Profit Shifting Before and After the Tax Cuts and Jobs Act

24 January 2019

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Abstract: In recent years, estimates of profit shifting by multinational companies have indicated substantial revenue costs to the U.S. government, likely in excess of $100 billion per year. The Tax Cuts and Jobs Act (TCJA) has changed the climate for profit shifting in several important ways: the lower U.S. corporate rate should lower the incentive to shift profits away from the United States, while “territorial” tax treatment (of some income) and the removal of tax upon repatriation should raise the incentive to shift profits abroad. In addition, several novel base protection measures, in particular the GILTI and the BEAT, are aimed directly at profit shifting. This paper evaluates tax law changes under the TCJA, discussing their likely effect on the magnitude of profit shifting. Estimates suggest that, once adjustment to the legislation is complete, it should reduce the U.S. affiliate corporate tax base in haven countries by about 20 percent, increasing the tax base in both the United States and in higher-tax foreign countries. Still, positive U.S. tax revenue effects are likely to be modest due to the design of the provisions.

Acknowledgements: I am thankful to Nikhita Airi for her careful research assistance. I received valuable feedback from Omri Marian, Vic Fleischer, Chris Sanchirico, Reed Shuldiner, Edward Kleinbard, Reuven Avi-Yonah, Cliff Fleming, Richard Phillips, Li Liu, Bret Wells, Alex Klemm and participants at colloquiums at UC-Irvine Law School and University of Pennsylvania Law School and at the National Tax Association conference.
I. Introduction

Public Law 115-97, typically referred to as the Tax Cuts and Jobs Act, generated the most sweeping corporate tax policy changes since 1986. The statutory corporate tax rate was lowered from 35 to 21 percent, and three new international provisions (GILTI, FDII, and BEAT), largely untested elsewhere, changed the tax treatment of multinational company income.¹ The United States also changed the label of its tax system from “worldwide” to “territorial” by exempting foreign income from taxation.

Still, in international tax, labels can be deceiving.² Most countries lie on a spectrum between a “pure worldwide” system and a “pure territorial” system, and the United States is no exception, then or now. Under the prior (purportedly worldwide) system, very little tax was collected on foreign income, and tax on foreign income was not levied until repatriation. Under the current (purportedly territorial) system, some tax on foreign income is collected currently through a global minimum tax.³

The sweeping nature of these corporate tax provisions makes forecasting their effects difficult. The U.S. Joint Committee on Taxation (JCT) estimated that the rate cut would dramatically reduce U.S. government revenues, even after base-broadening provisions were accounted for, by over $650 billion in the coming decade. International provisions also lost revenue, but much more modestly ($14 billion over ten years), since some provisions raise revenue (GILTI and BEAT) while others lose revenue

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¹ GILTI stands for Global Intangible Low-Taxed Income, FDII stands for Foreign-Derived Intangible Income, and BEAT stands for Base Erosion and Anti-Abuse Tax.
² For a longer discussion of the distinction between label and reality in international tax, see Clausing (2016b).
³ Subpart F income triggers current taxation under both prior and present law.
(territoriality and FDII). Taking the committee’s estimates at face value, they imply that the international provisions, on net, do not improve upon the status quo in terms of reducing the substantial revenue costs of profit shifting. Estimates in Clausing (2016) indicate that revenue costs from profit shifting likely exceeded $100 billion per year by the time of the legislation; these estimates are broadly consistent with findings of other authors as well as JCT estimates of the cost of deferral.

The following analysis begins by updating my prior work on the revenue costs of profit shifting, but focusing only on the activities of U.S. multinational companies. Then, I consider the impact of the provisions of the TCJA on profit shifting incentives. While the direction of the impact of each provision is clear, some provisions are difficult to model precisely. In my empirical analysis, I focus on the combination of the lower U.S. tax rate and the global minimum tax (GILTI), analyzing their joint impact on the corporate tax base in the United State and abroad. I estimate that these provisions will reduce profit shifting, lowering the corporate tax base in haven countries by about 20 percent in the steady-state equilibrium. Due to reduced profit shifting under these provisions, U.S. corporate tax revenues are estimated to increase by about $19 billion per year, $8 billion of which is due to the minimum tax. Foreign corporate tax revenues in non-haven countries are also buttressed by the global nature of the minimum tax.

However, the global nature of the minimum tax, in comparison to a per-country minimum tax, substantially reduces its impact. Indeed, the global nature of the minimum tax makes the U.S. the least desirable place to book income for many multinational

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4 There is also a one-time deemed repatriation tax on prior earnings. This represents a tax break in comparison to prior law, but it raises over $300 billion in the ten-year window. Since it is a one time tax on earnings that have already occurred, it is ignored in the subsequent analysis.

companies, since if they do not have sufficient foreign tax credits to offset minimum tax due, even high-taxed foreign income is preferable to US income because foreign tax credits shield haven income from the GILTI tax. In contrast, under a per-country minimum tax, reductions in haven tax bases would be about twice as large, and U.S. revenue gains from the minimum tax would be more than two and a half times higher.

In the short run, the effects of the TCJA on profit shifting will be smaller, as companies will gradually adjust to the diminished incentive to shift profits abroad. With time, the complete effects will become clearer. Yet even as these effects are sorted out, other countries’ policies, and multinational companies, will not stand still. Neither profit shifting, nor corporate tax competition, will end with the TCJA.

II. Prior Work

There are many prior studies on profit shifting, and good reviews are provided in Clausing (2016), Dowd, Landefeld, and Moore (2017), and OECD (2015).\(^6\) One grave difficulty in prior work is data quality. Some of the best databases in terms of company coverage and detail are financial reporting databases such as Orbis, yet these are missing tax haven observations, substantially reducing their usefulness.\(^7\) As subsequent analysis shows, nearly all profit shifting occurs with respect to haven countries, so studies that rely on Orbis data are likely providing substantial underestimates of the profit shifting problem.

\(^6\) The OECD overview of this issue is particularly comprehensive.
\(^7\) This problem is documented by Tørslev, Wier, and Zucman (2018) and discussed by OECD (2015), Dowd, Landefeld, and Moore (2017), and Clausing (2016). For example, Tørslev, Wier, and Zucman (2018) report that $55.3 billion in consolidated profits are reported by Apple in 2016 in the Orbis dataset, yet only $2.0 billion show up in the subsidiary data in Orbis. Similarly large amounts of haven income are missing for other multinational companies.
Tax data are often not available to researchers outside the tax authorities, although that is slowly changing in the United States and elsewhere. In this analysis, I rely on survey data from the U.S. Bureau of Economic Analysis. These data are particularly useful since they are publicly accessible, available for a long time series (1983 to 2015), and include data on U.S. affiliate operations in most (economically) important countries. U.S. multinational companies are required by law to fill out the surveys, but they are also reassured of confidentiality. Since the data are not used for tax or financial reporting purposes, there is no incentive to manipulate the data.

A few recent papers have considered profit shifting with novel sources of data. Dowd, Landefeld, and Moore (2017) use U.S. Treasury tax return data; their crucial insight is that the elasticity of the tax base with respect to tax rates is nonlinear, such that companies are far more responsive at low tax rates than they are at high tax rates. This finding helps resolve several puzzles in prior empirical work, including the large fraction of profit shifting activity that is destined for the lowest tax rate countries, documented in Clausing (2016). This finding also explains the discrepancy between the low elasticities of studies that relied on financial accounting databases (such as Orbis) that do not include most tax haven data and the larger elasticities of studies that rely on survey and tax data.

Two recent papers have extended the work on profit shifting to consider its effects on domestic productivity measurement, in Guvenen et al. (2018), and on macroeconomic statistics more generally, in Tørsløv, Wier, and Zucman (2018). These studies provide important evidence of the scale of the profit shifting problem as well as its pervasiveness in economic data.
Studies of the TCJA are relatively speculative at this point, and to my knowledge, there is not yet substantial work estimating how the legislation will affect profit shifting. Dharmapala (2018) has considered the likely consequence of the law on the tax burdens on foreign income faced by U.S. multinational companies. Drawing on prior research, he finds that the legislation is likely to raise the tax burden on foreign income for many multinational companies. There have also been some early analyses of possible effects on other countries, in Spengel et al. (2018) and Beer, Klemm, and Matheson (2018). Both of these studies focus primarily on the U.S. statutory rate change, rather than that the international provisions of the law.

III. Profit Shifting Before Public Law 115-97 (TCJA)

Under prior law, the U.S. had a purportedly “worldwide” tax system. Foreign income was taxable in the United States, with tax credits provided for foreign taxes paid to avoid double taxation. Still, there were caveats to the worldwide treatment. Tax was not due until repatriation, and cross-crediting was allowed, such that excess credits from high-tax countries could be used to offset U.S. tax due on income from low-tax countries. As time went by, lower corporate tax rates abroad left fewer U.S. multinational companies with excess credits. Companies were often reluctant to repatriate foreign income, due to the nagging suspicion that a better deal was to be had in the future, in comparison with paying the full U.S. rate. This suspicion was only fueled by a temporary tax holiday on repatriated earnings (with a repatriation tax rate of 5.25 percent), offered as part of the American Jobs Creation Act of 2004. In the end, the U.S. government raised very little, if any, revenue by taxing foreign income, since foreign tax credits offset
income that would have otherwise been taxable (e.g., royalty income), and companies were reluctant to repatriate without holidays or offsetting tax credits.\textsuperscript{8}

Under this system, deferral provided a large incentive to shift profits to havens offshore, where they would be taxed more lightly and might ultimately receive favorable treatment upon repatriation. And, regulatory changes in the late 1990s added fuel to the fire, by facilitating the creation of “stateless income”, whereby companies created complicated chains of ownership in order to further reduce their worldwide tax obligations, often resulting in income that completely avoided tax altogether.\textsuperscript{9}

There is no shortage of casual evidence indicating that profit shifting is a big problem. For example, on the eve of the TCJA, U.S. multinational companies were widely reported to have at least $2.6 trillion in foreign earnings sitting offshore, about $1 trillion of which was in cash, typically the result of prior profit shifting activity. In countries like Bermuda and the Cayman Islands, the profits booked by U.S. multinational affiliates were an order of magnitude larger than the entire size of the local economy.\textsuperscript{10} And companies themselves were vocal about the difficulty of having their foreign profits “locked out” by fear of repatriation tax, even though those funds were easily borrowed against, creating the equivalent of a tax free repatriation, and were also frequently already invested in U.S. capital markets, providing a source of capital for the larger U.S. economy.\textsuperscript{11}

\textsuperscript{8} See, e.g., Altshuler and Grubert (2001).
\textsuperscript{9} A detailed treatment of this problem is provided in Kleinbard (2011). See also Mintz and Weichenrieder (2010).
\textsuperscript{10} See Gravelle (2015).
\textsuperscript{11} A tax free repatriation results when a company borrows (perhaps using foreign cash as collateral) to finance domestic investments. The interest paid is deductible, but the interest earned on the cash abroad is taxable. These two tax events cancel if the interest rate is the same, and it is as if the company had access to its offshore earnings.
In Clausing (2016), I estimate that profit shifting likely cost the U.S. government between $77 and $111 billion each year by 2012. In this section, I update these estimates to 2015, making two changes in methodology. First, I no longer provide a “scaling up” of the estimate of profit shifting by U.S. multinational firms to include likely profit shifting by foreign multinational firms. Instead, I focus solely on the behavior of U.S. based multinational firms. This decision focuses on the subset of companies that are most affected by the change in U.S. tax law, and it also focuses on the companies for which we have the best data. This means that estimates in this paper should be smaller than those in the prior analysis, all things equal.

Second, I provide a more sophisticated measure of the share of the profits shifted abroad that truly “belong” to the U.S. Treasury, rather than to foreign government treasuries. In prior work, I assumed that the share of profits that would accrue to the United States (relative to foreign governments) was the same as the ratio of foreign affiliate transactions with U.S. parents, relative to transactions with affiliates in other countries.

Now, I instead assign shifted profits to countries’ tax bases based on a formula that reflects where economic activities are occurring; this should be a more accurate estimate of where profits would be in a counterfactual world without profit shifting. I rely on both supply and demand factors in the formula, focusing on activities that are less manipulated for tax purposes. In particular, I use a formula that is 50 percent sales, 25

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12 2012 was the most recent year with available data when that study was completed. This estimate represents the revenue cost of profit shifting relative to a counterfactual world without profit shifting. Of course, most legislative “solutions” to profit shifting will not completely eliminate profit shifting. This estimate should not be viewed as revenue that would result from any particular legislative proposal.

13 I exclude assets from the formula since they are typically more tax-sensitive than other factors.
percent employment, and 25 percent employee compensation. The latter weights are meant to balance not just where jobs are located, but also where high-wage jobs are located. Of course, this formula, like all such formulas, is somewhat arbitrary; below, I also provide alternative estimates with different formulas.

Otherwise, the methodology follows Clausing (2016). Like the prior study, I perform estimates for two data series, gross income and direct investment earnings, but here I report only direct investment earnings results, the more conservative estimate. There is some concern that the gross income series may include income that is double-counted due to chains of ownership and holding companies. This is not a problem with the direct investment earnings series, although that series omits some types of income, and there is no way to cleanly separate the double-counting issue from the other measurement differences.\textsuperscript{14} The use of a third-series, “profit like return”, was rejected since these data are based on a return on production, and as a consequence, they miss many “paper profits” that are booked in tax havens.\textsuperscript{15}

To estimate the movement of the tax base due to profit shifting, the analysis proceeds in several steps. First, the elasticity of the tax base with respect to effective tax rates is estimated.\textsuperscript{16} These elasticities are used to establish the counterfactual amount of

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\textsuperscript{14} Throughout the paper, the BEA direct investment earnings series is adjusted to reverse the BEA adjustment for the parent equity share, thus considering the full earnings rather than the share of those earnings that are owned by U.S. parents. In addition, foreign taxes are added back to the net totals, so that the earnings reflect before-tax earnings, comparable to the gross income series.

\textsuperscript{15} For example, in 2015, BEA data indicate only $1.8 billion in profit-like return in Bermuda, whereas the adjusted direct investment earnings series implies about $54 billion in profit, and the gross income series shows about $71 billion in profit.

\textsuperscript{16} Since the US tax rate is constant during this period, elasticity estimates based on tax rate differences would be identical to estimates based on tax rates.
profit located in each country, absent profit shifting incentives. This procedure generates large reductions in profits booked in low-tax countries; these “excess” profits are then reassigned to other countries’ tax bases based on the formula.17

Table 1 considers eight regressions examining the tax elasticity of the direct investment series; data cover the period of 2000-2015 for the countries where the BEA provides detailed data.18 The first four columns are pooled estimates. The latter four columns employ country-specific fixed effects, allowing each country to have its own base rate of earnings, and only estimating the tax sensitivity of the tax base due to within country changes in tax rates, not utilizing between country variation in tax rates. Different columns include additional control variables; columns (2) and (6) include macroeconomic variables and the distance of the country from the United States; columns (3) and (7) include affiliates’ plant, property, and equipment and employment, and columns (4) and (8) include both sets of control variables. While it may seem ideal to include as many control variables as possible, one also runs the risk of underestimating tax elasticities if one includes other variables that are also influenced by profit shifting incentives. For example, some real economic operations are likely sensitive to profit

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17 An alternative approach, followed by Guvenen et. al. (2018), is to simply assign companies’ global income based on a formula, effectively simulating what income would be in each country under a formulary apportionment tax system. Here, this approach is not feasible since it is not a series for US income that is comparable to the series used for foreign income. In particular, the US net income series includes some foreign income. There is a US profit-like return series, but the foreign profit-like return series may be missing important quantities of shifted income; for example, the 2015 preliminary BEA data show only $1.8 billion in profit-like return in Bermuda.

18 Due to regulatory changes in the late 1990s that substantially changed the nature of profit shifting, I constrain my analysis to the period of 2000-2015 to best reflect the incentives at work in recent years.
<table>
<thead>
<tr>
<th></th>
<th>Columns 1-4: Pooled Regressions</th>
<th>Columns 5-8: Country Fixed Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Tax rate</td>
<td>-4.066* (0.383)</td>
<td>-4.181* (0.316)</td>
</tr>
<tr>
<td>GDP</td>
<td>0.475* (0.027)</td>
<td>0.118* (0.036)</td>
</tr>
<tr>
<td>GDP p.c.</td>
<td>0.445* (0.035)</td>
<td>0.241* (0.027)</td>
</tr>
<tr>
<td>Distance</td>
<td>-0.298* (0.051)</td>
<td>0.0220 (0.037)</td>
</tr>
<tr>
<td>PPE</td>
<td>1.149* (0.034)</td>
<td>1.007* (0.036)</td>
</tr>
<tr>
<td>Empl.</td>
<td>-0.316* (0.033)</td>
<td>-0.323* (0.047)</td>
</tr>
<tr>
<td>N</td>
<td>788</td>
<td>779</td>
</tr>
<tr>
<td>$R^2$</td>
<td>0.13</td>
<td>0.52</td>
</tr>
</tbody>
</table>

**Note**: All variables are in natural logs except the tax rate. Direct investment earnings have been adjusted to add back foreign taxes paid and to reverse the BEA adjustment for the U.S. parent equity ownership percentage. **Tax rate** is the effective tax rate (taxes paid relative to direct investment earnings); it is bounded at 0 and 60 percent. **GDP** and **GDP p.c.** refer to gross domestic product in level and per-capita terms; data are from the World Development Indicators database. **Distance** is port distance between the country and the United States. **PPE** is plant, property and equipment and **Empl.** is employment.

shifting possibilities, and, especially in the case of havens, GDP numbers are also influenced by profit shifting.

In the end, all specifications show large, statistically significant tax effects, with an average semi-elasticity across the eight columns of -3.0. Similar regressions, reported in Appendix A, were also run for the gross income series (and its associated effective tax rate). In those eight regressions, the tax semi-elasticity averages -3.3. In the analyses that follows, I use the average elasticity for the direct investment earnings series, -3.0. This is
similar to the elasticity used in Clausing (2016) and to those found by the meta-analyses of de Mooij and Ederveen (2003, 2008) and de Mooij (2005), although it is higher than the typical elasticity reviewed in Dharmapala (2014). Nonetheless, the latter review relies on many studies that use Orbis data, where tax haven coverage is nearly non-existent, a problem discussed above. As this analysis shows, nearly all profit shifting occurs with respect to haven countries.

In fact, as Dowd, Landefeld, and Moore (2017) persuasively argue, tax elasticities are likely to be nonlinear, such that tax bases are more responsive to changes in tax rates at lower tax rates, and less responsive at higher tax rates. In this analysis, I also provide estimates using non-linear elasticities, an innovation relative to Clausing (2016). Non-linear elasticities are calculated by using both the tax rate and the square of the tax rate in the same specifications as Table 1, and averaging across the same eight specifications.\footnote{The responsiveness of the tax base to tax rate differences is then calculated based on the two countries in question.}

Figure 1 shows the total estimate of U.S. government revenue loss due to profit shifting, assuming that additions to the U.S. tax base would be taxed at an effective rate five percentage points lower than the statutory rate.\footnote{This adjustment allows for various provisions that narrow the tax base. Of course, assuming additional profits would be taxed at the statutory rate would increase this estimate, while assuming lower effective tax rates would reduce this estimate.} Revenue losses due to profit shifting climb steeply in recent years. Estimates (not reported) are higher for the gross income series than for the direct investment earnings series shown below. Table 2 provides more detail on these estimates for three years: 2005, 2010, and 2015. For both estimates, 2015 revenue losses are more than 2.5 times those for 2005. By 2015, estimates suggest that revenue losses from profit shifting total an amount between 27 and 33 percent of the U.S. corporate income tax base.
Figure 1: U.S. Federal Tax Revenue Lost Due to Profit Shifting (2000-2015)

![Graph showing revenue lost due to profit shifting from 2000 to 2015.]

Table 2: Estimates of Reduced U.S. Revenue due to Profit Shifting, 2005-2015 Using Adjusted Direct Investment Earnings Data

<table>
<thead>
<tr>
<th>Year</th>
<th>2. Total Reported Income/Earnings in Foreign Affiliates (billions)</th>
<th>3. Estimated Increased U.S. Tax Base without Income Shifting (billions)</th>
<th>4. Change in Revenue due to Income Shifting (billions)</th>
<th>5. Actual Corporate Tax Revenue, Federal Level (billions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Estimates Using Linear Elasticities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>517</td>
<td>123</td>
<td>- $37</td>
<td>278</td>
</tr>
<tr>
<td>2010</td>
<td>848</td>
<td>261</td>
<td>- $78</td>
<td>191</td>
</tr>
<tr>
<td>2015</td>
<td>810</td>
<td>309</td>
<td>- $93</td>
<td>344</td>
</tr>
<tr>
<td></td>
<td>Estimate Using Non-Linear Elasticities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>517</td>
<td>147</td>
<td>- $44</td>
<td>278</td>
</tr>
<tr>
<td>2010</td>
<td>848</td>
<td>311</td>
<td>- $93</td>
<td>191</td>
</tr>
<tr>
<td>2015</td>
<td>810</td>
<td>379</td>
<td>- $114</td>
<td>344</td>
</tr>
</tbody>
</table>

Note: The adjusted direct investment earnings series reverses the BEA’s adjustment for the U.S. parent equity share and adds back foreign taxes paid, so it is an estimate of earnings before tax.
Estimates using the gross income series are larger, but not reported here to focus on the more conservative data series. Since it is likely that the true elasticities are non-linear, my best estimate indicates that profit shifting by U.S. multinational companies has revenue costs of about $114 billion per year by 2015. While this estimate may seem large, it fits well with a changing corporate landscape where market power is increasingly concentrated, corporate profits are rising steadily, and corporate profits are increasingly booked offshore.\textsuperscript{21}

Figure 2 provides a depiction of the distribution of profit shifting across countries, using the direct investment earnings series data; the pattern is quite similar for the gross income series. 95 percent of the observed profit shifting magnitudes are a result of shifting to countries with effective tax rates under 13.125 percent, and 80 percent of the profit shifting is destined for by just seven havens: Bermuda, the Caymans, Ireland, Luxembourg, Netherlands, Singapore, and Switzerland. Of the $810 billion in foreign direct investment earnings, $458 billion are booked in these seven havens, and I estimate that $368 billion of these earnings are due to profit shifting using the linear elasticity; nearly all of the profit in havens is due to profit shifting using the non-linear elasticity.

No estimate is without elements of uncertainty, but I have proceeded with caution. First, the baseline elasticity is an outcome of reasonable specifications of how direct investment earnings relate to taxes; I choose an average elasticity across eight specifications that is in keeping with the larger literature.\textsuperscript{22} I use non-linear elasticities for

\textsuperscript{21} Corporate profits as a share of GDP (in either before-tax or after-tax terms) are at historically high levels, roughly fifty percent higher this century than in decades prior. Treasury economists have found that the corporate tax base is increasingly comprised of excess profits. See Power and Frerick (2016).

\textsuperscript{22} This elasticity is in keeping with sources that are not reliant on those financial accounting databases that omit haven observations (and thus most profit shifting).
Figure 2: Main Locations of Profit Shifting, 2015

Note: The seven big havens are Bermuda, the Caymans, Ireland, Luxembourg, Netherlands, Singapore, and Switzerland. Data on total profits are from the US BEA; other series are based on author calculations.

Some estimates; these raise the cost of profit shifting due to the fact that so much income is concentrated in the lowest tax rate countries. Second, the assignment of shifted profits back to countries’ tax bases is based on an arbitrary formula. Still, the formula itself reflects both supply and demand sources of value, and it is a reasonable indication of the source of value. Alternative formula choices are explored in Appendix B, and estimates using this formula lie in the middle of possible formula choices.

Third, I have erred on the side of caution, and only employed the direct investment earnings series as a measurement of income; this series does not have a double-counting problem. Fourth, the effective tax rate in the United States is assumed to be five percentage points lower than the statutory rate, to capture provisions that narrow the tax base. This effective rate is applied to the larger U.S. tax base (absent profit
shifting) to assess effects on U.S. government revenues. Since effective rates can vary substantially by industry, this is a simplification. Finally, this method does not capture methods of avoidance that reduce worldwide taxable income, and several methods of tax avoidance may go undetected in the BEA data.\textsuperscript{23} Clausing (2016) has an in-depth discussion of these sources of uncertainty.

IV. Profit Shifting After Public Law 115-97 (TCJA)

Within the new U.S. tax legislation, there are several important tax law changes that affect profit shifting incentives for U.S. based multinational companies; some of these provisions also affect shifting incentives for foreign multinationals. Table 3 summarizes the main provisions and their likely effects on profit shifting.

The statutory rate cut is dramatic, 14 percentage points, although the effective rate cut is lower than that (10 percentage points) due to several base-broadening provisions in the legislation. JCT calculates that the other business tax provisions reduce the 10-year revenue cost of the corporate tax cut from about $1.3 trillion to about $650 billion. The domestic production deduction is repealed, net operating losses are treated less favorably, research expenditures are amortized beginning in 2023, and debt-financed investments are treated somewhat less favorably.\textsuperscript{24} Thus, the overall incentive to earn income in the United States has improved, but not by the full 14 percentage points implied by the statutory rate decrease. In addition, the incentive to locate debt-financed investments in

\textsuperscript{23} This analysis does not consider the tax responsiveness of real factors (such as employment, assets, etc.); this consideration could lead to an underestimate of the tax responsiveness of paper profits, since the elasticities may be biased downward in some of the specifications of Table 1.

\textsuperscript{24} Arguably the interest limitations of the business tax provisions will also affect profit shifting, but these effects are not analyzed in this paper.
Table 3: Profit Shifting Incentives Before and After the TCJA

<table>
<thead>
<tr>
<th></th>
<th>Before TCJA</th>
<th>After TCJA</th>
<th>Effect on Profit Shifting</th>
<th>10 yr JCT Revenue Score, $b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Statutory Corporate Rate</td>
<td>35</td>
<td>21</td>
<td>Reduced incentive to shift out of US base</td>
<td>-1,349 (net: -654)</td>
</tr>
<tr>
<td>Tax Treatment of Foreign Income</td>
<td>No tax until repatriation, then 35 less foreign tax credit(^{25})</td>
<td>Not taxable unless subject to minimum tax</td>
<td>Increased incentive to shift out of US base</td>
<td>-224</td>
</tr>
<tr>
<td>Global Minimum Tax</td>
<td>N/A</td>
<td></td>
<td>0 until threshold, then 10.5; up to 13.125 if blended with income from higher tax countries(^{26})</td>
<td>Reduced incentive to shift profits to havens; increased incentive to earn in other countries</td>
</tr>
<tr>
<td>Foreign-Derived Intangible Income Deduction (FDII)</td>
<td>N/A</td>
<td>Tax preference for profits from export sales above threshold</td>
<td>Likely to have negligible effect</td>
<td>-64</td>
</tr>
<tr>
<td>Base Erosion and Anti-Abuse Tax (BEAT)</td>
<td>N/A</td>
<td>An add-on minimum tax when payments to foreign related parties exceed threshold</td>
<td>Reduced incentive to shift income out of US base</td>
<td>150</td>
</tr>
</tbody>
</table>

Note: The revenue numbers are from the December 18, 2017 tables provided by the JCT (JCX-67-17).

the United States has decreased, as noted by Gravelle and Marples (2018). Further, most profit shifting activity (95 percent in 2015) occurs with respect to countries with tax rates below the global minimum tax rate (up to 13.125 percent), so it is not clear that a reduction to 21 percent is enough to encourage inbound profit shifting.

\(^{25}\) Lighter rates may apply, or be anticipated, due to holidays, anticipated holidays, or expectation of future favorable treatment upon transition to a new tax system. Permanently reinvested earnings are not taxed in the United States, but might be expected to encounter deemed repatriation tax upon transition to a territorial system.

\(^{26}\) These rates are scheduled to increase after 2025, to 13.125 and 16.4 percent. This analysis ignores interaction effects between the provisions.
The TCJA was widely advertised as a move toward a territorial tax system, and indeed, foreign income is typically exempt from taxation, although there are important exceptions. Still, there is no tax triggered by repatriation, so whatever tax benefits are associated with moving income offshore occur without fear of later US tax. Holding other provisions constant, this provision will increase the incentive to shift income out of the United States tax base.

Under prior tax law, tax upon repatriation resulted in a “lock-out” effect, and this lock-out effect may have provided a speed limit on the booking of income offshore. As recognized since Hartman (1985), repatriation taxes need not create lock-out effects for mature firms, if future tax treatment is both certain and unchanging. However, in practice, certainty was lacking, causing companies to stockpile earnings offshore in the hope of more favorable future tax treatment. Indeed, more favorable tax treatment eventually arrived with the TCJA, and it temporarily arrived earlier, with a holiday in 2005. While waiting for favorable treatment, the “lock-out” effect likely dampens the overall enthusiasm for shifting profit offshore, since shareholders are prevented from accessing the profits unless they pay the tax due upon repatriation.

Despite the shift to a territorial system under the TCJA, there are significant provisions under the law that may actually result in a higher net burden on foreign income for US multinational companies. While there is no tax due upon repatriation, there is a minimum tax due currently on global intangible low-taxed income, or “GILTI” income. While the first ten percent return on assets is exempt from the GILTI tax (providing a perverse incentive to increase real investments abroad), profits beyond that

27 Since the repatriation tax is unavoidable, companies will have the incentive to invest in whatever location generates the greatest profits, knowing that when the income is moved, it will incur a one-time repatriation tax regardless.
amount are taxable at half the U.S. tax rate.\textsuperscript{28} Under plausible circumstances, this will actually raise the burden on foreign profits relative to prior law, as argued by Dharmapala (2018) and others.

But will the GILTI provision cause profit to be shifted into the United States? In practice, that outcome is questionable. Since the TCJA uses a \textit{global} minimum tax, tax obligations in higher tax countries can offset the minimum tax due on haven income. Therefore, companies can blend their haven and non-haven foreign income, reducing or perhaps eliminating payments of U.S. minimum tax, and achieving a lower tax rate than the US rate.\textsuperscript{29}

While the global minimum tax discourages profit shifting to havens, it is effectively an “America last” tax policy from the perspective of revenue, since both low-tax and high-tax foreign countries are tax-preferred relative to the United States, if a company is in deficit credit position with respect to GILTI income. (That distinction will be discussed shortly.) Indeed, the GILTI acts as a support to the tax revenues of our trading partners, reducing tax competition pressures. That feature may speak in its favor, as argued by Morse (2018), since it helps combat a race to the bottom in corporate tax competition.

Under the TCJA, the corporate rate may be somewhat lower if the firm has above-normal profits generated by export sales. However, this provision (the FDII) is likely to be challenged by trading partners since it may not be compatible with WTO obligations.\textsuperscript{30}

In addition, since it only applies to export sales, companies will still have an incentive to

\begin{footnotes}
\footnote{The GILTI rate starts at 10.5 percent but is scheduled to increase to 13.125 percent in 2026.}
\footnote{Only 80 percent of the foreign taxes paid are creditable, so there will still be some incentive to seek out lower tax locations.}
\footnote{Sanchirico (2018) discusses the FDII; there is some ambiguity regarding the WTO issue, but the FDII is unlikely to be an effective way to encourage US IP activity or buttress the tax base.}
\end{footnotes}
locate profits offshore if some of the resulting profits are generated by sales to the US market. In addition, there is a perverse incentive to avoid locating real assets in the United States, since those reduce the amount of FDII that is subject to the deduction, which is only allowed on profits above a normal return on assets.

Finally, there is the base-erosion anti-abuse tax, or the BEAT. This provision is an add-on minimum tax that applies whenever deductible payments to foreign related entities exceed a threshold. There are many curious interactions between the BEAT and other provisions that can also raise the tax burden associated with the minimum tax. While the BEAT is complicated and difficult to model, it is a feature of the tax landscape that should lower the incentive to shift profits to low-tax locations for both U.S. and foreign multinational companies. Indeed, one salutary feature of the tax is that it treats both US and foreign taxpayers on the same terms.

Once the dust clears, the JCT forecasts that the international provisions of the new law will lose revenue, setting aside the one-time deemed repatriation tax revenue. (This one-time provision is a tax break relative to prior law, but it raises revenue in the ten-year JCT estimate.) In the ten year window, the international provisions lose about $14 billion in revenue, on top of the $654 billion lost due to the corporate tax cuts.31

Modeling Assumptions

To consider the overall effects of these tax law changes on profit shifting incentives, several modeling assumptions are needed. First, both above and in prior work, I account for base-narrowing provisions that lower the marginal effective tax rate below the statutory rate. Given the base-broadening provisions of the TCJA, a smaller reduction

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31 There are also about $265 billion in net tax cuts for pass through businesses; these are ignored in the present analysis.
in the effective rate is now justified. Following the assumptions of the Congressional
Budget Office, I will use a rate of 20 percent to capture the new marginal effective rate.\textsuperscript{32}

Modeling the global minimum tax rate is difficult, since it depends on the
circumstances of individual companies, which are likely to vary widely across industries,
and depend on the mix of foreign affiliates’ locations. For companies with deficit credits,
that do not have enough foreign tax credits to completely offset their GILTI tax, I model
the GILTI as \textit{raising} the tax rate on haven income from its current rate to something
between 10.5\% and 13.125\%. Since foreign tax credits are only creditable at a rate of 80
percent, for a country with a tax rate of 0, the GILTI rate will be 10.5\%, but for a country
with a tax rate between 0 and 13.125, the GILTI tax rate will slowly increase from 10.5%
to 13.125\%. For the purpose of the present analysis, I ignore the zero rate on the first ten
percent return on assets; Sullivan (2018) indicates that, at present, this is likely to be a
small benefit for most major multinational companies.\textsuperscript{33}

For higher tax countries, since foreign tax credits can be used to offset minimum
tax due on low-tax country income, I model the change in tax rate as a decrease to 10.5
percent plus 20 percent of the foreign rate. Since the company has deficit credits, any
marginal dollar earned abroad will help offset GILTI tax, effectively lowering its overall
tax burden. For example, a dollar of income earned in a 25 percent tax rate country (e.g.,
the Republic of Korea) will increase the parent company GILTI tax obligations by 10.5
cents, but will also reduce prior GILTI tax burdens by 20 cents, or 80 percent of the 25

\begin{footnotesize}
\textsuperscript{32} See the supplementary tables accompanying CBO’s April 2018 \textit{The Budget and Economic
Outlook: 2018 to 2028}, available here: \url{https://www.cbo.gov/about/products/budget-economic-
data\#10}. One could quibble with any choice of rate. The 20 percent rate is the CBO rate for 2018-
2021 on all corporate capital, weighted across investment and industry types.

\textsuperscript{33} If companies respond to the exclusion from tax of the first ten percent return on assets by
offshoring more real investments, this could change over time.
\end{footnotesize}
cent Korean tax burden. So, the net tax consequence of the additional income earned abroad is 25 cents paid to the Korean government, plus 10.5 cents of additional GILTI tax, minus 20 cents of reduced GILTI burden on haven income, totaling 15.5 cents, which equals 10.5 percent plus 20 percent of the 25 percent Korean tax.

For companies with excess foreign tax credits, where their foreign operations already generate sufficient foreign tax credits to wipe out any GILTI tax due, tax incentives post-TCJA are similar to those under pre-TCJA law, only without the fear of tax due upon repatriation. The marginal consequence of earning another dollar in a haven is the haven rate, since existing foreign tax credits will eliminate any GILTI due. The marginal consequence of earning an additional dollar in Korea will be the Korean tax rate, since there are not additional benefits associated with earning in Korea due to the existing excess of foreign tax credits.

One essential question is how many companies (and how much income) will face the incentives of deficit credit firms and how many companies (and how much income) will face the incentives of excess credit firms. For U.S. multinational companies as a group, the effective tax rate on their foreign income (in total) is very similar to the 10.5 percent GILTI cutoff.34 Thus, one plausible assumption is that about half of income is held by companies in excess credit position and half of income is held by companies in deficit credit position, with respect to the global minimum tax. That is the assumption I will adopt initially, but I provide a range of estimates that depend on different values of that parameter.

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34 It is a bit lower using the gross income series, at 8 percent, and a bit higher using the direct investment earnings series, at 11 percent.
Of course, as company behavior changes in response to the new tax law, these parameters will likely evolve. The most recently available data, in Table 4, indicate that only 28 percent of foreign direct investment earnings are booked in countries with effective tax rates above 13.125 percent. Therefore, at present, the global minimum tax should act as an important force blunting U.S. multinationals’ tax sensitivity to the tax rates of foreign countries, for those companies in deficit credit position.

Table 4: Distribution of US MNC Profits, 2015

<table>
<thead>
<tr>
<th>Direct Investment Earnings Series</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Value, $b</td>
<td>809,714</td>
</tr>
<tr>
<td>Share of Value with Known Effective Rate</td>
<td>95.6%</td>
</tr>
</tbody>
</table>

**Of Known Rate Countries: Shares**

| Effective Rate < 10.5 Percent | 70.9% |
| Effective Rate Between 10.5 and 13.125 Percent | 1.2% |
| Effective Rate Greater than 13.125 Percent | 27.9% |

Note: The Direct Investment Earnings series has been adjusted to add back foreign taxes paid and to reverse the BEA adjustment for the parent equity share percentage. Data are from the BEA.

While both the adoption of territorial treatment of some income (and the absence of tax upon repatriation) and the BEAT should affect profit shifting incentives, they work in opposite directions, and are difficult to model precisely. Territorial treatment, by removing the possibility of tax upon repatriation, should heighten tax responsiveness, as some evidence from the UK suggests.$^{35}$ The BEAT, by discouraging related party payments that facilitate profit shifting, should reduce tax responsiveness. JCT estimates suggest that the former effect will dominate the latter in terms of revenue consequences,

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but since the BEAT is a novel provision, and U.S. territorial adoption is idiosyncratic, it is difficult to view these numbers as more than educated guesses. This paper will not model either provision. If the JCT is correct, US revenue changes due to changes in profit shifting will be lower than what is implied by my estimates of the international provisions below, since the effects of territorial treatment may outweigh the effects of the BEAT. Out of necessity, there are also other effects of changes in the law that are not modeled here.\textsuperscript{36}

\textit{Estimates of Changes in Profit Shifting After TCJA}

The lower U.S. corporate tax rate makes a difference in the marginal incentive to shift income, but even more important is the global minimum tax. Before the tax law changes, the difference in effective tax rates between the United States and major trading partners varied from nearly -30 percent to + 30 percent. At one extreme lie countries like Bermuda with an effective tax rate approaching zero; at the other end is Greece, where the effective tax rate for U.S. foreign affiliates was nearly 60 percent in 2015.

After TCJA, things are different. The U.S. tax rate declined, and foreign tax rates are now highly compressed for deficit credit companies, from a 10.5 percent rate (on above normal returns) for zero tax rate countries, to a $10.5 + (0.2 \times T_f)$ rate, where $T_f$ is the foreign tax rate, for high tax countries, since those streams of income can be blended with GILTI income. For any foreign country with a tax rate less than 52.5 percent, this rate is lower than the new U.S. statutory rate. At 52.5 percent, the two rates are even. For

\textsuperscript{36} Every journey begins with a single step. Unfortunately, this exercise would become extremely complicated, and would require a great deal of company-specific information, if all of the effects of the legislation were considered together. Among other things, I do not consider the effects of the limitations on interest deductibility, the effects on accounting measures of tax liabilities (both short and long run), interactions between the GILTI and the BEAT (and indeed between other provisions), effects on the “real” shifting of jobs or assets (that may be encouraged by elements of the GILTI and the FDII), and the likely tax policy responses of other countries.
excess credit companies, aside from the lower U.S. rate and the absence of tax upon repatriation, little is changed. There are still substantial incentives to seek out Bermuda income (which faces a roughly zero marginal rate) and to avoid Greek income, which will face the full marginal foreign rate.

Figure 3 shows these tax treatments for excess credit and deficit credit companies. The old effective tax rates (marked by the blue diamonds) are also the rates faced by companies with excess credits; they range from about zero to about 60 percent. As Figure 3 indicates, the new GILTI-inclusive rates for deficit credit companies (marked by the green circles) are far more compressed than those rates, ranging from 10.5 percent to about 22 percent. The GILTI’s contribution to the total tax rate for low tax countries is also indicated in the figure, marked by red squares. Again, this figure simplifies the picture, since it ignores many details, including the impact of the BEAT, interactions between the BEAT and the GILTI, the issue of losses, and other considerations.
Figure 3: Effective Tax Rates for GILTI Income, Before and After TCJA

Note: Author calculations based on US BEA data.

In modeling the likely effects of this legislation on profit shifting, one should distinguish between the steady-state response to changes in tax incentives and the immediate response. Immediately after the legislation goes into effect, it is unlikely that companies will reorient their profit shifting in response to compressed tax rates. It’s true that the gap between Bermuda and Greece is much smaller than it once was for some firms, but if one has profit booked in Bermuda instead of Greece, it hardly pays to rearrange things so that the income is now booked in Greece. Simply put, a lower tax rate is still lower. The companies that are currently engaged in profit shifting have already set up vast accounting and legal operations surrounding minimizing global tax burdens;
given the magnitudes involved, it is unlikely that these operations will cease if they can only save ten percent instead of thirty.37

On an ongoing basis, for companies with deficit credits, it is apparent that the United States will be the least desirable place to book income, since the GILTI rate is well below the U.S. rate, and high-tax country income is also tax-preferred to U.S. income as long as the foreign rate is below 52.5 percent. For excess credit companies, booking income in the United States remains preferable to foreign income so long as the U.S. rate is lower than the foreign rate, which is more likely now, since the U.S. statutory rate has dropped to 21 percent. But, haven income is better still.

In the steady-state, once companies and their tax planners have adjusted to the new tax environment, profit shifting is less lucrative than it was previously, and that should have material effects on the extent of profit shifting. The following analysis undertakes a preliminary analysis of the likely steady-state response of U.S. multinational companies profit shifting behavior in light of the new tax environment, focusing in particular on the GILTI global minimum tax and the change in the statutory rate.

Figure 4 shows the estimated change in profits for each country, ordered by their 2015 effective tax rate, due to the global minimum tax only. The analysis makes several assumptions that are then varied. It assumes that half of the foreign income of U.S. multinational companies is held by companies in deficit credit position and half is held by those in excess credit position, with respect to the GILTI tax. For the companies in deficit credit position, the effective tax rate abroad changes as indicated by Figure 3; for companies in excess credit position, the effective tax rate abroad is unchanged. Changes

37 Indeed there is substantial evidence that suggests that large companies do the vast majority of all profit shifting, perhaps due to the large fixed costs associated with setting up the associated legal and accounting expertise. See, e.g., Wier and Reynolds (2018).
in the tax rate are multiplied by the elasticity of the tax base with respect to the tax rate, using the non-linear elasticities, as detailed in Section III above. (Results with linear elasticities are footnoted.) That tax responsiveness is then applied to the direct investment earnings data from 2015, the most recent year with available data.

The total tax base change across all foreign countries is then allocated across countries according to a formula, as in section III above, that reflects both the employment by U.S. affiliates (number of employees and employee compensation, each weighted ¼) and sales of U.S. affiliates (weighted ½) in different countries of the world, relative to the global totals. Alternate formulas generate the same pattern that is documented in Appendix B.

**Figure 4: Tax Base Change for U.S. Affiliates due to Global Minimum Tax**  
(ordered by Effective Tax Rate in 2015, using non-linear elasticities)

Note: Figure shows results of author analysis using the adjusted direct investment earnings series.
These calculations imply that the GILTI tax will reduce profits booked in havens by 13.3 percent, increasing profits booked in other high-tax countries by 13.6 percent, and increasing the U.S. tax base by $42 billion, resulting in about $8 billion in tax revenue each year at new tax rates.\(^\text{38}\)

Beyond the global minimum tax, the reduction in the U.S. statutory rate also generates new profit shifting incentives. However, the elasticity here is lower, since most profit shifting occurs with respect to the lowest tax rate countries, and 21 percent is still well above that threshold. Based on prior work, I estimate that the relevant elasticity for the U.S. rate change is \(-0.7\).\(^\text{39}\) This acts to uniformly reduce tax bases across foreign countries, by about 7 percent, increasing the tax base accordingly in the United States.

When the minimum tax and that U.S. rate change are taken together, they result in tax base changes that are summarized in Table 5. Note that these numbers are not revenue estimates for any particular provision. Instead, these numbers show an estimate of how behavioral responses by companies may change the location of U.S. affiliate profit shifting in the steady-state, after the adjustment to the new tax law is complete. Also, estimates are based on 2015 data since that is the most recent year with available data; hence, this table shows the change to tax bases in 2015 if TCJA had already been fully in effect (and adjusted to) in 2015.

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\(^\text{38}\) Had linear elasticities been used instead, profits in havens would have declined by 11 percent, a smaller reduction due to lower tax responsiveness. Profits booked in high-tax countries would increase by 17 percent, a higher amount due to the fact that there is greater increase in their tax base for deficit credit companies with the constant elasticity assumption. The U.S. tax base would increase by less, $20 billion, resulting in an additional $4 billion in revenue. 

\(^\text{39}\) This elasticity is in line with the number suggested by Dowd, Landefeld, and Moore (2017). In regressions focused on the relevant elasticities for high-tax countries (starting with tax rates 25 percent and higher), tax coefficients were not always statistically significant or negative, but averaged across specifications, they were in the similar to those suggested by the Dowd, Landefeld, and Moore study.
Table 5: Changes in Corporate Tax Base Due to Reduced Profit Shifting in TCJA

<table>
<thead>
<tr>
<th>Adj. Dir. Inv. Earnings, billions</th>
<th>Tax Base Change due to Global Min. Tax, billions</th>
<th>Tax Base Change due to Global Min. Tax, percent</th>
<th>Tax Base Change due to U.S. Rate Change, billions</th>
<th>Total Change in Tax Base for U.S. Affiliates, percent</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min Tax Countries</td>
<td>558</td>
<td>-74.5</td>
<td>-13.3%</td>
<td>-39.9</td>
</tr>
<tr>
<td>Others, OECD</td>
<td>148</td>
<td>19.1</td>
<td>12.9%</td>
<td>-10.3</td>
</tr>
<tr>
<td>Others, Non-OECD</td>
<td>68</td>
<td>10.2</td>
<td>14.9%</td>
<td>-4.8</td>
</tr>
<tr>
<td>U.S.</td>
<td>41.7</td>
<td></td>
<td></td>
<td>54.2</td>
</tr>
</tbody>
</table>

U.S. Revenue ($b) $8.3b $10.8b $19.2 b

Note: This analysis considers the steady-state effect on tax bases from the reduced profit shifting due to these provisions. The reduction in the U.S. statutory tax rate is expected to lose a lot of revenue overall; see Table 3. The change in revenue above is calculated at a 20% marginal effective tax rate. BEA data are from 2015.

In the end, the minimum tax reduces the tax base in minimum tax countries by about thirteen percent, increasing the tax base in other countries. Together with the change in the U.S. tax rate, minimum tax countries lose about twenty percent of the U.S. affiliate corporate tax base, whereas higher tax countries, in both OECD and non-OECD groups, gain an increased U.S. affiliate corporate tax base of about 6 and 8 percent, the net of their gain from the minimum tax and their loss due to the statutory rate change. The United States tax base benefits from both changes, increasing by about $96 billion, resulting in a tax revenue gain at new tax rates of about $19 billion. About $11 billion of

40 These changes mask the winners and losers among foreign countries. The big seven havens (Bermuda, the Caymans, Ireland, Luxembourg, the Netherlands, Singapore, and Switzerland) all lose over 20 percent of their tax base; in dollar terms, the largest tax base losers are Luxembourg, the Netherlands, and Ireland, losing more than $15 billion in U.S. affiliate corporate income tax base. On the other hand, Greece, Germany, Italy, Israel, Russia, Costa Rica, South Africa, Finland, and Brazil all experience a greater than 15 percent increase in their U.S. affiliate tax base. Still, since so little profit was booked in these countries originally, the associated dollar amounts are small. The biggest winner in dollar terms is Mexico, with a $2 billion increase in their U.S. affiliate corporate tax base.
that revenue gain is due to the statutory rate change, and about $8 billion is due to the global minimum tax.41

It is relatively simple to change the assumption regarding the fraction of total foreign income held by companies that are in deficit versus excess credit with respect to the global minimum tax; Appendix C provides a range of estimates for situations where between 10 and 90 percent of income is held by companies that have deficit credits with respect to the global GILTI tax.

Neither the adoption of territoriality (the removal of the tax upon repatriation as well as territorial treatment for some income) nor the BEAT are modeled here. From a U.S. perspective, the JCT estimates indicate that territoriality may worsen profit shifting more than the BEAT remedies it. However, the BEAT also affects foreign multinational companies, and for that group of companies, the effects are unambiguous. Both the lower U.S. rate and the BEAT should reduce the incentive to shift income out of the U.S. tax base. However, the behavior of foreign multinational companies is not modeled here.

V. Alternative Policies

There are both incremental and wholesale tax policy changes that would affect the profit shifting landscape more dramatically. Examples of incremental changes include a higher minimum tax rate, or instituting a per-country version of the minimum tax. Either change would raise more U.S. revenue and further reduce profit shifting incentives. Table 6 shows estimates for a per-country version of the minimum tax; this change increases the U.S. revenue gain from the minimum tax substantially, from $8 to $22 billion.

41 Of course, the statutory rate change still loses a lot of revenue; this estimate merely shows that there is some benefit to the US tax base in terms of reduced profit shifting activity.
This change is primarily due to a larger reduction in profit shifting when tax responsiveness is not reduced by the “global averaging” feature of the GILTI; under a per-country tax, no companies would be able to avoid GILTI through cross-crediting with higher-tax income. For foreign countries that are not minimum tax countries, the positive effects of less profit shifting to havens are roughly the same size as the negative effects of less blunting of their higher tax rates via global averaging; together, they are as well off as they were under the global minimum tax.

**Table 6: Effects of a Global Minimum versus a Per-Country Tax**

<table>
<thead>
<tr>
<th></th>
<th>Global Minimum Tax</th>
<th>Per-Country Minimum Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Tax Country US Affiliate Tax Base (%)</td>
<td>-13.3 %</td>
<td>-26.1 %</td>
</tr>
<tr>
<td>Other Foreign Country US Affiliate Tax Base (%)</td>
<td>13.6 %</td>
<td>13.5 %</td>
</tr>
<tr>
<td>US Corporate Tax Base (billions USD)</td>
<td>$41.7 b</td>
<td>$107.5 b</td>
</tr>
<tr>
<td>Implied Additional US Revenue</td>
<td>$8.3 b</td>
<td>$21.5 b</td>
</tr>
</tbody>
</table>

Source: Author calculations based on BEA data and assumptions in text.

Like all analyses in this section, this analysis utilizes nonlinear elasticities. Estimates using linear elasticities are included in Appendix D.

A higher minimum tax rate would also further level the playing field between the United States and lower-tax countries. Indeed, if the GILTI rate were harmonized with the regular U.S. rate, there would no longer be an incentive to shift profit offshore, nor would there be need for BEAT or FDII (for U.S. multinational companies). There would remain an incentive to avoid paying tax in countries with rates higher than that of the United States.
While such changes would reduce profit shifting, there are also concerns. Harmonizing rates on domestic and foreign income basically transforms our tax system into a true worldwide system, with more bite than our prior purportedly worldwide system since foreign income is taxed currently. It is possible that the new lower corporate tax rate would make such a change more palatable. Still, for some reason, the very label “territorial” was fetishized in the debate surrounding the TCJA. In fact, moving to a “territorial” system was deemed more competitive, even though it arguably raised tax burdens on foreign income for many U.S. multinational companies relative to prior law. Still, there is a legitimate argument that a worldwide system harms resident companies in competition with non-resident companies in third markets, potentially distorting ownership patterns of investment in a way that reduces efficiency. The tax disadvantage faced by resident companies could also encourage corporate inversions.

Indeed, there is a clear tradeoff between corporate tax base protection and this notion of competitiveness, on which I’ve written extensively elsewhere.\textsuperscript{42} However, I would argue that both the prior U.S. system and the present one have not struck the right balance between these two policy desiderata.

Instead, both systems put too much emphasis on competitiveness relative to corporate tax base protection. Under the prior system, U.S. multinational companies were the envy of the world in terms of their outsized impact on world markets, their historically large corporate profits, and their savvy tax-planning acumen. U.S. corporate tax receipts were fifty percent lower (as a share of GDP) than that of our typical trading partners’. U.S. companies have a disproportionate presence on Forbes lists of the world’s top 2000 companies, and U.S. corporate profits are about 50 percent higher as share of

\textsuperscript{42} See Clausing (2016b) and Clausing (2018).
GDP (before or after tax) in recent years, relative to prior decades.\textsuperscript{43} Competitiveness does not seem to be a clear problem. On the other hand, as the analysis of section III indicates, the U.S. government loses over $100 billion a year in tax revenue to profit shifting (at prior tax rates).

From this starting point, along comes the TCJA, providing net corporate tax cuts of over $650 billion over the next decade. While some provisions certainly make a dent in the profit shifting problem, the international provisions of the legislation are conflicting, and taken as a whole, will not raise substantial U.S. revenue. Much more could be done to protect the corporate tax base.\textsuperscript{44}

Further, in this fiscal environment, it is unclear that these corporate tax cuts are affordable, as debt to GDP ratios were already scheduled to reach 90 percent over the coming decade prior to the TCJA, and now are estimated to approach 100 percent of GDP over the coming ten years.\textsuperscript{45} While there are certainly other sources of revenue that could be tapped, the corporate tax has an important role to play in our broader tax system. From an equity perspective, it is more progressive than any tax in our system aside from the estate tax, which itself is small, and shrinking under the TCJA.\textsuperscript{46}

From an efficiency perspective, in the presence of expensing and large subsidies for debt-financed investments, the corporate tax largely falls on the “excess profits” of companies, not on the normal return to capital. Taxing excess profits is efficient, and

\textsuperscript{43} For more on the U.S. position in Forbes lists, see Clausing (2018). For more historical and comparative data on U.S. corporate tax revenues and U.S. corporate profits, see Clausing (2016c).

\textsuperscript{44} There are daunting political obstacles, however. The U.S. corporate community has complained about the BEAT and the GILTI, both tougher provisions than expected. Thus, it is likely that there will be pressure to weaken these provisions.

\textsuperscript{45} See Congressional Budget Office (2018).

\textsuperscript{46} For a complete defense of the role of the corporate tax, see Clausing (2016c). For more on the incidence of the corporate tax, see Clausing (2013).
recent research also suggests that taxing the normal return to capital is no more inefficient than labor taxation.\textsuperscript{47} Finally, from a tax administration standpoint, the corporate tax is one of our only tools for taxing capital income, since the vast majority of U.S. equity income goes untaxed by the U.S. government at the individual level.\textsuperscript{48} The corporate tax also has an important role to play as a backstop to the individual tax system, since without a corporate tax, the corporate form generates sheltering opportunities. For all of these reasons, the next round of corporate tax reform should focus on protecting the corporate tax base in order to meet important revenue, progressivity, and efficiency goals.

In addition, there are clever ways to reduce tax competition pressures and combat fears regarding competitiveness. A formulary apportionment system, or a destination-based corporate tax, would lower the tax responsiveness of the tax base, providing a better environment for a robust corporate tax. These policy options are discussed further elsewhere, but they should be carefully considered in future reform efforts.\textsuperscript{49} And, even absent such grand reforms, the pressure for corporate inversions can be averted through simple, off the shelf, anti-inversion measures.\textsuperscript{50} Finally, it is important to remember that competitiveness entails far more than the corporate tax system; investments in human capital, infrastructure, and sound, stable governance institutions all play essential roles in creating a strong business climate.

\textsuperscript{47} See, e.g., Farhi et al. (2012), Conesa, Kitao, and Krueger (2009), and Piketty and Saez (2012, 2013).
\textsuperscript{48} See Burman, Clausing, and Austin (2017).
\textsuperscript{50} See Clausing (2014), Shay (2014), and Kleinbard (2014).
VI. Conclusion

The Tax Cuts and Jobs Act contains several features that change the profit shifting landscape. The lower statutory rate, the GILTI, and the BEAT are likely to reduce profit shifting offshore, while the territorial treatment of (some) foreign income, and the absence of tax upon repatriation, are likely to increase profit shifting incentives. Due to the complexity of the tax law changes and the interactions among them, as well as the moving target of foreign tax policies and multinational company tax planning, precise conclusions about the impact of the TCJA are difficult. Many of the international features of the law are unchartered territory, and there are myriad questions for future research.

This analysis has compared profit shifting incentives before and after the TCJA. Before the TCJA, deferral of U.S. tax on foreign income provided large incentives to minimize global tax burdens by shifting income to tax havens. U.S. multinational companies, aided by a permissive regulatory environment, became renowned profit shifters. In 2015, 59 percent of the direct investment earnings of U.S. multinational companies were booked in just seven havens, and these seven countries accounted for 80 percent of all U.S. multinational profit shifting activity. Only 22 percent of foreign earnings were booked in countries with effective tax rates above 15 percent. By 2015, profit shifting by U.S. multinational companies reduced federal corporate tax revenues by over $100 billion a year.

While this is a large number, the counterfactual is a world without profit shifting, and most legislative changes are likely to stop far short of such a world.\textsuperscript{51} The TCJA is no

\textsuperscript{51} Some dramatic reforms, such as a pure worldwide system, formulary apportionment, and a destination based cash flow tax, would come close to eliminating profit shifting, though of course they would not eliminate tax avoidance, as firms might then undertake other decisions, such as mergers or acquisitions, or changes in ownership structure, to avoid tax. Still, not all decisions are
exception; it is far from an end to profit shifting. However, there are still substantial changes in the tax landscape. In addition to the reduction in the U.S. statutory rate, the global minimum tax on GILTI income acts to substantially compress tax rate differences across countries for some companies. When companies do not have sufficient foreign tax credits to offset the tax due under GILTI, the GILTI provision raises the marginal tax rate on non-exempt haven income to at least 10.5 percent (up to 13.125 percent), and it lowers the marginal tax rate on higher-tax foreign income substantially, such that it remains below the U.S. tax rate for any foreign tax rate below 52.5 percent.\footnote{52 The first ten percent return on assets is untaxed under the GILTI, so it faces the foreign tax rate, with no residual U.S. taxation.}

On the other hand, for companies with large amounts of foreign tax credits offsetting the GILTI, the marginal incentives to shift income across countries are largely unchanged relative to prior law, aside from the U.S. statutory tax rate reduction and the absence of tax upon repatriation. Although the U.S. tax rate reduction is important for domestic firms, it is not a determinative force when it comes to profit shifting activity, since the prior distribution of shifted foreign earnings was extremely concentrated in the lowest tax countries.

The provisions modeled here indicate a reduction in profit shifting incentives after the TCJA. After adjustment is complete, estimates indicate a 20 percent reduction in the U.S. affiliate corporate tax base in tax havens, a 7 percent increase in the U.S. affiliate corporate tax base for foreign countries above the minimum tax threshold, and a $95 billion increase in the U.S. corporate tax base each year, which will generate about $19 billion equally tax sensitive. It is widely known in public finance that there is a hierarchy of behavioral response, such that financial decisions are far more sensitive to tax incentives than are “real” decisions. See, e.g., Auerbach and Slemrod (1997) and Saez, Slemrod, and Giertz (2012).
billion in tax revenue at the new corporate tax rate, $8 billion of which is due to the
global minimum tax. A per-country minimum tax is estimated to increase U.S. revenues,
and reduce profit shifting to tax havens, far more substantially.

Still, these estimates are preliminary, and they do not account for two important
provisions. In particular, the quasi-territorial nature of the tax system (with no tax due
upon repatriation, and tax free treatment for some foreign income) may increase profit
shifting incentives more than the BEAT decreases profit shifting incentives, possibly
cutting into the modest beneficial effects on profit shifting that are documented here.
Nonetheless, both the GILTI and the BEAT should be applauded for reducing
international tax competition pressures, particularly relative to a hypothetical version of
the TCJA without these provisions.

In the end, the Tax Cuts and Jobs Act certainly provides tax cuts; that much is
certain. The net ongoing corporate business tax cuts total more than $650 billion over the
coming decade.\textsuperscript{53} In my opinion, revenue-neutral business tax reform, as previously
suggested by both Democrats and Republicans, would have been a far better path
forward.\textsuperscript{54} In addition, the positive effects of the these tax cuts on the larger economy
were substantially oversold, though it will take time to establish their ultimate effect.\textsuperscript{55}
Beyond doubt, the TCJA has created many interesting questions for economic research.

\textsuperscript{53} As before, I am ignoring the one time repatriation tax on previously earned income, which is a
tax cut relative to prior law, but raises revenue in the ten-year window.
\textsuperscript{54} In recent years, both former Ways and Means Chair Dave Camp (a Republican) and the Obama
Administration offered examples of such reforms.
\textsuperscript{55} The Trump Administration made particularly far-fetched claims of $4,000-$9,000 average
wage increases resulting from the corporate tax cuts, and officials also argued that companies
would share their cash windfalls with workers. Early data on wage growth indicate no evidence of
the windfall-sharing mechanism. Whether investment will surge, and by how much, will take
time to establish, but few economists believe that wage growth numbers of these magnitudes are
plausible.
References


———. 2014. “Competitiveness Has Nothing to Do With It.” *Tax Notes* 144 (September).


Shay, Stephen. 2014. “Mr. Secretary, Take the Tax Juice Out of Corporate Expatriations.” *Tax Notes*, July.


Appendix A


<table>
<thead>
<tr>
<th></th>
<th>Columns 1-4: Pooled Regressions</th>
<th>Columns 5-8: Country Fixed Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>Tax rate</td>
<td>-5.016*</td>
<td>-4.227*</td>
</tr>
<tr>
<td></td>
<td>(0.392)</td>
<td>(0.352)</td>
</tr>
<tr>
<td>GDP</td>
<td>0.435*</td>
<td>0.0907*</td>
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<tr>
<td></td>
<td>(0.028)</td>
<td>(0.040)</td>
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<tr>
<td>GDP p.c.</td>
<td>0.486*</td>
<td>0.287*</td>
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<tr>
<td></td>
<td>(0.039)</td>
<td>(0.031)</td>
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<tr>
<td>Distance</td>
<td>-0.300*</td>
<td>0.0209</td>
</tr>
<tr>
<td></td>
<td>(0.054)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>PPE</td>
<td>1.195*</td>
<td>1.046*</td>
</tr>
<tr>
<td></td>
<td>(0.038)</td>
<td>(0.039)</td>
</tr>
<tr>
<td>Empl.</td>
<td>-0.373*</td>
<td>-0.359*</td>
</tr>
<tr>
<td></td>
<td>(0.035)</td>
<td>(0.052)</td>
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<tr>
<td>N</td>
<td>788</td>
<td>779</td>
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<tr>
<td>$R^2$</td>
<td>0.17</td>
<td>0.51</td>
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</table>

Note: All variables are in natural logs except the tax rate. Tax rate is the effective tax rate (taxes paid relative to direct investment earnings); it is bounded at 0 and 60 percent. GDP and GDP p.c. refer to gross domestic product in level and per-capita terms; data are from the World Development Indicators database. Distance is port distance between the country and the United States. PPE is plant, property and equipment and Empl. is employment.
Appendix B: US Federal Tax Revenue Lost Due to Profit Shifting, 2000-2015
Using Alternate Formulas

In the text, I employ a formula to assign shifted profits to countries’ tax bases based on where economic activities are occurring. The baseline formula relies on both supply and demand factors: 50 percent sales, 25 percent employment, and 25 percent employee compensation. Below, I also provide alternative estimates with different formulas.

Alternative formulas include the so-called “Massachusetts” formula that is 1/3 assets, 1/3 payroll, and 1/3 sales, as well as single-factor formulas based on employment, employee compensation, assets, and sales. The “Massachusetts” formula results in a nearly identical evolution of revenue numbers as reported in the text (and is therefore not visible in the figures), whereas the single-factor employee compensation formula assigns the most profit back to the United States, and the single-factor assets formula assigns the least profit back to the United States. These results are expected, since US parents have a large share of worldwide employee compensation, whereas assets may be distorted by profit shifting incentives. Figures B1 and B2 shows the patterns: Figure B1 shows the linear elasticity estimates and Figure B2 shows the non-linear elasticity estimates.

Figure B1: US Federal Tax Revenue Lost Due to Profit Shifting, 2000-2015, Linear Elasticities and Alternative Formulas

Source: Author calculations based on BEA data and assumptions in text.
Figure B2: US Federal Tax Revenue Lost Due to Profit Shifting, 2000-2015, Non-linear Elasticities and Alternative Formulas

Source: Author calculations based on BEA data and assumptions in text.
Appendix C:

Below are estimates considering the effect of the global minimum tax, depending on the fraction of foreign income held by companies with deficit credits with respect to the GILTI global minimum tax.

Table C1: Changes in Corporate Tax Base Due to the Global Minimum tax (only)

<table>
<thead>
<tr>
<th>Fraction of Foreign Income in Companies with Deficit Credits:</th>
<th>10%</th>
<th>50%</th>
<th>90%</th>
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<tbody>
<tr>
<td>Min Tax Countries (%)</td>
<td>-2.7%</td>
<td>-13.3%</td>
<td>-24.0%</td>
</tr>
<tr>
<td>Other Countries, OECD (%)</td>
<td>2.6%</td>
<td>12.9%</td>
<td>23.3%</td>
</tr>
<tr>
<td>Other Countries, non- OECD (%)</td>
<td>3.0%</td>
<td>14.9%</td>
<td>26.9%</td>
</tr>
<tr>
<td>U.S. Tax Base ($b)</td>
<td>$8.3b</td>
<td>$41.7b</td>
<td>$75.0b</td>
</tr>
<tr>
<td>U.S. Tax Revenue ($b)</td>
<td>$1.7b</td>
<td>$8.3b</td>
<td>$15.0b</td>
</tr>
</tbody>
</table>

Source: Author calculations based on BEA data and assumptions in text.

Appendix D:

Below are estimates comparing the global and the per-country minimum tax, using a constant elasticity of -3.0.

Table D1: Effects of a Global Minimum versus a Per-Country Tax (linear elasticity)

<table>
<thead>
<tr>
<th></th>
<th>Global Minimum Tax</th>
<th>Per-Country Minimum Tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimum Tax Country US Affiliate Tax Base (%)</td>
<td>-10.6 %</td>
<td>-20.2 %</td>
</tr>
<tr>
<td>Other Foreign Country US Affiliate Tax Base (%)</td>
<td>17.4 %</td>
<td>10.4 %</td>
</tr>
<tr>
<td>US Corporate Tax Base (billions USD)</td>
<td>$20.0 b</td>
<td>$83.2 b</td>
</tr>
<tr>
<td>Implied Additional US Revenue</td>
<td>$4.0 b</td>
<td>$16.6 b</td>
</tr>
</tbody>
</table>

Source: Author calculations based on BEA data and assumptions in text.