



Budget Model

Profit Shifting and the Global Minimum Tax

Summary: We estimate that the recent OECD proposal for a global minimum tax would triple the effective U.S. tax rate on foreign income from 2 percentage points to 5.8 percentage points. The Biden administration's proposed changes to the U.S. global minimum tax regime would instead raise the effective U.S. tax rate on foreign income to 12.4 percentage points.

Key Points

- Profit shifting by U.S. multinational firms to foreign jurisdictions appears to have fallen since 2018. We estimate that at least \$140 billion in profit was returned to the U.S. from 2018 to 2020 in response to the Tax Cuts and Jobs Act and other recent policy changes.
- Adopting the recent OECD proposal for a global minimum tax would triple the effective U.S. tax rate on foreign income from 2 percentage points to 5.8 percentage points. If, instead, the Biden administration's proposal to the existing U.S. global minimum tax regime were enacted, the effective U.S. tax rate on foreign income would rise more than six-fold to 12.4 percentage points.
- Under both current law and the Biden administration's proposal, we estimate that it is profitable for U.S. firms to locate *intangible* investments in a foreign jurisdiction with a zero-tax rate, while the OECD proposal would make the U.S. the better location. Under current law, the U.S. and a foreign jurisdiction with an 8.5 percent tax rate are comparable locations for *tangible* investments, while the Biden proposal would make the U.S. more advantageous and the OECD proposal would make it less so.

Background

On July 1st, the OECD/G20 Inclusive Framework on Base Erosion and Profit Shifting (BEPS) [released an outline](#) of proposed changes to international tax rules agreed to by 132 countries. The proposal includes two components, or "Pillars." Pillar One addresses the impact of digitalization and the growing role of intangibles by sharing taxing right among multinational enterprises' (MNEs) home country and the countries in which they operate.¹ Pillar Two addresses tax-motivated profit shifting by MNEs and imposes a 15 percent global minimum tax on profits in every country. The minimum tax is intended to curtail the use of tax havens and align the location of reported profits with the location of economic activity.

In parallel to the multilateral OECD negotiations, the Biden administration has proposed changes to the U.S. global minimum tax introduced in the 2017 Tax Cuts and Jobs Act (TCJA): the Global Intangible Low-Taxed Income (GILTI) regime. In the [President’s Budget for Fiscal Year 2022](#), the administration proposes doubling the minimum tax rate on U.S. multinationals’ foreign income from at least 10.5 percent to at least 21 percent and increasing the portion of foreign income subject to the tax.

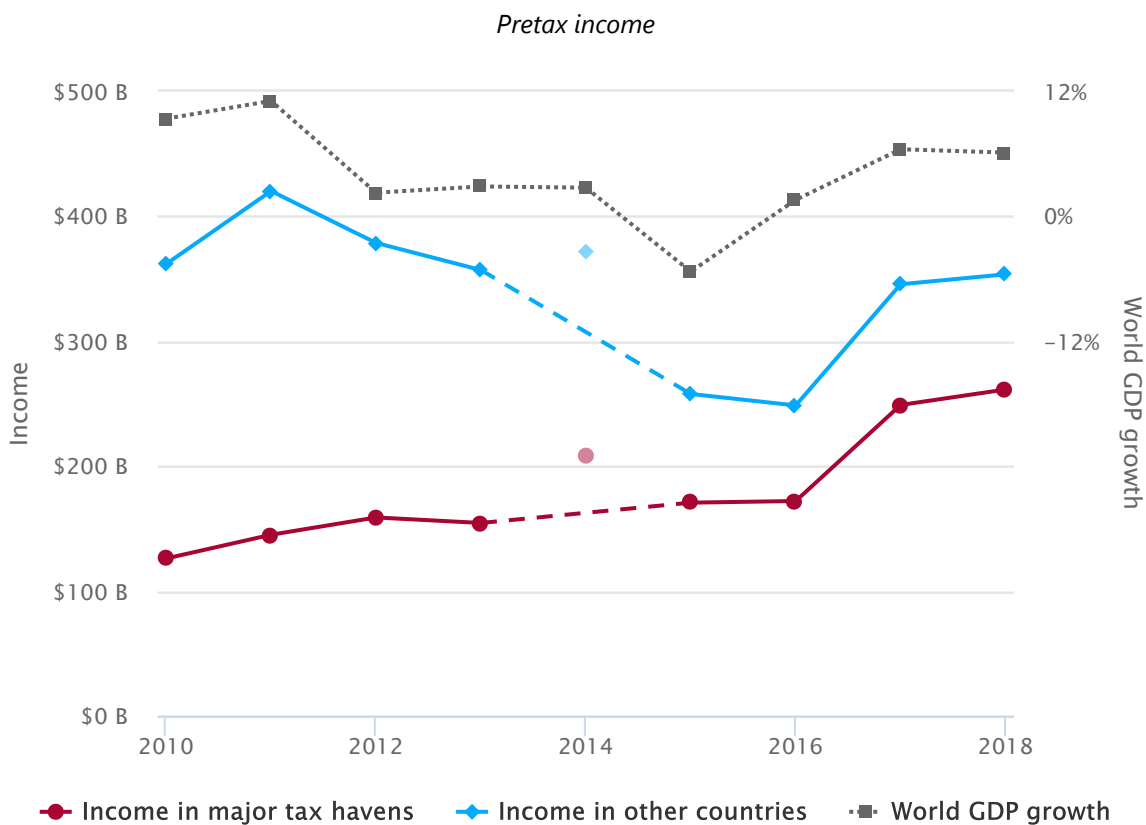
If enacted, these proposals would add to significant changes in the taxation of U.S. multinationals over the last few years. The introduction of GILTI and other provisions of the TCJA, as well as tax and regulatory changes abroad since 2015, reflect efforts by U.S. and foreign policymakers to combat profit shifting. These changes likely affected incentives to shift income to low-tax jurisdictions, but so far little is known about their impact.

Profit Shifting and Tax Havens in the Last Decade

The scale of profit shifting has increased dramatically over the last decade. Figure 1 shows two measures of the profits reported by U.S. multinationals in major tax havens and in all other countries. The major tax havens are Bermuda, the Cayman Islands, Ireland, Luxembourg, the Netherlands, Switzerland, and Singapore.² These measures come from a legally mandated survey of U.S. MNEs run by the Bureau of Economic Analysis (BEA) and are available through 2018. The first, pretax income, is the financial accounting income of MNEs. The second, profit-type return, reflects income from current production and MNEs’ measured contribution to economic value added.³

Figure 1. Foreign Profits of U.S. Multinationals

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Profit-type return



Sources: BEA, World Bank, PWBM

Notes: Values for 2014 were affected by a change in the survey’s coverage of MNEs in that year and are shown separately. According to BEA, “the increase in most U.S. MNE activities from 2013 to 2014 appears to largely reflect the improved coverage.”

Income measures are for majority-owned foreign affiliates. Pretax income equals net income less income from equity investments plus income taxes. Profit-type return also excludes capital gains and depletion and includes other adjustments to convert financial income to a current production basis. Both measures are net of losses.

Figure 1 shows that foreign income in non-haven countries has risen and fallen over the last decade in tandem with world GDP—as expected if it reflects real economic activity abroad. In contrast, income in tax havens has grown steadily since 2010. According to both profit measures, income in tax havens more than doubled from 2010 to 2018, from about \$120 billion to \$250 billion, while income in all other countries declined. The share of foreign profits attributed to tax havens rose from 25 to more than 40 percent over that period. Some of that likely reflects shifting of profits from non-haven foreign countries into havens. But as we discuss below, much of the income in tax havens appears to have been shifted from the U.S., eroding the domestic corporate income tax base.

Policy Responses to Profit Shifting

Responding to the growing concentration of income in tax havens, U.S. and foreign policymakers have enacted a number of reforms in recent years aimed at curtailing profit shifting.

GILTI

Most significantly for U.S. multinationals, the Tax Cuts and Jobs Act of 2017 introduced a new regime for the taxation of foreign profits. Before the TCJA, income of U.S. MNEs’ foreign affiliates was effectively exempt from U.S. taxes unless it was repatriated (distributed as a dividend to the U.S. parent). As a result, most foreign

income was not repatriated, and repatriations could be timed to minimize tax liability. Under the TCJA, a subset of foreign income—Global Intangible Low-Taxed Income (GILTI)—is included in U.S. parent corporations' taxable income and is subject to tax in the year it is earned, but at a lower rate than other income.

The GILTI regime is intended to capture mobile (easy to shift) profits in low-tax countries and apply a residual U.S. tax to "top up" foreign taxes so that the combined foreign and U.S. tax rate is at least 10.5 percent. GILTI includes most foreign income of U.S. MNEs except Subpart F income—highly mobile income such as interest and royalties that is already subject to U.S. tax—and foreign oil and gas extraction income (FOGEI). Positive income and losses in different countries are blended (netted out) to determine a multinational's net global income. MNEs can exclude an amount of income equal to 10 percent of the value of foreign affiliates' tangible assets, referred to as a substance carve-out. Exempting this 10 percent deemed return on tangible assets is an attempt to limit GILTI to income from intangibles.

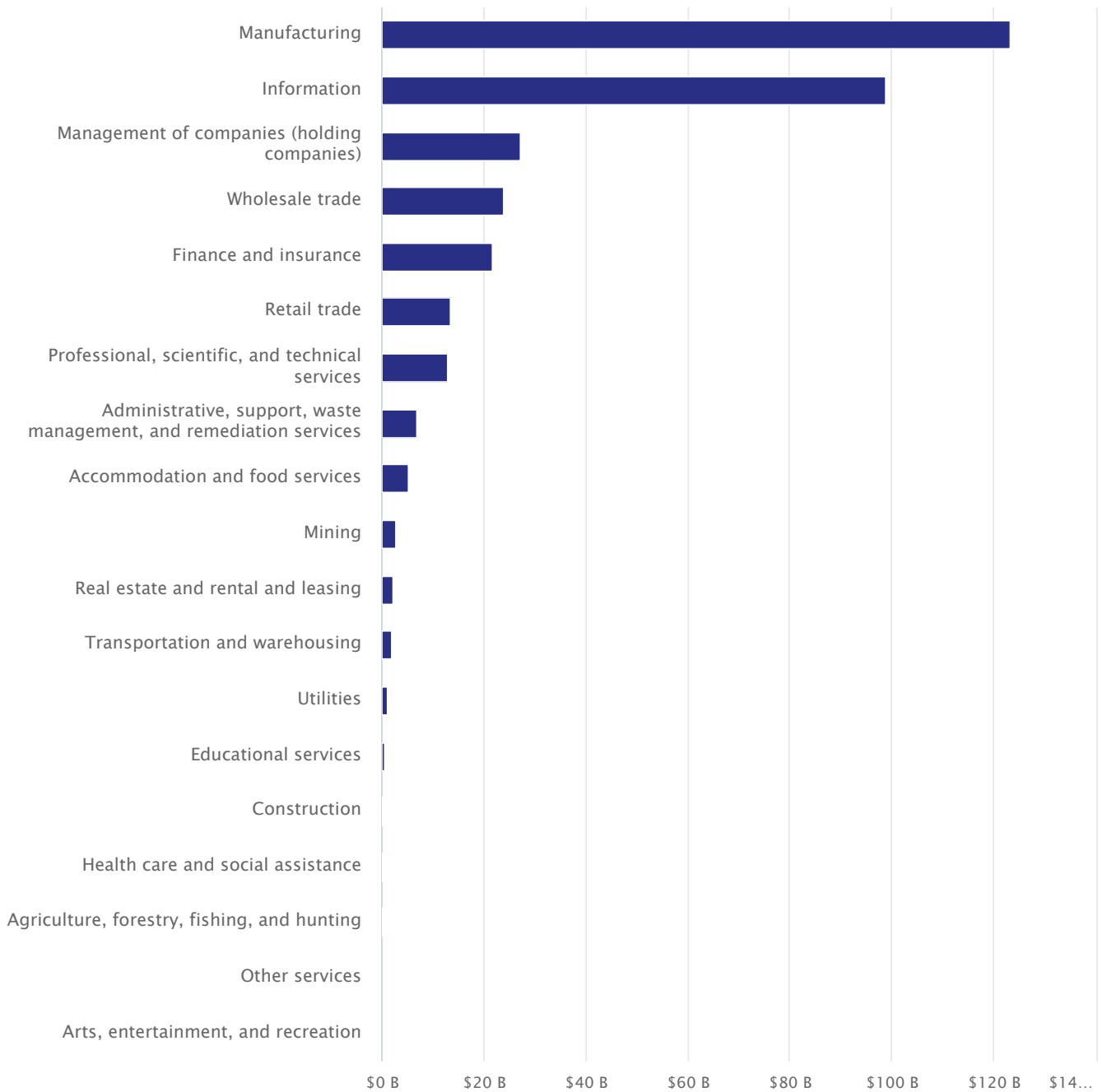
The minimum tax rate of 10.5 percent is achieved by exempting 50 percent of GILTI and taxing the rest at the 21 percent statutory corporate rate, with a foreign tax credit equal to 80 percent of foreign taxes paid on GILTI.⁴ For income reported in a country with zero taxes, the residual U.S. tax rate is 10.5 percent ($50\% \times 21\%$). Since there are no foreign taxes, the total tax rate is also 10.5 percent. For income with a foreign tax rate of 5 percent, the residual U.S. tax rate is 6.5 percent ($50\% \times 21\% - 80\% \times 5\%$) and the total tax rate is 11.5 percent ($5\% + 6.5\%$). For income with a foreign tax rate of 10 percent, the residual U.S. rate is 2.5 percent and the total rate is 12.5 percent.

The total tax rate rises with the foreign tax rate up to 13.125 percent—beyond which residual U.S. tax is zero—because only 80 percent of foreign taxes can be used as a credit against U.S. taxes on GILTI.⁵ However, foreign taxes paid on GILTI in high-tax countries can offset U.S. taxes on GILTI from low-tax countries, a practice referred to as blending or cross-crediting. If a U.S. MNE's foreign affiliate is taxed at a high enough rate that 80 percent of its foreign taxes exceeds the U.S. tax on its income, the excess can be used as a credit against any residual U.S. tax on its income in other countries.

Because the GILTI regime has only been in place since 2018 and public data on U.S. corporations' taxes is released with a lag of several years, little is known about GILTI's impact on U.S. multinationals. Data for 2018 released in July 2021 showed that MNEs reported a total of \$342 billion in GILTI. Figure 2 shows the distribution of GILTI across industrial sectors. GILTI was highly concentrated in a small number of industries: the manufacturing and information sectors alone account for almost two thirds, and the next five largest sectors make up another 30 percent.

Figure 2. Global Intangible Low-Taxed Income (GILTI) in 2018 by Sector

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Sources: Internal Revenue Service, *Statistics of Income*

Other provisions of the TCJA

Several other provisions of the TCJA affected U.S. multinationals’ incentives to shift profits or locate economic activity outside the U.S. The statutory corporate tax rate was reduced from 35 percent to 21 percent, substantially lowering the tax burden on domestic income. Before the TCJA, the U.S. statutory rate was one the highest in the world. It now falls in the middle of the distribution of countries’ corporate tax rates.

The TCJA also introduced a preferential tax rate on some domestic income derived from sales to foreign markets, referred to as Foreign Derived Intangible Income (FDII). FDII is intended to encourage companies to

locate intangible assets and the profits they generate in the U.S. Like GILTI, FDII is determined by subtracting from income a deemed 10 percent return on tangible assets (in the case of FDII, tangible assets located in the U.S.) to approximate income from intangibles. This income is taxed at a reduced rate of 13.125 percent, achieved by exempting 37.5 percent of FDII from taxation.⁶

Another component of the TCJA, the Base Erosion and Anti-Abuse Tax (BEAT), imposes a minimum tax on large corporations that make deductible payments to their foreign affiliates above a threshold. The BEAT is intended to limit the tax benefits of such payments, which can be used to shift income to low-tax jurisdictions. Appendix A provides an overview of the BEAT.

International policy changes

The ongoing negotiations through OECD on the two-pillar approach to international tax reform are a continuation of a multilateral process underway since 2013. These discussions produced an agreement in 2015 on [reforms to the international tax system](#), now referred to as BEPS 1.0 (while the ongoing negotiations are BEPS 2.0). BEPS 1.0 sought to harmonize tax rules across jurisdictions, eliminate harmful practices, and improve transparency with new reporting requirements. Since 2015, numerous countries have implemented BEPS 1.0 recommendations, adopting or amending transfer price regulations, nexus requirements, and other measures to counter tax avoidance by MNEs. Of particular significance for U.S. multinationals, BEPS 1.0 [guidelines](#) bar payments for the use of an intangible asset to entities that were not involved in its development and perform no relevant functions, regardless of the intangible's legal ownership.

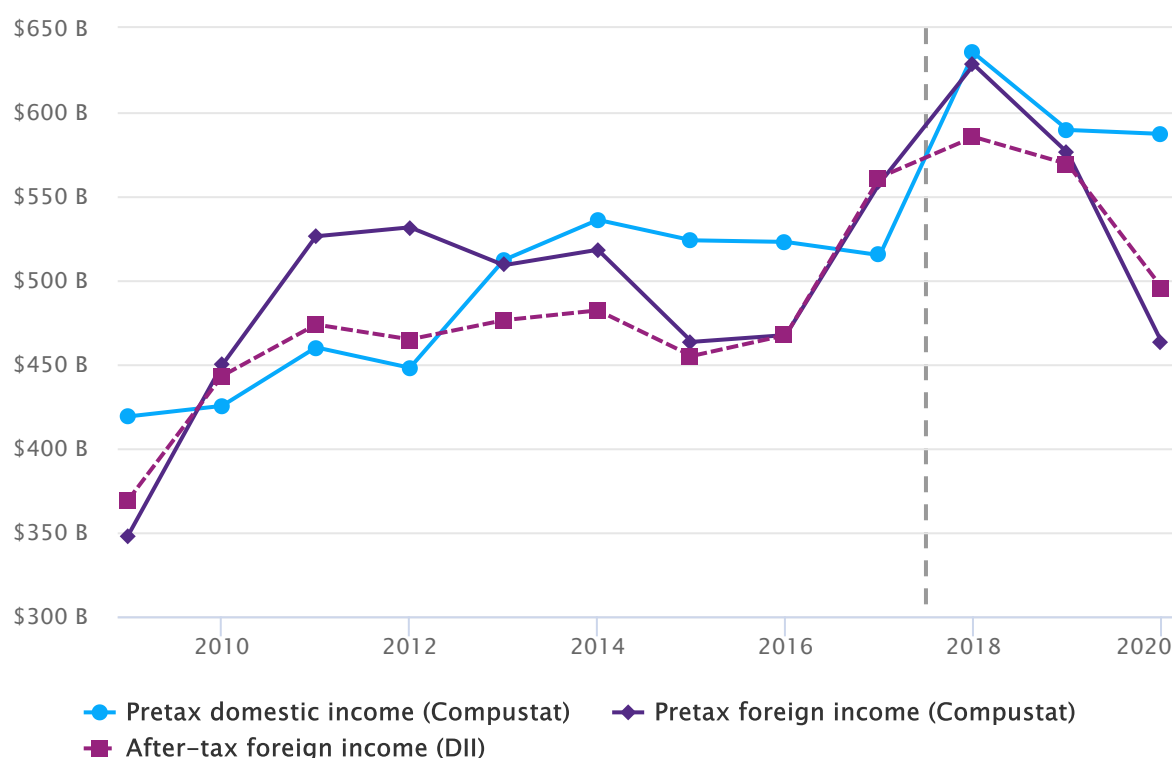
Another major recent development relates to a single country: Ireland. Ireland has long played a central role in profit shifting and tax avoidance by U.S. multinationals, in part because of an unusual feature of its corporate tax law that allowed an entity incorporated in Ireland to be a tax resident of another jurisdiction. Changes to Irish corporate residence rules implemented in 2015 eliminated this feature, but arrangements in existence at the time were allowed to continue until 2020. In a recent analysis for the Irish Department of Finance, [Coffey \(2021\)](#) argues that 2020 marks the end of the "Double Irish," a longstanding profit shifting strategy that makes use of two Irish corporations, one of which is a tax resident of a different jurisdiction (such as Bermuda). We review some of the evidence presented by Coffey in the next section.

U.S. Multinationals After TCJA

Despite the three and half years elapsed since the TCJA was enacted, the law's impact on U.S. multinationals remains unclear. Comprehensive and detailed data on the activities and taxation of MNEs are released with a significant lag; information for 2018 became available only in the last year. However, nearly all major U.S. multinationals are required to file annual financial statements, which provide limited information on their foreign activities through 2020. In addition, MNEs' aggregate income and payments are reported in balance of payments data, which are also generally available through 2020. We use these sources to assess the response of U.S. multinationals to the TCJA and other recent policy changes.

Figure 3 shows total foreign and domestic pretax income reported by public U.S. corporations on financial statements, aggregated from company-level data in Standard & Poor's *Compustat* database. The figure also shows a measure of MNEs' foreign profits from the balance of payments, direct investment income (DII). DII is reported on an after-tax basis and is not directly comparable to income from *Compustat* or the measures in Figure 1, but we include it as a check on the reliability of trends observed in the financial statement data.

Figure 3. Foreign and Domestic Income Through 2020

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Sources: *Compustat*, BEA, PWBM

Notes: The dashed vertical line indicates enactment of the TCJA.

Measures from *Compustat* include all positive pretax income of corporations reporting both domestic and foreign income.

After-tax foreign income (DII) is direct investment income from BEA's *International Transaction Accounts*.

The *Compustat* and DII measures of foreign income both show a similar pattern immediately before and after the TCJA's enactment. Foreign profits rose sharply from 2016 to 2017 and continued growing in 2018, but declined in 2019 and especially 2020. Compared with its peak in 2018, foreign income was 15 to 25 percent lower in 2020, depending on the measure. Domestic profits followed a similar pattern from 2017 to 2019 but diverged in 2020, remaining flat while foreign profits fell more than \$100 billion. The share of worldwide profits attributed to the U.S. rose to 56 percent in 2020, an increase of 5 percentage points compared with the previous year and the years immediately preceding the TCJA.

Did U.S. multinationals bring income home?

Figure 3 shows that, in aggregate, growth in MNEs' foreign profits slowed and the U.S. share of their income rose following enactment of the TCJA. Those outcomes are consistent with the objectives of the TCJA and other recent policy actions. However, aggregate measures cannot establish whether and how any particular MNE altered its behavior in response to policy. Moreover, most of the aggregate shift occurred in 2020, two years after the TCJA's enactment and coinciding with a global pandemic and collapse of the world economy.

To identify the effects of the TCJA more precisely, we use company-level financial data from *Compustat* to construct a panel of MNEs active before and after the law's enactment. The panel includes 1,282 multinational corporations and spans the period from 2009 to 2020.⁷ For each company, we calculate the U.S. share of

worldwide pretax income and the foreign tax rate paid on affiliates' income. We then divide companies into three groups based on their average foreign tax rate in 2015, 2016, and 2017, which we refer to as their pre-TCJA foreign tax rate. The first group comprises companies with a pre-TCJA foreign tax rate of 13.125 percent or lower; the second group comprises those with a pre-TCJA foreign tax rate of 35 percent or higher; and the third group includes all other companies.⁸ We refer to these groups as the low-tax group, the high-tax group, and the control group. There are just over 310 companies in both the low- and high-tax groups and 655 in the control group.

U.S. multinationals' incentive to shift profits or locate mobile economic activity abroad depends on the difference between the tax rate on income reported in the U.S. and the tax rate on foreign income. The TCJA affected these tax rate differentials in two key ways, with different implications for the three groups.

First, the introduction of the GILTI regime raised the tax rate paid on income in low-tax jurisdictions, shrinking the differential between U.S. and foreign rates for the low-tax group. It did not affect the other two groups, whose foreign taxes fully offset the U.S. tax on GILTI. This should discourage profit shifting to tax havens and raise the share of income reported in the U.S.

Second, the reduction in the statutory corporate tax rate from 35 to 21 percent reduced the differential for the low-tax group by moving the U.S. rate closer to their foreign tax rate. For the high-tax group, it increased the differential (in absolute terms) by moving the U.S. rate further below their foreign tax rate. In both cases, the change in the tax rate differential should encourage relocation of profits and economic activity into the U.S. For the control group, the effect of the statutory rate change is ambiguous but is likely small compared with the other two groups.⁹

Relative to the control group, companies in the low-tax group were exposed to both changes—meaning they likely saw a substantial change in their U.S.-foreign tax rate differential—while companies in the high-tax group were exposed to the statutory rate reduction. Companies in the control group were not meaningfully exposed to either change. If MNEs in the low-tax group were engaged in tax-motivated profit shifting prior to the TCJA, we would expect the U.S. share of their worldwide income to rise relative to the control group's share. If MNEs in the high-tax group are able to relocate income or real activity to the U.S.—in effect, tax-motivated shifting *into* the U.S.—we would expect the U.S. share of their worldwide income to rise relative to the control group's as well.

To test for these responses, we estimate an event study model of the U.S. share of worldwide income:

$$S_{it}^{US} = \alpha_i + \gamma_t + \sum_{t=2010}^{2020} \beta_t^L L_i + \sum_{t=2010}^{2020} \beta_t^H H_i$$

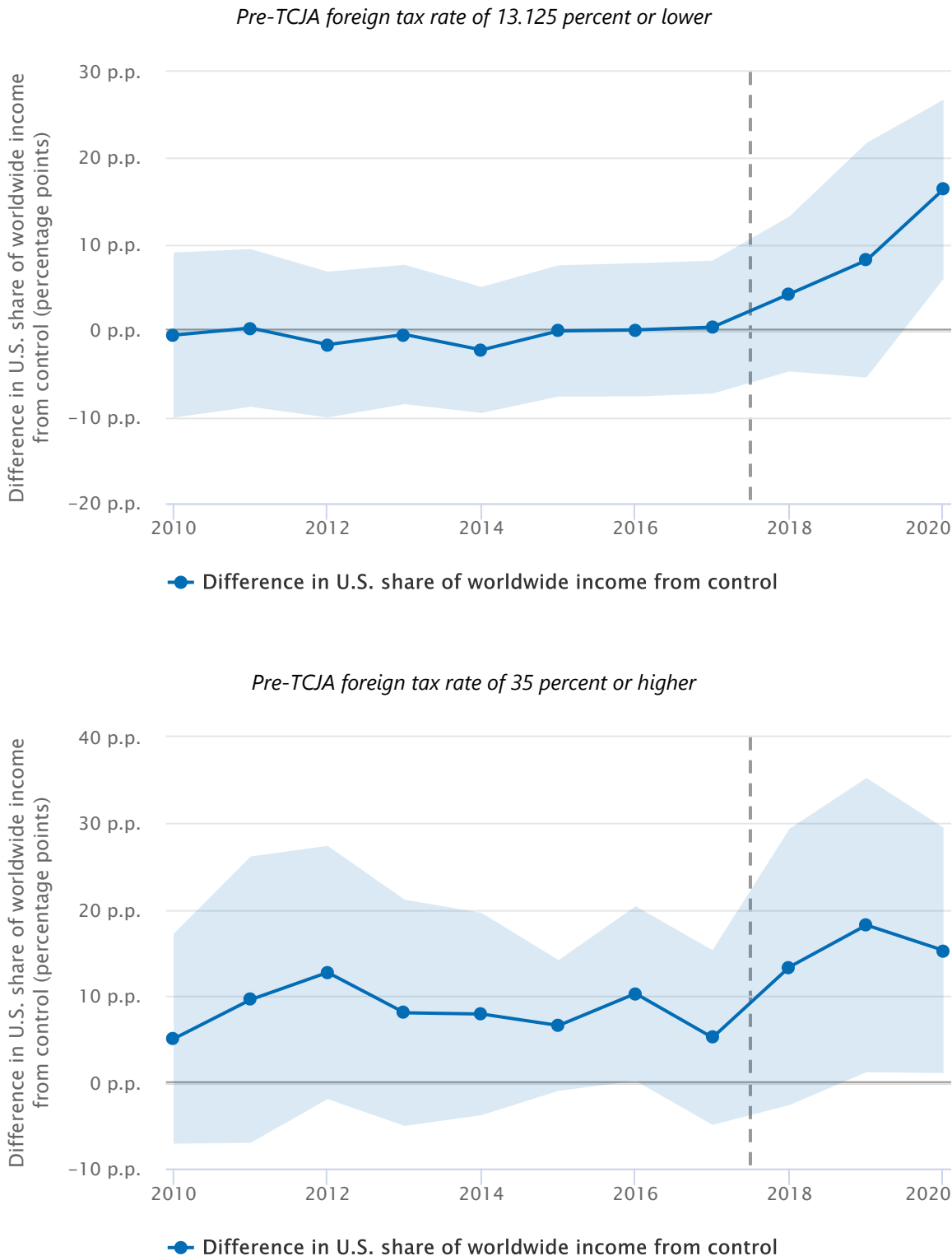
where S_{it}^{US} is the domestic share of company i 's worldwide income in year t , α_i is a full set of company fixed effects, γ_t is a full set of year fixed effects (excluding 2009 as the reference period), L_i and H_i are indicators equal to one if company i belongs to the low- or high-tax group, and the coefficients β_t^L and β_t^H estimate the average difference in the U.S. share of income for the low- and high-tax groups relative to the control group.

Figure 4 plots the estimated coefficients β_t^L for the low-tax group in the upper panel and β_t^H for the high-tax group in the lower panel. These coefficients measure the percentage point difference between the U.S. share of the group's worldwide income and the control group's U.S. share of worldwide income. The upper panel shows that the low-tax group's U.S. income share was essentially the same as the control group's from 2010

to 2017, but jumped 3.9 percentage points in 2018 and another 12.1 percentage points from 2018 to 2020. From the lower panel, the high-tax group’s U.S. income share was generally between 5 and 10 percentage points higher than the control group’s in the years leading up to the TCJA. That difference rose to 13.4 percentage points in 2018—an increase of 6 percentage points relative to the 2015–2017 average—and continued rising to more than 15 percentage points in 2019 and 2020.

Figure 4. Event Study Estimates: U.S. Share of MNEs’ Worldwide Income After TCJA

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Source: PWBM

Notes: The dashed vertical line indicates enactment of the TCJA.

The points show the estimated coefficients β_t^L in the upper panel and β_t^H in the lower panel. The shaded areas are 95 percent confidence intervals based on standard errors clustered at the company level.

The estimation sample contains 1,282 multinational corporations and 12,491 company-year observations. The control group includes all companies with a pre-TCJA foreign tax rate between 13.125 percent and 35 percent. There are 315 companies with a pre-TCJA foreign tax rate of 13.125 percent or lower, 312 with a rate of 35 percent or higher, and 655 with a rate between 13.125 and 35 percent. Companies are weighted by their cumulative foreign pretax income in 2015, 2016, and 2017.

The estimates in Figure 4 imply that MNEs in the low- and high-tax groups shifted at least \$140 billion in cumulative profits into the U.S. from 2018 to 2020 in response to the TCJA, boosting reported U.S. income by \$25 billion in 2018, \$45 billion in 2019, and \$70 billion in 2020.¹⁰ Those values are a lower bound on the total amount shifted, because they do not account for elements of the law that changed the control group's incentive to move income into the U.S. as well as the low- and high-tax groups', such as FDII. The actual total is likely somewhat higher.

While our approach is not a direct test of the TCJA's impact, the estimates in Figure 4 are strong suggestive evidence. The behavior of multinationals changed beginning in the year after enactment, in ways intended by the law and expected given its substance, and to a meaningful degree.

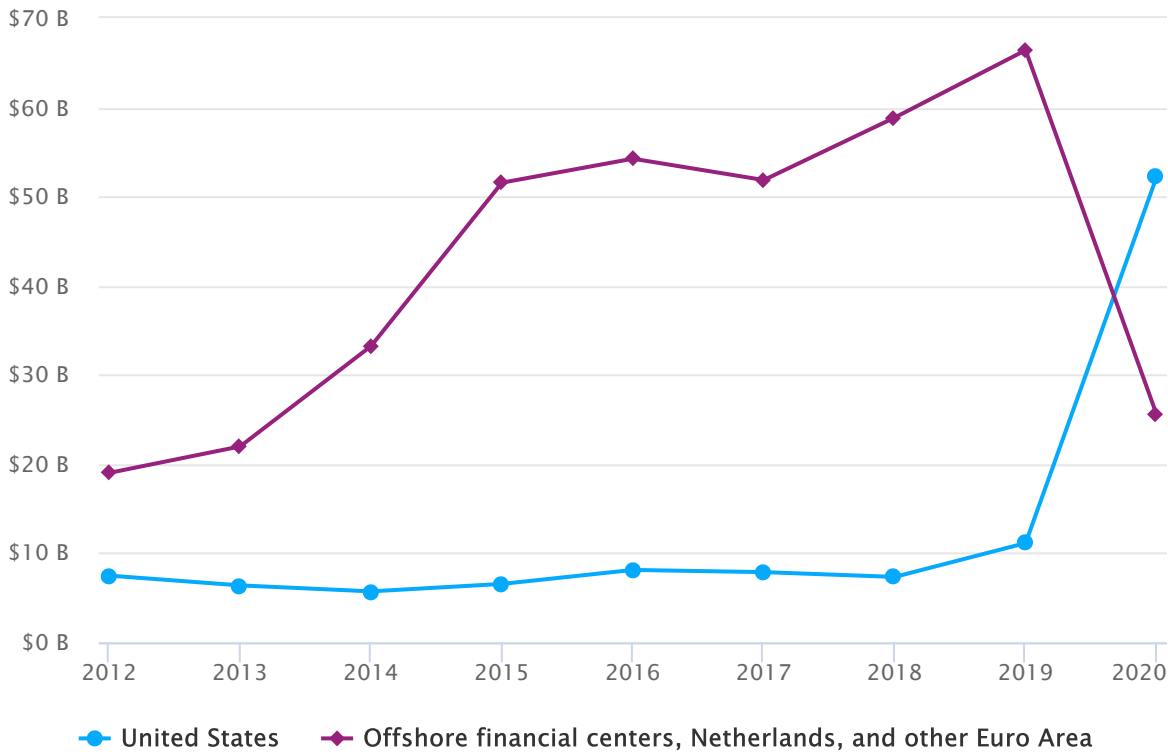
The end of the Double Irish

In a recent analysis for the Irish Department of Finance, [Coffey \(2021\)](#) identifies a major driver of the rising U.S. share of multinationals' worldwide income: the apparent end of the Double Irish. The Double Irish and related tax planning tools facilitated the movement of profits from market countries to affiliates in Caribbean tax havens through the payment of royalties and licensing fees, sometimes through an intermediary in the Netherlands. These tools were rendered inoperative by changes to Irish tax law in 2015, which were fully implemented by the end of 2020. (See the discussion of policy responses to profit shifting above.)

The Double Irish is not the only profit shifting tool available to U.S. MNEs and its demise does not necessarily imply an increase in their U.S. income. But Coffey shows that this has in fact been its effect, suggesting that after the TCJA's statutory rate reduction and the introduction of FDII, a U.S. MNE can achieve an overall effective tax rate on U.S. income from intangibles as low as the rate it achieved through the use of tax havens. Figure 5 compares Irish royalty payments for the use of intellectual property to the U.S. with payments to offshore financial centers, the Netherlands, and other Euro Area countries.¹¹ Data for the Netherlands alone is only available in some years but generally accounts for more than 90 percent of Irish royalty payments to the Euro Area as a whole.

Figure 5. Irish Royalty Payments for the Use of Intellectual Property by Recipient Country

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Sources: Seamus Coffey, Eurostat, PWBM

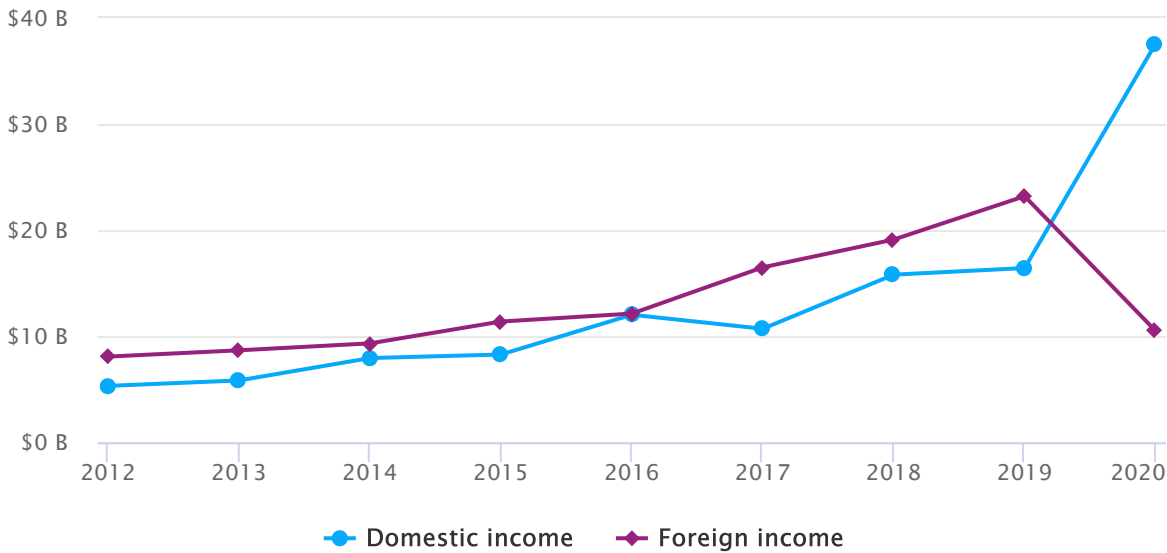
Note: "Offshore financial centers" is a grouping of 40 countries and includes all the major tax havens except Ireland, the Netherlands, and Switzerland.

From 2019 to 2020, royalty payments to offshore financial centers and the Netherlands declined by \$40.8 billion, while payments to the U.S. rose \$41 billion. Coffey notes that the timing of those shifts aligns closely with the announced plans of two major U.S. multinationals. At the end of 2020, Facebook [disclosed](#) that, as of July of that year, "Intellectual property licenses related to our international operations have been repatriated back to the US." Earlier this year, Alphabet (previously Google) [announced](#) that, beginning in 2020, they "license[d] intellectual property from the U.S. that was previously licensed from Bermuda resulting in an increase in the portion of our income earned in the U.S." The impact of these changes is clear in the corporations' public financial statements. Figure 6 shows domestic and foreign income reported by the two companies. Like Figure 5, they show a sharp break between 2019 and 2020, with foreign income falling by at least half and U.S. income more than doubling.

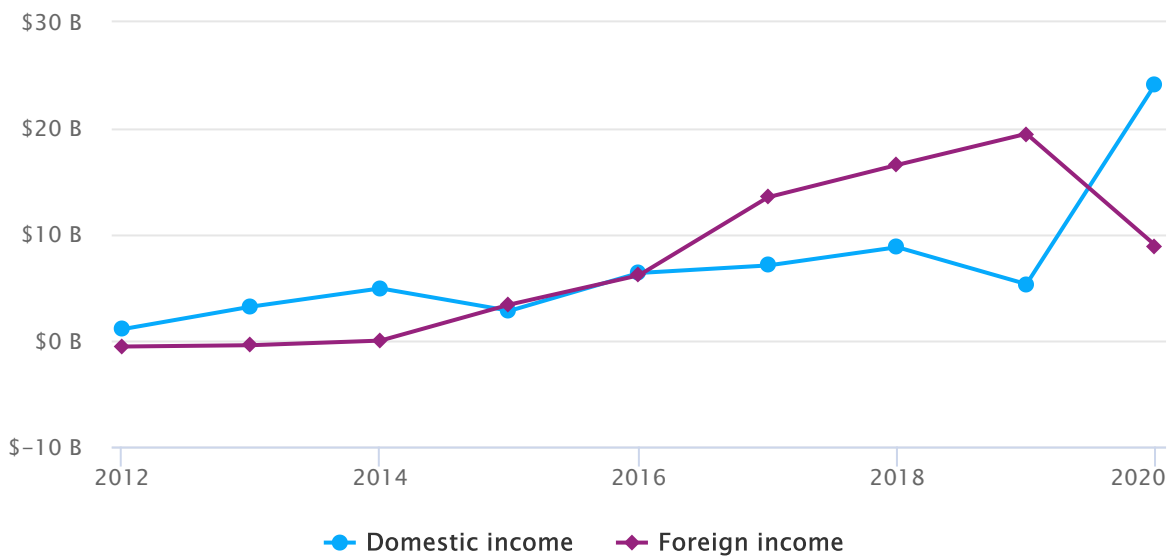
Figure 6. Pretax Income of U.S. MNEs Repatriating Intellectual Property in 2020

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Alphabet



Facebook



Source: Compustat

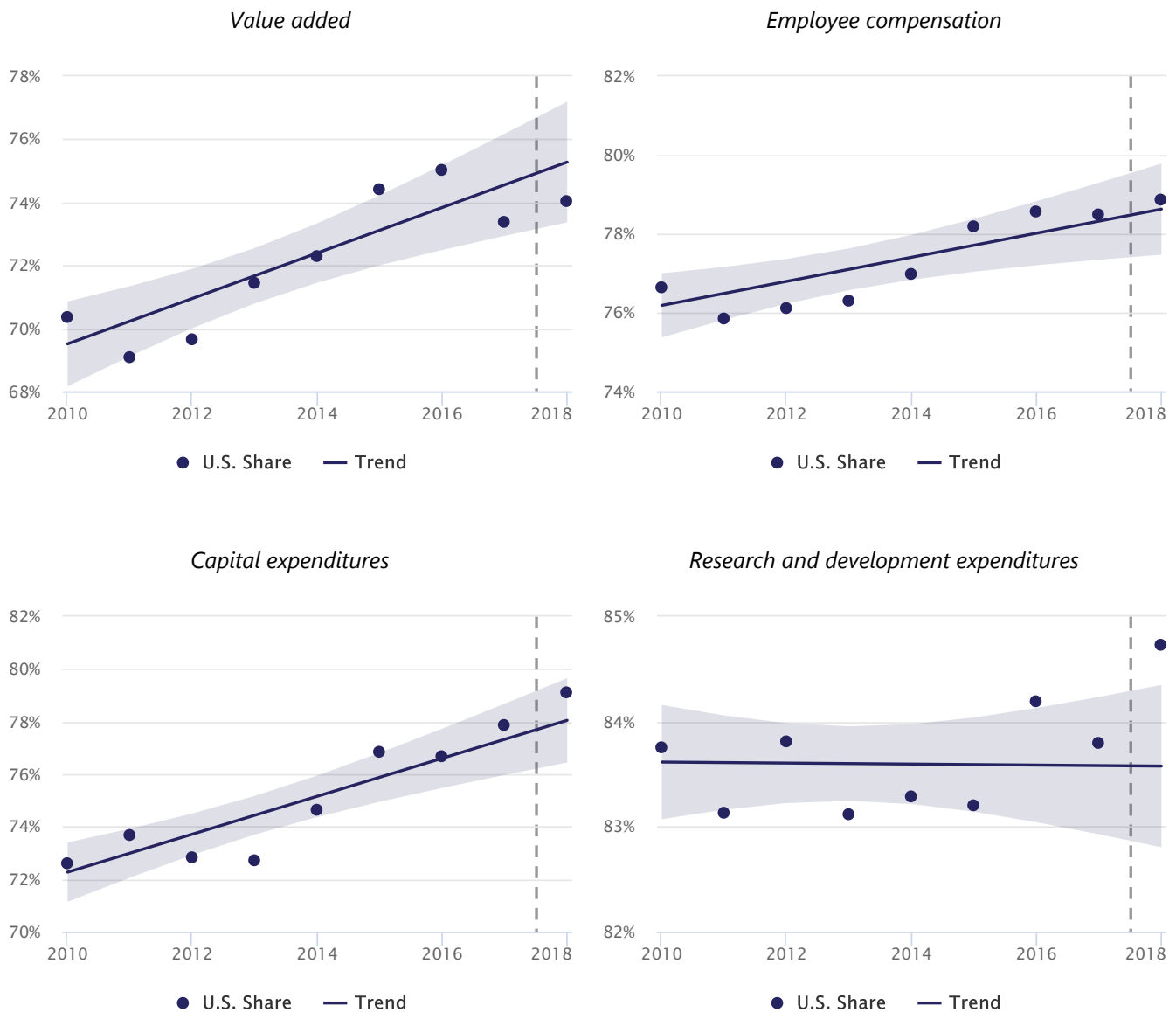
Did U.S. multinationals bring economic activity home?

Aggregate data on the real economic activity of U.S. MNEs and their foreign affiliates is available only for 2018. Although the previous sections indicate that TJCA’s impact has emerged gradually over the three years since its passage, we briefly consider its immediate effects on the location of multinationals’ output, labor, and capital. Figure 7 shows the U.S. share of MNEs’ worldwide activities along four dimensions: value added, employee compensation (wages plus benefit costs), capital expenditures (for tangible assets), and expenditures for research and development (R&D). For all four measures, the U.S. share rose from 2017 to 2018. However, for all four measures except R&D expenditures, the U.S. share had been rising for most of the decade prior to TCJA. As a simple check of whether the 2018 value was higher than one would predict given

those prior trends, Figure 7 also plots a linear time trend estimated over years before the TCJA’s enactment and 95 percent confidence intervals around the trends. Values for 2018 that fall within those intervals are no higher than would be expected given pre-TCJA trends and suggest that the measure was not affected by the TCJA.

Figure 7. U.S. Share of MNEs’ Economic Activity After TCJA

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Sources: BEA, World Bank, PWBM

Notes: The dashed vertical line indicates enactment of the TCJA.

The solid lines show pre-TCJA trends. The shaded areas are 95 percent confidence intervals around those trends. All measures are for majority-owned foreign affiliates.

The U.S. shares of multinationals worldwide value added and employee compensation were either below or close to their pre-TCJA trends in 2018, indicating no immediate response to the TCJA’s enactment. The U.S. share of capital expenditures was above-trend but still within the range expected given historical volatility. The U.S. share of R&D expenditures, however, rose sharply in 2018 and was well-above its pre-TCJA range.

Though very preliminary, this is further suggestive evidence that the TCJA encouraged MNEs to locate intangible assets in the U.S.

Global Minimum Tax Proposals

Biden administration proposal

The Biden administration proposal raises the minimum tax rate on U.S. multinationals' foreign income through several changes to the current GILTI regime. First, the proposal raises the U.S. statutory corporate tax rate from 21 to 28 percent and increases the share of GILTI included in taxable income from 50 to 75 percent. This results in a tax rate on GILTI of at least 21 percent ($75\% \times 28\%$). Second, foreign tax credits and taxable income are determined on a country-by-country basis, disallowing cross-crediting and the blending of income and losses from different countries. Third, the proposal increases the amount of foreign income included in GILTI by eliminating the substance carve-out for 10 percent of foreign tangible assets and the exemption for FOGEI.¹²

The proposal also eliminates the preferential tax rate for FDII, which the administration argues encourages offshoring of tangible assets. It replaces the BEAT with a new tax targeted at payments to related parties in low-tax jurisdictions, SHIELD (Stopping Harmful Inversions and Ending Low-tax Developments). Appendix A provides an overview of SHIELD.

OECD Pillar Two proposal

The recently agreed outline for Pillar Two proposes a 15 percent minimum tax rate on MNEs' foreign income. Each member country would apply the tax to its own multinationals with revenues of 750 million euros or more.¹³ Income and tax credits are determined on a country-by-country basis and there are no major income exemptions. However, losses or excess credits in one year may be carried forward to offset income or tax liability in later years.¹⁴ The proposal includes a substance carve-out for deemed returns on both tangible assets and payroll costs. The deemed rate of return on both is 7.5 percent for the first five years and then falls to 5 percent.

So far, 132 member jurisdictions have joined the agreement but it still faces resistance from Ireland, Hungary, Estonia, Nigeria, Kenya, and Sri Lanka, among others.

Effective tax rates

To assess the impact of alternative global minimum tax regimes, we estimate effective tax rates (ETRs) on U.S. multinationals' foreign profits under current law and the two proposed reforms. For the OECD Pillar Two proposal, we calculate hypothetical ETRs for U.S. MNEs if the U.S. conformed its minimum tax to the OECD proposal.¹⁵ We assume the 15 percent minimum tax replaces the existing GILTI regime but that current U.S. law is otherwise unchanged. For the substance carve-out, we use the 7.5 percent allowed during the first 5 years.

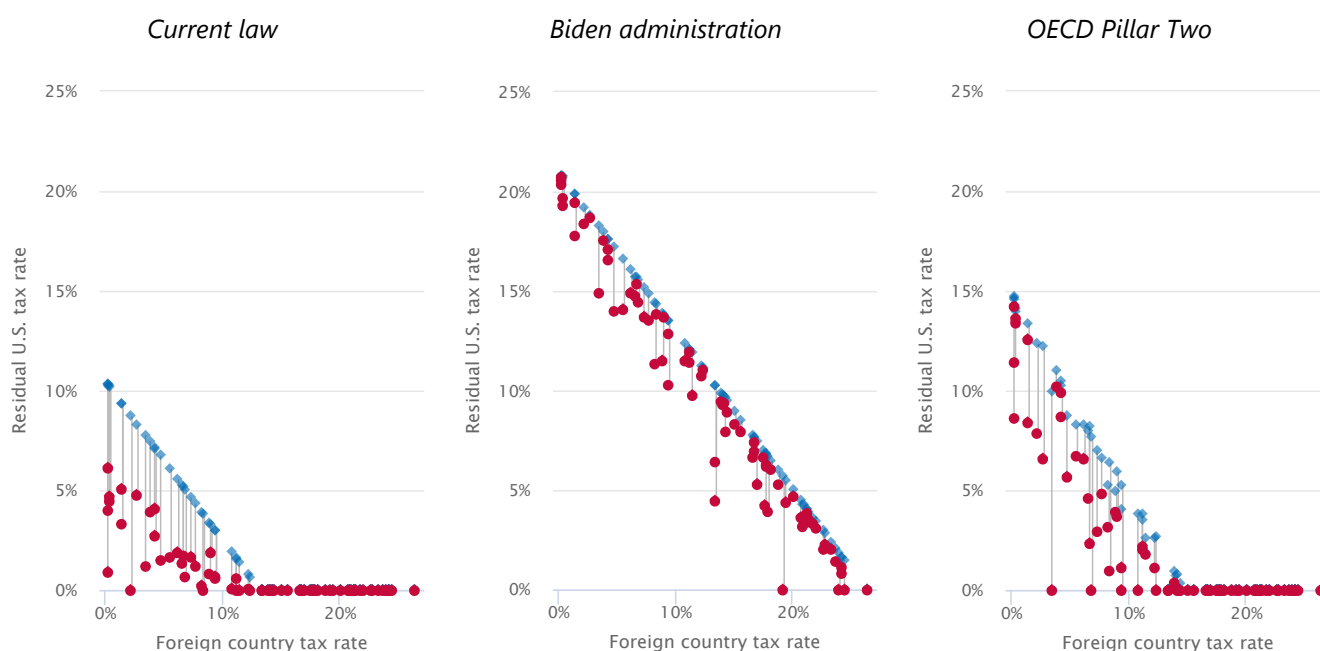
ETR estimates are based on data for 2018 reported on IRS Form 8975, Country-by-Country Report, but incorporate data from several other sources.¹⁶ Appendix B describes the inputs to the ETR calculations. Our method predicts that U.S. multinationals reported a total \$336 billion in GILTI in 2018, very close to the actual total of \$342 billion. We estimate that the residual U.S. tax rate on GILTI in 2018 was 5.8 percent and the

combined U.S. and foreign tax rate on GILTI was 17.6 percent. These estimates are close to the 5.5 percent and 16 percent reported by the Joint Committee on Taxation from a sample of 81 large corporations' 2018 tax returns.

Figure 8 shows the residual U.S. tax rate on profits in low-tax countries under the three minimum tax regimes, plotted against the foreign tax rate. The dark blue triangles indicate the statutory country-level minimum tax rate. This is the tax rate that would result if each minimum tax's basic rate structure were simply applied on a country-by-country basis to all foreign income. The light blue circles indicate the effective tax rate, which accounts for the exemption of certain types of income, substance carve-outs, and blending of losses and credits across countries.

Figure 8. Effective Tax Rates Under Alternative Global Minimum Tax Regimes

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Source: PWBM

Note: Tax rates are relative to all foreign profits.

Under current law, the average effective residual U.S. tax rate on foreign profits is 2 percent. This is less than half the average statutory residual rate of nearly 5 percent, reflecting the sizable impact of blending of losses and tax credits, the 10 percent tangible return substance carve-out, and the exclusion of FOGEI from GILTI. Combining U.S. and foreign taxes, U.S. multinationals pay an average rate of 12 percent on their foreign income.

If the GILTI reforms proposed by the administration were enacted, the effective residual U.S. tax rate would rise more than six-fold to 12.4 percent, only slightly below the average statutory rate of 13.5 percent. The dramatic narrowing of the gap between statutory and effective rates is a consequence of the move to country-by-country determination of income and credits (i.e., no blending), the elimination of the substance carve-out, and the inclusion of FOGEI in GILTI. Together with the higher statutory rate, these factors would boost the combined tax rate on U.S. MNEs from 12 to 22.4 percent.

If the U.S. adopted the OECD proposal, the residual U.S. tax rate would nearly triple from 2 percent to 5.8 percent. This is about four fifths of the statutory residual rate of 7.1 percent. The OECD proposal does not exclude Subpart F income or FOGEI from taxable income but allocates both the income and any U.S. taxes paid on it back to the country of origin. That is why the statutory residual rate appears somewhat nonlinear relative to the foreign rate in Figure 8. The increase in the ETR compared with current law mainly reflects the move to country-by-country determination of income and credits. This is partly offset by the allowance of loss carryforwards and a substance carve-out for both tangible assets and payroll costs (though at a lower rate than current law).¹⁷ Under the OECD proposal, U.S. multinationals would pay an average combined rate of 15.8 percent on their foreign income.

Investment Location Choice of U.S. Multinationals: Intangible vs. Tangible

We extend the analysis in [Singh and Mathur \(2019\)](#) to study the effects of the administration's and OECD global minimum tax proposals on the investment location incentives. This framework allows us to separate the treatment of intangible from tangible assets and compare the benefits and costs of locating new capital in the U.S. versus a foreign jurisdiction. Specifically, they consider a new \$10 million investment with a useful life of 5 years. The income generated by the investment is completely derived from foreign use. It is assumed that the investment in tangible and intangible assets generates the same returns every year: 10 percent normal return and 20 percent economic rents. Appendix C Table 1 shows the before-tax outlays, net capital stock and returns from the investment. The tax treatment of tangible and intangible investment differs. Many jurisdictions including the U.S. allow immediate expensing of most intangible investments. While the U.S. allows expensing of qualified tangible assets under section 168(k), most foreign jurisdictions allow only a depreciation deduction of tangible capital. Appendix C Table 2 shows the taxable income under expensing and depreciation. Singh and Mathur (2019) compare the total tax liabilities, after-tax cash flows, net present value (NPV) and internal rate of return (IRR) of an intangible investment in the U.S. versus a foreign jurisdiction with a zero-tax rate.¹⁸ They also conduct a similar comparison of a tangible investment in the U.S. versus a foreign jurisdiction with an 8.5 percent tax rate. It is unlikely that a foreign jurisdiction that can house a MNE's tangible investment, e.g., factories, faces a zero-tax rate. If the investment is located in the U.S., the MNE benefits from the FDII rule. If the investment is located abroad, it faces the GILTI tax.

Current law

Table 1 and 2 are taken from Singh and Mathur (2019) and show the after-tax cash flows, NPV and IRR from intangible and tangible investments under current law.

Table 1: After-tax Cash Flows, NPV and IRR from Intangible Investment under Current Law

(in million USD)

[DOWNLOAD DATA](#)

| Year | Investment located in US | Investment located Overseas |
|------|--------------------------|-----------------------------|
| 0 | -8.69 | -8.95 |
| 1 | 4.34 | 4.48 |
| 2 | 3.82 | 3.94 |
| 3 | 3.30 | 3.40 |
| 4 | 2.78 | 2.86 |
| 5 | 2.26 | 2.33 |
| IRR | 30.0% | 30.0% |
| NPV | 4.20 | 4.33 |

Source: Singh and Mathur (2019)

Table 2: After-tax Cash Flows, NPV and IRR from Tangible Investment under Current Law

(in million USD)

[DOWNLOAD DATA](#)

| Year | Investment located in US | Investment located Overseas |
|------|--------------------------|-----------------------------|
| 0 | -8.69 | -10.00 |
| 1 | 4.27 | 4.67 |
| 2 | 3.76 | 4.14 |
| 3 | 3.25 | 3.60 |
| 4 | 2.75 | 3.07 |
| 5 | 2.24 | 2.53 |
| IRR | 29.1% | 26.7% |
| NPV | 4.01 | 4.05 |

Source: Singh and Mathur (2019)

They find that under current law, the NPV of an intangible investment is higher if it is located in a foreign jurisdiction with zero tax. This is because the GILTI tax on income from investment abroad is still lower than the tax liability with FDII benefit of income from domestic investment. With a 50 percent deduction, the GILTI income is subject to a 10.5 percent tax rate, while the FDII deduction is only 37.5 percent.

The results are different if the investment is in tangible assets instead. They find that under current law, the NPV from tangible investment is approximately the same in the U.S. as in a foreign jurisdiction with an 8.5 percent tax rate. A key distinction arises from the exemption of a presumptive 10 percent return on tangible assets in FDII and GILTI that lowers both the FDII tax benefit as well as the GILTI tax liability. In addition, since 80 percent of foreign taxes can be used for foreign tax credit, U.S. tax on the GILTI income is reduced further. These factors increase the benefit of locating investment in the foreign jurisdiction. On the other hand, although certain categories of tangible investments qualify for immediate expensing in the U.S., most foreign jurisdictions only allow a depreciation deduction. This difference tilts the benefit back toward the U.S. The after-tax IRR ends up higher when the tangible investment is located in the U.S. However, the tangible investment location incentives are neutral based on the NPV. Although the initial after-tax outlay is lower, the total tax liability is higher in the U.S. in future periods.

Biden administration proposal

Table 3 and 4 show the after-tax cash flows, NPV and IRR from intangible and tangible investments under the Biden administration proposal based on our calculations.

Table 3: After-tax Cash Flows, NPV and IRR from Intangible Investment under the Biden Administration Proposal

(in million USD)

[DOWNLOAD DATA](#)

| Year | Investment located in US | Investment located Overseas |
|-------------|---------------------------------|------------------------------------|
| 0 | -7.20 | -7.90 |
| 1 | 3.60 | 3.95 |
| 2 | 3.17 | 3.48 |
| 3 | 2.74 | 3.00 |
| 4 | 2.30 | 2.53 |
| 5 | 1.87 | 2.05 |
| IRR | 30.0% | 30.0% |
| NPV | 3.48 | 3.82 |

Table 4: After-tax Cash Flows, NPV and IRR from Tangible Investment under the Biden Administration Proposal

(in million USD)

[DOWNLOAD DATA](#)

| Year | Investment located in US | Investment located Overseas |
|------|--------------------------|-----------------------------|
| 0 | -7.20 | -10.00 |
| 1 | 3.60 | 4.32 |
| 2 | 3.17 | 3.86 |
| 3 | 2.74 | 3.39 |
| 4 | 2.30 | 2.93 |
| 5 | 1.87 | 2.46 |
| IRR | 30.0% | 23.2% |
| NPV | 3.48 | 3.19 |

We find that under the Biden administration's proposal, the NPV is still higher if a MNE locates its intangible investment overseas. First, the repeal of FDII implies income from domestic investment faces the entirety of the higher corporate tax rate of 28 percent. Second, although the deduction on the GILTI income is lowered to 25 percent, the GILTI tax rate of 21 percent is still considerably lower than the statutory corporate rate.¹⁹

Similarly, the repeal of FDII increases the tax liability of tangible investment in the U.S. At the same time, income from tangible investment abroad that is subject to GILTI rises compared to current law as the 10 percent return is no longer exempt. That coupled with the higher GILTI tax rate leads to higher U.S. tax on GILTI. We find that under this proposal, the total tax liability of tangible investment in the U.S. increases more than that in the foreign jurisdiction starting in period 1. However, the higher corporate tax rate of 28 percent also implies a bigger reduction in taxable income under immediate expensing of domestic investment in period 0. This ends up making the U.S. a better location choice for the MNE's tangible investment.²⁰

OECD Pillar Two proposal

To illustrate the impact of the global minimum tax in the OECD proposal on location incentives, we conduct the same analysis assuming that the MNE is subject to the U.S. current law except for the tax treatment of its income from investment abroad. Table 5 and 6 show the after-tax cash flows, NPV and IRR from intangible and tangible investments under the OECD proposal based on our calculations.

Table 5: After-tax Cash Flows, NPV and IRR from Intangible Investment under the OECD Proposal

(in million USD)[DOWNLOAD DATA](#)

| Year | Investment located in US | Investment located Overseas |
|-------------|---------------------------------|------------------------------------|
| 0 | -8.69 | -8.50 |
| 1 | 4.34 | 4.25 |
| 2 | 3.82 | 3.74 |
| 3 | 3.30 | 3.23 |
| 4 | 2.78 | 2.72 |
| 5 | 2.26 | 2.21 |
| IRR | 30.0% | 30.0% |
| NPV | 4.20 | 4.11 |

Table 6: After-tax Cash Flows, NPV and IRR from Tangible Investment under the OECD Proposal

(in million USD)[DOWNLOAD DATA](#)

| Year | Investment located in US | Investment located Overseas |
|-------------|---------------------------------|------------------------------------|
| 0 | -8.69 | -10.00 |
| 1 | 4.27 | 4.58 |
| 2 | 3.76 | 4.07 |
| 3 | 3.25 | 3.55 |
| 4 | 2.75 | 3.03 |
| 5 | 2.24 | 2.52 |
| IRR | 29.1% | 25.9% |
| NPV | 4.01 | 3.84 |

Since the proposed minimum tax rate is 15 percent, the tax liability on income from intangible investment abroad is higher than under current law. Assuming that income from domestic intangible investment faces the same tax liability as current law, the MNE's NPV is higher if it chooses the U.S. as the destination for its intangible investment.

Similarly, the higher minimum tax rate increases the tax liability on income from tangible investment overseas compared to current law, even though the full crediting of foreign taxes lowers it slightly. The NPV is higher if the MNE chooses to locate its tangible investment in the U.S. However, it is important to point out that in addition to 5 percent of tangible assets, the Pillar Two rules provide for a substance carve-out that also excludes 5 percent of payroll (7.5 percent in the first 5 years). The exemption of deemed returns on payroll costs is not taken into consideration in the calculation. It would further lower the income subject to the global minimum tax and reduce the tax liability on income from investment overseas. It may very well make the foreign jurisdiction the better location choice for the MNE's tangible investment.

Appendix A. BEAT and SHIELD

To reduce base erosion and earning stripping, the TCJA introduced the Base Erosion and Anti-Abuse Tax (BEAT). The BEAT is a minimum tax based on an expanded tax base without regard to certain deductions such as interest payments to another foreign affiliate. It was put in place to discourage profit shifting of MNCs out of the U.S. For example, an U.S. entity would pay an excessive amount of interest on the internal debt to a foreign parent or affiliate to reduce its taxable income in the U.S. The minimum tax is the difference between 10 percent of the expanded tax base and the regular tax liability, if the former is higher than the latter.

Based on the most recent 2018 returns of active corporations released by the Statistics of Income (SOI), base erosion minimum tax added up to 1.8 billion dollars. The sectors that had the highest base erosion minimum tax were manufacturing, finance and insurance.

A few issues in the design of the BEAT make it less effective in addressing profit shifting than intended. First, the cost of goods sold is exempt from the BEAT, which creates a loophole that allows these payments to escape the additional tax liability. Second, a MNC is not subject to the BEAT unless it has more than \$500 million in gross receipts averaged across a three-year period and more than 3 percent (2 percent for financial groups) of its total deductions is paid to its foreign affiliates. This leaves out a lot of MNCs and gives them the incentive to stay just below these thresholds. Finally, the BEAT tax rate of 10 percent on the expanded tax base is still significantly lower than the domestic corporate tax rate and does not serve as a strong deterrent to profit shifting.²¹

The SHIELD aims to address these shortcomings by making MNCs' payments to related parties that are subject to a low effective tax rate nondeductible. The low effective tax rate would be either the 15 percent global minimum tax rate that is agreed upon or the 21 percent GILTI minimum tax rate as proposed by the Biden administration, depending on which is put in place first. The tax rate that a MNC's expanded tax base is subject to in the U.S. would almost certainly exceed 10 percent. In addition, payments for the cost of goods sold would also be disallowed up to the amount of the payment and the SHIELD would apply to any financial reporting groups whose global annual revenues are more than \$500 million. All these changes are a step forward towards more effectively preserving the U.S. corporate tax base. At the same time, foreign MNCs headquartered in a low-tax jurisdiction could see their tax bills in the U.S. increase significantly. If that would affect their decision to invest and operate in the U.S. is an empirical question.

Appendix B. Effective Tax Rates

Estimates of ETRs by country begin from 2018 data from IRS Form 8975, Country-by-Country (CbC) Report. For a set of about 100 countries or country groupings in which U.S. MNEs have affiliates, the CbC tables report aggregate profits before income taxes, income taxes paid, tangible assets, and the number of employees. Data are provided separately for affiliates with net profits and those with losses.

For all other inputs needed to calculate ETRs, we augment the CbC data with information from other data sources:

Payroll expense: We calculate average employee compensation by country in 2018 from BEA's *Activities of Multinational Enterprises* (AMNE) survey data. We then combine this with the number of employees from CbC to estimate total payroll expense by country.

Subpart F income: We estimate the distribution of Subpart F income by country and industry using data for 2016 reported on IRS Form 5471, Information Return of U.S. Persons With Respect To Certain Foreign Corporations. We combine these estimates with data on Subpart F income by industry from the IRS' 2018 *Corporation Complete Report* (CCR) to estimate Subpart F income by country in 2018. We estimate U.S. taxes on Subpart F income using the weighted average of average tax rates by industry in 2018, with weights equal to each industry's Subpart F income.

Foreign oil and gas extraction income (FOGEI): We estimate FOGEI and related deductions by country and industry using data for 2006 to 2017 reported on Form 1118, Foreign Tax Credit. We then project values for 2018 based on the price of Brent crude oil, which is highly correlated with FOGEI historically.

Loss carryforwards: To estimate net operating loss (NOL) deductions by country in 2018, we first calculate a proxy for the loss carryforward utilization rate by industry using data for all U.S. corporations from the CCR. The proxy rate is equal to the ratio of losses claimed as a deduction in 2018 to total losses in 2016 and 2017. We then estimate the distribution of foreign affiliates' losses by country and industry using data for 2016 from Form 5471. Using those estimates as weights, we calculate proxy utilization rates by country as a weighted average of industry-level rates. Finally, we apply the country-level proxy rates to total losses by country in 2016 and 2017 from the CbC data.

Blending of income and losses: Using CbC and AMNE data for 2018 and Form 5471 data for 2016, we estimate net profits and losses by industry of U.S. parent corporations, country of foreign affiliates, and industry of foreign affiliates. We combine these estimates with others described above to calculate tested income or loss under current law by country and industry of affiliate. We then aggregate by industry of U.S. parent corporation and calculate the ratio of net tested income to tested income. We estimate the corresponding country-level ratio as a weighted average of parent industry ratios, with weights equal to the parent industries share of tested income in the country.

Cross-crediting: Based on information from 81 large corporations' 2018 tax returns reported in [Dowd, Giosa, and Willingham \(2020\)](#), we assume that one third of GILTI foreign tax credits are disallowed under current law. Together with the distribution of foreign income taxes reported in CbC data and the calculation of minimum tax liability before credits, this assumption sets the amount of cross-crediting as a residual.

Note that ETR estimates for the OECD Pillar Two proposal do not account for the carryover of excess foreign tax credits to subsequent years.

Appendix C. Total Tax Liability, After-Tax Cash Flows, NPV and IRR from Intangible and Tangible Investments under Current Law, the Biden Administration Proposal and

the OECD Proposal

[Download Appendix C tables.](#)

This analysis was conducted by [Alexander Arnon](#), [Zheli He](#), and [Xiaoyue Sun](#). Prepared for the website by [Mariko Paulson](#).

1. Under Pillar 1, a market country is qualified to share the residual profit if a multinational corporation earns at least 1 million euros in revenue there. The threshold is lowered to 250,000 euros for countries whose GDP is below 40 billion euros. [↩](#)
2. Estimates for the Cayman Islands also include several other small Caribbean islands: the British Virgin Islands, Montserrat, and the Turks and Caicos Islands. [↩](#)
3. Pretax income is not reported directly in the survey data; it is calculated as net income less income from equity investments plus income taxes. Profit-type return also excludes capital gains and depletion and includes other adjustments to convert financial income to a current production basis. Both measures are net of losses. See [Blouin and Robinson \(2020\)](#) for a detailed discussion of these and other measures of U.S. MNEs' foreign profits. [↩](#)
4. The share of GILTI exempted is scheduled to fall to 37.5 percent starting in 2026, raising the minimum tax rate to 13.125 percent. [↩](#)
5. In practice, the tax rate on GILTI may be higher because MNEs are required to allocate some domestic expenses to their foreign income, which reduces the share of taxes allowed as a foreign tax credit below 80 percent. [↩](#)
6. The share of FDII exempted is scheduled to fall to 21.875 percent starting in 2026, raising the preferential tax rate to 16.406 percent. [↩](#)
7. The sample includes companies with at least \$1 million in cumulative foreign pretax income in 2015, 2016, and 2017. We fill in some missing values as in [Dyreg and Lindsey \(2009\)](#) and exclude all companies still missing values for domestic pretax income, foreign pretax income, or foreign current tax expense. [↩](#)
8. 13.125 percent is the foreign tax rate at which, in principle, residual U.S. tax on GILTI is zero. 35 percent is the pre-TCJA U.S. statutory corporate tax rate. [↩](#)
9. [Dowd, Landefeld, and Moore \(2017\)](#) show that the profit shifting response to tax differentials is highly nonlinear, meaning that MNEs generally respond to large differentials only. [↩](#)
10. We calculate the amount of income shifted as the difference from a counterfactual in which the U.S. share of the low- and high-tax groups' income remains at pre-TCJA (the 2015-2017 mean) levels relative to the control group from 2018 to 2020. [↩](#)
11. "Offshore financial centers" is a category created by Eurostat that contains [40 countries](#) and includes all the major tax havens except Ireland, the Netherlands, and Switzerland. [↩](#)

12. The administration proposal includes additional changes to the GILTI regime that we do not consider here. For example, the proposal would eliminate the high-tax income exclusion—intended to partly offset the limitations on foreign tax credits—and disallow deductions related to the 25 percent of GILTI excluded from taxable income. ↩
13. Countries could choose to set a revenue threshold below 750 million euros. ↩
14. See the October 2020 [OECD blueprint](#). ↩
15. U.S. policymakers are not currently considering adopting the OECD proposal directly, and OECD negotiations on Pillar Two include discussions of integration with the existing U.S. minimum tax regime. However, these calculations provide a useful illustrative benchmark for the relative burdens imposed under alternative minimum tax regimes. ↩
16. Accounting for the income shifts between 2018 and 2020 discussed in the previous section would affect ETR estimates. However, the detailed data required to update the ETR calculations will probably not be available until 2023. ↩
17. Note that our estimates do not account for the carryover of excess foreign tax credits to subsequent years. Hence they may be viewed either as an upper bound on ETRs under the OECD proposal or as applying to the first year the minimum tax is in effect, when there would presumably be no credits carried forward from prior years in the minimum tax basket. ↩
18. A discount rate of 10 percent is assumed. Appendix C provides tables with details of all the calculations. ↩
19. We assume that the immediate expensing of intangible investment lowers the taxable income under GILTI in the foreign jurisdiction in period 0. In the case that it leads to a tested loss in the foreign jurisdiction, the U.S. tax liability on GILTI would be higher than the calculation in the analysis, which could make U.S. the better location choice for the MNE's intangible investment. ↩
20. We follow the assumption in Singh and Mathur (2019) that the entire tangible investment under consideration qualifies for the expensing rules of section 168(k), as amended by section 13201 of the TCJA. If it qualifies only partially, then the benefit of locating it in the U.S. would decrease accordingly. ↩
21. Kamin, et al. (2019) provide an in-depth analysis of the key problems in the 2017 tax legislation. ↩