1990s and 2000s, especially for MNEs US following the introduction in 1996 of the "check-the-box" rules. It likely continued to increase in the US at least until 2017. However, it would appear to have decreased in

[86] https://www.oecd.org/tax/beps/beps-actions/

[87] Preetika Joshi, "Does Private Country-by-Country Reporting Deter Tax Avoidance and Income Shifting? Evidence from BEPS Action Item 13." Journal of Accounting Research, Volume 58, Issue 2, May 2020, Pages 333-381

[88] Felix Hugger, The Impact of Country-by-Country Reporting on Corporate Tax Avoidance, University of Munich, Leibniz Institute for Economic Research, Ifo Working Paper No. 304. https://www.ifo.de/en/publikationen/2019/working-paper/impact-country-country-reporting-corporate-tax-avoidance

[89] See e.g.: Katharina Nicolay, Hannah Nusser, and Olena Pfeiffer, *On the Interdependency of Profit Shifting Channels and the Effectiveness of Anti-Avoidance Legislation*, Center for European Economic Research, Discussion Paper No. 17-066, 2017. https://ftp.zew.de/pub/zew-docs/dp/dp17066.pdf

the EU in the past decade in response to policy changes. The effect of the TCJA in the US is more ambiguous.

A1.1.4 Micro v Macro Data

One of the striking differences in estimates of tax semi-elasticities and associated profit shifting is between those based on micro data and those based on macro data. Beer at al. note, for example, that in their sample the mean estimates using macro data was much higher, at 2.29, than the average based on micro data (about 1). So, which are more accurate?

Studies using micro data rely on confidential information about turnover, profit, amounts paid in tax, and other information from individual MNEs and their several subsidiaries and other affiliates. This data enables the calculation of entity-specific effective tax rates as well as accurate accounting of entity-specific confounding effects. Such studies should thus in principle be far more accurate than studies using macro data.

Beer et al. observe that studies using micro data may miss some forms of profit shifting that don't show up in the profits of MNE entities, such as where an MNE has used contractual agency or commissionaire arrangements to avoid having a "permanent establishment" (PE).[90] Macro studies can pick these PEs up and, as Beer et al. note, also potentially capture longer-term responses. However, it is not clear how significant contractual agency and commissionaire arrangements are as source of profit shifting. As regards long-term effects, the utility of a trend component to a model of profit shifting would be attractive if the trend were consistent. However, as observed above, trends in profit shifting seem to have changed over time, so the inclusion of a trend component may actually make the model less reliable.

Finally, Fuest et al. observe: "... nowadays, tax competition between countries mainly takes place through instruments other than statutory tax rates, such as R&D tax subsidies, patent boxes, and tax exemptions."[91] This means that the primary variable of interest is the effective average tax rate, taking into account these tax expenditures and special rates, which can only be computed by using micro data. (Fuest et al. also found that models that included effective tax rates were a better fit than models that included statutory tax rates; indeed, the coefficients on the former were significant whereas those on the latter were not.) As such, it would appear that estimates of profit shifting based on micro data are likely to be much more reliable than those using macro data.

A1.1.5 MNE Structures and The Double Counting Problem in BEA Data

Dhamikka Dharmapala, professor at the University of Chicago, co-editor of the prestigious Journal of Law and Economics, and one of the world's leading experts on the economics of taxation, has observed that some estimates of profit shifting to tax neutral jurisdictions are inconsistent with the tax semi-elasticities found in the literature.[92] For example, he notes that using BEA data on net book income, US MNEs are estimated to shift about 40% of profits to low-tax jurisdictions. But the semi-elasticities found in the literature (for which the weighted mean is about 0.8) imply that only 10% to 20% of profit would be shifted in this way.

[90] This issue is addressed by BEPS Action 7 (https://www.oecd.org/tax/beps/beps-actions/action7/)
[91] Fuest et al. supra note 27, at 3.
[92] Dharmapala, Dhammika. 2019. "Profit Shifting in a Globalized World." *AEA Papers and Proceedings*, 109: 488-92.

Dharmapala notes that one possible explanation for this is that the measured semi-elasticities only reflect marginal rates of shifting (i.e. the amount of profit shifting that occurs as a result of small changes to CIT rate differentials at a particular point on the tax differential curve), whereas most of the shifted profit is *inframarginal* (i.e. occurs due to all differences in CIT rates, not just at the margin) and that the semi-elasticities at other points on the rate differential curve may be larger.

Another explanation is that net book income (NI) is not a good measure of profit shifting because it includes a substantial proportion of double counted income. For example, many MNEs establish holding companies (holdcos) and joint ventures (JVs) in zero tax jurisdictions, from which they make investments in other jurisdictions around the world. NI includes the income from the subsidiaries of these holdcos and JVs (which typically pay tax wherever they are domiciled) and then includes it at again in the form of "equity income" from the holdcos and JVs.

A recent paper by two eminent professors of accounting, Jennifer Blouin of the Wharton Business School at the University of Pennsylvania and Leslie Robinson of the Tuck School of Business at Dartmouth College, analysed in great detail the interpretation—and potential for misinterpretation—of BEA data and other data sources, such as CbCR, when used to estimate profit shifting. They note that the increasing tendency for MNES to use tiered structures of indirectly owned affiliates has resulted in the same income being reported in more than one jurisdiction. As they explain:

> For example, consider a MNE parent which owns a foreign affiliate (Affiliate 1) that in turn owns another foreign affiliate (Affiliate 2). Affiliate 1 is the 'direct' owner of Affiliate 2, while the MNE parent is the indirect owner. The BEA requires Affiliate 1 to report the income of Affiliate 2 on its own income statement, while at the same time Affiliate 2 will also report its own income. The income of Affiliate 2 on Affiliate 1's books is referred to in the data as equity income from investments. Equity income only arises from foreign affiliates that are indirectly-owned by the MNE parent. Equity income is neither dividend income nor does it represent an asset (cash or otherwise) flow between two foreign affiliates. It is only an accounting construct that arises when MNEs must report affiliate-level financial data by jurisdiction.[93]

Moreover, Blouin and Robinson note that "in 1990 equity income represented 27% of aggregate foreign affiliate net income but, in 2016, equity income comprised 67%. This means that two-thirds of foreign profits in the aggregate BEA data are reported in at least two different countries – once in the country of the affiliate owner and once in the country of the affiliate that generated the income. Furthermore, equity income is disproportionately reported in tax havens."[94]

Blouin and Robinson further emphasize that "failing to remove equity income will artificially increase profits and at the same time artificially decrease effective tax rates, resulting in an overstated semi-elasticity estimate. This semi-elasticity estimate is then multiplied by the tax rate differential between the foreign affiliate and the U.S. parent (which is overstated) to determine a tax responsiveness thereby compounding the bias in the estimate of revenue lost."[95]

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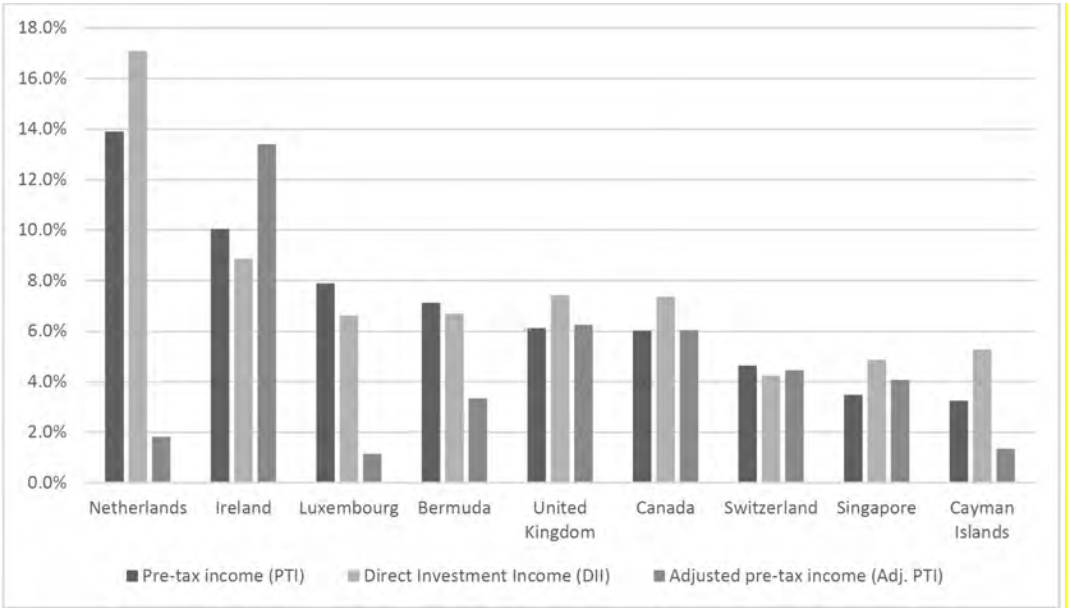
[93] Jennifer Blouin and Leslie Robinson, How much profit of multinational enterprises is really in tax havens?, Tax Policy Center Working Paper, May 2020, at p. 4.
https://www.taxpolicycenter.org/sites/default/files/blouinrobinson_ssrn.pdf
[94] Ibid. at 4.
[95] Ibid. at 20.

As an example of the effect of failing to account for this double counting of income in affiliates, Blouin and Robinson re-analysed the data from the BEA underpinning an analysis of profit shifting by US MNEs by Kimberley Clausing. The results are shown in Figure A7. Blouin and Robinson explain the various measures: "Clausing (2016) uses [BEA measures] PTI and DII; we add our measure, Adj.PTI, to the figure. PTI is aggregate Net Income plus foreign tax expense as reported in the Activities of U.S. MNEs data. DII is aggregate parents' shares of the net income of directly-owned affiliates as reported in the Balance of Payments data. Adj.PTI is aggregate PTI less equity income." The overestimates of pre-tax income for the Netherlands, Ireland and the Cayman Islands are stark.

Blouin and Robinson note that "Simply removing equity income from the measure of foreign affiliate profits in each country and changing nothing else reduces the estimate of tax revenue losses from 42% to 13% of corporate tax revenue."[96] But the effect of using the wrong measure of income also affects the effective tax rate paid by MNEs, which in turn leads to incorrect estimates of the tax semi-elasticity. When all of these effects are accounted for properly, Blouin and Robinson note that Clausing's 2016 estimate of tax revenue losses falls to 4% of corporate tax revenue. That is of course still a large amount. But it is only about one tenth as much as Clausing had claimed!

Figure A7: Comparison of BEA Measures of MNE Income, 2012



Source: Blouin and Robinson, 2020.

A1.1.6 Double Counting in CbCR

In the past two years, a new source of data on MNE profits has become available as a result of mandatory Country-by-Country Reporting (CbCR) for companies with annual income of €750 million or more. The OECD has so far released macro (aggregated) data for 2016 and 2017. Meanwhile, micro data (for individual companies) for the same years has been made available confidentially to tax authorities. This has led to a spate of new studies using both macro and micro data.

[96] Ibid. at 21.

Blouin and Robinson point out that CbCR is relatively new and guidance is evolving. They note that under current guidance, the financial statements upon which CbCR reporting is based can be any of: audited financials, statutory accounts, management accounts, or regulatory reports. They observe that "The lack of a consistent data source for all reporting MNEs makes it difficult to perform reliable analyses with CbyCR data."[97]

Worse than this inconsistency in data, in its early guidance for CbCR, the OECD failed to address the exclusion of subsidiaries' intra-company dividends from parents' pre-tax profits.[98] As a result, various different approaches were taken, with the result that in some jurisdictions, including the U.S., there was considerable double counting.[99] Noted tax economist Thomas Horst and Alex Curatolo estimated the scale of double counting in US CbCRs for 2017 by comparing the aggregate CbCR data on pre-tax profits for the 1,575 companies that made a CbCR filing in the US ($2.02 trillion) with data on pre-tax profits for the 1,379 companies with revenues in excess of $850 million in the Compustat database ($1.45 trillion) and an estimate of pre-tax profits for the remaining companies ($100 billion).[100] By first removing the totals attributable to stateless entities (about $200 billion), Horst and Curatolo calculated that approximately $260 billion, or 14.4% of the $2.02 trillion in CbCR reported pre-tax profits was double counted. (If stateless entities are included, the total rises to $470 billion, or 23% of the total.)

Horst and Curatolo do note that "A pro rata 14.4 percent reduction in the pretax profit attributed to foreign jurisdictions having an ETR under 5 percent ($0.45 trillion) may overstate the actual (but unknown) double count for that category because U.S. MNEs had a clear incentive to avoid overstating the pretax profit allocated to tax havens on a required tax form the IRS would share with foreign tax authorities."[101] However, given the instructions issued by the IRS, it is also possible that many US MNEs felt obliged to include all intra-company dividends. And it is likely that they set up their CbCR reporting system in such a way that the accounts from each jurisdiction were treated in a similar, or at least consistent manner.

Horst and Curatolo further established that of the $1.82 trillion pre-tax profit of non-stateless entities reported in the US CbCR, $640 billion came from foreign jurisdictions, of which 70%, or $450 billion, was from jurisdictions with an effective CIT of 5% or less. If the double counted profits were evenly distributed, that would mean about $65 billion in double counted pre-tax profits attributed to low-tax jurisdictions, implying that true pre-tax profits from those jurisdictions of $385 billion.

Blouin and Robinson also wonder if at least some "stateless income" is double counted.

> "Anecdotally, many researchers believe that stateless income reported in CbyCR only includes activity that effectively avoids tax in all jurisdictions. However, this category primarily includes the income of conduit entities that are not subject to tax. Conduits include partnerships, which themselves are not subject to tax. Rather, their owners, the partners, are subject to tax based

[97] Ibid. at 31.
[98] This has now been corrected. See: OECD, *Guidance on the Implementation of Country-by-Country Reporting BEPS ACTION 13*, Updated December 2019, at p. 13. https://www.oecd.org/ctp/guidance-on-the-implementation-of-country-by-country-reporting-beps-action-13.pdf
[99] Thomas Horst and Alex Curatolo, "Assessing the Double Count of Pretax Profit In the IRS Summary Of CbC Data for Fiscal 2017," Tax Notes International, Volume 98 (4), April 27, 2020, pp. 427-432.
[100] Ibid.
[101] Ibid.

> on their proportional ownership in the entity. CbyCR requires that large partnerships report their activity that is passed through to their owners on Form 8975 as stateless. If the partner also has a duty to file CbyCR, then it reports its proportional share of the partnership's income on its CbyCR where the partner is subject to tax."[102]

If, say, 50% of stateless income were double counted, that would increase the total from Horst an Curatolo to $360 billion, or 17.8%. If that were evenly distributed, then double counting of pre-tax profits of US MNEs in low-tax jurisdictions would amount to about $80 billion, lowering to true pre-tax profits in those jurisdictions to $370 billion. (But note that not all of those profits should be treated as tax-induced shifting.)

The government of the Netherlands undertook an evaluation of Dutch MNEs, comparing the CbCR filings with filings submitted to the Dutch tax administration as well as company annual reports. It found that profit as implied by CbCR filings had been overstated by nearly 50%:

> "The Netherlands analysed the bias in 2016 CbCR-profits due to the inclusion of participation results and other mismatches in CbCRs. An exact estimate is not possible, but the order of magnitude of the biases in CbCR-profits is very large. Under reasonable assumptions, accounting for these biases leads to an estimated profit of 17.3 billion euros, instead of 24.8 billion euros for the companies with positive profits, meaning that profit is overstated by almost 50%. Without these biases the ETR for the Netherlands would be 16% instead of 10.6%. As CIT is in principle calculated over profits and losses during the life-cycle, the impact of loss carryovers should be taken into account to calculate an unbiased ETR. Taking this into account would bring the ETR to 21%."[103]

A1.1.7 Estimates of Profit Shifting Using CbCR Data

In January 2021, three economists from the University of Munich, Clemens Fuest, Felix Hugger, and Florian Neumeier, published a study that used micro CbCR data on German MNEs for the years 2016 and 2017. [104] They found that while 82% of German MNEs that filed CbCR reports have subsidiaries in low and zero-tax jurisdictions (which they refer to as "tax havens"), only 9% of global profits of those MNEs are reported in those jurisdictions – and only about 40% of those profits were shifted to reduce tax liabilities.

Fuest et al. calculate that if smaller (non-CbCR reporting) German MNEs and foreign MNEs with operations Germany also shift the same proportion of profits to low- and zero-tax jurisdictions, the total amount of profits shifted would be about €19 billion per year. In addition, they estimated that only about 40% of profits reported in "tax havens" were the result of tax-induced profit shifting. As such, their estimate of total tax revenue losses is about €5.7 billion, which is about one quarter the amount estimated by TJN ($24.4 billion).[105] Moreover, they note that "our regression results confirm that profit

[102] Blouin and Robinson, supra note 93, at 31.
[103] Government of the Netherlands, *Note on Country-Specific Analysis: The Netherlands*, No Date, https://www.oecd.org/tax/tax-policy/netherlands-cbcr-country-specific-analysis.pdf
[104] Clemens Fuest, Felix Hugger, Florian Neumeier, Corporate Profit Shifting and the Role of Tax Havens: Evidence from German Country-By-Country Reporting Data, CESifo Working Paper No 8838, January 2021.
[105] Ibid.

shifting by large German MNEs mainly takes place through tax havens, whereby European tax havens are far more important for German MNEs than tax havens outside Europe."[106]

Table A1: Profits Shifted out of Germany

	Profits reported in Germany (bn. EUR)	**Shifted profits** (bn. EUR)	**Shifted profits** %	**Impact on tax revenue**
Large German MNEs	123.8	-5.4	-2.2%	-1.6
Smaller German MNEs	203.5	-8.7	-2.1%	-2.6
Foreign MNEs in Germany	117.0	-5.1	-2.2%	-1.5
German non-MNEs	78.0	-	-	-
Sum	522.2	-19.1	-1.8%	-5.7

Source: Fuest et al., 2021 and author's calculations.

It is also worth noting that Faust et al. downplay the likely extent of double counting in the CbCR reports for Germany; that may be entirely correct, however if double counting is a more significant problem than they suggest then even these more modest estimates of profit shifting exceed the actual amount.[107]

In February 2021, three economists from Italy's Ministry of Finance, Barbara Bratta, Vera Santomartino, and Paolo Acciari published a working paper detailing an analysis of the extent of profit shifting and tax losses globally using micro-CbCR data.[108] Their analysis is to date the only comprehensive analysis of profit shifting using CbCR micro data (i.e. confidential data from individual MNEs). It is thus the closest comparator to TJN's estimates. Table A2 shows Bratta et al's estimates of the size of profit shifting *from* the top 7 jurisdictions (indicated by negative numbers) and *to* the top 8 jurisdictions. These represent about 80% of all profits shifted in Bratta et al's model.

Table A2: The Distribution of Profit Shifting in Bratta et al.

Jurisdiction	**Shifted Profits (€ Billions)**
United States of America	-321
Japan	-123

[106] Ibid at p. 3.

[107] Specifically, they note (at p. 7): "The CbC reporting guidelines require MNEs to report their activities in a way that prevents a double counting of subsidiaries' income at the level of their parent company either as equity income or dividend income. Income stemming from partnerships, in contrast, might in fact be double counted (cf. Hanlon 2018). However, the CbC reporting guidelines provide that MNEs report the income from partnerships that is passed through to them in a separate row. We find that only six out of the 333 German MNEs in our sample report such income. It thus appears that this problem is only of minor relevance for our analysis."

[108] Barbara Bratta, Vera Santomartino, and Paolo Acciari, Assessing profit shifting using Country-by-Country Reports: a non-linear response to tax rate differentials, Rome: Ministry of Economy and Finance, Dipartimento della Finanze, Working Paper, DF WP n.11 Febraury 2021, https://www.finanze.gov.it/export/sites/finanze/.galleries/Documenti/Varie/Assessing-profit-shifting-using-Country-by-Country-Reports-Bratta-Santomartino-Acciari-2021-19-02.pdf (Hereinafter Bratta et al. 2021a).

India	-70
Algeria	-68
France	-59
South Africa	-50
China	-32
Virgin Islands (British)	315
Bermuda	129
Singapore	66
Switzerland	59
Ireland	44
Great Britain	44
United Arab Emirates	43
Hong Kong	37

Source: Bratta et al, 2021.

Because Bratta et al. were working from Italian CbCR data, they were able to access micro data on MNEs that have either their UPE or a subsidiary in Italy. That sample includes data on 2,262 MNEs,[109] which although large is only about a third of all CbCR filers in 2017, which total 6,557. It is quite possible that the sample is biased and that the extrapolations from the sample are inaccurate and misleading.

The overall level of tax shifting globally estimated by Bratta et al. is large relative to many other estimates, even those using macro data. Meanwhile, their estimate of tax shifting by MNE's with their UPE in the U.S. is large relative to studies based on US microdata adjusted for double counting. These preliminary observations suggest that an evaluation of Bratta et al's modelling strategy is in order.

Among the potential problems with Bratta et al's analysis are:

1. Their method for addressing double counting due to intra-company dividends. Bratta et al. note that:

> "We find dividends to be concentrated in a modest share of MNEs, accounting for 14% of the sample, and that they concentrate mainly in MNEs with Italian UPE. We also find that dividends account for 12% of profits reported in Italy by foreign MNEs and 38% of profits reported there by Italian MNEs. This implies that the dividend issue mainly concerns UPEs, thus suggesting that controlling for the UPE's country effect on profit allocation in the regression may tackle this issue."[110]

[109] This was from more recent version of the paper by Bratta et al. published by the University of Oxford Said Business School in June 2021 (Hereinafter Bratta et al. 2021b), which is available here: https://oxfordtax.sbs.ox.ac.uk/files/wp20-11pdf. Table 21, at p. 78.
[110] Ibid. at 11.

In a later section, they explain that they seek to control for intra-company dividends through the use of a "dummy" (0-1) variable that is one only for profits reported in the UPE jurisdiction and zero for all other jurisdictions.[111]

Their finding that dividends account for 12% of profits reported by foreign MNEs is broadly consistent with Horst and Curatolo's estimate for US MNEs. However, it is unclear how effective Bratta et al's use of a dummy variable is in addressing the double counting issue.

In terms of the scale of profit shifting, it is worth comparing Bratta et al's estimates of profit shifting by US MNEs with the reported macro data. Table A3 applies the methodology developed by Blouin and Robinson for adjusting U.S. Bureau of Economic Analysis reported net income to overcome the double counting problem and compares the results to income aggregated from US MNEs' CbCR. Two observations seem pertinent: first, the overall scale of profit shifting for the U.S. (and globally) by Bratta et al. seems large relative to the totals reported for the U.S. both from CbCR and BEA data. Blouin and Robinson report that the major low-tax jurisdictions represent about 75% of all profits reported in jurisdictions with CIT rates under 15%.[112] On that basis, Bratta et al's estimates of "profit shifting" are in line with the aggregate CbCR data. However, not every dollar of profit reported in a low-tax jurisdiction is shifted to avoid taxes! If one makes the same assumption as Fuest et al. that only about 40% of profits shifted to low-tax jurisdictions are shifted to avoid tax, then the extent of tax-avoidance profit shifting by U.S. MNE's was between $75 billion and $92 billion in 2016 and between $132 billion and $156 billion in 2017.[113] In other words, tax-related profit shifting by U.S. MNEs would be between 40% and 50% of Bratta et al's estimate of "profit shifting."

Moreover, it should be born in mind that profit's "shifted" by U.S. MNEs until (and including) 2017 were in fact profits deferred; while such shifting reduces the amount of taxes paid in the jurisdiction from which they are shifted, taxes are eventually paid in the U.S. when the profits are repatriated.

Table A3: Comparing Measures of Foreign Pre-tax Income of US MNEs (US$ millions)

	2016		2017	
Jurisdiction	**Adj PTI (BEA)**	**CbCR**	**Adj PTI (BEA)**	**CbCR**
Ireland	77,369	31,391	80,134	29,478
Luxembourg	-963	-2,140	12,391	24,866
Netherlands	14,675	37,643	55,736	40,010
Caribbean	11,850	26,082	20,512	61,441
Bermuda	-1,602	24,900	7,947	32,476
Singapore	27,573	29,041	35,902	54,642
Switzerland	43,098	-6,204	36,315	49,376
Major Low-tax jurisdictions	172,000	140,712	248,937	292,290

[111] Ibid. at 26.

[112] Blouin and Robinson, 2020, Table A2 Panel A, p. 64.

[113] i.e. multiply the amounts in the line "Major low-tax jurisdictions" in Table 3 by 0.4/0.75 = 0.53.

All jurisdictions	420,565	431,813	594,560	638,467
% in major Low-tax jurisdictions	41%	33%	42%	46%

Source: Author's calculations based on data from BEA, OECD.

Note: "Adj PTI (BEA)" uses data from the Bureau of Economic Analysis and equals Net Income + tax expense – equity income (per Blouin and Robinson, 2020).

2. Bratta et al. note that the sum of all profit shifting within an MNE should be zero but find that "It is necessary to apply the zero-sum condition as the application of profit shifting coefficient to MNE profit does not result in the sum being equal to zero when none of these types of conditions are imposed."[114] To the extent that the sum of all modelled profit shifting is greater than zero (prior to adjustment), this would suggest that there is, indeed, some double counting of pre-tax profits in low-tax jurisdictions within MNE CbCRs. Addressing this deficiency by applying a zero-sum condition could exacerbate the amount of pre-tax profit inappropriately allocated to such jurisdictions.
3. Bratta et al's numbers contain at least one peculiarity, namely the very large tax loss for Algeria, which seems vastly disproportionate to Algeria's GDP.[115]
4. The use of the cubic functional form may have distorted both the scale and distribution of profit shifting. It should be noted that the choice of functional form is determined not by any fundamental economic insights but is, rather, based on the fit of the form to the data. The problem with that approach is that there is a risk that the essentially arbitrary functional form exacerbates the estimated amount of profit shifting for jurisdictions for which there is a significant difference between the average effective CIT rate (EATR) in the UPE jurisdiction and the EATR in the subsidiary jurisdiction. It is noteworthy that Bratta et al found that the U.S. had among the highest EATR's in the world at the time (37.7%). When combined with the very significant levels of U.S. overseas investment, it seems likely that the cubic form will have exaggerated the total amount of profit shifting by U.S. companies. (This can be seen in Figure A8 below.)

Notwithstanding these concerns, Bratta et al have produced a very interesting and possibly groundbreaking study.

A1.1.8 The Functional Form of Models Affects Estimates of Profit Shifting

The issue of model functional form noted above in relation to Bratta et al's use of a cubic form applies to all estimates of tax semi-elasticities and implied profit shifting.

One of the problems with the meta-analyses discussed in section 1.1.2 is that they presume a single semi-elasticity that applies regardless of the domestic tax rate and tax rate differential. Yet, Hines and Rice understood that the relative incentive to shift profits to jurisdiction A is larger the lower is the CIT rate in A – and that this incentive is nonlinear. Hines and Rice used a quadratic function to model this nonlinearity. In their main model, Bratta et al., use a cubic model.

It is important to note here, however, that these model structures are largely data-fitting exercises. There is no underlying reason to think that the incentives MNEs face actually follow quadratic or cubic functions. The true functional form is unknown (indeed, the relationship is almost certainly unique to

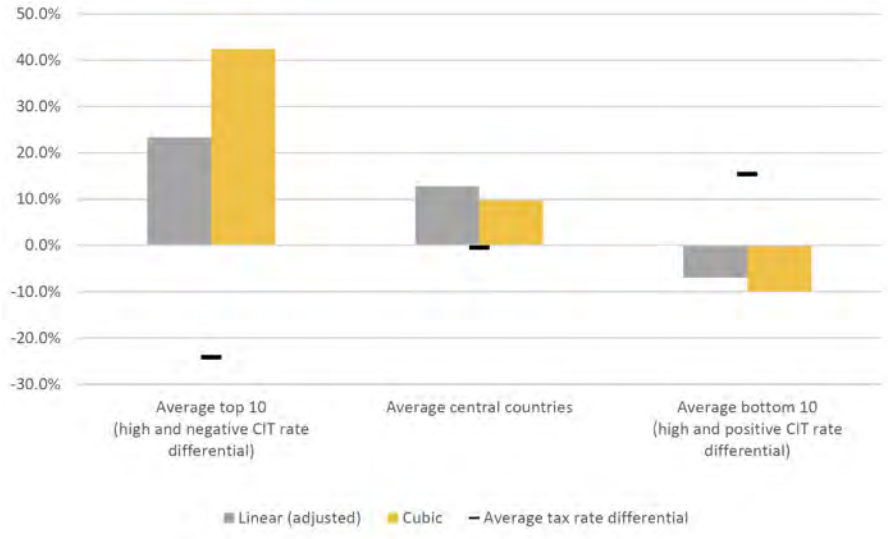
[114] Bratta et al. 2021b, at p. 54, footnote 31.
[115] The researchers are aware of this and are investigating the cause. (Barbara Bratta, personal communication.)

each MNE and does not follow a systematic macro pattern). As such, caution is required about drawing conclusions that rely on particular functional forms.

At an aggregate level, an example of the consequences of using different functional forms can be seen in Figure A8, from Bratta et al., which shows that the use of a cubic functional form nearly doubles the amount of profit that is assumed to be shifted to jurisdictions with very low CIT rates (in the figure denoted by those that have a "high and negative CIT rate differential") compared with the use of a linear functional form. The authors explain:

> "Figure [A8] presents the average share of shifted profits over total reported profits for three categories of countries: countries with a very high, in absolute terms, negative CIT rate differential, countries with a very high positive CIT rate differential, and a residual group composed of all remaining jurisdictions in between. The results are displayed both by using the non-linear, meaning cubic, identification strategy (in yellow) and the linear formulation adjusted in order to make it comparable with the nonlinear results (in grey). In both specifications, countries with the highest negative CIT rate differential (bars on the left) present a higher share of shifted profits over total profits compared to the other two country groups. Shifted profits account for a greater share of total profits in the non-linear (cubic) specification compared to the linear specification for countries with a CIT rate that is very distant from the average – either lower (bars on the left) or greater (bars on the right). For countries with a CIT rate more in line with the average (bars in the middle), the linear specification provides a higher share of shifted profits compared to the non-linear (cubic) specification. This supports the finding that the linear specification underestimates the relative magnitude of profit shifting in countries with CIT rate differentials very distant from the average, while over-estimating profit shifting in countries whose CIT rate is closer to the average."[116]

Figure A8: Average share of profit shifting over total profits by average CIT rate differential (Bratta et al.)



Source: Bratta et al. (2021b).

[116] Bratta et al. 2021b. at 57.

A1.1.9 Other Estimates of Revenue Losses from BEPS

All the studies so far described use variants of the methodology developed by Hines and Rice, using data on pre-tax profits of MNEs in various jurisdictions to estimate tax semi-elasticities and from those infer rates of profit shifting. In the past decade, several new strands of literature have been developed that use other methodologies. This subsection briefly considers these methods and the results.

Returns on Foreign Direct Investment

In 2015, UNCTAD developed a model that used data on returns to foreign direct investment (FDI) in order to estimate the profit differential between jurisdictions that apply low rates of CIT to foreign direct investments and are net suppliers of FDI, and jurisdictions that are net recipients of FDI. The inference is that lower returns on outward FDI implies profit shifting. UNCTAD estimated total global profit shifting of $200 billion in 2014 using this method.[117] Unfortunately, the regressions upon which the analysis is built all have low explanatory power (the highest has an R square of 0.37),[118] which means they are likely subject to substantial omitted variables bias, making the coefficients on the variables unreliable. As such, while the models may be detecting profit shifting, it is very difficult to tell how much.

Jansky and Palansky updated the UNCTAD methodology.[119] Their estimate of total profit shifting was $125 billion globally. However, as with UNCTAD, their models also had weak explanatory power, with R squares of below 0.3, implying again the likelihood of significant omitted variables bias and hence unreliable estimates.

BEPS Models

Also in 2015, Ernesto Crivelli, Ruud De Mooij and Michael Keen from the IMF developed a method for assessing the extent of both base erosion and profit shifting using a model similar to the Hines-Rice macro model for assessing profit shifting but instead of using the profit rate as the dependent variable, they used each jurisdiction's tax base (as a percentage of GDP).[120] Using macro data covering the period 1980 to 2013 and splitting jurisdictions into OECD and non-OECD groups, they found that reductions in foreign CIT rates led to a reduction in the CIT base in the short term. The longer-term effects were less clear cut. It would appear that these kinds of models suffer the same kinds of problems as other models that rely on macro data (including both the profit-shifting models discussed in section A1.1.4 and the UNCTAD-type FDI-based models discussed above), namely: the data are too crude and subject to confounding effects.

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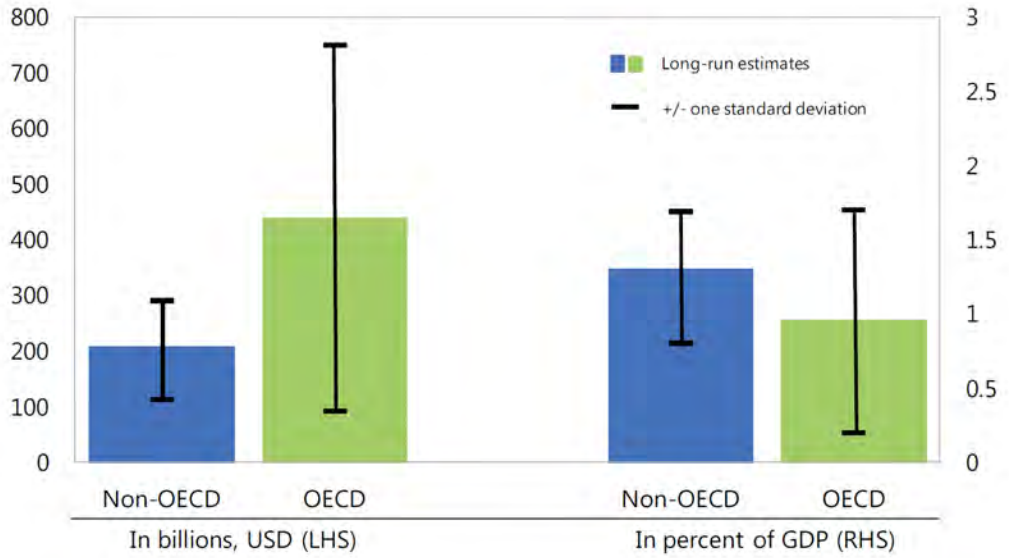
[117] UNCTAD, An FDI-driven approach to measuring the scale and economic impact of BEPS, ANNEX II: Technical background paper accompanying the World Investment Report 2015, Chapter V "International Tax and Investment Policy Coherence" https://unctad.org/system/files/official-document/wir2015ch5_Annex_II_en.pdf, at p. 26.
[118] Ibid. at p. 21
[119] Petr Janský & Miroslav Palanský, 2019. "Estimating the scale of profit shifting and tax revenue losses related to foreign direct investment," *International Tax and Public Finance*, Vol. 26(5), pp. 1048-1103.
[120] Ernesto Crivelli, Ruud De Mooij and Michael Keen, *Base Erosion, Profit Shifting and Developing Countries*, IMF Working Paper WP/15/118, 2015.

This can be seen in the wide likelihood boundaries (the black lines) on their revenue loss estimates shown in figure A8. These lines show only one standard deviation boundaries, which means that there is about a 34% probability that the actual amount of revenue loss is outside those bounds. Using the more common 2 standard deviations (which would correspond approximately to 95% confidence limits), the long-run effects could be anywhere from 0% to 5% of GDP (though that upper bound seems improbable given that for the OECD revenue from CIT has been less than 5% of GDP for the past 50 years).

In other words, it is difficult to say with any degree of certainty what effect the existence of low tax jurisdictions has on CIT revenue. As the authors note, "The analysis here provides one simple, albeit highly speculative, way to size the possible effects of BEPS."[121] Nonetheless, others have taken the "highly speculative" point estimates they found for revenue losses (1% of GDP for OECD countries, 1.3% of GDP for non-OECD countries) and used it to assert that the authors have estimated the revenue loss at $650 billion.

Figure A8: Revenue Loss Estimates from IMF BEPS Model



	USD, billions	Percent of GDP
Non-OECD	28	0.2
OECD	95	0.2

Source: Crevelli et al., 2015

Alex Cobham and Peter Janský sought to repeat the work of the IMF economists using a dataset that they hoped would deliver more precise results, but appears to have done the opposite. They ran six regressions, the first three with the IMF data, the second three with their alternative "GRD" dataset and they report: "The p-values from the testing for the six specifications are 0.0977, 0.0939, 0.1734, 0.8138,

[121] Ibid. at 21.

0.5983 and 0.9825."[122] As they note, two of these (the first two, using IMF data) are barely significant at the 0.10 level; the others don't even come close. Nonetheless, they assert:

> There is clearly space to develop a methodological approach that goes beyond statutory tax rates and responds more closely to the actual incentives that multinationals face for profit shifting. But the central findings of this leading analysis of global tax avoidance by multinational companies appear broadly solid. The estimated tax loss with the preferred GRD data is around US$500 billion, compared with US$650 billion in the original paper.[123]

This is hubristic. Indeed, it is quite perplexing that after finding that their regressions were not good fits even for the IMF data, let along the GRD data, they would claim that their results establish that Crivelli et al's analysis is "broadly solid." Surely, their results merely confirm that the analysis is weak. And why would they "prefer" the $500 billion dollar figure, when the overall regression on which it is based had such a poor fit to the data? All most odd.

It is also worth noting that aside from the poor precision of these BEPS estimates, there is a broader problem with them, which is that the setting of the CIT rate and base should not be considered independent from the setting of other tax rates and bases. This is addressed in section 1.3 in the main paper.

A1.1.10 Conclusions

From the above discussion it is clear that estimates of profit shifting and revenue losses vary widely. While all the estimates suffer from limitations caused by inadequate and inconsistent data, this is more so for global estimates than for some national estimates. As a result, much depends on the model specification and assumptions. While it is possible that as much as $1 trillion in profit is shifted each year from higher- to lower-tax jurisdictions, it is also possible that the figure is closer to $200 billion. The extent to which profit shifting results in revenue losses is an even more vexed question, as discussed in the main paper.

[122] Alex Cobham and Petr Janský, "Global Distribution of Revenue Loss From Corporate Tax Avoidance: Re-Estimation And Country Results," Journal of International Development, Vol. 30, 2018, pp. 206–232, at p. 214.

[123] Ibid. at p. 221.

A1.2 TJN's "Profit Misalignment" Model

TJN's estimate of the taxes "lost to multinational corporations shifting profits into tax havens" is based on what it calls "profit misalignment", which is related to but different from "profit shifting."

A Google Scholar search identifies 56 unique papers containing the term "profit misalignment" in either the title or abstract of a paper. The search results are reproduced in Appendix 1.3 but it is worth quickly summarizing them here: Of the 56 papers, 49 appear to relate directly to the concept discussed by TJN (the others are unrelated), and of those 49 papers, 30 are authored or coauthored by Alex Cobham and/or Petr Janský. Meanwhile, among the remaining papers are several with direct connections to TJN, Alex Cobham, and/or Petr Janský.[124]

Who, you might ask, are Alex Cobham and Petr Janský? Alex Cobham is the CEO of TJN and was previously a researcher at the Center for Global Development, Christian Aid, and Save the Children. He has also "consulted widely, including for UNCTAD, the UN Economic Commission for Africa, DFID, and the World Bank."[125] Petr Janský a researcher at Charles University in Prague, a coauthor of TJN's Corporate Tax Haven Index, and a named advisor for TJN's SOTJ 2020. He has also been a researcher for or consultant to: Christian Aid, Oxfam, Save the Children, the Center for Global Development, ActionAid, and Greenpeace.[126]

It is difficult to avoid the conclusion that TJN has consciously sought to develop and promote the concept of "profit misalignment." The term as it is used by TJN appears to originate with a blog post written by Alex Cobham when he was a researcher at the Center for Global Development in 2014.[127]

So, what is "profit misalignment"? TJN doesn't define it in SOTJ 2020, but notes in the methodology that such, "a profit misalignment method … typically starts from a given relationship between real profit (p) and a combination of labour (measured using wages and employees), capital (often approximated with tangible assets) and revenue. Profit misalignment is then calculated as the difference between reported profits (π) and theoretical profits (p)."[128]

Had TJN adopted such a methodology in calculating "profit misalignment" in SOTJ 2020, it would have been broadly consistent with the literature on profit shifting (depending, of course, on the precise specification of the model). However, it did not adopt this methodology. Or, at least, it made major revisions to it. Specifically, TJN notes that to calculate the "theoretical profits" for SOTJ 2020, "We give 50 per cent of the weight to labour (25 per cent wages and 25 per cent to employees) and 50 per cent of

[124] These include: a paper by an undergraduate student at Charles University whose supervisor was Petr Janský. (https://dspace.cuni.cz/handle/20.500.11956/91438); paper by a postgraduate at the Prague University of Economics using data from Janský (https://efaj.vse.cz/pdfs/efa/2020/01/03.pdf); a review of a paper by Cobham and Jansky.

[125] https://taxjustice.net/taxjustice_team/alex-cobham/

[126] https://www.dropbox.com/s/tjus9lqm75dpa09/201104_CV_Petr_Jansk%C3%BD.pdf?dl=0

[127] https://www.cgdev.org/blog/four-futures-international-tax-rules

[128] SOTJ Methodology 2020, at 3.

the weight to unrelated party revenues."[129] The following subsections critically evaluate the merits of this model.

A1.2.1 The Development of the "profit misalignment" concept.

As noted, TJN does not define "profit misalignment" or offer any rationale for the specific formulation of the profit misalignment model it uses in SOTJ 2020. Some insight, however, may be gleaned from a 2017 paper by Alex Cobham and Petr Janský entitled *Measuring Misalignment: the Location of US Multinationals' Economic Activity versus the Location of their Profits*.[130] In that paper, Cobham and Janský describe what they call the, "first analysis of global misalignment patterns in the profits of US multinational groups."[131] In so doing, they define misalignment as, "the correlation of factors of economic activity with gross profit across countries, and over time."[132] Given that Hines and Rice produced an assessment of profit shifting by US firms as far back as 1994, the only way Cobham and Jansky can justify the assertion that this is a "first analysis" would be if "profit misalignment" is something very different from "profit shifting."

Figure A9 shows Cobham and Janský's 2017 estimates of profit misalignment for US companies as a function of various individual factors, i.e. assets, sales, employees and wages, and composites, namely:

- CCCTBa and CCTBtg, which are composite measures based on formulas proposed by the European Commission for the Common Consolidated Corporate Tax Base, "which is weighted one-third tangible assets, one-third sales, and one-third split equally between compensation costs and (number of) employees…."[133] CCCTBa includes all assets. CCCTBtg includes only tangible assets.
- "Canadian" is a composite based on the formulary apportionment model used by Canada's provinces (one half sales, one half wages).

[129] SOTJ 2020, at p. 22. (The SOTJ Methodology 2020 (p. 3) says, similarly, "In our version of this method we allocate 25% of the weight to employees, 25% of the weight to wages, and 50% of the weight to unrelated party revenues."). TJN offers the following formula:

$$\frac{p_i}{\sum_i p_i} = \frac{1}{4} * \frac{L_i}{\sum_i L_i} + \frac{1}{4} * \frac{W_i}{\sum_i W_i} + \frac{1}{2} * \frac{Rev_i}{\sum_i Rev_i}$$

The variables in the formula are not explicitly spelled out but given the preceding statement, it seems reasonable to infer that it describes the proportion of theoretical profit of a firm **p** in jurisdiction **i** relative to total firm profit ($\Sigma_i p_i$), which is equal to ¼ number of workers in i relative to the firm's total + ¼ wage in i relative to the total of all wages in the firm + ¼ revenue in i relative to the total revenue.

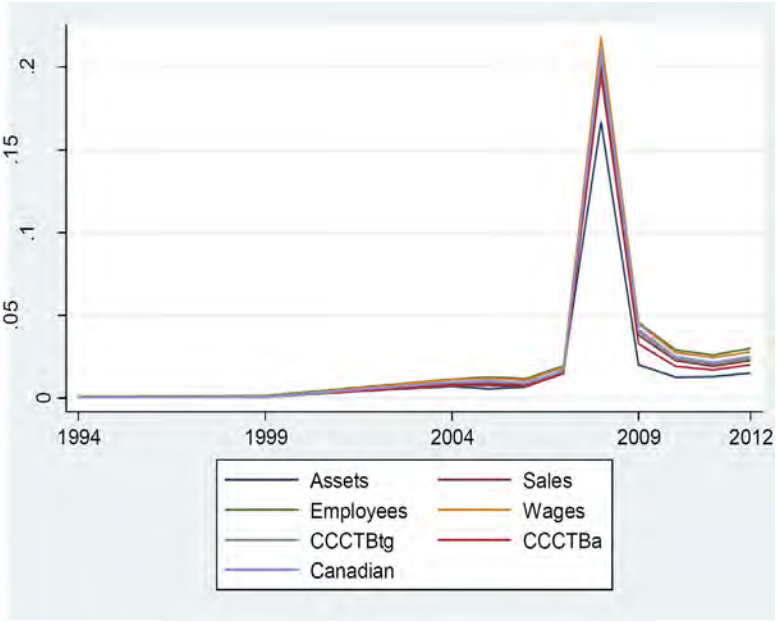
[130] Alex Cobham and Petr Janský, "Measuring Misalignment: the Location of US Multinationals' Economic Activity versus the Location of their Profits." Development Policy Review, July 2017. An earlier version of the paper was published by the International Center for Tax and Development, with the same title. See: https://opendocs.ids.ac.uk/opendocs/bitstream/handle/20.500.12413/11202/ICTD_WP42.pdf

[131] Ibid.

[132] Cobham and Janský, 2017, at 8.

[133] Cobham and Jansky, 2017, at 6.

Figure A9: Profit Misalignment as relative intensity of distortion



Source: Cobham and Janský, 2017.

It would appear, then, that the assessment of theoretical profits in TJN's SOTJ 2020 profit misalignment model is based loosely on a formulary apportionment model somewhat similar to that used by Canadian provinces. Indeed, in their 2014 paper, Cobham and Simon Loretz, then at the Institute for Advanced Studies in Vienna, explain how they see unitary taxation with formulary apportionment as a preferable alternative means of taxing MNEs:

> "The alternative of unitary taxation has been proposed: treating each multinational group of companies as a unit, regardless of the geographical and juridical location of the individual subsidiaries; calculating profit and loss on a group-wide basis; and then allocating the taxing rights on this consolidated profit between the jurisdictions with which the group has a nexus, according to the extent of actual economic activity. Systems of unitary taxation with formula apportionment currently exist only at the national level, most notably in the United States (US), Canada and Switzerland, and - for local business tax - in Germany. There is also a longstanding proposal of the European Commission (2011) to extend unitary taxation and formulary apportionment to the whole of the European Union under the Common Consolidated Corporate Tax Base (CCCTB)."[134]

A1.2.2 Problems with the Profit Misalignment Approach

Regardless of the merits and drawbacks of unitary taxation and formulary apportionment, there are several problems with this using approach to identify profit shifting and associated revenue losses:

[134] Alex Cobham and Simon Loretz, *International Distribution of the Corporate Tax Base: Implications of Different Apportionment Factors under Unitary Taxation*, International Center for Taxation and Development, November 2014.

First, basing theoretical profits on formulary apportionment is arbitrary and lacks a solid theoretical or empirical basis. Consider James Hines' observation, with regard to studies of tax avoidance, "that compare reported profit rates in countries with differing tax rates":

> "The idea, of course, is to measure the extent to which unusually high rates of profit are reported in low-tax jurisdictions. This immediately raises the question of what rate of profit should be expected in the absence of tax-motivated income re allocation, and this question has multiple components. **There is no presumption that profits measured as a fraction of sales, assets, or some other metric of business activity should be the same in all foreign jurisdictions**."[135]

Indeed, Bratta et al. show that there is substantial variation in the amount of profit reported as fractions of these factors in different regions, as can be seen in Table 5.

Table A5: Factor profitability in MNE subsidiaries in different regions, CbCR data

	Geographic Area of subsidiaries			
	Europe	Americas	Asia & Oceania	Africa
Profits/unrelated party revenues (median)	8%	10%	11%	14%
Profits/Tangible Assets (median)	51%	42%	59%	57%
Profits/Employees (€ median)	21,428	21,724	21,332	16,970

Source: Bratta et al. 2021.

From an economic perspective, profit arises from the difference between revenue and costs. One way to model this is to consider output as a function of capital, labour and other factors, and their factor productivity.[136] By contrast, in SOTJ 2020, TJN simply *assumes* that labour is the only source of productivity; to the extent that capital is given any weight it is via the sales in a jurisdiction, which seems a weak proxy at best. Moreover, rather than attempting to identify the appropriate parameter value for the components of productivity through a regression or other econometric modelling technique, TJN simply assumes the parameter values.

Second, the particular apportionment chosen by TJN would appear to be heavily biased towards jurisdictions where firms have large numbers of workers. In Figure A9, it is notable that the misalignment in relation to both "Employees" and "Wages" is higher than the misalignment in relation to either of the CCCTB measures. While it seems reasonable to exclude intangibles from the measure (on the grounds that intangible assets are presumed to be a major source of profit shifting), it is odd that TJN chose to exclude tangible assets from its method for calculating misaligned profits in SOTJ 2020, especially given that Cobham and Janský's 2017 paper expressly considered these other components.

Third, the apportionment chosen by TJN is heavily biased towards jurisdictions in which the MNE has sales, since half the weight in the apportionment is allocated to the jurisdiction where sales are made. While MNEs will typically have sales offices in the jurisdictions in which they sell goods and services, the

[135] James R. Hines Jr. "Policy Forum: How Serious Is the Problem of Base Erosion and Profit Shifting?" *Canadian Tax Journal* (2014) 62:2, 443 – 53, at 447. (emphasis added)

[136] Typically, researchers use a Cobb-Douglas production function, but the precise functional form is of less relevance to us here than the variables that comprise it.

assets deployed in furtherance of sales may well be small relative to total assets, making sales a weak proxy for assets. In many cases, products are developed in one country, manufactured in another, and sold in a third; in such cases, the assets deployed in the jurisdiction of scale will likely be diminutive compared to the assets deployed in the jurisdiction of development and manufacture. Since decisions concerning the location of product development and manufacture are motivated by many things other than tax rates, the large weight allocated to jurisdiction of sale seems rather inappropriate.

A1.2.3 Other Problems with TJN's Calculation of Tax Losses

In addition to the inappropriate use of the formulary-apportionment based "profit misalignment" model, there are several other problems with the way that TJN calculates tax revenue losses, including

Use of Macro Data

TJN uses macro (aggregate) CbCR data, which as noted in section 1.1.4 tends to result in high and likely excessive estimates of profit shifting because it is not possible to account for any characteristics specific to individual MNEs and so cannot properly differentiate between profits that should be allocated.

Failure to Clean Data

Bratta et al, who also used the CbCR data, note that they performed an extensive cleaning exercise to eliminate reporting errors. TJN makes no mention of any attempt to clean its data.

Failure to Address Double Counting due to Intra-Company Dividends

TJN acknowledges the potential for double counting due to intra-company dividends and even cites both Horst and Curatolo and Blouin and Robinson, but it does not make any adjustments to account for it. Indeed, it asserts that "Significantly, there do not seem to be incentives for double counting profits in tax havens by MNCs (since they know this data is to be used for assessing transfer pricing risk)."[137] While it is true that MNEs might have incentives to avoid giving the impression that they report more profit in low-tax jurisdictions than they actually do, as Horst and Curatolo note, that is not necessarily the same as avoiding double counting in CbCR reports, especially given the ambiguous guidance by the OECD and the interpretation of that guidance by some tax authorities (including the IRS and apparently those in Italy).

Extrapolating from Small Sample of Jurisdiction Pairs

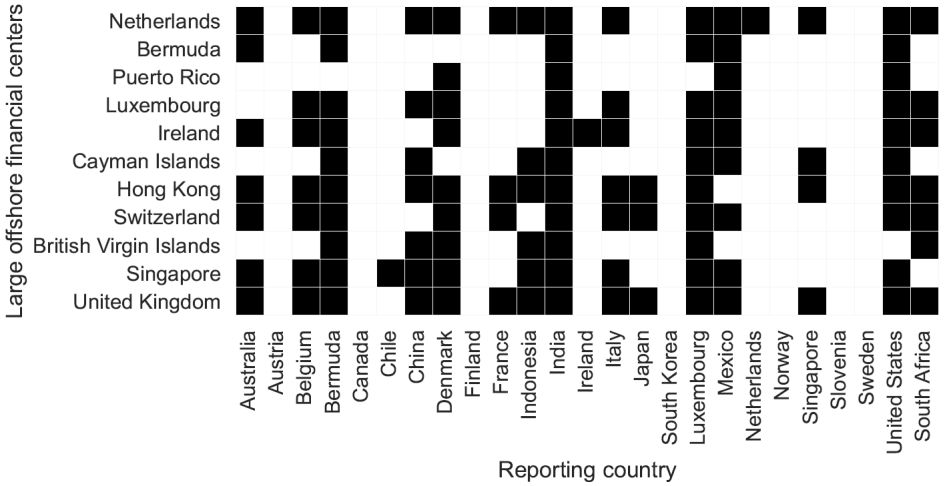
Another significant problem with TJN's methodology is the way that it addresses missing data. This begins with its use of data from only 11 jurisdictions for the parameterization of its model, specifically: Australia, Belgium, Bermuda, China, Denmark, India, Italy, Luxembourg, Mexico, the United States, and South Africa. And of those countries, only Bermuda, China, India, Luxembourg, Mexico and the U.S. reported on Cayman, as can be seen in figure A10.

The use of such a small sample is almost certain to lead to biases of various kinds and in particular selection bias. The OECD notes that some UPE reporting jurisdictions aggregate information on partner jurisdictions when the number of MNE subsidiaries in those jurisdictions is small (in order to protect the confidentiality of those MNEs). As such, the UPE jurisdictions that report on individual partner jurisdictions are more likely to be those that are host to larger numbers of MNE subsidiaries in their

[137] SOTJ Methodology 2020, at p.2.

jurisdiction. **This means that the selection of jurisdictions that provide data on Cayman as a partner jurisdiction likely have a larger number of UPEs that have subsidiaries in Cayman than do other UPE jurisdictions. So, extrapolating from the sample of such jurisdictions will almost certainly exaggerate the scale of MNE subsidiaries in Cayman**.

Figure A10: Public Availability of Partner Jurisdiction CbCRs



Source: SOTJ Methodology.

Extrapolations to Address Missing Data from non-reporting NMEs

TJN notes that the raw data from CbCR are incomplete. Specifically, it notes that the number of reporting MNEs in some jurisdictions is lower than the number of MNEs with group revenues of at least €750 million in the Orbis database. To address this, TJN multiplies "all reported financial information" by the ratio of [number of in-scope companies in the Orbis database in jurisdiction]:[CbCR reporting MNEs in jurisdiction]. TJN's headline results are reproduced in Table 6. (Note, however, that TJN uses a factor of 2 for China rather than 7 – see discussion below.)

Table A6: Number of companies expected (according to Orbis) versus observed in the CBCR data

Country	# Expected (Orbis)	# Observed (CBCR)	Ratio
China	583	82	7.11
Denmark	69	39	1.77
Bermuda	60	39	1.54
Singapore	48	32	1.50
US (2016)	1501	1101	1.36
South Africa	58	44	1.32
Japan	891	715	1.25
Italy	151	130	1.16
Indonesia	22	19	1.16
France	206	180	1.14
Canada	179	160	1.12

Korea	205	185	1.11
Sweden	95	88	1.08
Ireland	47	45	1.04
US (2017)	1501	1548	1.03
AUS	111	110	1.01
India	158	165	0.96
Norway	55	60	0.92
Chile	29	32	0.91
Finland	48	54	0.89
Netherlands	136	155	0.88
Australia	64	73	0.88
Belgium	45	54	0.83
Poland	24	29	0.83
Slovenia	5	7	0.71
Mexico	40	74	0.54
Luxembourg	30	120	0.25

Source: SOTJ 2020 Methodology.

This is a rather problematic approach to the problem of missing data. Prima facie it seems most *unlikely* that the distribution of missing MNEs and their various characteristics will be similar to those who completed CbCR reports.

Indeed, it is highly likely that the missing data is biased towards smaller companies. CbCR entails self-reporting by companies and is a very costly exercise.[138] So, smaller companies would have incentives to avoid it if possible. Thus, companies that are close to the minimum in-scope size (€750m) may seek to keep their (real or apparent) revenues below the threshold.

Evidence for such an effect comes from a study by Felix Hugger, who used Orbis data on firms in the OECD with revenue of between €100 million and €1 billion for the years 2014 and 2016, and found an apparent increase in bunching just below the threshold (a 6% increase in firms with revenue €700-€750m) and a reduction just above it (an 8% reduction in firms with revenue €750-800m).[139] (See fig. A11).

In addition, Bratta et al. find that there is a non-linear relationship between MNE size and profit shifting, with larger firms being responsible for proportionally a much larger share of all shifted profits.[140] This is corroborated by Fuest et al. who find that "The profits reported in European tax havens by the smallest 25% of MNEs in our sample exceed the profits reported in non-havens by approximately 45%. For the

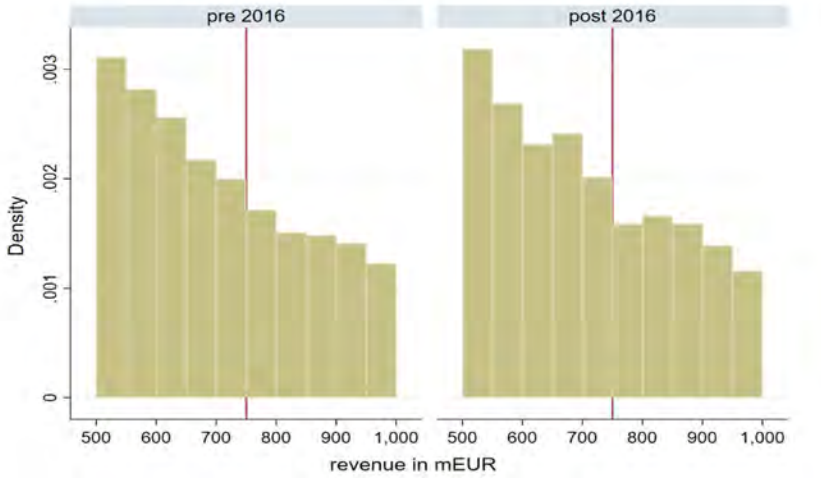
[138] Deloitte estimates that setting up a well-planned data aggregation process for CbCR takes 6-9 months, with attendant resource costs. See: https://www2.deloitte.com/content/dam/Deloitte/global/Documents/Tax/dttl-tax-country-by-country-reporting-faqs.pdf

[139] Specifically, he found, "The share of all firms in the sample that is between EUR 700m and 750m increased by 6% between 2014 and 2016, while the share of firms just above the threshold (between EUR 750m and 800m) fell by almost 8%.

[140] Bratta, 2021b, at p.

largest 25% of German MNEs in our sample, this effect grows to over 80%. Moreover, we find that only the largest 50% of MNEs in our sample appear to use non-European tax havens to shift profits."[141]

Figure A11: Change in Distribution of MNE's with Annual Revenue around the CbCR in-scope minimum



Source: Hugger, 2019.

So, to the extent that the missing data is biased towards smaller MNEs, simply extrapolating amounts in proportion to the apparent under-reporting of CbCRs based on a comparison of Orbis and CbCR data could lead to potentially significant upward bias.

However, when it comes to China, the decision to use a lower multiple may lead to an overestimate of profit shifting. TJN notes that "We run a robustness test in which the data of China was not adjusted. This increases total profit shifting by 5%, especially towards China and Macao, and away from the United States and the United Kingdom." This is rather significant, as it implies that if the number of reporting companies in China were still under-represented at a multiplication factor of two, then TJN's estimates of total profit shifting should fall further.

In the 2017 CbCR aggregates, China reports CbCRs from 264 MNEs – more than three times the number that reported in 2016.[142] Since it is highly unlikely that the number of Chinese MNEs in-scope for CbCR increased more than three-fold during the course of a year, it seems safe to assume that the 2016 number under-reported by at least a factor of three. As such, TJN's "conservative" decision to double the number of Chinese MNEs led to a significant underestimate in the number of Chinese MNEs. Had TJN adjusted by a factor of 3, total profit shifting might have been lower by 5% (assuming the conclusions of TJN's "robustness check" apply linearly). Had it adjusted by a multiple of 7, consistent with its approach to other jurisdictions, total profit shifting might be down by 30%?

These biases are particularly likely to affect Cayman since three of the six UPE jurisdictions that report subsidiaries in Cayman and are used to parameterize the profit misalignment model (i.e. China, Bermuda and the U.S. for 2016) have multiples of 1.5 or more. **Precisely how TJN's use of extrapolation**

[141] Fuest et al. at p. 21.
[142] See: https://stats.oecd.org/Index.aspx?DataSetCode=CBCR_TABLEI

affects Cayman's numbers is not entirely clear but it seems likely to increase the amount of profit shifting allegedly facilitated by Cayman, possibly very significantly.

Inferring the Jurisdiction of Subsidiaries that are Aggregated in CbCR

In their public macro CbCR reports, some jurisdictions report aggregates by region rather than for each country (in some cases, i.e. where the number of entities in a jurisdiction is small, this is done for reasons of confidentiality). TJN employs an interesting strategy to address this problem:

> We address these biases by modelling the location of employees and sales for each pair of countries using the Histogram-based Gradient Boosting Regression Tree, a type of gradient boosting based on decision trees which frequently outperforms other machine learning algorithms while offering some interpretability on the most relevant variables …. We train the location of profits, employees and sales using variables from the gravity data set of CEPII, imports and exports from UN Comtrade, and foreign direct investment from the World Bank as well as from other sources. We obtain a median out-of-sample R-square of 0.49, 0.50 and 0.51 respectively for employees, sales and profits.[143]

In SOTJ 2021, TJN adopts the same methodology but obtains slightly different out-of-sample R-squares (0.6, 0.44, and 0.49).

If I understand this correctly, TJN is saying that it uses a machine learning algorithm to identify a model that best first the relationships between a sub-sample of known aggregate (CbCR reported) profits, number of employees, and sales of subsidiaries of MNEs in each jurisdiction with various data, including: the gravity (international trade) data set from CEPII (a French research centre), imports and exports from the UN's Comtrade database, FDI from the World bank, and "other sources." It then chooses the models that achieve the highest out-of-sample correlations. And it then uses these to identify the likely number and scale of MNE subsidiaries in jurisdictions for which data is only available at a regional level.

On the one hand, the fact that the reported out of sample correlations for each criterion are around 0.5 suggests that it achieves about 50% accuracy. That's not bad, all things considered. But it also means that it is out on average by 50%, for each variable, which means that in some cases it is probably out by much more, others by much less. Without crosschecking with the underlying data (which is not publicly available), it is impossible to know which jurisdictions are out by 20% and which are out by 80%. As such, **as a predictor of profit shifting to specific jurisdictions it is essentially useless**.

Inferring missing data

TJN notes that data is missing for some important jurisdictions, including Germany, the UK and Spain. It notes that it addresses this, "by estimating the number of domestic employees and revenue for all non-reporting countries." TJN goes on to describe its method:

> "We do so by using a linear model based on the number of expected companies in each country, its GDP, population, the ETRs and the total consolidated banking claims on an immediate

[143] SOTJ Methodology 2020

counterparty basis (Table B4 of the BIS data) (R-square 0.91, 0.98 respectively for employees and sales."[144]

While the correlation coefficients imply these relationships are fairly consistent, that might be because there is not much profit shifting happening in most countries (per Bratta et al.). As such, using these models to predict economic activity in jurisdictions where there is profit shifting (in either direction) would lead to large errors.

One way to evaluate this hypothesis is to compare TJN's estimates of tax losses for a jurisdiction for which TJN used extrapolations based on its linear model with estimates based directly on data for that jurisdiction. Fortunately, just such a comparison is possible in the case of Germany.

As discussed above, Fuest et al. assessed the extent of profit shifting and tax losses for Germany. These estimates of tax losses can be directly compared with TJN's. And although TJN does not disclose its estimates of profit shifting, these can be inferred from the tax losses. Table A7 shows TJN's and Fuest et al's estimate of tax-related profit shifting and CIT losses. Converting Fuest et al's estimate of CIT losses from Euros to US Dollars at the prevailing rate in 2017, TJN's estimates of losses are nearly four times those of Fuest et al.

The lower figure for profit shifting according to TJN ($81 billion) assumes that TJN used the same statutory CIT rate to estimate tax losses as Fuest et al. (i.e. 30%), while the higher figure ($106 billion) assumes that TJN used its own estimate of Germany's effective CIT rate (22.9%). At the higher rate, the implied amount of shifted profits is more than five times Fuest et al's estimate. Similarly, the lower figure for CIT loss uses TJN's effective CIT rate, giving a loss that is one fifth that of TJN's

Table A7: Estimates of tax-related profit shifting and associated revenue losses in Germany

Study	**Shifted Profits ($ Billion)**	**CIT Loss ($ Billion)**
Fuest et al	21.1	4.8 or 6.3
TJN	81 or 106	24

Since Fuest et al's analysis uses micro CbCR data from Germany, it is without a doubt far more accurate than TJN's, which is based on the edifice of inferences described above. As such, it seems that TJN's strategy for inferring missing data is not a spectacular success. Indeed, **TJN's estimates for this important jurisdiction are so far from those calculated by a group of eminent German economists, using reliable data, that it seems likely that TJN's inference approach is responsible for considerable distortion to its overall estimates.**

A1.2.4 How did TJN calculate the effective tax rates it uses?

Once TJN has estimated the extent of profit shifting, it then seems to use its calculations of effective CIT rates (ETRs) in each jurisdiction to calculate the amount of tax that has been "lost".[145] Precisely how TJN

[144] TJN notes that "We only use this information to redistribute profits back to the home countries but not to calculate profit shifted." But that doesn't really matter (and would appear to be misleading), since the model still underpins estimates of profit shifting: TJN presumably redistributes profits back so that they can calculate the pre-tax profits that would have been earned in a jurisdiction but for profit shifting.

[145] TJN does not explicitly assert that it uses effective CIT rates in calculating the tax losses. It is possible that it uses statutory rates. But it does list effective tax rates in

calculates its ETR is unclear: It lists 4 different rates for each jurisdiction in the methodology and yet another one in the main report. The one listed in the main report, which is presumably the one that it applied to calculate tax losses, seems unrelated to the other four. For example, the ETRs for Italy in the Methodology are 12.6%, 13.6%, 14.3% and 15.4%, while the ETR for Italy given in the main report is 18.55%.[146] Bratta, by contrast, calculates an ETR for Italy of 20.2%.[147] Given the importance of ETRs for calculating tax losses, the lack of transparency regarding how these losses were computed and why different ETRs seem to have been used in the calculation of tax losses than are given in the methodology seems rather odd.

A1.2.5 Comparing TJN's Estimates of CIT Revenue Losses with Other Estimates

TJN's overall estimate of CIT revenue losses are not inconsistent either with some of the macro estimates discussed in section 1.1 or with Bratta et al's assessment using micro CbCR data discussed in the same section. While both the macro analyses and Bratta's assessment raised concerns, it is difficult to evaluate the plausibility of their estimates of worldwide profit shifting because no truly credible estimates exist. To repeat Blouin and Robinson, "Clearly, more careful work is needed."[148] As such, all that can really be said about TJN's global estimates of CIT revenue losses is that they might be in the right ballpark.

TJN's estimates of the distribution of those losses, however, is quite another matter. As already noted, TJN's methodology for allocating tax losses is fundamentally at odds with the entire economic literature. As can be seen table 6, TJN's estimates of the distribution of profit misalignment is quite different from the distribution of profit shifting estimated by Bratta et al. Indeed, apart from the U.S., which is ranked first by both, the remaining jurisdictions in the top 7 are entirely different.

Table A8: Comparing the distribution of TJN's profit "misalignment" with Bratta et al's estimates of profit shifting for the top 7 jurisdictions ranked by amount of shifted or "misaligned" profit. (US$ billions)

	TJN		Bratta	
Rank	**Jurisdiction**	**Profit "misaligned"**	**Jurisdiction**	**Profit shifted**
1	United States	277	United States	356
2	Germany	106	Japan	137
3	United Kingdom	106	India	77
4	France	86	Algeria	76
5	Brazil	61	France	65
6	Italy	47	South Africa	56
7	Singapore	45	China	36

Source: Author's calculations based on SOTJ 2020 and Bratta et al.

[146] SOTJ Methodology 2020, at p.4; SOTJ 2020 at p. 20.
[147] Bratta et al., 2021b, at p. 79.
[148] Blouin and Robinson, supra note 93

Note: to calculate profit "misaligned", TJN's estimates for tax losses were divided by TJN's estimates of the average effective tax rate for the jurisdiction. To calculate the amount of profit shifted in Bratta's model, their numbers in Euros were converted at a rate of €0.9 to $1.

When jurisdictions are ranked by revenue loss, the picture is a little different, as can be seen in table 7. This is because of the average effective tax rates used in each case.

Table 7: Comparing the distribution of CIT revenue losses in SOTJ 2020 and Bratta et al. for the top 7 jurisdictions ranked by amount of lost revenue (US$ billions)

	TJN		**Bratta et al.**	
Rank	**Jurisdiction**	**CIT Revenue loss**	**Jurisdiction**	**CIT Revenue Loss**
1	United States	49	United States	134
2	Germany	24	Japan	38
3	Brazil	15	India	35
4	France	14	Algeria	19
5	Colombia	12	France	21
6	Nigeria	11	South Africa	15
7	United Kingdom	10	China	8

Ironically, TJN's estimate for CIT tax losses in the US are much closer to those estimated by Bluin and Robinson, using adjusted pre-tax profit, than Bratta et al's estimate. However, TJN's estimate of CIT losses for Germany is, as already noted, about four times that amount calculated by Fuest et al. Meanwhile, TJN's estimate of the effect on CIT revenue for the UK has the opposite sign to that of Bratta et al., who estimated that the UK would gain about $48 billion in MNE profits, which would generate an additional $8 billion in CIT.

Practically any way one looks at it, therefore, the decline in CIT rates in the OECD has not resulted in a "race to the bottom."

A 1.3. Google Scholar Search for "profit misalignment"

A Google Scholar search identifies 56 unique papers containing the term "profit misalignment" in either the title or abstract of a paper. The search results are reproduced below. Of the 56 papers, 49 appear to relate directly to the concept discussed by TJN (the others are unrelated), and of those 49 papers, 30 are authored or coauthored by Alex Cobham and/or Petr Janský. Meanwhile, among the remaining papers are several with direct connections to TJN, Alex Cobham, and/or Petr Janský.[149]

Who, you might ask, are Alex Cobham and Petr Janský? Alex Cobham is the CEO of TJN and was previously a researcher at the Center for Global Development, Christian Aid, and Save the Children. He has also "consulted widely, including for UNCTAD, the UN Economic Commission for Africa, DFID, and the World Bank."[150] Petr Janský a researcher at Charles University in Prague, a coauthor of TJN's Corporate Tax Haven Index, and a named advisor for TJN's SOTJ 2020. He has also been a researcher for or consultant to: Christian Aid, Oxfam, Save the Children, the Center for Global Development, ActionAid, and Greenpeace.[151]

It is difficult to avoid the conclusion that TJN has consciously sought to develop and promote the concept of "profit misalignment." The term as it is used by TJN appears to originate with a blog post written by Alex Cobham when he was a researcher at the Center for Global Development in 2014.[152]

* = not authored by Cobham or Jansky

S Godar, P Janský - Post-Communist Economies, 2020 - Taylor & Francis

Despite numerous data challenges, economists have established that the multinational corporations' reported profits are not well aligned with their economic activity across countries. However, uncertainties remain about the extent and patterns of this misalignment …

Cited by 2 Related articles All 2 versions

[PDF] ids.ac.uk

Measuring misalignment: The location of US multinationals' economic activity versus the location of their profits

A Cobham, P Janský - Development Policy Review, 2019 - Wiley Online Library

… This committed the OECD to establish baseline findings for the extent of **profit misalignment**, in order to understand the scale of the problem and to be able to track the progress of the BEPS initiative over time (OECD, 2015a) …

Cited by 101 Related articles All 14 versions

[149] These include: a paper by an undergraduate student at Charles University whose supervisor was Petr Janský. (https://dspace.cuni.cz/handle/20.500.11956/91438); paper by a postgraduate at the Prague University of Economics using data from Janský (https://efaj.vse.cz/pdfs/efa/2020/01/03.pdf); a review of a paper by Cobham and Jansky.

[150] https://taxjustice.net/taxjustice_team/alex-cobham/

[151] https://www.dropbox.com/s/tjus9lqm75dpa09/201104_CV_Petr_Jansk%C3%BD.pdf?dl=0

[152] https://www.cgdev.org/blog/four-futures-international-tax-rules

Corporate **Profit Misalignment**: Evidence from German Headquarter Companies and Their Foreign Affiliates

P Jansky, S Godar - 2020 - ideas.repec.org

Despite numerous data challenges, economists have established that the multinational corporationsâ€™ reported profits are not well aligned with their economic activity across countries. However, uncertainties remain about the extent and patterns of this misalignment …

All 3 versions

[CITATION]

Key findings from global analyses of multinational **profit misalignment**

A Cobham, P Janský, S Loretz - 2017 - irihs.ihs.ac.at

Cobham, Alex; Janský, Petr and Loretz, Simon (2017) Key Findings from Global Analyses of Multinational **Profit Misalignment**. In: Picciotto, Sol, (ed.) Taxing Multinational Enterprises as Unitary Firms. Institute of Development Studies, pp. 100-118 … Full text not available from this …

Cited by 4 Related articles All 2 versions

[PDF] cuni.cz

*Country-by-Country Reporting Data and Profit Shifting of Banks

A Bartoňová - 2017 - dspace.cuni.cz

… With recently obtained country-by-country data we can address and measure the **profit misalignment** of financial institutions for 2014 – 2016 … We then observe the difference between CCCTB and actual taxable income, which determines the size of **profit misalignment** …

Cited by 2 Related articles

*TAX BASE EROSION AND CORPORATE PROFIT SHIFTING: AFRICA IN INTERNATIONAL COMPARATIVE PERSPECTIVE

RE Phoya, M Meinzer, SN Lima - Financing for …, 2020 - uonjournals.uonbi.ac.ke

… Haven Index dataset produced by the Tax Justice Network in 2019, in which the legal framework and practices of 64 jurisdictions including nine African countries are assessed to measure the risks of tax avoidance, base erosion and profit shifting, **profit misalignment**, and the …

All 2 versions

Statistical Measurement of Illicit Financial Flows in Sustainable Development Goals: Tax Avoidance by Multinational Corporations

A Cobham, J Garcia-Bernardo, P Jansky… - Working Papers …, 2021 - ideas.repec.org

… Second, the **profit misalignment** method applied to the country-by-country reporting (CBCR) data of large MNCs emerges as the most suitable method from a critical review of existing approaches and a range of available statistical data sources …

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[PDF] amazonaws.com

A half-century of resistance to corporate disclosure

A Cobham, P Janský, M Meinzer - Transnational Corporations, 2018 - books.google.com

… unsuccessful. Moreover, one of the two indicators proposed for SDG 16.4 would draw directly on OECD country-by-country reporting data in order to construct a measure of **profit misalignment** (Cobham & Janský, 2018). The …

Cited by 23 Related articles All 11 versions

[PDF] econstor.eu

European banks and tax havens: evidence from country-by-country reporting

P Janský - Applied Economics, 2020 - Taylor & Francis

… In contrast with several recent and concurrent papers such as Bouvatier, Capelle-blancard, and Delatte (2017) or Fatica and Gregori (2020), I am using a larger data set and different indicators, specifically those of **profit misalignment**, which enable me to observe how well profit …

Cited by 16 Related articles All 7 versions

[PDF] researchgate.net

The costs of tax havens: evidence from industry-level data

P Janský - Applied Economics, 2020 - Taylor & Francis

… From Figure 1, I can see that the full set of data for both foreign affiliates and US parents and for all the variables needed for the estimation of the **profit misalignment** (net income, income taxes, tangible assets, sales, employment, compensation of employees) for the group of all …

Cited by 5 Related articles All 7 versions

[PDF] gabriel-zucman.eu

Did the Tax Cuts and Jobs Act Reduce Profit Shifting by US Multinational Companies?

J Petr - gabriel-zucman.eu

Page 1. Did the Tax Cuts and Jobs Act Reduce Profit Shifting by US Multinational Companies?∗ Javier G -B † Petr J ‡ Gabriel Z § July 7 th , 2021 Preliminary and incomplete Abstract The Tax Cut and Jobs Act of 2017 reduced …

All 2 versions

[PDF] glopolis.org

Country-by-country reporting data of banks: tax havens and the Czech Republic

P Janský - Prague: G topolis. Retrieved February, 2017 - glopolis.org

… Here I briefly review only the following seven areas, which are some of the most relevant ones to the main research question: the use of banks' CBCR data; other CBCR data; measuring **profit misalignment**; financial transparency; Czech banks; estimates of revenue effects of …

Cited by 6 Related articles All 4 versions

[PDF] vse.cz

*Critical Literature Review on Tax Avoidance

P Procházka - Prague Economic Papers, 2021 - ceeol.com

… These two indicators are (1) a cross-border **profit misalignment** measure and (2) the level of undeclared offshore assets. Their ultimate goal is to fight tax evasion and provide a fair share of tax for the jurisdiction where economic activity takes place …

Related articles All 7 versions

[PDF] financialtransparency.org

Country-by-Country reporting: How restricted access exacerbates global inequalities in taxing rights

A Knobel, A Cobham - Available at SSRN 2943978, 2016 - papers.ssrn.com

… Most importantly, this would involve a gradual reversal of the failure to deliver BEPS Action 11. This called for the creation of a baseline estimate of the global scale of **profit misalignment** with real economic activity, and the tracking over time of progress …

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[PDF] econstor.eu

Global distribution of revenue loss from tax avoidance: Re-estimation and country results

A Cobham, P Janský - 2017 - econstor.eu

… In a similar line, we consider the alternative list of the six major **profit misalignment** jurisdictions of the Netherlands, Ireland, Luxembourg, Bermuda, Switzerland, and Singapore, identified for US-headquartered multinationals by Cobham and Janský (2015) …

Cited by 66 Related articles All 13 versions

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Global distribution of revenue loss from tax avoidance

A Cobham, P Janský - Cit, 2017 - agefi.fr

… In a similar line, we consider the alternative list of the six major **profit misalignment** jurisdictions of the Netherlands, Ireland, Luxembourg, Bermuda, Switzerland, and Singapore, identified for US-headquartered multinationals by Cobham and Janský (2015) …

Cited by 46 Related articles

[PDF] ugent.be

Paradise lost-Who will feature on the common EU blacklist of non-cooperative tax jurisdictions?

W Lips, A Cobham - Open Data for Tax Justice, 2017 - biblio.ugent.be

… C. Public country-by-country reporting by multinationals, with jurisdictions committing to reduce the revealed **profit misalignment** … Cobham, A., Janský, P., & Loretz, S. (2017). Key Findings from Global Analyses of Multinational **Profit Misalignment** …

Cited by 12 Related articles All 4 versions

[PDF] ids.ac.uk

International distribution of the corporate tax base: Implications of different apportionment factors under unitary taxation

A Cobham, S Loretz - 2014 - papers.ssrn.com

… worldwide level. 6 Rather than emphasise **profit misalignment**, the IMF uses the broader concept of spillovers in international corporate taxation (defined as the effect of one country's rules and practices on others). IMF (2014 …

Cited by 77 Related articles All 6 versions

[PDF] ASSESSING THE IMPACT OF THE C (C) CTB: EUROPEAN TAX BASE SHIFTS UNDER A RANGE OF POLICY SCENARIOS

A Cobham, P Janský, C Jones… - Tax Justice …, 2017 - img.dash.documentonews.gr

… At this point, multinationals (and their advisers, including the big four accounting firms) and tax authorities themselves would become publicly accountable for the degree of **profit** '**misalignment**', and annual progress in reducing it …

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… 2.2 Evidence of profit shifting The evidence clearly confirms not only the existence of serious **profit misalignment** but also its sharp growth over recent decades. For example, Cobham and Janský (2019) use data on United States …

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… 1 This sub-section follows closely that in our earlier background paper (Cobham & Jansky, 2017b), drawing in turn on Cobham (2014). Page 6. [6] These three categories make up the various forms of profit shifting, which must be distinguished from **profit misalignment** …

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A4. A Statistical and Economic Critique of TJN's Methodology for Identifying "Abnormal" Bank Deposits

In seeking to identify the scale of tax evasion, TJN begins by identifying jurisdictions with "abnormal [bank] deposits", which is then used to underpin the remainder of the analysis. As such, the plausibility of TJN's assessment of the scale of tax evasion, both in general and in specific jurisdictions, is highly dependent on the suitability of its methodology for identifying "abnormal deposits." This appendix provides a brief statistical critique of TJN's approach.

TJN describes its methodology for identifying jurisdictions with "abnormal deposits" thus:

> "In the first step, we identify what we call "abnormal deposits". We start by identifying jurisdictions that attract large amounts of bank deposits (compared to the size of their economy) and at the same time offer strong bank secrecy laws; for our purposes, we define these jurisdictions as those that score at least 20 (out of 100) on Banking Secrecy, the first Key Financial Secrecy Indicator of the Financial Secrecy Index 2018 (the relevant year from the Tax Justice Network's biennial ranking of jurisdictions most complicit in financial secrecy). In the banks of some of these jurisdictions, foreign deposits are significantly higher than would be

> expected based on the size of the jurisdictions' economies: for our purposes, we examine jurisdictions that report foreign bank deposits with a value of more than 15 per cent of their GDP. Using regression analysis, we estimate the expected deposits in each country, exploiting the strong relationship between GDP and bank deposits in countries that do not provide opportunities for secrecy arbitrage (ie those countries with lower scores for Banking Secrecy and a relatively low ratio of bank deposits to GDP); the R-squared for this regression using 2018 data is 0.79. "Abnormal deposits" are then defined as the difference between the actual deposits and the expected deposits in each jurisdiction. We argue that these abnormal deposits are located in these jurisdictions precisely due to the fact that these jurisdictions provide financial secrecy."[153]

TJN notes:

> "We find that 39.3% of global bank deposits can be considered abnormal as per our definition, meaning that they are located in secrecy jurisdictions in quantities that are higher than would be expected based on the size of these jurisdictions' economies."

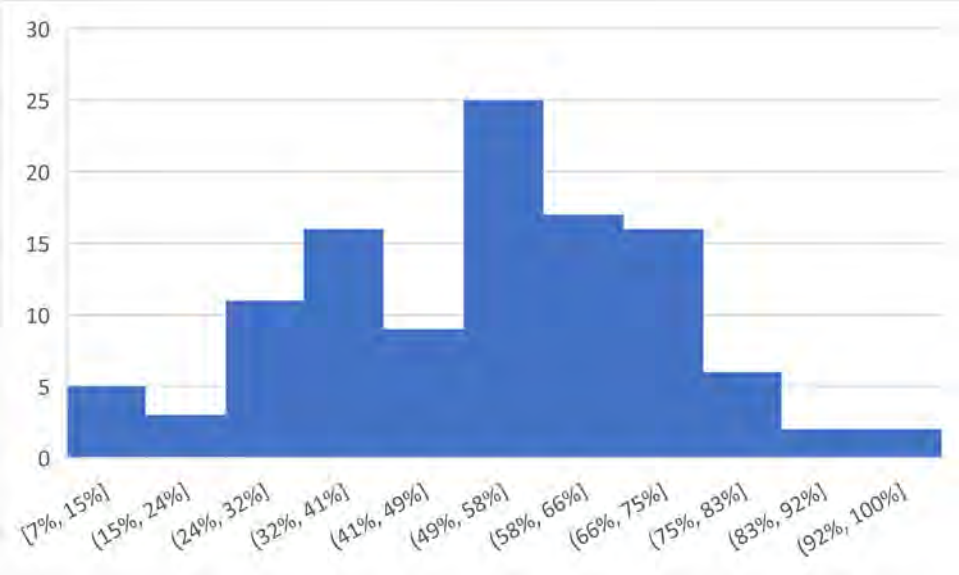
On the face of it, this should be a red flag: when nearly 40% of anything is "abnormal," it rather begs the question as to what is "normal." In nature, many distributions follow a bell-shaped curve that is often referred to as the "normal distribution." In evaluating whether a particular observation belongs in a particular distribution, statisticians commonly use tests that measure the probability of that observation falling within the distribution. The cut-off criteria for such tests are typically 5% (for 2-tail tests) or 10% (more commonly for 1-tail tests). If we assume we are talking about a one-tail test here, one would expect that only 10% of the jurisdictions to be "abnormal" – and 90% would be "normal".

These tests would, logically, be applied to both criteria employed by TJN. As such, one would first identify the 10% of jurisdictions that score highest on bank secrecy. Then one would identify the 10% of jurisdictions among those that score highest on foreign deposits.

Starting with the "bank secrecy" KSFI from TJN's 2018 Financial Secrecy Index, Figure A12 is a histogram showing the distribution of bank secrecy scores according to TJN's methodology. On the basis of this distribution, it would appear that jurisdictions that scored 75% or more are plausibly outliers and could be considered "abnormal."

Figure A12: Distribution of KFSI-1 Scores

[153] SOTJ 2020, at 41



Source: author, based on TJN's Financial Secrecy Index.

If we were being generous, we might widen the definition somewhat to include the jurisdictions that scored just below 75, since TJN has identified these as scoring poorly – as denoted by its use of orange shading. This would include the top 18 jurisdictions as follows:

Country Name	Score
Tanzania	100%
Antigua & Barbuda	93%
Andorra	87%
Hong Kong	86%
Bahrain	80%
Maldives	80%
Montserrat	80%
Grenada	77%
St Kitts and Nevis	77%
Gibraltar	76%
Belize	73%
Lebanon	73%
Liechtenstein	73%
Paraguay	73%
Seychelles	73%
Switzerland	73%
Thailand	73%

Turks & Caicos Islands	73%

If we were being extremely generous, we might expand the criteria to include the 14 jurisdictions shaded yellow

Anguilla	70%
Bahamas	70%
Dominica	70%
Hungary	70%
St Lucia	70%
Turkey	70%
Bermuda	67%
St Vincent & Grenadines	67%
Gambia	66%
Latvia	66%
Taiwan	66%
Brunei	63%
Kenya	63%
Samoa	63%

Going beyond this would seem to be inconsistent with the aim of targeting “abnormal” jurisdictions or indeed jurisdictions that TJN itself has identified as raising concerns regarding banking secrecy based on its own criteria, since all the other jurisdictions are shaded green, presumably to indicate that their levels of bank secrecy are acceptable.

But even if one were to extend the definition beyond what is really plausible and include the next set of jurisdictions, shaded pale green, this would include all jurisdictions with scores of more than 50%.

Bolivia	60%
Botswana	60%
Chile	60%
Curacao	60%
Denmark	60%
Greece	60%
Luxembourg	60%
Macao	60%
Mauritius	60%

Puerto Rico	60%
San Marino	60%
Aruba	57%
Austria	57%
Guernsey	57%
Dominican Republic	56%
Israel	56%
Panama	56%
Venezuela	56%
France	54%
Montenegro	54%
Barbados	53%
Finland	53%
Ghana	53%
Liberia	53%
Poland	53%
Uruguay	53%

At this point, more than half the jurisdictions are included. But the observant reader will perhaps have noticed that Cayman is not among those jurisdictions. Nor is the UK. Nor the US. Indeed, only six of the jurisdictions in TJN's Top 15 jurisdictions with the highest value of "abnormal deposits" would also qualify as a "secrecy jurisdiction" on the basis of TJN's own KFSI-1, namely: Luxembourg, Hong Kong, France, Bermuda, Panama, and Switzerland.

It is simply inconceivable that the definition of "abnormal" could be extended further. Yet under TJN's definition, which includes all jurisdictions that score 20 or more on its indicator, every jurisdiction bar 5 is considered "abnormal." In other words, according to TJN more than 95% of all jurisdictions have abnormally high levels of bank secrecy. (It should be no surprise that four of the five jurisdictions that qualify as "normal" are in the EU: Spain, Slovenia, Belgium, and Lithuania.)

Secondly, TJN's criteria for a jurisdiction with "abnormal deposits" are essentially arbitrary. TJN begins by identifying jurisdictions with foreign bank deposits that represent more than 15% of GDP. This captures 31 jurisdictions that are financial centers. TJN offers literally no justification for this criterion, presumably because it can offer none. It should not be surprising that financial centers have high levels of foreign bank deposits. There is nothing "abnormal" about this. Moreover, at 14% of all jurisdictions (31/219), this would seem prima facie to exceed what statisticians would consider outside the norm.

But TJN does not stop there because it then goes on to perform a regression analysis in which it considers the relationship between inward bank deposits as a percentage of GDP (the dependent

variable) and GDP (the independent variable) on the remaining 188 jurisdictions (i.e. excluding the 31 financial centres). TJN explains:[154]

> "Having excluded these jurisdiction[sic], we seek to establish a 'normal' relationship between inward deposits and GDP. Using a sample of the remaining countries i and data for 2018, we estimate the following model:
>
> $$Inward\ bank\ deposits\ as\ share\ of\ GDP_i = \alpha * GDP_i + \epsilon$$"

But the implied relationship ("GDP" *causes* "inward bank deposits as a share of GDP") seems peculiar to say the least. Indeed, it is tempting to describe it as statistical sophistry. The two terms are presumably correlated because jurisdictions that grow more quickly (and thus have higher levels of GDP) do so in part through trade and financial relationships with other jurisdictions.[155] But the causal relationship might more plausibly be the reverse of that implied by TJN, i.e.: higher inward bank deposits as a share of GDP leads to more rapid economic growth, which generates higher GDP. Or, more likely, the two are co-determined – i.e. GDP and inward bank deposits as a percentage of GDP both tend to grow together because of other factors. In either case, there is no good reason to think that there is a "normal" relationship between the two variables.

To make matters worse, excluding the 31 financial centres from its initial regression analysis more-or-less ensures that the "model" is parameterized in such a way as to ensure that the financial centres become outliers. And, lo and behold, TJN then declares that they are outliers! This is called assuming one's conclusions.

Nonetheless, TJN uses this regression to identify "abnormal deposits" in each jurisdiction:

> "The level of "abnormal deposits" in each jurisdiction is then defined as the difference between actual, observed deposits, and the expected deposits as predicted by the regression coefficient from Figure 1. The assumption is that these deposits are located here precisely due to the fact that these jurisdictions provide some form of financial secrecy."

Unfortunately, this assumption is just that, an assumption.

Unsurprisingly, this somewhat ridiculous procedure identifies a rather large number of jurisdictions; 54 in all. As TJN notes:

> "We find that 39.3% of global bank deposits can be considered abnormal as per our definition, meaning that they are located in individual jurisdictions in quantities that are higher than would be expected based on the size of these jurisdictions' economies. Note that this includes additional jurisdictions to the 31 preidentified: that is, jurisdictions within the regression sample can also be identified as holding abnormal deposits, where the levels exceeds that predicted."

Included in TJN's list are three jurisdictions that do not meet TJN's criterion for secrecy, namely Canada, Belgium and Spain. It is not clear whether those jurisdictions are included in the 39.3%. If not, then the number falls to 51. But anyway you cut it, whether it is jurisdictions representing 39.3% of global bank

[154] SOTJ Methodology 2020.

[155] To the extent that economic growth intermediates the relationship, a stronger relationship might exist between changes in inward bank deposits and changes GDP per capita over time. Investigating such a relationship is however beyond the scope of this critique.

deposits, or 23% (51/219) of all jurisdictions, there is something abnormal about TJN's list of "abnormal" jurisdictions.

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