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The Tax Cuts and Jobs Act: An Appraisal

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The Tax Cuts and Jobs Act: An Appraisal

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Abstract

This paper assesses the landmark Tax Cuts and Jobs Act (TCJA), from the perspective of both the U.S. itself and the wider world. The reform has many positive aspects including steps to broaden the base of, and reduce marginal rates under, the personal income tax (PIT), reduce distortions to investment and financing decisions, and mitigate outward profit shifting. But the TCJA has a large fiscal price tag and leaves significant uncertainty as to how the U.S. tax system will develop. The PIT changes could have better targeted relief at low earners, and there is scope to more fully address distortions in business taxation. The novel international provisions create a complex array of both positive and negative international spillovers, and have the potential to significantly reshape the wider international tax system.

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[1] Many colleagues have contributed to the ideas and analysis set out here: Ali Alichi, Ruud de Mooij, Vitor Gaspar, Cory Hiller, Alexander Klemm, Emanuel Kopp, Daniel Leigh, Thornton Matheson, Christophe Waerzeggers and Peter Williams. We have benefited too from discussions with many colleagues, and with practitioners and academics at a workshop on this topic at the IMF. Views and errors are ours alone.

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I. INTRODUCTION

In December 2017, the United States Congress passed comprehensive and wide-reaching legislation to overhaul the U.S. tax system. The law—popularly known as the Tax Cuts and Jobs Act (TCJA)[2] is a significant change in the U.S. personal and business income tax system, with several novel features and repercussions that go well beyond the borders of the U.S.

There were various objectives assigned by the U.S. administration to the TCJA. The U.S. tax code has long needed an overhaul and the administration argued that this should be targeted at:

- simplifying the system;
- making the U.S. business tax competitive in an international context;
- providing tax relief to lower- and middle-income Americans;
- not providing income tax cuts to the wealthy;
- lowering statutory rates and broadening tax bases;
- creating a more equitable system (including by taxing households at similar levels of income in a uniform way, independent of their type of business or source of income); and
- achieving these various objectives without adding to the fiscal deficit.

On the last of these, however, independent estimates indicate that the planned reduction of the tax burden implied by the TCJA comes at a significant fiscal cost. For example, it is estimated by the Congressional Budget Office (CBO, 2018) to add around US$2.3 trillion to the budget deficit over the next ten years, based on a static costing. Once macroeconomic feedback effects are incorporated, the CBO estimates that the policy changes will add US$1.9 trillion to the deficit over the next ten years.

This paper provides an account and assessment of the key provisions of the TCJA, and relates these changes to both the goals noted above and previous IMF tax policy advice (for example, see Clausing, Kleinbard and Matheson, 2016 and Grigg and Matheson, 2012). It does so both from the perspective of the U.S. itself and, in terms of potential spillovers, that of the rest of the world.

The TCJA is a substantial reform with much technical detail, touching on many aspects of a complex system. Its implementation requires a significant number of regulations that are not yet available, creating uncertainty in the final application of the law. The aim in this paper is not to provide a full assessment, but to review and assess its central features. To this end it explains and appraises the various changes in the business tax (Section II), personal income

[2] The formal title is "HR1: An Act to provide for reconciliation pursuant to titles II and V of the concurrent resolution on the budget for fiscal year 2018."

tax (Section III) and taxation of pass-through entities (Section IV). It then examines the international provisions (Section V), analyzes the macro effects of these changes in the U.S. (Section VI) as well as the likely tax policy spillovers to other countries (Section VII).

II. Changes to the Domestic Business Tax System

The TCJA brings the most significant changes to business taxatoin in the U.S. since the Reagan administration.. These go a long way to lessening distortions in the taxation of U.S. corporations and, taken together, should incentivize new investment and job creation in the U.S. by both U.S. firms and foreign corporations that operate within the U.S.

Further, the systemic nature of the U.S. economy and the important position that U.S. multinationals occupy in the global system mean that the (in several respects, quite fundamental) changes to the U.S. tax system have the potential to significantly reshape the international tax system. These effects are the topic of Section V.

A. A Lower Statutory Corporate Income Tax Rate

The TCJA lowers the federal statutory rate on incorporated businesses from 35 to 21 percent, moving the U.S. from having been, for the last twenty years, an increasingly isolated outlier relative to other advanced and emerging economies to now being close to the median of tax rate imposed by other OECD countries (Figure 1). However, once subnational corporate taxes—which range from 0 to 10 percent at the state level and 0 to 6.4 percent at the local level—are taken into account, the U.S. remains in the upper range of the statutory rate prevailing in other industrial economies. The change also eliminates the deduction for income from qualified production activities[3] and so would ensure that the bulk of C-corporation[4] income is taxed at federal level at a common 21 percent statutory rate (although the TCJA did offer a new deduction ('FDII') for domestic entities that potentially lowers the rate on corporate income arising from foreign sales—as discussed below).

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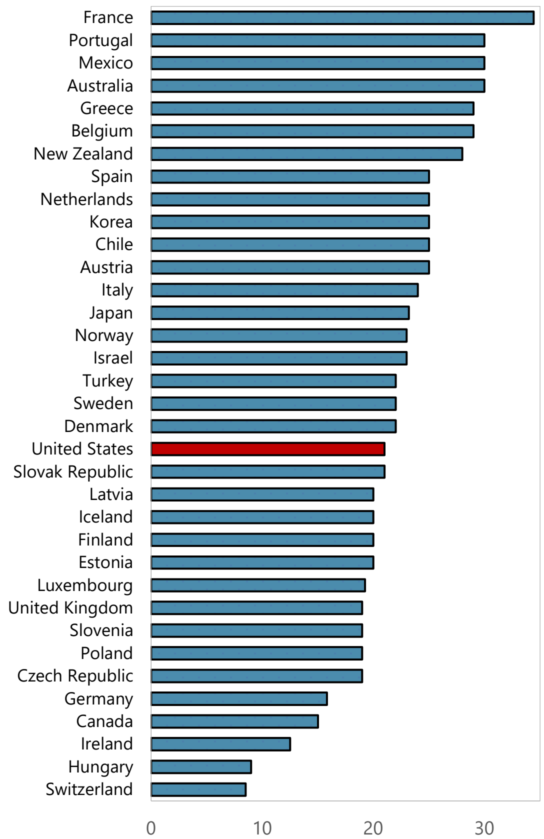
[3] A company operating in manufacturing, some construction services, engineering and architectural services, software development, and some other activities could qualify for the domestic production activities deduction, calculated as 9 percent of net income from these activities (with some limitations on this deduction).

[4] C-Corporation represents a tax status under the federal income tax law and generally encompasses any corporation that is taxed as a separate entity from its shareholders.

Figure 1. Statutory Central Government Corporate Tax Rates (percent)



Sources: Organization for Economic Cooperation and Development
Note: Central government rates only

An Appraisal

Most observers regard a cut in the statutory rate of corporation tax as long overdue. Many of the most significant distortions implicit in the U.S. system—including incentives to shift profits outside the US (including by inverting[5]) and toward artificially high leverage—are ameliorated simply by reducing the statutory tax rate (since the value of those various deductions, incentives, and tax avoidance practices will be proportionally less at a lower statutory rate). The lower statutory rate will also lessen the wide dispersion in effective tax rates (across industries and capital structures) that distorts resource allocation toward those activities and financing choices that face a lower tax rate—a point that is taken up further below.

[5] Corporate inversion is the process whereby a U.S. based company changes its legal domicile to an offshore jurisdiction, usually by merging with a foreign corporation.

On profit shifting, which has been a particular focus of interest, applying a consensus estimate of its responsiveness to cross-country tax differentials from the meta-analysis in Beer, de Mooij and Li (2018),[6] the 14-point cut in the statutory rate implies a 21 percent increase in the reported CIT base in the U.S. This almost entirely eliminates the profit shifting estimated there, in itself leading to additional revenue (at the new low rate) of about US$40 billion (though that is much more than offset by the loss from the rate cut itself.)[7]

Discussion has thus centered around not the direction but the extent of the rate change. As seen above, the reduction simply restores the U.S. to the relative position it had in the early 1990s, at around the OECD norm, and indeed somewhat above that when account is taken of subnational corporate taxes[8]). Certainly, the cut in the CIT rate comes at a significant revenue cost (estimated by the Joint Committee on Taxation at US$1.4 billion over the next 10 years). From the perspective of other countries, the reduction in the U.S. rate may be seen as removing an anchor that has supported CIT rates in the rest of the world, with some risk of further aggravating international tax competition. This is a complex issue, with several other features of the reform being relevant, and is taken up in Section VII.

B. Investment and Finance

Expensing and Depreciation

Prior to the TCJA, the U.S. maintained a system of bonus depreciation that allowed for a front-loaded write-off of certain types of corporate capital spending. Specifically, firms that purchased property that was depreciable under the Modified Accelerated Cost Recovery System with a recovery period of 20 years or less could take a deduction for 50 percent of the cost of the investment in its first year in service (with standard depreciation schedules applicable to the remaining 50 percent).[9] Certain investment properties—typically spending to improve the interior of a building—also qualified for this bonus depreciation. This provision applied only to the original or first use of the asset (that is, newly acquired, but previously used, assets did not qualify).

The TCJA replaces this with more generous treatment. Instead of a 50 percent write-off, firms can fully expense—that is, immediately deduct the full cost of—various forms of both

[6] Specifically, a 1.5 semi-elasticity of reported profits with respect to the tax differential between the U.S. and others.

[7] These estimates use figures in Table 6 of Beer, de Mooij and Li (2018): with a reported CIT base of US$907, the 21 percent reduction implies an increase in the base of US$190, compared to estimated pre-reform profit shifting of US$198 billion, The revenue loss from the reduced rate, at the pre-reform level of the base is about US$120 billion.

[8] See OECD (2017).

[9] The provision was thus not a bonus in the sense that it allowed more than 100 percent of the asset to be deducted over its lifetime, but in the sense of accelerating that deduction.

new and used tangible property that has a recovery period of under 20 years. This 100 percent write-off applies until end-2022; from 2023–27 there will be a gradual reduction in the share of investment that can be immediately expensed.[10]

Treatment of Interest Expenditure

Businesses subject to U.S. tax have generally been allowed to deduct all interest in the taxable year in which it is paid or accrued, within some limits. This creates an inherent tax incentive to the use of debt rather than equity finance, since there is no comparable deduction for the cost of the latter. Such excess leverage can pose financial stability risk when the borrowing is from third parties (sometimes referred to as 'debt bias'). It can also incentivize the artificial shifting of profits within multinational groups to affiliates in jurisdictions where the tax rate applied to interest received is below that at which it is deducted ('debt-shifting').

The U.S. has though long had 'earnings stripping' rules that can limit the amount of interest that can be deducted (as a means to prevent the erosion of the corporate tax base through interest payments to non-residents). Specifically, prior to the TCJA, interest deductions to related parties (where no U.S. tax was imposed on the corresponding interest income) are limited to 50 percent of a firm's adjusted taxable income[11] in cases where (i) a corporation maintains a debt-to-equity ratio that is higher than 1.5 and (ii) some part of the interest paid is not subject to U.S. income or withholding tax. Disallowed interest can be carried forward indefinitely.

In an effort to reduce the debt bias and debt shifting implicit in the business tax, the TCJA introduces new and broader limits on the deductibility of interest[12]. (For cross-border payments, the general 'BEAT' provision discussed later can also create limits on interest deductibility). From 2018–21, interest deductions in any given year are capped at 30 percent of earnings before net interest expenses, tax, depreciation, amortization, depletion and net operating loss. From 2022 onwards, the 30 percent cap applies to a more binding definition of earnings before interest, tax and net operating loss. As under section 163(j), the disallowed interest deductions can be carried forward but there is no relief from these limits either for firms with a debt-equity ratio of under 1.5 or for interest payments that are subsequently subject to U.S. income tax. There are no specific provisions for financial services companies

[10] From 2022, the TCJA replaces the current expensing of R&D by deprecation, a quite significant reduction in the generosity of capital allowances. Some have doubted, however, whether future tax increases included in the TCJA, which helped to the demands of the legislative reconciliation process, will come to pass.

[11] Calculated as taxable income before deductions for net interest expenses, depreciation, amortization, depletion, net operating losses, or for domestic production.

[12] Subpart F treatment of interest was, however, not changed by the TCJA.

but the new limits do not apply to a range of real estate businesses[13], farms, and regulated utilities.

An Appraisal

The full expensing of certain forms of capital investments goes a long way in reducing the marginal effective tax rate on new capital projects and moving the U.S. closer to a 'cashflow' form of corporate tax.[14] As such, for investments financed by equity (whether retained earnings or new issues) it would tax only rents—any amount, that is, in excess of the minimum required by the investor—and not the normal return to capital arising from those forms of capital spending that qualify for the 100 percent write-off. In so doing, it would in principle eliminate the distortion that is currently inherent in the business tax's treatment of capital spending. Said another way, the marginal effective tax rate (METR)[15] on equity-financed investment would be zero, and the incentive to invest exactly as it would be in the absence of taxation. This does, however, presume full loss offset, while the TCJA moves in the opposite direction by eliminating loss carry backs and further limiting loss carry forwards. Averaging over all assets, including those for which immediate expensing is not available (but not taking account incomplete loss offset), Gravelle and Marples (2018)[16] estimate that the average METR for equity-financed investment in the U.S. is reduced by the TCJA from around 16 percent to 3 percent.

That said, the announced phasing out of the expensing provision from 2023 will create timing distortions and complexity (for example, giving incentives for firms to front-load investments in order to take advantage of the more generous tax treatment). A less distorting approach would be to simply allow firms to expense all new capital investments (however long- or short-lived) and to make that expensing provision a permanent feature of the U.S. tax code, as a step toward making the business tax a full cashflow tax.

Matters are more complex in relation to debt-financed investments. Combining interest deductibility with generous depreciation allowances amounts effectively to allowing the cost of investment to be deducted more than once, and so leads to a negative METR: a marginal subsidy, that is, to capital formation. This appears to have been the case prior to the TCJA for a broad range of investments. As a result, the TCJA has two countervailing effects for firms unconstrained in their ability to deduct interest, both before and after the TCJA: immediate

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[13] Real estate firms can elect to not be subject to the interest limitations but then would not be eligible for expensing.

[14] Personal taxes are set aside in this discussion, as would be warranted if the final shareholders are tax exempt or the required post-corporate tax return is set in world markets.

[15] The METR is the wedge between the pre- and post-tax return on an underlying investment which just yields the investor their required post-tax return (expressed as a proportion of the former).

[16] Table 2.

expensing points to an even more negative METR, but the reduced statutory rate implies a less negative one. The latter effect seems to be the dominant one: Gravelle and Marples (2018) report an increase in the average METR for debt-financed investments, across all assets, from -64 to -48 percent.[17] The result likely hinges on the fact that (i) these types of investments were already getting a front-loaded depreciation and so the incremental benefit from full expensing is perhaps relatively small and (ii) the reduction in the statutory rate was large.

If, on the other hand, the restriction on interest deductibility bites, the situation is much the same as for equity finance,[18] with an METR for plant and machinery of zero. For firms that were not constrained in their interest deductions, pre-TCJA however, and so initially had a negative METR, there will thus be an increase in the METR, albeit in the direction of reducing the distortion to capital investment decisions.

Broadly speaking, METRs thus fall for equity-financed investment and increase for debt-financed ones. Overall, and allowing for some non-deductibility of interest, Gravelle and Marples (2018) find only a modest reduction in the average METR across all types of investment and finance, from 1.7 percent to -3.6. Importantly, however, within this aggregate movement is a general convergence of METRs towards zero. The dispersion of METRs, that is, has fallen, implying an efficiency gain (possibly significant) from the reduced tax-induced dispersion in METRSs and resulting misallocation of capital across different types of investment.

Independent of the impact of METRs, the restriction on interest deductibility (along with the fall in the statutory rate itself) will tend to moderate 'debt bias.' This is a positive step, given the financial stability risks from excess leverage (especially in the financial sector).[19] But thin capitalization rules are an imperfect and inevitably crude device for limiting debt—one stark instance being their failure to address these issues for financial institutions).

The new caps on interest deductibility also introduce a procyclical distortion in the system with the cap becoming more/less binding when earnings weaken/strengthen. In a downside scenario, this could exacerbate strains and bankruptcy pressures faced by leveraged corporate entities. This effect is magnified by the TCJA's restrictions on the offsetting of losses.

A better approach would be simply to remove the underlying tax distortion itself. This could be done in a variety of ways. One is by moving towards an Allowance for Corporate Equity (ACE) form of corporate tax (as recommended for example by Clausing et al, 2016), which

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[17] Table 2. Using a different methodology, Beer, Klemm and Matheson (2018, Table 2) estimate a reduction from -174 to -57 percent.

[18] There are subtleties, not addressed here, arising from the effect that current investment may have, through this impact on future earnings, in loosening future constraints on interest deductions: see for example Mintz (2018).

[19] See for instance IMF (2016) and de Mooij and Keen (2013).

would maintain the deduction for interest but add a corresponding deduction for a notional cost of equity finance. Another possibility, toward which the TJCA may have tipped the balance, would be to maintain cash flow treatment of investment while eliminating the deduction for interest spending on newly-contracted debt. This would require transition rules, but does not seem unduly complex. Previously the argument against such a cash flow tax was the potential for losing significant revenues in the near-term that would be made up only over time. With the introduction of the TCJA much of this downside has already occurred with the introduction of temporary expensing for a subset of investments. More challenging, however—or at least much less familiar—would be the extension of cash flow treatment to financial operations.[20]

C. Repeal of the Corporate Alternative Minimum Tax

In 1986 the U.S. adopted the alternative minimum tax (AMT) on corporations in its current form (although a minimum tax has been in place since 1969). The goal was to ensure that the various tax preferences and deductions that had been enacted over time did not unduly erode the corporate tax base and that all profitable businesses pay some tax. To this end, it required corporations to calculate a hypothetical tax liability at a 20 percent rate on a broader base that both limited certain deductions (e.g. depreciation, foreign tax credits, net operating losses, certain intangible costs) and added back certain nontaxed income (e.g. tax-exempt interest). The corporations then paid the larger of the calculated AMT or the liability under the business income tax system. (Small businesses were, however, exempted from the AMT in 1997).

The AMT mainly affected a small subset of industries (notably finance, insurance, and mining and manufacturing), and generated a relatively small share of business tax revenues. The AMT did, however, create some compliance costs since companies are required to ensure they calculate their tax liability under both systems.

An Appraisal

Eliminating the corporate AMT is a positive step. The revenue cost is moderate, and it will lessen costs for firms in complying with (and understanding the consequences of) the tax code as a result of having to run a parallel tax calculation each year (including keeping track over time of credits, the basis of depreciable property, carryovers, credits and operating losses).

[20] Cash flow treatment requires the taxation of all inflows, principal as well as interest, and the deduction of all outflows. The challenges this creates re similar to those discussed in relation to the treatment of financial services under the VAT, as discussed for instance in Crawford and others (2010).

III. Changes to The Personal Income Tax

A. Tax Rates

Under the TCJA, the marginal rates under the PIT have been reduced for married couples earning above US$19,050 (US$9,525 for individuals): Table 1 shows the full set of changes. However, these changes to the rate structure expire after 2025 and the system will then revert to the brackets that were in force prior to the TCJA. Important too is that the tax brackets will be indexed to chained CPI (versus CPI previously[21]) so that taxpayers will more quickly move into higher tax brackets over time (recovering, according to the JCT, around US$133bn in revenues over the next decade).

Table 1. Tax Rate Schedule for Married Filing Jointly Households

Pre-TCJA		TCJA	
Household Income ($)	Tax Rate (%)	Household Income ($)	Tax Rate (%)
< 19,050	10	< 19,050	10
19,050-77,400	15	19,050-77,400	12
77,400-156,150	25	77,400-165,000	22
156,150-237,950	28	165,000-315,000	24
237,950-424,950	33	315,000-400,000	32
424,950-480,050	35	400,000-600,000	35
> 480,050	39.6	> 600,000	37

B. Deductions and Exemptions

The TCJA increases the standard deduction from US$13,000 to US$24,000 (for joint filers) and eliminates the US$4,150 individual exemption for each taxpayer and qualifying dependent. The higher standard deduction will also have the effect of encouraging more taxpayers not to itemize their deductions.

The TCJA also eliminates various itemized deductions (including for home equity loans, gambling losses, theft or casualty losses, and work-related expenses). It caps the deduction for state and local taxes at US$10,000 and lowers the cap on mortgage interest deductions to apply only up to US$750,00 in the total amount of loans used to buy, build or substantially improve the taxpayer's main home or second home (previously the cap was US$1 million

[21] Under the chained CPI the expenditure weights in the index are updated each month to reflect changing consumption patterns, particularly those that occur in response to shifts in relative prices. In the non-chained CPI, these weights are held fixed for 24 months. The chained CPI is viewed as a closer approximation to the actual cost-of- living. See Green et al (2003).

and in addition interest on home equity loans of up to $100,000 of principal that were used to finance consumption was also deductible). Finally, medical expenses in excess of 10 percent of income can continue to be itemized (although a 7.5 percent of income limit applies for 2018, as it did for 2017). Again, as with the tax rate schedule, the changes to deductions and exemptions expire after 2025.

C. Tax Credits

The child tax credit was increased under the TCJA (from US$1,000 to US$2,000) and up to US$1,400 of the total credit is refundable (previously the credit was partially refundable, based on income level). In addition, the income cut-off for eligibility to the credit was increased (from US$110,000 to US$400,000 for joint filers) making the credit available to a wider range of upper income taxpayers. These changes also expire after 2025.

D. The Alternative Minimum Tax (AMT)

The personal AMT was put in place originally in 1969 and has continued as a way to levy further revenue from wealthy taxpayers whose normal PIT liability has been significantly reduced as a result of extensive use of itemized deductions. It also captures otherwise not currently taxable income from individuals that exercise stock options, from those sheltering income in farming or passive activities, and from those that utilize deductions linked to the depletion of mines or other natural deposits.

Prior to the changes to the tax code, the AMT applied to around 4½ million households, mostly concentrated in those earning between US$200,000 to US$1 million. The AMT in 2017 raised US$38 billion in revenues (or around 2½ percent of all individual income taxes) largely by clawing back itemized deductions for those higher income households.

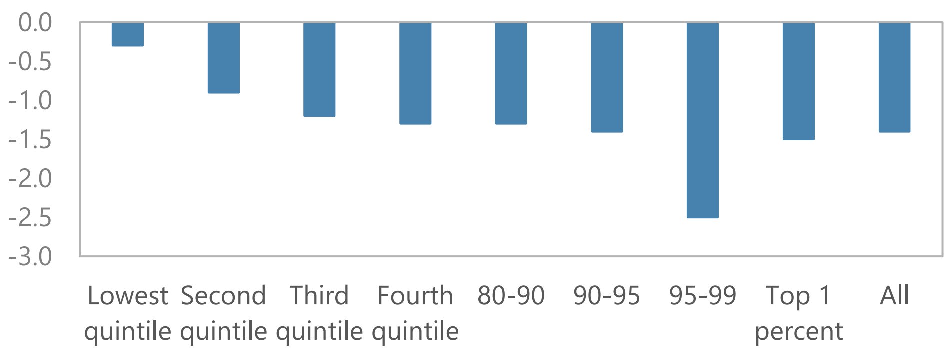
Under the TCJA the amount of income (as defined under the AMT) that is exempt was raised from US$86,200 to US$109,400 for married couples. The threshold above which this exemption starts to be phased-out was also increased, from US$160,900 to US$1 million (for married couples) making the exemptions applicable to a larger share of upper income taxpayers.

The reduction or elimination of a range of standardized deductions (notably that for state and local taxes) and the higher standard deduction also mean that the standard personal income tax liability, rather than the AMT, is likely to be binding for a large number of taxpayers. The net effect of these changes—both in the standard tax system and in the thresholds for the AMT itself—will be to significantly reduce the number of taxpayers that are subject to the AMT.

An Appraisal

Static costing of the impact of various changes in the individual income tax described above (see JCT 2017) indicate that, in 2019, all income groups will be subject to a lower effective tax rate (Figure 2). However, not only does the absolute dollar reduction in tax payable increase as income rises, so does even the proportional reduction, at least until the top percentile (Figure 3). Various studies corroborate this finding.[22] Indeed approximately 25 percent of the revenue cost of the personal income tax changes accrues to those making over US$500,000 per year (Figure 3) By 2025 (i.e., even prior to the expiration of the various TCJA provisions), 43 percent of households at the lowest end of the income distribution would face the same or higher tax rate (in part a product of the lower rate of indexation of provisions in the code). These results will clearly change, however, once macroeconomic feedback effects are taken into account: (see Lizarazo et al (2017) for a discussion of potential dynamic effects of personal income tax reform in the U.S. in a heterogenous agent model).

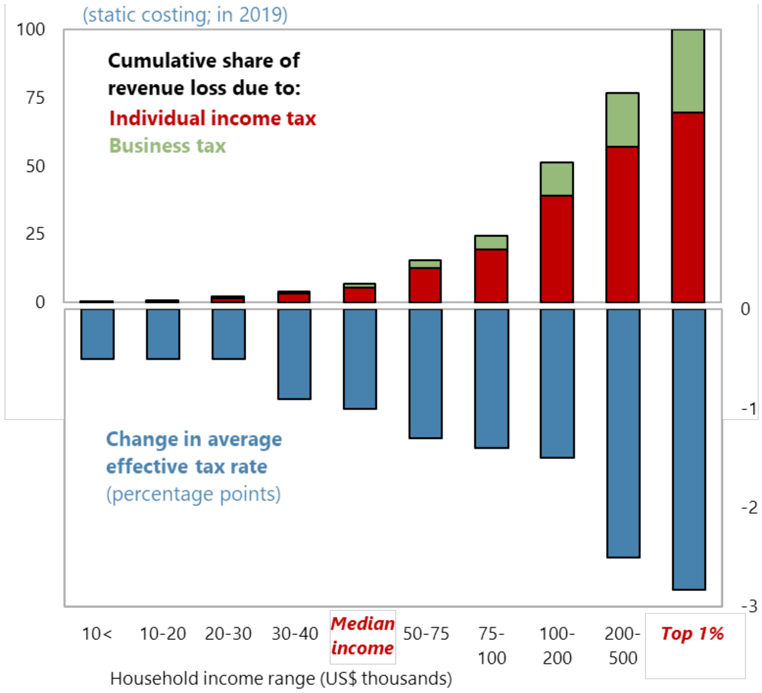
Figure 2. Total Effective 2018 Tax Rates Change Due to the Tax Cuts and Jobs Act *(percent)*



Source: Tax Policy Center.
Note: refers to provisions affecting the individual income tax code.

[22] See Tax Policy Center, 2017, Penn Warton Budget Model, 2017 and CBO (2017b).

Figure 3. Tax Cuts and Jobs Act: Effect by Income Category

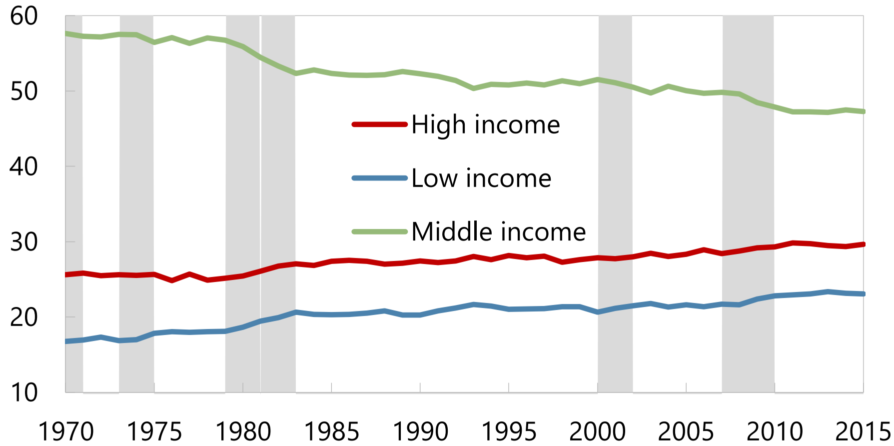


Source: Joint Committee on Taxation

The main beneficiaries of the tax reform are thus the same households that have seen the largest real income gains over the past 15 years. Since the last major tax reform in the U.S., gains in real incomes have largely accrued to those earning more than 150 percent of the median income.[23] Those earning the median income or less have stagnated. Indeed, the median household real income in 2016 was only 0.6 percent higher than it was in 1999 and, for the lowest 40 percent of the income distribution, real incomes were actually lower in 2016 than in 1999. On the other hand, the top 20 percent of the income distribution saw real incomes growing almost 10 times faster than the median over the same period (and faster still for the top 5 and 1 percent of the income distribution).

[23] See Alichi, et al. (2016).

Figure 4. Share of Households in Different Income Brackets (percent)



Source: Alichi, et al., 2016
Note: Low income is defined as <50% of median income, high income as great than 150 percent of median income.

As such, given the changes in the effective rates of personal taxation it is hard to see the TCJA as achieving the administration's stated objective of implementing a tax cut that is targeted at the middle-class. To achieve that objective, it would be possible to make some changes to concentrate tax relief more on those earning close to or below the median income while providing less for those earning above 150 percent of the median income. Some special regimes, including the carried interest provision, could be eliminated to recover some of the lost revenues and improve the progressivity of the system. Such changes would simplify the system, significantly lower the fiscal costs of the changes to the personal income tax, help mitigate income polarization, and provide a boost that is specifically targeted to those groups that have seen little increase in real incomes over the past 20 years.

To help support the working poor, the child tax credit could be made fully refundable. It could also could be phased out from a much lower household income level (i.e. close to the median income) to make the system more progressive and to lessen the revenue cost of the credit. In addition, to raise labor force participation and support low- and middle-income families, the tax code could help lower income families cover part of the costs for child and dependent care expenses (something that the administration itself had previously proposed).

Steps could be taken to expand eligibility for the Earned Income Tax Credit (EITC), notably to encompass workers without dependents, those under 25, and older workers that are not yet eligible for social security, and to increase its generosity. The revenue costs of such changes are likely to be relatively low[24] but they would have a significant impact on those working families that find themselves with incomes that are close to or below the poverty line.

These various changes could be legislated so as to make the personal income tax system both simpler and more progressive. There would then no longer be a need to maintain the AMT as a parallel regime to "patch" the main personal income tax regime. Full elimination of the AMT would somewhat lower compliance costs and further simplify the system.

The replacement of individual exemptions with a higher standard deduction and the elimination of various itemized deductions are positive steps that will simplify the system and result in fewer taxpayers itemizing their deduction. While the caps on the state and local tax deduction and mortgage interest deduction are in the direction of past staff advice they could have been taken further by a more assertive reduction in the mortgage interest cap and a full elimination of the deduction for state and local taxes.

The overall distributional effect of the TCJA will of course also depend on the incidence of changes to business taxation. These—and particularly the degree to which they will ultimately benefit workers—have been a focus of debate and continuing controversy.[25] To the extent that the CIT bears on rents, the rate reduction will directly benefit owners (including of course the non-residents who own something like one quarter of all U.S. equites), [26] with any effect on workers coming through general equilibrium effects that may follow from that. More direct effects on workers can follow to the extent that the CIT bears on the use of capital itself.

The argument is clearest for the case of a small open economy, in which the after-tax tax return to capital available on world markets is taken as given: taxing that return cannot reduce capital owners' income, but must instead must fall on less mobile factors, most obviously labor (and perhaps also land). Several considerations make this a difficult issue to resolve. Empirical evidence on the extent to which the corporate tax has been shifted to labor remains contentious (see Gravelle 2011). For the U.S., with no major rate change over decades, experience to draw on is necessarily scant. Some estimates for Europe put the incidence of corporate taxes on labor at around 30 percent. Since the U.S. is evidently not a small economy, one might expect a larger incidence on capital and hence a smaller benefit to labor from the business tax reform. Also, the extensive holding of U.S. corporations' equity by nonresidents suggests that a considerable part of the benefit from a lower business taxes

[24] See Hoynes (2014). Again, however incidence considerations arise, given evidence that a large part of the benefit of the EITC goes to employers in the form of reduced wages (Rothstein, 2010).

[25] Auerbach (2018) provides a detailed treatment of this issue, concluding that "the potential for disagreement….is large": see also Gravelle and Marples (2018) and Slemrod (2018).

[26] Citing CBO (2018), Slemrod (2018) notes that nearly half of the increase in GDP from the TCJA is projected to accrue to non-residents.

enjoyed by non-residents.[27] On the other hand, to the extent that the reform moves the system closer to a rent tax, that in itself will alleviate whatever burden is eventually borne by labor. The issue thus remains to a large degree open and likely to be a subject for future research (particularly since evidence on the eventual burden of the corporate tax would be expected to play out over the longer term).

E. Other Important Provisions of the Act

The Individual Mandate. One of the central provisions of the Affordable Care Act was to impose a fee on households if they are able to afford health insurance but choose not to buy it (the individual shared responsibility payment). That fee, administered through the annual filing of the household's federal tax return, is quite substantial: the larger of 2.5 percent of annual household income or US$695 per adult and US$347.50 per child. The TCJA eliminates this provision, starting in 2019.

An Appraisal. This fee acted to help sustain a pooling equilibrium in the nongroup health insurance market. The exact magnitudes of the effects are highly uncertain and dependent on the behavioral model employed. However, it seems clear that elimination of this fee will reduce coverage, worsen the average risk of the insured pool, and result in somewhat higher premiums. Indeed the CBO has provided an analysis of the likely effects of eliminating that provision (CBO 2017) and, while recognizing the uncertainty of any estimate, estimates that the number of people with health insurance would fall by 4 million in 2019, rising to 13 million by 2027. The study also finds that average premiums in the nongroup market might rise by around 10 percent. As such, this policy change runs counter to protecting those gains in healthcare coverage that have been achieved since the financial crisis, particularly for those at the lower end of the income distribution.

Carried Interest. A taxpayer can receive a profits interest in a partnership in exchange for the performance of services. Such interests are taxed as long-term capital gains (often referred to as "carried interest") and thus at a lower rate than if they were taxed as ordinary income. The tax reform introduces a minimum holding period of three years for such income to be taxed as long-term capital gains but preserves the thrust of the provision.

An Appraisal. The carried interest provision in the tax code significantly reduces the marginal tax rate faced by some high-income individuals and introduces inequities between taxpayers of similar incomes that can and cannot recharacterize their labor remuneration to take advantage of this provision. It also creates a distortion that incentivizes households to recast their incomes in the form of profits interest in a partnership. This avoidance possibility should be eliminated with the income from such activities taxed as ordinary income.

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[27] See U.S. Treasury, 2018.

Estate and Gift Taxes. The exemption for the estate, gift, and generation skipping transfer tax is doubled to US$11.2 million per individual (until 2025) and is indexed to inflation beyond that.

An Appraisal. This change in the exemption provides tax relief to households with very significant assets: less than 0.2 percent of individuals that die in a given year are subject to the estate tax even before the TCJA. This change runs counter to the objective of providing tax relief to the middle class. Further, the fact that the step-up in basis for capital gains treatment of assets held at death will continue creates a significant windfall to beneficiaries of wealthy decedents.

IV. Provisions for Pass-through Businesses

A substantial part of the business income base is not subject to tax under the CIT (as "C-corporations") but rather under the individual income tax system as "pass-throughs". The owners of those businesses are taxed as if the income is passed through to them rather than being taxed once at the corporate level and then again at the individual level. Such businesses include partnerships, sole proprietorships and S-corporations.

Around 95 percent of all businesses in the U.S. are constituted as pass-throughs. While many of these are small businesses (with less than US$10 million in sales) there are also a number of very large businesses in this group (including many hedge funds, private equity firms, real estate businesses, law firms, accounting and consulting practices). In 2013, 51 percent of all business income was earned by pass-through entities and more than two-thirds of that income accrued to the top 1 percent of taxpayers (Nelson, 2016).

Prior to reform, with pass through income subject to normal personal tax rules and a top marginal rate applied to such income at 39.6 percent, organization as a pass-through entity could often be tax advantaged relative to being a C-corporation (given the statutory tax rate of 35 percent plus dividend and capital gains taxation). The reduction of the statutory rate to 21 percent, however, could reverse this to create a large tax advantage for firms to reorganize as C-corporations. To mitigate this possibility, the TCJA creates a deduction for pass-throughs of 20 percent so that, effectively, only 80 percent of certain types of pass-through income is taxed at the personal income tax schedule. For those taxpayers that can take advantage of this provision, this implies that the top marginal rate they would pay falls from 39.6 percent (in the previous regime) to 29.6 percent[28] in the new regime.

The deduction is available to all with incomes under certain thresholds (for joint-filers that earn under US$315,000 of taxable income), regardless of their business. For certain "specified services businesses" the 20 percent deduction phases out for joint-filers earning from US$315,000 to US$415,000. These types of businesses include law firms, medical

[28] 80 percent of the highest marginal rate under the post-TCJA PIT, 37 percent.

practices, accounting and consulting firms, brokerage services, professional athletes or any trade or business in which the principal asset is the reputation or skill of one or more of its employees (engineering and architectural services, however, are explicitly excluded).

Even for those businesses that are not specified services businesses, the 20 percent deduction is capped at the lower of 50 percent of the W-2 wages of the firm or 25 percent of the W-2 wages plus 2.5 percent of the value of the undepreciated tangible assets of the business.[29] These limits explicitly do not apply, however, to real estate investment trusts.

An Appraisal

The TCJA sets the maximum effective rate on pass-throughs that qualify for the deduction (29.6 percent) below both the effective rate on distributed corporate profits (32.85 percent)[30] and the top marginal PIT rate (37 percent). The treatment of pass-through entities in the TCJA thus creates incentives to recharacterize C-corporation and personal income as pass-through income. As such, the policies create inequities between businesses that earn the same income but that have a different organizational form (or a different business area), with consequent incentive to change organizational form simply for tax reasons. The policies also create inequities between households that can and cannot arrange their activities and recharacterize their income to qualify for the deduction. In doing so, this creates significant incentives for some high-income employees to become independent contractors (forming partnerships or sole proprietorships, for example) to reduce their tax obligations, potentially eroding both the business and personal income tax bases.

The TCJA does contain guardrails that are intended to limit the use of the pass-through deduction. However, it is unclear how effective these will be in preventing an erosion of the personal income tax base from high income individuals or from stopping pass-throughs from redesigning their operations to maximize their ability to qualify for the 20 percent deduction. In addition, the guardrail provisions greatly increase the complexity of an already complicated set of provisions and may themselves add to the inequities and inefficiencies in the tax treatment of income depending on the nature of the business that derives it (e.g. real estate development versus providing accounting services).

It would be better not to have the 20 percent deduction for certain types of pass-through income. This would have ensured the highest tax rate for pass-throughs remains above that for distributed corporate profits, creating incentives for a broad range of entities to incorporate as C-corporations. In doing so, this would significantly simplify and make more

[29] There is ambiguity on whether or how owners of multiple pass-through entities can aggregate wages and tangible assets across their holdings in calculating the caps on the 20 percent deduction.

[30] The tax borne by distributed profits is 21 percent at the corporate level and then a further 15 percent dividend tax at the household level (a combined 21 + (100-21) * (0.15) = 32.85 percent. However, insofar as the firm is owned by entities not subject to dividend taxation the combined rate could be lower. Subnational taxes will also enter the calculations.

neutral the treatment of business income. Further, such a change would eliminate the incentive for higher income individuals to become pass-throughs. A deduction could be provided solely for pass-through income that is below a certain threshold, to provide a preferential tax regime for truly small businesses and entrepreneurs.

V. International Provisions

The TCJA includes several very marked and in some respects novel changes in how the U.S. tax system interacts with those of other jurisdictions.[31] Five provisions are central to this:[32]

1. **Elements of territoriality**. Prior to reform, the U.S. taxed the worldwide income of U.S. multinationals, with a non-refundable credit for foreign taxes paid, and liability to U.S. tax being deferred until dividends were paid from the foreign subsidiary to the U.S. parent. The TCJA moves the system—subject to important caveats below—toward a territorial system, excluding from U.S. taxation the active business income that is earned abroad.

2. **Transition tax on unrepatriated profits**. Under prior law, the possibility of deferral, (likely combined with the expectation of a future reduction in the tax rate applied to repatriations)[33] resulted in U.S. multinationals building up a very substantial stock of unrepatriated earnings (in the order of US$2.6 trillion). [34]As a transition measure associated with the move to territoriality, the TCJA imposes a one-time tax on the deemed repatriation of that income; at the rate, for corporate owners, of 15.5 percent for those funds that are held in cash or cash-equivalent assets and 8 percent for the remainder. This is to be paid over the next 8 years.[35] As can be seen from Figure 6 (below), this represents the only substantial revenue-raising element in the TCJA (although some repatriations, perhaps taxed at a higher rate, would presumably have occurred without the reform, especially if the expectation of a future rate reduction had been credibly removed).

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[31] It is worth noting that under the U.S. tax code, Puerto Rico constitutes a foreign jurisdiction. Thus, for instance, some of the anti-avoidance provisions in the new law may adversely affect transactions between mainland corporations and related parties in the commonwealth.

[32] For a more detailed description and appraisal of these, see Dharmapala (2018) and Gravelle and Marples (2018).

[33] Had this not been the case, deferral would have been less attractive: if unrepatriated funds had accumulated at the investor's minimum required pre-tax return, it would not have changed the present value of taxes due. The expectation of a future likely reduction on repatriations was likely stoked by the experience of a temporarily reduced rate on repatriations (for example in the Homeland Investment At of 2004) and widespread discussion of the move to territoriality.

[34] See Institute of Taxation and Economic Policy, 2017.

[35] There are also special rules for S-corporations and estate investment trusts.

Three other measures are especially novel, having no parallel elsewhere in the international tax landscape. These relate to:

3. **'Global Intangible Low Taxed Income'** (**GILTI)**. As an important qualification of the move to territoriality, the TCJA imposes a minimum tax on overseas income that is in excess of 10 percent of the return on tangible assets abroad. (Despite the name, GILTI income is not formally associated with intangible assets).

   This provision taxes at the 21 percent corporate rate the aggregate of the income of controlled foreign corporations that is earned in all foreign jurisdictions that is in excess of 10 percent of qualified business asset investment (i.e., the depreciated value of tangible fixed assets of those controlled foreign corporations, calculated not by the rules that apply to investment in the U.S., or those of the foreign country, but by reference to a less generous depreciation schedule)—but with a deduction for corporate recipients of 50 percent of that income.[36] Credit is also given for 80 percent of the foreign tax paid on such income. There is, however, no deferral of the tax and no link to repatriation of the income. This, in effect, imposes a minimum rate on GILTI income of 10.5 percent on such income (when no tax is paid abroad) with the U.S. liability wholly eliminated if the foreign tax on that income is at least 13.125 percent (i.e. 10.5 percent divided by the 80 percent foreign tax credit). The GILTI provisions may have substantial bite in practice.[37]

   As a consequence, the post-TCJA system may be better described as being worldwide with a minimum tax that is defined by the GILTI provision, rather than as territorial. It is, broadly, simply a rather different hybrid of the two than was the pre-TCJA system.

4. **'Foreign Derived Intangible Income' (FDII)**. Domestic corporations receive a 37.5 percent deduction from the corporate tax base for 'FDII,' which is calculated as the income of the corporation in excess of 10 percent of qualified business asset investment multiplied by the share of foreign-derived income to total income (all calculated on a consolidated group basis). This effectively reduces the corporate tax rate from 21 to 13.125 percent for income arising from the sale of goods or services that are produced in the U,S, but sold to non-U.S. parties.to the extent that such income exceeds 10 percent of tangible assets.[38] As with GILTI, despite the name there is no explicit link with

[36] From taxable years starting in 2026, the deductible portion falls to 37.5 percent, and the minimum rate consequently increases to 13.125 percent (and the foreign rate at which U.S. liability is extinguished rises to 16.406 percent).

[37] Calculations using aggregate data in Beer, Klemm and Matheson (2018) suggest an average effective GILTI rate relative to foreign pre-tax income of about 2.9 percent (and an average foreign tax rate of 7.9 percent). Dharmapala (2018) suggests that GILTI may even bite for most U.S. multinationals.

[38] From 2026 on, mirroring the parameter change under GILTI, the deductible portion under FDII falls to 21.875 percent (implying an effective rate of 16.406 percent.

intangible assets, though one source of such a high return on tangible assets that is evidently very much in mind is the receipt of royalty and similar payments from foreign entities. And this provision too may have significant applicability: one estimate is that had FDII been in effect in 2014, around 9 percent of all U.S. companies and 13 percent of multinationals would have been eligible for FDII, with a particularly heavy concentration in manufacturing. [39]

5. **Base Erosion and Anti-Abuse Tax (BEAT)**. The TCJA applies an anti- base erosion provision to multinational companies[40] that have annual gross receipts over US$500 million in the preceding 3 years and make certain cross-border payments to affiliates in an amount exceeding 3 percent of their total deductible expenses. The payments targeted here are those (such as interest, royalties, and management fees) that are commonly associated with profit shifting. The provision does not apply to items characterized as cost of goods sold. Specifically, the BEAT imposes a tax liability that is equal to the larger of (i) a tax at 5 percent (this rate rising quickly over time) [41] on a concept of “modified” taxable income that adds back into income those deductions claimed for cross-border payments to affiliates that are not part of the costs of goods sold (essentially encompassing service payments, interest, rents and royalties) or (ii) the regular tax liability (net of tax credits) under the normal corporate income tax base (although with exceptions, until 2025, for R&D credits and some other specific credits).

An Appraisal

As with the reduction in the statutory rate, the movement towards territoriality restores the U.S. to what has become the advanced country norm. The U.K. and Japan, most notably, have moved in the same direction in recent years (though China, India, Brazil and other countries that may well become increasingly prominent as capital exporters remain closer to the worldwide model).

In efficiency terms, territoriality has the merit that U.S. firms will compete on equal tax terms in foreign countries with firms based elsewhere (at least, those that are not domiciled in jurisdictions that operate effective worldwide tax systems), including in the acquisition of other companies and productive assets: the criteria of capital import and ownership neutrality respectively (CIN and CON). At the same time, however, inefficiencies arise in that differences in third countries’ tax rates mean that territoriality can distort the choice of U.S. companies as to where to operate abroad: a failure of ‘capital export neutrality’ (CEN).

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[39] Dowd and Landefeld (2018).

[40] This includes both U.S. companies and foreign companies with income effectively connected with a U.S. trade or business but does not cover individuals, S-corporations, regulated investment companies or real estate investment trusts.

[41] The rate rises to 10 percent for 2019–25, and 12.5 percent thereafter.

Theory provides little guidance, however, on which of these dimensions of efficiency is more important.[42] It may be that neither of these efficiency effects, which operate in opposite directions, will be especially marked, given that the ability to defer U. S taxes is likely to have meant that for many firms the pre-reform system was already, in many respects, a form of de facto territorial system—though other considerations arise below.

With the move to territoriality, some tax on deemed repatriated profits in the transition to the territorial approach is necessary and advisable. However, given that this is a tax on past profits, and thus is non-distortionary, the rate was likely set at too low a level given the urgent need for federal budget revenues. This is particularly so since the previous system of tax deferral has already conveyed large tax benefits to those companies that chose not to repatriate profits. Finally, it seems hard to justify a differential tax treatment of past profits based on whether they are currently being held in cash or non-liquid assets, especially given that taxpayers have 8 years to meet their liability.

Worth noting too is that the evidence suggests that, while for tax purposes this offshore income is viewed as unrepatriated, the resources are actually not being held offshore in an economic sense and, rather, are likely largely invested in a range of (mostly fixed income) U.S. dollar assets. While there will be some portfolio rebalancing as firms readjust their capital structure to the new provisions of the tax code, this is likely to occur over an extended period of time. Also, because the repatriation is deemed, the low tax rate is available to all firms regardless of whether or not they "move" (in an accounting sense) their offshore profits. Based on these factors, it is not expected that the taxation of offshore profits will create a visible effect in international financial markets or lead to significant capital flows back into the U.S., or create measurable movements in currency markets.

By removing the backstop of taxation in the U.S., the move towards territoriality means there is potentially a heightened risk that profits are shifted out of the U.S. into lower tax jurisdictions. For this reason—and because of possible spillover effects discussed later—IMF staff and others[43] have argued that such a move would need to be accompanied by some form of minimum taxation of earnings abroad. The GILTI provisions introduce such a tax, though evidently targeted at those companies that derive a large part of the earnings from projects with returns in excess of 10 percent of tangible assets. How to tax such earnings has been a centerpiece of recent debates in international taxation, with a recognition that their inherent mobility has enabled firms with heavy reliance on intangibles—notably the leading 'digital' companies, but also for example some pharmaceutical companies and even some blue chips—to pay relatively little tax. The GILTI provisions take a sword to this Gordian knot,

[42] See for instance IMF (2014). In the context of the U.S reform, Dharmapala (2018) stresses CON; Gravelle and Marples (2018) stress CEN, noting too that from an initial perspective this requires deductibility of foreign taxes (treating them just like any other cost) while from a global perspective it requires their crediting.

[43] As for instance in Clausing et al (2016) and Mullins (2006).

ensuring that such activities pay, somewhere in the world, a tax rate of at least 10.5 percent with no deferral.

The core incentive that the GILTI provision creates is towards establishing, in respect of operations outside the U.S., a low ratio of income (in the numerator) to tangible assets (in the denominator). Looking to the numerator, this points towards arranging to receive income in the U.S. rather than abroad, with income from intangibles (such as royalties and similar payments) evidently very much in the minds of those framing the TCJA (particularly given how much of such intangible income has come to be realized in low tax jurisdictions, so as to defer U.S. tax liability).

There is evidently, however, also an effect through the denominator, creating incentives to locate tangible assets outside rather than in the U.S., perhaps by acquiring foreign companies.[44] Indeed as will become clear below, there can be an incentive to locate tangible assets abroad to the point that the associated investments would be unprofitable in the absence of the tax. To put this another way, GILTI can mean that the METR for investment abroad is negative. This does not sit easily with the objective of improving the competitiveness of U.S. business, at least in respect of investment within the U.S.

There is no doubt that the GILTI provisions, whose effect is supported by the FDII discussed shortly, are an ingenious approach to the problems posed by intangibles in the prior regime Nevertheless, a case can be made that the approach would be even more effective if it were imposed on a jurisdiction-by-jurisdiction basis, rather than on the aggregate of activities abroad: foreign tax credits from higher ta jurisdictions could not then be mixed with more lightly taxed income to increase the available foreign tax credit. Increasing tangible assets in one jurisdiction would then not have the effect of reducing GILTI income arising in others. there would then be still less to gain by receiving GILTI income in higher tax jurisdictions. By the same token, as taken up later, a jurisdiction-by-jurisdiction minimum tax would support stability in the wider international tax system.

One other aspect of the GILTI provisions may prove important. To the extent that, for some firms, its effect may plausibly be to increase the U.S. tax payable on foreign earnings, it may actually increase the incentive to invert. The TCJA does incorporate additional provisions to discourage inversion,[45] but this may nonetheless in some cases still be a tax-efficient strategy.

The FDII, applicable to domestic corporations, is in important respect the mirror image and support of GILTI, establishing a lower tax rate for income derived from transactions with

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[44] Dharmapala (2018) sees significant efficiency loses from increased divergence from CON, with a tipping of the comparative advantage towards U.S. firms in acquiring tangible assets abroad and for non-residents in acquiring them in the U.S. Whether this is movement away from or towards CON would though seem to depend also on the tax treatment offered by other countries).

[45] Most notably, the favorable treatment of deemed repatriations is rescinded if inversion takes place in the decade following the TCJA.

entities or persons abroad. The underlying logic is that without some more generous treatment of domestic investments that serve foreign markets, the elements of territoriality and the GILTI provision could leave it preferable to produce such items abroad by moving tangible assets offshore (where the intangible assets are located). As such, GILTI is sometimes referred to as the stick discouraging U.S corporations from locating intangibles abroad and FDII as the carrot to encourage their relocation to the U.S. The lower tax rate for exporters will have the effect of distorting location decisions based on tax considerations (which, in some sense, is what is intended).

There is concern, however, that the FDII provision could be subject to a WTO challenge on the grounds that it constitutes a subsidy that is contingent on export performance (normally prohibited under the WTO Agreement on Subsidies and Countervailing Measures). [46]It may also run afoul of the minimum standard on harmful tax practices under the G20-OECD project on Base Erosion and Profit Shifting (BEPS), which aims to counter measures that offer advantageous tax treatment for activities that are not tied to real activity in the country concerned. Further, it is unclear, given the costs of transferring intangible assets and potentially countervailing effects from other provisions of the Act, that the preference will achieve its desired goals of incentivizing a repatriation of intangibles back to the U.S. The lower tax rate for exporters creates an economic distortion that arises from a more favorable tax treatment for exports than for domestic sales which will have the effect of distorting location decisions based on tax considerations (which, in some sense, is what is intended). As such, a less distortive system would eliminate this provision.

The third international tax novelty, the BEAT, is aimed directly and broadly at limiting opportunities to shift profits to low tax jurisdictions through inter-corporate payments. In this, it is notably more aggressive than measures coming out of the G20-OECD Base Erosion and Profit Shifting (BEPS) project. It may be that the BEAT will achieve its intended objective of curtailing various base erosion and profit shifting behaviors. There is concern, however, that it may prove punitive for a range of legitimate commercial activities—including in the financial sector—that do not constitute tax avoidance or aggressive tax planning. Crucial here is that the BEAT includes no test that the outgoing payments will be lightly taxed at the other end. The provision also creates a broad-ranging preference for domestic over foreign production (since it applies only to cross-border payments), although its scope is limited to large corporations. [47] Further, new incentives are now created for

[46] Views on this do differ somewhat: Kamin and others (2017) argue that the FDII regime "is likely an illegal export subsidy in violation of WTO agreements"; Sanchirico (2018) concludes that it is not clearly in breach.

[47] This particular aspect has led some to speculate that the BEAT may violate US tax treaty provisions, particularly under Article 24 of the US model, the "non-discrimination provision." Others, though, argue that this would not be the case, on the ground that the BEAT is not similar to denying a deduction, and that it is conceptually similar to a broadly applied thin capitalization rule—which rules do involve denying interest deductions to foreign but not domestic related parties, but are not regarded as non-discriminatory. In any event,

companies to rearrange their operations—or at least their accounting—to avoid application of the BEAT (e.g. by recharacterizing cross-border transactions with related parties as cost of goods sold, or even by inverting). These shortcomings should be mitigated by only applying the provision to those transactions that are designed to transfer profits to low tax jurisdictions (as defined by regulations, or potentially for jurisdictions with statutory tax rates below a certain cut-off).[48]

The GILTI, FDII and BEAT provisions have few if any precedents, and are certainly complex. Tax planners and academics are still in the process of fully understanding their implications. The complexity comes in part from a swathe of detailed provisions that are not set out above, and in some cases have not yet been defined.[49] Even within the broad parameters described above, however, deciding on the tax-efficient response by U.S. investors is not straightforward—and will depend sensitively on their circumstances. Companies may well, for some time, adopt a wait-and-see approach before they make decisions to change investment locations or restructure their operations (or even the accounting of their operations).

Take, for instance, a U.S. multinational company decision as to whether to locate in the U.S. or abroad a given set of tangible assets to serve foreign markets. Figure 5 shows how the tax-efficient decision depends both on the rate of return earned on those assets and the foreign tax rate[50]. If the rate of return on tangibles is less than 10 percent, then the choice simply depends on whether the foreign tax rate exceeds 21 percent (in which case, given the element of territoriality, investing in the U.S. is preferred). Suppose, however, the return on tangible assets is higher than 10 percent, opening up the possibility that GILTI (if the investment is placed abroad) or FDII (if placed at home) will apply.

Specifically, the choice is then between (i) locating at home and paying 21 percent on that part of the return under 10 percent plus the FDII rate of 13.125 percent on the excess, or (ii) locating abroad and paying GILTI on the eligible income plus the foreign tax liability. If the rate of return is only slightly above 10 percent, then how that excess income is treated immaterial: If the foreign tax rate is not very much below 21 percent, investing in the U.S. is preferred. If, on the other hand, the excess return is extremely high, then in effect it is only the treatment of that excess income that matters. Since the firm can always achieve a 13.125 percent tax on that income by locating in the U.S. and being taxed under FDII, the U.S. would be the preferred location unless the foreign tax rate is only very slightly above that. Hence the bowed part of the boundary between the two choices shown in the figure.

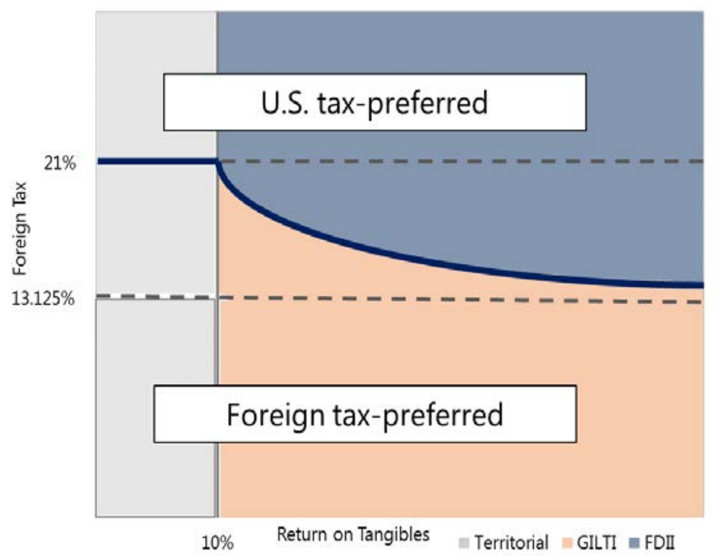
under US law, treaties may be overridden by domestic legislation, though courts and indeed congress have been reluctant to find such overrides in the past. See, e.g., Avi-Yonah (2018).

[48] There are also possible WTO issues under the BEAT: see Avi-Yonah and Vallespinos (2018).

[49] For example, those relating to the allocation of domestic interest expenses to foreign activities.

[50] The foreign tax is here assumed for simplicity to be a tax on pure rents.

Figure 5. Tax-Efficient Investment Location Given Territoriality, GILTI and FDII



Note: The bold line shows combinations of the foreign tax rate (T_F) and pre-tax return on tangibles (r) at which the after-tax reruns from investing in the U.S. and abroad are equal, given a domestic tax rate of 21 percent in the latter. For $r > 0.1$ tis is defined by

$$rT_F + \max\{(r - 0.1), 0\} = (0.21)[r - 0.375(r - 0.1)],$$

the term on the left being tax payable under GILTI< that on the right being tax payable under FDII.

Further complexities arise when considering not where to locate a given investment, but how much to invest there. [51] Take, for example, a firm that is benefiting from FDII today and expects to do so in the future. Suppose it is producing only for export. Then immediate expensing will generate a deduction at the FDII rate of 13.125 percent, and future cash flows will be taxed at the same rate. So it might seem that the tax will act effectively as a rent tax on that investment and that the marginal effective tax rate (METR) will be zero. However, investing gives rise to another effect: by increasing the stock of tangible capital to which the benchmark return of 10 percent is applied it automatically reduces the amount of income subject to the reduced FDII rate and increases the amount that is subject to the standard rate of 21 percent. This effect increases the tax liability associated with the investment and so implies an overall discouragement to investment (i.e. the METR is positive). But this is not the only possibility. As shown in Appendix I, the sign of the METR depends on both the regime in which the firm finds itself when investing and that in which it receives the associated income. Table 2 summarizes the results. Though there are exceptions, the overall impression is that FDII actually creates a disincentive to create tangible assets in the U.S.,

[51] On this see also Beer, Klemm and Matheson (2018) which takes a different methodological approach to the calculation of marginal effective tax rates but reaches broadly similar conclusions.

since a higher stock of such assets mechanically reduces the amount of FDII income to which the favorable treatment applies.

Table 2. The METR for Domestic Investment under FDII

		Period 2	
		FDII	Standard regime
Period 1	FDII	+	+
	Standard regime	−	0

Note: Details in Appendix I.

For tangible investments abroad, the position is essentially reversed under GILTI (considering here only U.S. taxes[52]), because it is a higher rate (not a lower rate) that is applied to the income in excess of a 10 percent return on tangible capital. A firm that is in the GILTI regime now and expects to remain there, for instance, gains an additional advantage by locating tangible assets abroad—beyond any income they generate—since by doing so it increases the amount of income that is excluded from taxation in the U.S. under the GILTI. Hence, as noted, the METR on investing in tangible capital abroad in such a case is negative.

And even all this does no more than touch on the complexities at stake.[53] In considering an investment decision within the U.S., a firm may, for example, conclude that the tax treatment (e.g. under FDII) would imply a much lower tax rate than it pays abroad. However, by locating in the U.S. that same investment would now become, in principle, subject to the BEAT on any transactions that subsidiary may have with offshore related parties. For example, take a firm that locates all its technology or human resource services in a subsidiary outside of the U.S. and then charges the multinational's various corporate entities an internal payment to remunerate for providing those services. It may well become less advantageous to invest in the U.S. because doing so would give rise to BEAT-related tax liabilities on those internal corporate payments. But it may be even better strategy for that company to expand its activities in the U.S. and so generate enough deductible expenses not subject to the BEAT that it ceases to be liable to the BEAT. Again, the privately optimal response will be very company-specific.

Though the picture is complex, it may well be that the international provisions of the TCJA create incentives to locate more intangible assets in the U.S, and more tangible investments outside of the U.S., than before the TCJA. Though there are evidently other important aspects

[52] Importantly too, foreign investments do not receive immediate expensing for application of the GILTI provisions.

[53] Some provisions have also merged as needing clarification, or to have rough edges that would ideally be smoothed. The limitations on allocating expenses to foreign affiliates for calculation of the foreign tax credit, for instance, mean that GILTI liability may remain in the U.S. even when the foreign tax rate exceeds 13.125 percent. And the calculation of BEAT on gross rather than net ingest has been a concern for financial institutions, routinely engaging in much larger within-group gross flows then net.

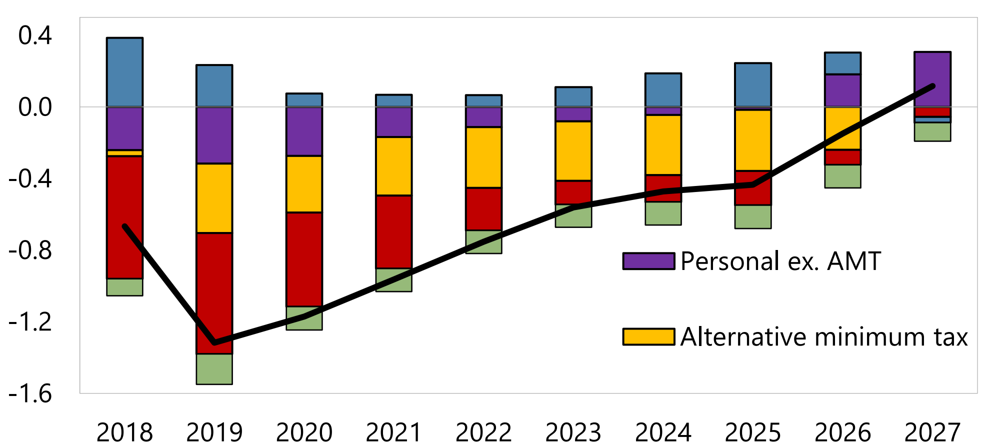
of the reform that encourage real investment in the U.S., this potential feature of the international provisions does not accord well with the stated objective of the reform to encourage investment and job creation within the U.S.

VI. An Exploration of Macroeconomic Effects

The TCJA implies a significant reduction in the taxation of both individuals and corporates in the coming years. It is clear that this magnitude of revenue loss will have important consequences for the U.S. macroeconomic outlook as well as for the path of federal finances in the coming years. To assess these, the effects of the various different components of the tax reform were simulated using DSGE models to assess their potential effects. Specifically, the JCT (2017) static costing was used as a starting point for the net impulse and the implied change in the effective tax rates for businesses, households and individuals.

The collective impact of these changes is estimated to be an increase in the level of GDP over the near-term by 1.2 percent (by 2020)[54]. Much of this effect is cyclical, arising from the demand stimulus implied by the TCJA. There is, though, some modest improvement in potential growth as a result of the reform, largely from its effect in encouraging capital investment. The provisions that apply to business entities (both C-corporations and pass-throughs) are expected to have the largest effects on output and, within those effects, the combination of a lower statutory rate and the expensing of capital spending are likely to generate the most important effects on investment and growth.

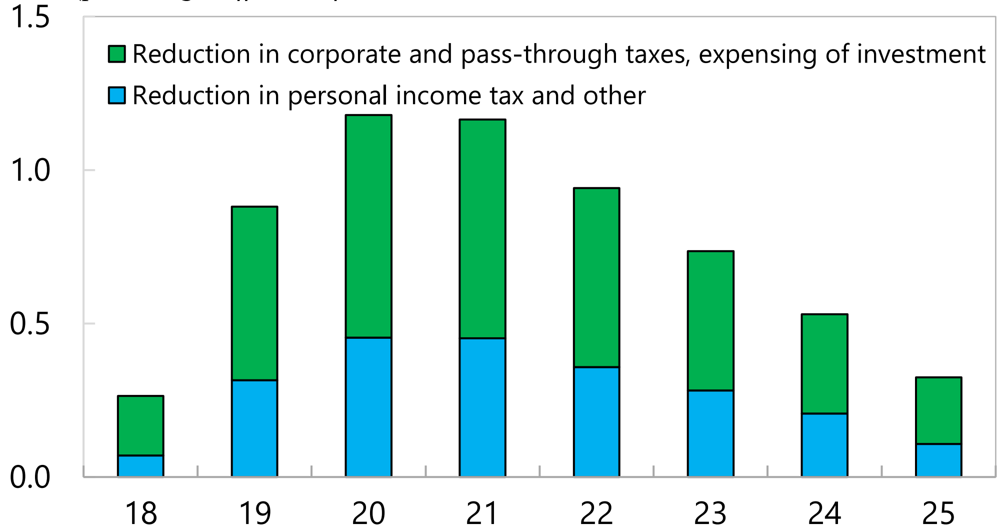
Figure 6. U.S. Tax Cuts and Jobs Act (TCJA) Impact on Tax Revenue
(percentage points of GDP; static costing)



Sources: IMF staff estimate, based on the Joint Committee on Taxation's costing.

[54] Note the estimates presented here are focused only on the tax reform and do not include the effects of the Bipartisan Budget Act which added US$300billion to spending in 2018–19.

Figure 7. GDP Level Impact
(percentage difference from baseline)



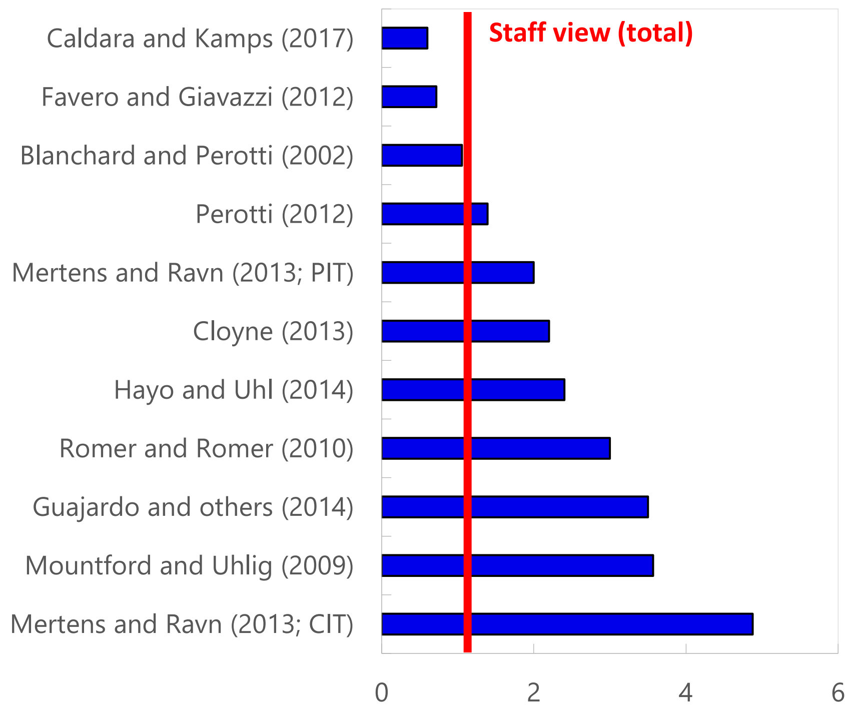
The estimated effects of the reform imply fiscal multipliers that are broadly consistent with the (admittedly wide) range that has been identified in the literature. Calculating backward from the estimated macroeconomic effect, the implicit multipliers in this assessment are described in Table 3 These are perhaps conservative when compared with the recent published literature that estimates the impulse and peak multiplier from changes in tax policy (summarized in Figure 8).

Table 3. Fiscal Impact and GDP Level Impact, 2018–2020

	Fiscal	GDP	Multiplier
Total	**-1.2**	**1.2**	**1.0**
Corporate and pass-through	-0.5	0.9	1.8
Personal	-0.6	0.3	0.4
Tax on unrepatriated profits	0.1	0.0	0.0
Tax on foreign profits (territorial)	-0.1	0.0	0.0

Table reports percent of GDP deviations from pre-tax baseline, and average multiplier (GDP level impact / structural deficit impact).

Figure 8. Literature: Impact of a Tax Cut of 1 percent of GDP on GDP *(percent; peak)*



Despite an improved picture for GDP, the reduction in tax revenues and looser fiscal policy will raise the primary deficit-GDP of the federal government and put the federal debt-GDP on a steeper upward path (Figures 9 and 10).[55]

Figure 9. Federal Debt
(percent of GDP)

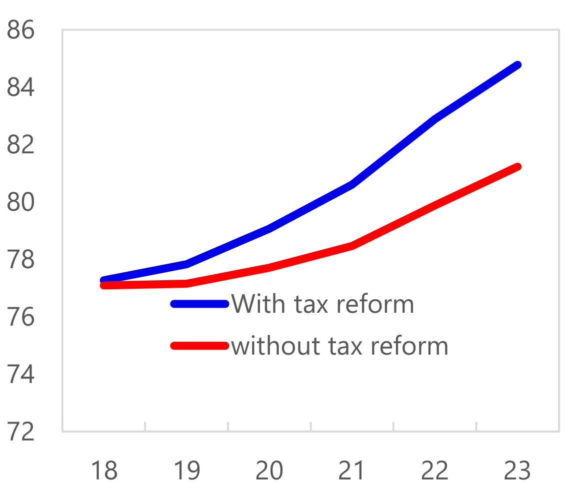
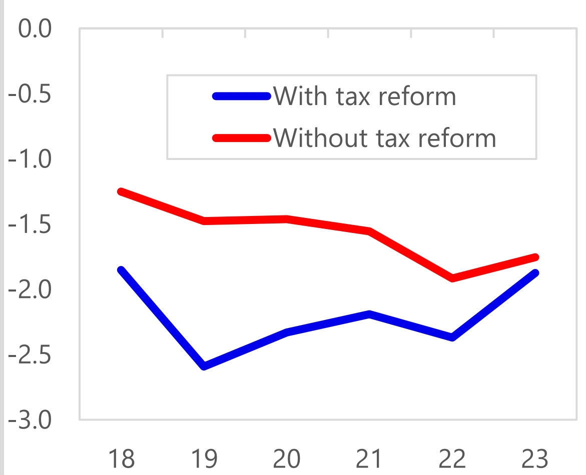


Figure 10. Primary Fiscal Balance,
(federal government, percent of GDP)



[55] See IMF (2018) for more discussion.

As GDP rises further above potential the unemployment rate is likely to continue to fall further below the level consistent with full employment (Figure 11), taking more than a decade to converge back to the natural rate. This will, in turn, create larger upward pressures on inflation that will require the Federal Reserve to raise policy rates at a faster pace in order to achieve the Fed's dual mandate of 2 percent Personal Consumption Expenditures inflation and full employment (Figure 12).

Figure 11. Unemployment Rate
(percent)

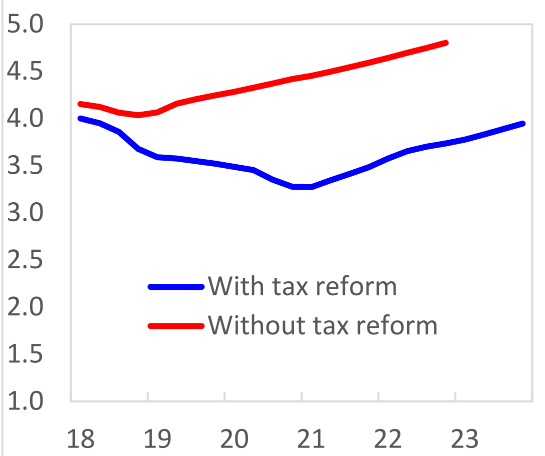
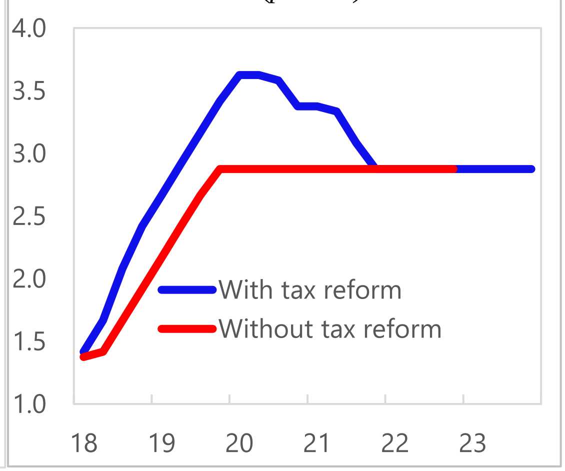
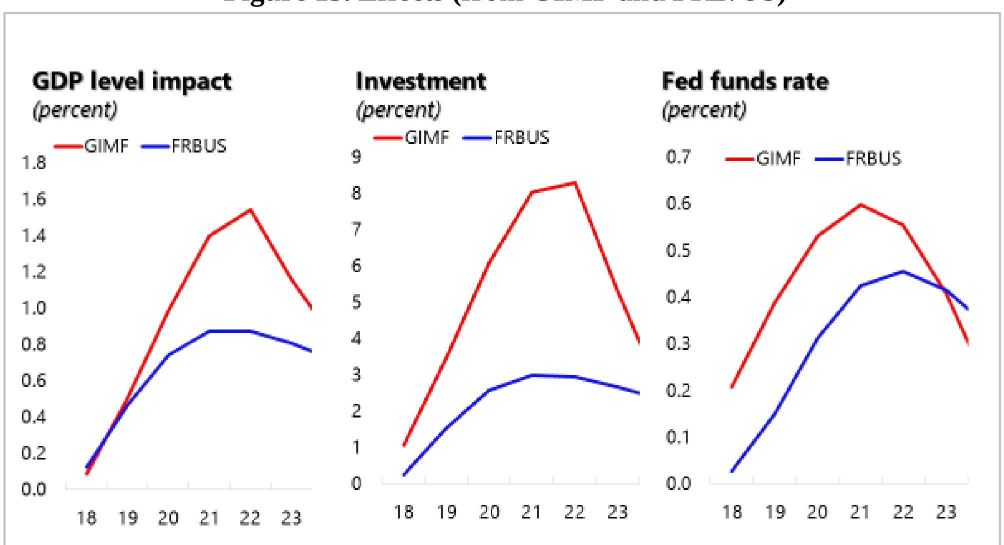


Figure 12. Federal Funds Rate
(percent)



These estimates of the macroeconomic effect parallel fairly closely those that emerge from simulations using the Federal Reserve Board's U.S. (FRBUS) model and from the IMF's own Global Integrated Monetary and Fiscal (GIMF) model.

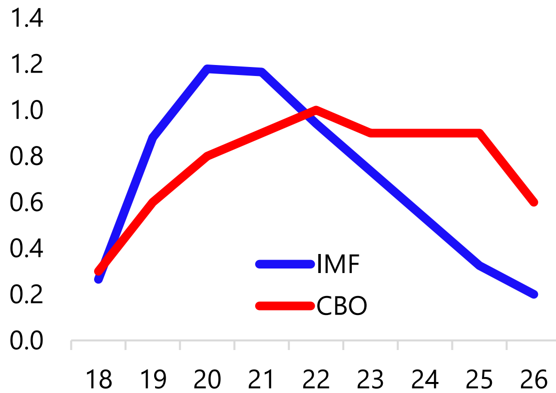
Figure 13. Effects (from GIMF and FRB/US)



Note: all charts are differences from the given model's baseline scenario.
Source: IMF staff simulations of Federal Reserve Board US model and IMF Global Integrated Monetary and Fiscal model.

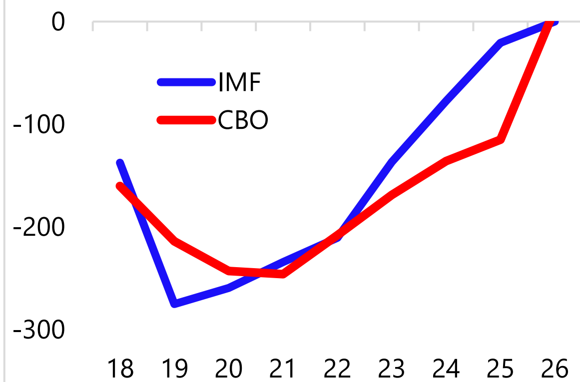
While the broad assessment of the macroeconomic impact is similar to that estimated by the CBO, the dynamics are quite different. Specifically, the CBO assesses the tax reform to have a much larger and lasting effect on potential output but with a smaller cyclical component (both as the stimulus is being rolled out and, later in the forecast horizon, as the stimulus is expected to be withdrawn). In part this is also because the CBO's costing of the impact on the federal deficit arising from the TCJA predicts much less of a reversal of the revenue effect within the 10-year budget horizon than was statically costed in the original JCT assesment of the Act.

Figure 14. GDP Level Impact
(*percentage point difference from baseline)*



Sources: Congressional Budget Office and IMF staff estimate

Figure 15. Federal Primary Deficit Impact
(billions of dollars, difference from baseline)



Sources: Congressional Budget Office and IMF staff estimate

VII. Spillovers And Possible Reactions Abroad

The TCJA has potentially substantial implications for other countries, in terms of both broad macroeconomic impact and through the incentives, for both companies and governments, created by the detail of its provisions.

Macroeconomic Spillovers

The most direct and immediate impact of the U.S. tax reform on other countries is through the spur it provides to aggregate activity in the U.S (as analyzed above). This demand stimulus will not only add to U.S. growth but also create a faster normalization of U.S. monetary policy and a rise in both the US dollar and in interest rates. The net effect of this change is likely to provide a near-term boost to the U.S. and to translate into higher import growth, an increase in the U.S. current account deficit (to around 3½ percent of GDP by 2019–20), putting upward pressure on the dollar and worsening the international investment position. The higher U.S. current account deficit is expected to be matched by growing current account surpluses (or smaller current account deficits) in other systemic economies with the largest current account effect likely to be seen in Canada and Mexico. As a result, global imbalances are expected to rise, with the various attendant risks that such imbalances convey (including possibly catalyzing public support for increased protectionism).

However, outside of this baseline effect, the range and size of future risks, both for the U.S. and for the global economy, is likely to rise. The expectation is that the demand stimulus would lead the Federal Reserve to raise policy rates at a faster pace which could potentially create volatility and disruptions in U.S. asset markets. There could be a tightening of U.S. and global financial conditions, an abrupt decompression of term and other risk premia, and strains placed on leveraged corporates and households. Such a scenario could also create important adverse risks for non-U.S. corporates, households, and sovereigns (especially those that have borrowed heavily in U.S. dollars) and/or trigger a marked reversal of capital flows, particularly to emerging markets.

Tax-related International Spillovers[56]

These baseline macroeconomic effects do not, however, capture the potential impacts of the reform on either investment abroad or the extent of profit shifting between the U.S. and the rest of the world. In practice, these effects are a major consideration for other countries as they consider the impact of the reform, and whether to respond to it through changes in their own tax system (and if so how). There is also the potential that policy changes abroad that are triggered by the TCJA could, in turn, have spillback effects for the U.S. itself. Indeed, the U.S is so significant to the international tax system, and so fundamental are the change in policies, that an ultimate reshaping of that system may prove one of the most lasting consequences of the reform. The complexity of the TCJA means, however, that quite how the reform will play out in the wider global context is far from easy to assess.
Consider first the impact on real investment. As seen above, the TCJA likely lowers the METR for many investments in the U.S., so tending to increase investment there—including by foreign corporations (which can also benefit from the FDII provisions). That does not, however, necessarily mean a reduction in investment elsewhere. That may be the case, however, if companies are constrained in the overall amount of capital they can deploy worldwide or if they are serving integrated markets (within North America, for instance) from different locations. In such circumstances, companies would effectively have to allocate across locations, and the statutory rate at which profits are taxed becomes relevant. For this, the reduction in the average effective tax rate—which is more marked than the change in the METR—comes into play and will tend to reduce real investment abroad. Beer, Klemm and Matheson (2018) estimate a fairly wide range of possible real investment reductions: assuming no change in tax rates outside the U.S., their simulations imply a median reduction in multinational investment of between 1.1 and 2.7 percent of their capital stock,[57] and of 5 to 20 percent in the most affected percentile. Corresponding to this, median tax revenue from

[56] A detailed analysis of these is provided in Beer, Klemm and Matheson (2018). There are parallel and important issues as to the impact on and reactions of, subnational governments within the U.S.; these are not addressed here.

[57] Tables 3 and 4. The difference arises from alternative choices of weights in assessing sensitivity to changes in the U.S. statutory tax rate.

multinationals is estimated to fall by 0.6 to 1.3 percent (and 3 to 21 percent in the top percentile).

Three aspects of the reform may have countervailing effects on investment and revenue abroad:

- First, to the extent that the taxation of repatriated earnings had an impact under the prior regime, the move toward territoriality reduces the U.S. tax charge on foreign profits, and so (all else being equal) would tend to increase, U.S. corporations' investments abroad. There is indeed evidence that the movement to territoriality in the U.K. led to an increase in outward investment to lower tax jurisdictions (see Liu, 2018).

- Second, as also noted above, the GILTI provisions which accompany the shift towards territoriality create a new incentive to locate real investments outside the U.S. The extent of these effects being very uncertain, however, it seems a reasonable presumption that the net effect will be reduction in real investment abroad, more marked in countries with closer relations to the U.S.

- Third, and acting to offset the first aspect, insofar as locating investments inside of the U.S. could be expected to give rise to taxation under the BEAT, this could make it less advantageous to invest in the U.S. rather than abroad.

The large reduction in the statutory tax rate in the TCJA can also be expected to reduce profit shifting out of the U.S., as discussed earlier, a counterpart to which would be a reduction in tax revenue accruing in other countries. Beer, Klemm and Matheson (2018) put the consequent median revenue loss outside the U.S., including also that from the reduction in investment discussed earlier (all still at unchanged tax rates outside the U.S.), at 1.3 to 2.8 percent of revenue from multinationals.[58] These effects may be exacerbated by both the BEAT measures (to the extent that it reduces taxable of foreign affiliates in the U.S. as a result of reduced cross-border payments to them.) and the effect of the GILTI insofar as it undercuts the tax advantage to U.S. corporations in relocating their income to low tax jurisdictions.

Second Round Effects and Strategic Responses

All this assumes unchanged policies outside the U.S. In practice, many countries are actively considering how the reform may affect them, and how, if at all, to respond.

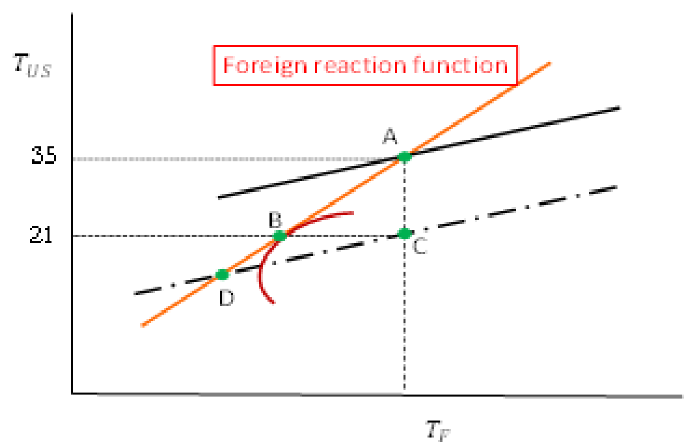
Much attention has focused on the possibility that the TCJA will intensify the trend towards lower corporate tax rates that has been underway for many years—with likely consequent

[58] As in previous footnote.

adverse effects on tax revenue, but perhaps also the effect of moderating any reduction in real investment. Assessing this raises several considerations.

One of these is the nature of the strategic interaction between the U.S. and the rest of the world. Suppose that one simply thinks of interactions in the setting of tax rates as a one-shot game, ignoring the complications that repeated interactions bring, and that there is only one other country, which behaves in Nash fashion, simply taking as given whatever tax rate is set by the U.S. One possibility then is that the U.S. acts as a Stackelberg leader, internalizing in its decision the likely response of others. Another is that the U.S. also plays Nash. Figure 16[59] contrasts the outcomes in these two cases. The initial equilibrium is at point A, with the U.S. setting a rate of 35 percent and the other country choosing the corresponding tax rate on its best response function.

Figure 16. Strategic Interactions in Tax-Setting



Take first the case in which the U.S. acts as a Stackelberg leader, choosing its own tax rate to pick off its preferred point on the foreign best response. The interpretation of the rate reduction under the TCJA would then be that. perhaps because of a change in policy preferences,[60] the preferred position of the U.S. is now at point B, where an iso-welfare locus is tangential to the foreign best response. In reaction to the U.S. cut, the foreign country will reduce its tax rate to the level at point B—and that will be the end of things.

[59]The upward-sloping best responses in Figure 16 reflect the common presumption that tax rates across countries are strategic complements. For more on the diagrammatic apparatus here (including the shape of iso-welfare contours) see Keen and Konrad (2013).

[60] An alternative interpretation, for instance, is that U.S. policy preferences have not changed, but (in term of Figure 16 below) the foreign best response has drifted downwards over recent years, and with it foreign tax rates; with some fixed cost to changing the tax rate, the U.S. then reacts when that downward shift is sufficient to make responding worthwhile.

Things are different, however, if the U.S. is playing Nash, so that the initial equilibrium is such that its best response passes though A. The rate cut of the TCJA can then be thought of as a downward shift of the U.S. best response as to take it through point C, implying, at the initial foreign tax rate, a U.S. rate of 21 percent. The new equilibrium is then found at point D, where the two best responses intersect.

Comparing the two cases, point D being south-west of B, the final reduction in tax rates—in both the U.S. and the rest of the world—is less if the U.S. is a Stackelberg leader than if it too plays Nash: the intensification of tax competition set in train by the U.S. tax cut, that is, is consequently less. Which view of the strategic game comes closer to capturing reality is by no means clear (and of course both are highly simplistic). It may be, for instance, that the apparent difficulty of achieving substantial tax change in the U.S. means that a leadership role is inevitable; and wise policy makers, recognizing that, will think through how others will respond to their decisions.[61] Or it may be that substantive reform now being in place, simple changes in the rate will now be much easier.

The difference between the outcomes in these two strategic settings is likely to be greater, all else equal, the more responsive are tax rates set by each country to those set by others: the flatter, that is, is the foreign best response in Figure 16.

Taking a central estimate of this parameter from the (fairly sparse) literature, Beer, Klemm and Matheson (2018)[62] estimate that in the Stackelberg case (or, more generally, when further changes in the U.S. rate are ruled out) rates in the rest of the world will fall by an average of 3.8 percentage points. They further estimate that (notwithstanding the dampening of investment effects this implies) the additional reduction in median revenue from multinationals will be in the order of 3 to 7 percent. This is larger than the effect at unchanged tax rates: policy responses elsewhere can thus be far from second-order in assessing the final effects of the TCJA.

Suppose, instead, that the U.S. is playing Nash. Within the same setting as Beer, Klemm and Matheson (2018), [63] rates abroad fall instead by 4.6 points, while that in the U.S. falls not by the 14 points of the TCJA but by 16.8. The difference is thus modest. At levels of responsiveness that are higher but within the range of existing estimates, however, the difference is very marked. Such calculations can be no more than illustrative, but suggest,

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[61] Gordon (1992) offers an explanation of the provision of foreign tax credits—a puzzle, in that it is more consistent with global efficient (CEN) than national—on the grounds that the U.S. has acted as a Stackelberg leader and by this means induced higher tax rates elsewhere. Interestingly, he speculates that foreign crediting may end—as now—if the U.S. ceases to be a leader.

[62] Table 7.

[63] The analytics are a fairly straightforward extension of those in Appendix II of Beer, Klemm and Matheson (2018). We are grateful to Alexander Klemm for performing these calculations.

nonetheless, that doubts over the form of strategic interactions in tax-setting are a significant source of uncertainty in assessing the impact of the TCJA on competition in tax rates

All this, however, focuses solely on the statutory tax rate, and does not capture other central aspects of the TCJA that will likely shape the reactions of other countries.

One is the move towards territoriality. To some extent, the final total tax paid by U.S. multinational on their earnings abroad was independent of the tax rate charged abroad: foreign countries could tax at up to the U.S. statutory rate without any impact on the total tax paid by investors, but with the effect of increasing their own revenue at the expense of revenues to the U.S. Treasury. Historically, this has likely been an important way in which the U.S. policy has served to sustain higher statutory tax rates in the rest of the world. The widespread use of deferral, however, significantly blunted this effect, so this twist to downward rate competition may be limited.

The novel international provisions of the TCJA, however, in some important respects point in the opposite direction. To see this, consider again Figure 5, considered this time from the perspective of a foreign government, whose sole concern—for simplicity—is to attract U.S. multinational activity (the location of which is assumed, again for simplicity, to be driven solely by tax considerations). Setting a tax rate above 21 percent does not look like a wise strategy since U.S. corporations will then prefer to produce in the U.S. Those U.S. companies that are producing in other jurisdictions for export to third markets would take advantage of FDII if their return on tangibles is above 10 percent and relocate to U.S. as a base for exports.

More strikingly, supposing for the moment that there is only one foreign country, there is also little point in setting a tax rate below 13.125 percent, since that is the best that is available to an export-oriented U.S. corporation if it were to choose to locate in the U.S. A low tax jurisdiction that aimed to attract intangible income by setting low tax rates will now have an incentive to actually *raise* its tax rate.

The expectation might thus be, in broad terms, of a foreign tax rate being set between 13.125 and 21 percent.[64] Matters become more complex, however, when recognizing that there are many foreign jurisdictions. If one were to set its rate at 13.125, for example, another could by setting its own rate to (say) zero ensure that the U.S. corporation faced a total rate of 10.5 percent, rather than the 13.125 rate it would face in the other jurisdiction or if it opted for FDII. Another way to see the consequence of averaging is in the implication that a jurisdiction may be able to lower its statutory rate below 13.125 percent without triggering any GILTI liability for the U.S. multinational (particularly if there are significant investments

[64] And by the same logic, between 16.406 and 21 percent from 2026. To the extent such an increase in the lower rate is indeed expected, this may also mitigate any incentive to reduce rates now.

taking place in jurisdictions with tax rates that are quite a bit higher). Clearly, however, that reduction in the tax payable by the U.S. corporation is fairly modest.

The pressures towards higher tax rates in low tax jurisdictions are further mitigated, of course, to the extent that they seek also to attract activity from higher-tax jurisdictions other than the U.S. Worth noting, nonetheless, is that any upward pressure on rates in low tax jurisdictions could have a significant spillover benefit to other countries that are also affected by profit shifting. That, in turn, once the dynamics fully play out, would limit the downward pressure.

The key point, however, is that the structural reforms introduced by the TCJA are likely have implications for the wider international tax regime that are profound, and subtler than a simple intensification of rate competition. These are, as yet, far from being perfectly understood, and doubtless much innovative thinking is going on. Countries might conceivably, for instance, choose to adopt schemes that vary the tax rate with the return on tangible investments, undoing the manner in which GILTI and FDII favor the locating of intangibles in the U.S.

Importantly too, countries have many other instruments, beyond the statutory rate, by which they might choose to respond. Broadly, they face two challenges: potentially increased outward profit shifting, and a potential disincentive to real investment by U.S. corporations. The extent of these will of course vary across countries. Many low tax jurisdictions, for instance, may not plausibly host significant real investments and their business model is based on attracting intangibles. For many of the more advanced economies, however, both considerations may plausibly apply since they have a large domestic market as well as potentially offer opportunities for reducing the tax burden on intangible assets.

More widely, the TCJA feeds into, and to a large degree may reshape, the wider continuing debate as to the future of the international tax system. The GILTI provision, for example, is a creative approach to the wider difficulties of taxing the income associated with intangibles. Other countries which see themselves as suffering from similar difficulties of a mobile tax base that is linked to intangible assets may look to creating their own form of GILTI. Similarly, countries may respond with a modified version of the BEAT if that gets traction as a widely acceptable response to base erosion and profit shifting.

The international provisions of the TCJA do not, however, resolve the fundamental problems of the current international system, which arise from the inherent and increasing difficulties associated with the implementation arms-length pricing.[65] The wider debate on the implications of digitalization, linked to broader arguments for asserting a power to tax business income in ‘market countries’, meaning those whose residents are the purchasers of

[65] See for instance IMF (2014).

goods and services sold—calls for some form of 'destination based' taxation. The TCJA recasts the debate, but does not close it.[66]

VIII. Concluding Remarks

The TCJA is a major event, not only for the U.S. but for the rest of the world too. Domestically, many of its elements—reducing marginal rates under the PIT, broadening some elements of its base and accelerating depreciation allowances—are qualitatively similar to changes seen elsewhere, and are broadly in the direction of reducing inefficiencies. Some elements of the business tax reform—the reduction in the CIT rate, the elements of territoriality—represent marked changes for the U.S. but in wider terms restore the U.S.to norms that have emerged elsewhere.

The structural changes to international taxation, in contrast, are novel, and analysts are still grappling to fully understand their implications. They are by no means a simplification of what is already a complex system. However, other elements of the TCJA, such as the elimination of the corporate AMT, and the reduction in the scope of itemized deductions do serve to simplify the system somewhat.

Appraising all of this is challenging. The reform is multi-faceted, complex, and leaves considerable uncertainty as to how the system will look in just a few years. On some important aspects of the reform, the public finance literature provides no very precise agreed conclusions: on the impact of the CIT rate cut on others, for instance, and on the efficiency effects of the international tax reform. And how other countries will react with what spillback effects on the U.S. remains largely imponderable.

While the assessment here can thus be no more than preliminary, some broad conclusions do nonetheless emerge. First, the reform could have been more effectively structured to achieve the stated goal of supporting the middle class. Second, while the TCJA takes on various sources of distortion it does not fully resolve them: the adoption of formulaic approaches to further limiting interest deductions (through tightening an arbitrary earnings-based limit) and in the international provisions (the rationale for taking a10 percent return on tangibles as critical being unclear) is symptomatic that the underlying problems of debt bias and profit shifting ultimately remain. Third, the large fiscal cost of the reform leaves open the possibility that substantial additional tax or spending measures may be needed to restore the fiscal position. At that point, it may be that other tax measures that were not considered in the TCJA—the adoption of a federal VAT, carbon taxation (or an increased in the gasoline tax)—may re-enter the debate.

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[66] The House Republicans' *Blueprint* of 2016, for instance, proposed what was in essence of a form of destination-based cash flow tax than arguable would resolve many of these issues, though bringing its own challenges of design and implementation (set out in Auerbach and others, 2017). Some see hints of destination taxation in the reduced taxation of exports under FDII and the inclination to tax payments abroad under the BEAT.

Appendix I. Marginal Effective Tax Rates Under International Provisions

METR under FDII

Consider a firm (assumed to have no domestic income) that undertakes an equity-financed tangible investment of I at time 0, which is immediately expensed, and then sells the remaining $(1-\delta)I$, which is fully taxed, at time 1. The full amount of the investment contributes to the qualifying business asset base at time 1, but, the underlying asset being sold, is removed from the base thereafter. This perturbation thus has consequences only in periods 0 and 1.

Define μ_t to be an indicator variable taking the value unity if the firm faces at the margin he reduced FDII rate, τ_F, and 0 if it faces the standard rate, τ, so that the rate faced in period t is $\tau_t^* = \mu_t \tau_F + (1-\mu_t)\tau$. Additional tax paid in period 0 is then $-\tau_0^* I$ while that in period 1 is

$$\mu_1\{\tau_F[F(I)+(1-\delta)I-(0.1)I]+\tau[F(I)+(1-\delta)I](1-\mu_1)\tau[F(I)+(1-\delta)I]\}$$

$$=\tau_1^*[F(I)+(1-\delta)I]+\mu_1(\tau-\tau_F)(0.1)(K+I)\,.$$

The firm's after-tax profits (other than an irrelevant constant) are thus

$$\Pi(I) = -(1-\tau_0^*)I + \frac{1}{1+r}\{(1-\tau_1^*)[F(I)-(1-\delta)I]-\mu_1(\tau-\tau_F)(0.1)I\}$$

where $r > 0$ is the required return on equity finance (independent of corporate taxation).

Maximizing Π with respect to I, rearranging the necessary condition gives the wedge between pre-and post-tax returns as

$$\Theta \equiv F' - r - \delta = \frac{(\tau_1^* - \tau_0^*)(1+r) + \mu_1(0.1)(\tau-\tau_F)}{1-\tau_1^*}$$

where the prime indicates differentiation. Consider then the four cases in Table 1 at the end below, starting in the top left corner and moving clockwise.

<u>Case 1: FDII in both periods</u> ($\mu_0 = \mu_1 = 1;\ \tau_0^* = \tau_1^* = \tau_F$). Then

$$\Theta = \frac{(\tau-\tau_F)(0.1)}{1-\tau_F} > 0\,.$$

<u>Case 2: FDII in period 0, standard in period 1</u> ($\mu_0 = 1, \mu_1 = 0;\ \tau_0^* = \tau_F, \tau_1^* = \tau$). Then, since $\tau > \tau_F$:

$$\Theta = \frac{(\tau-\tau_F)(1+r)}{1-\tau} > 0$$

<u>Case 3: Standard in both periods</u> ($\mu_0 = \mu_1 = 0;\ \tau_0^* = \tau_1^* = \tau$). Then $\Theta = 0$.

<u>Case 4: Standard in period 0, FDII in period 1</u> ($\mu_0 = 0, \mu_1 = 1;\ \tau_0^* = \tau, \tau_1^* = \tau_F$). In this case:

$$\Theta = \frac{(\tau_F - \tau)(1 + r) + (0.1)(\tau - \tau_F)}{1 - \tau_F} = \frac{-(\tau - \tau_F)(r + 0.9)}{1 - \tau_F} < 0.$$

It is these results that are summarized in Table 2.

METR for GILTI

Assuming no foreign taxes, the analysis for tangible investments abroad under GILTI parallels that for FDII except now setting $\tau = 0$; reviewing the results for the four cases above, the sign pattern in the analogous matrix for GILTI is the precise opposite of that for FDII.

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