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In this article, the author assesses how the Tax Cuts and Jobs Act shaped the effective tax rates of large U.S. nonfinancial corporations based on information corporations provide in the GAAP financial statements they include with their annual SEC Forms 10-K.

This article assesses what effect the Tax Cuts and Jobs Act had on the effective tax rates (ETRs) of large U.S. nonfinancial corporations based on information in the generally accepted accounting principles financial statements corporations include with their annual SEC Forms 10-K. I evaluate both the TCJA's one-time adjustments, which mainly affect corporations' ETRs for 2017,[1] and the TCJA's permanent adjustments, which mainly affect corporations' ETRs for 2018.

My analysis of the TCJA's one-time effects on 2017 ETRs is based on corporations' summaries of those effects in the text of the income tax notes included with their SEC Forms 10-K for 2017. The two most significant one-time effects are the transition tax imposed as of December 31, 2017, on the post-1986 earnings and profits of U.S. corporations' foreign subsidiaries, and the remeasurement of deferred tax assets and liabilities resulting from the reduction in the federal rate from 35 percent to 21 percent. My main conclusions are that the average net effect of all one-time adjustments for the 147 corporations for which I calculated an ETR for 2017 is small (-2.6 percent), but that the impact on 2017 ETRs varies widely among corporations and for any given type of one-time adjustment (for example, the transition tax).

I undertook two separate analyses of the TCJA's permanent changes (for example, global intangible low-taxed income, the base erosion and antiabuse tax, and foreign-derived intangible income) on ETRs for 2018. My first analysis is based on data provided in the ETR reconciliation tables included with corporations' SEC 10-K filings for 2018. Unfortunately, only 21 of the 107 U.S. corporations for which I could calculate an ETR for 2018 disclose separate ETR reconciliation adjustments for the TCJA's permanent provisions.[2]

[1] For ease of exposition, I refer to fiscal years by the calendar year in which the fiscal year starts, not the usual convention based on the end of the fiscal year. To take an extreme example, Adobe Inc.'s last full fiscal year started on December 1, 2017, and ended on November 30, 2018, so I refer to that fiscal year as "2017." Adobe recorded the one-time effects of the TCJA in its SEC Form 10-K for 2017. The effect of the TCJA's permanent changes will be reflected in Adobe's ETR reconciliation table to be included with the SEC Form 10-K that Adobe will file in January 2020 for its fiscal year starting in December 2018.

[2] I believe the GILTI, FDII, and BEAT provisions would have had a material effect on many other corporations' 2018 ETRs if they had been evaluated separately. However, those many other corporations apparently concluded that the SEC's regulations allowed them to embed the separately significant adjustments of the TCJA's permanent provisions in other broad reconciliation categories (for example, foreign income taxed at different rates).

My conclusions regarding the TCJA reconciliation adjustments for those 21 corporations are:

- 11 corporations reported a GILTI adjustment to their 2018 ETR, the average value of which is 2.7 percent of the corporation's 2018 pretax income;
- 15 corporations reported an FDII adjustment to their 2018 ETR, the average value of which is -2.6 percent of the corporation's 2018 pretax income; and
- only one of the 21 corporations reported a BEAT adjustment to its 2018 ETR, the value of which is 3.5 percent of that corporation's 2018 pretax income.

Given how few corporations disclosed separate adjustments to their 2018 ETRs for the specific, permanent changes made by the TCJA, I undertook a second statistical analysis of the overall ETRs in 2015-2016 and 2018 for all U.S. corporations in my database. Rather than analyzing the ETRs actually reported by corporations, I calculated "normalized" ETRs that take into account all permanent adjustments but disregard all one-time and other transitory adjustments reflected in the corporations' ETR reconciliation tables. The main conclusions of my statistical analysis of normalized ETRs are:

- for 2015-2016, U.S. corporations with higher shares of earnings before tax (EBT)[3] attributed to foreign operations (foreign shares of EBT) enjoyed notably lower normalized ETRs — by contrast, foreign shares of EBT had no apparent effect on normalized ETRs for 2018;
- for both 2015-2016 and 2018, U.S. corporations with higher research and development expense margins enjoyed lower normalized ETRs in those years;
- U.S. corporations with low foreign shares of EBT in 2015-2016 realized the largest reductions in normalized ETRs between 2015-2016 and 2018; and
- increases in a corporation's foreign share of EBT between 2015-2016 and 2018 resulted in a lower normalized ETR in 2018.

The last result leads me to conclude that while the TCJA reduced the overall tax benefit of shifting income from U.S. to foreign affiliates, many U.S. corporations in 2018 still continued to increase their foreign shares of EBT and, because of low foreign tax rates, further reduced their overall normalized ETRs because they did so. In other words, the TCJA did not end U.S. tax policy concerns about U.S. corporations shifting EBT to low-tax foreign jurisdictions.

I. Introduction

The TCJA not only reduced the federal statutory tax rate from 35 percent to 21 percent, but also made several major changes to the federal tax treatment of the foreign income of U.S. corporations and their subsidiaries. Most U.S. corporations reasonably expected the TCJA to reduce their overall GAAP effective tax rates; my research investigates the extent to which various U.S. corporations benefited from, or were burdened by, the TCJA's various provisions.

A corporation's ETR is the income tax expense reported on a corporation's GAAP income statement expressed as a percentage of the corporation's GAAP pretax income from continuing operations. Total GAAP income tax expense includes federal, state and local, and foreign income tax. Similarly, GAAP pretax income from continuing operations consists of income from both domestic and foreign operations. Although GAAP ETRs measure a U.S. corporation's overall (domestic and foreign) tax burden, I expected that I could identify the impact of the TCJA's significant provisions based on the ETR reconciliation tables that corporations must include in the income tax notes to their annual GAAP financial statements. Those tables quantify the effect of any underlying cause that increases or reduces a corporation's ETR by at least 5 percent of the statutory rate for that year.[4] I assumed that the TCJA's permanent provisions

[3] Here, the term "earnings before tax" has the same meaning as the phrase "pretax income from continuing operations."

[4] For example, if the applicable federal rate was 21 percent, a separate adjustment would be required for any provision of federal tax law (for example, GILTI) that resulted in an adjustment to the ETR of more than 1 percentage point.

regarding GILTI, BEAT, and FDII would have a material impact on many U.S. multinational corporations' ETRs in 2018, and that those material adjustments would be reflected in the corporations' ETR reconciliation tables included with their SEC Forms 10-K for 2018.

I focused on income tax data included with corporations' annual SEC 10-K filings because those data are publicly available soon after the close of a corporation's fiscal year. Before undertaking that research, I had a limited understanding of how GAAP income tax expense for a year differed from the total income tax that corporations reported on their federal, state and local, and foreign income tax returns for that year. Although I initially considered calculating corporate ETRs based on cash income taxes paid for a year, I decided to focus instead on GAAP ETRs when I learned that tax executives of U.S. publicly traded companies are typically more focused on GAAP ETRs than on the cash-based ETRs[5] that are often favored by tax analysts.[6]

II. Current vs. Deferred Income Tax Expense

Interpreting ETR data from a corporation's annual financial statements requires some understanding of how both pretax income and income tax expense reported on a corporation's GAAP (or book) income statement for a year differ from the analogous amounts reported on a corporation's income tax returns. Broadly speaking, the differences between book income before tax and taxable income per a tax return consist of timing differences and permanent differences.

Timing differences arise when some item of income or expense is reflected in pretax book income in one year and in tax return income in an earlier or later year. For example, accelerated tax depreciation results in a deferral of tax return income. By definition, timing differences that arise in one year will reverse in some later year, so they have no permanent effect on the difference between the cumulative value of pretax book income and the cumulative value of tax return income.

By contrast, permanent differences refer to differences between pretax book income for a year and tax return income for that year that will not be reversed in a later year. For example, interest received from state and local governments is generally exempt from federal tax, which results in a permanent difference between pretax book income for a year and tax return income for that year.

A corporation with a book tax timing difference that defers income tax payments to future years (for example, accelerated tax depreciation) will accrue deferred income tax expense on its book income for the current year. Because deferred tax expense does not require a cash payment in the current year, the corporation records a deferred tax liability on its balance sheet. That deferred tax liability reflects the additional income tax that the corporation will pay in the future when the current timing difference is reversed.

Conversely, other timing differences (for example, an agreement to provide post-retirement health insurance to current employees) result in the deferral of a book expense. The difference between the higher taxes paid for the current year and the lower tax expense accrued on the corporation's books results in a deferred tax asset on the corporation's balance sheet. Deferred tax assets also arise when a corporation cannot claim the benefit of various losses or tax credits in the current year (including carrybacks to earlier years) but can carry those losses or credits forward for tax savings in future years. The value of the deferred tax asset on the corporation's balance sheet reflects tax savings the corporation expects to enjoy in future years when the current-year timing difference is reversed.[7]

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[5] John R. Graham et al., "Incentives for Tax Planning and Avoidance: Evidence From the Field," 89(3) *Acc't Rev.* 991 (May 2014), found that:

> 47 [percent] of the tax executives in publicly traded companies state that top management values the GAAP ETR more than the cash taxes paid and in another 37 [percent] of public firms the two metrics are equally valued by top management. Thus, in 84 [percent] of the public companies, the accrual accounting measure of taxes that affects reported accounting earnings is at least as important as the cash taxes paid.

[6] *See, e.g.*, Scott D. Dyreng et al., "Changes in Corporate Effective Tax Rates Over the Past 25 Years," 124(3) *J. Fin. Econ.* 441, 445 (2017).

[7] In some cases, the corporation might doubt its ability to actually claim the available tax benefit and thus realize the value of its deferred tax asset. For example, a tax credit carried forward might expire before it can be claimed. In those cases, the corporation records a valuation allowance, which is offset against the deferred tax expense on its income statement and the associated deferred tax asset on its balance sheet.

In summary, a corporation's total GAAP income tax expense will be the sum of its current income tax expense and its deferred income tax expense. Deferred income tax expense for a year may be positive or negative, depending on whether total book tax timing differences for that year are positive or negative. Current income tax expense reflects not only the statutory rates of federal, state and local, and foreign income tax, but also permanent differences between GAAP pretax income and taxable income (for example, tax-exempt income) and various tax credits (for example, the federal research credit) that reduce taxes payable in the current year.

III. TCJA Effects on ETRs for 2017 vs. 2018

Broadly speaking, the total impact of the TCJA on a corporation's ETR consists of various one-time and other transitory adjustments to the corporation's income tax expense resulting from its enactment, plus its recurring adjustments to the corporation's income tax expense for 2018 and subsequent years.

The TCJA's one-time adjustments (enumerated below) should in theory have been reflected in the corporation's ETR for the first fiscal year ending after December 22, 2017, which is the corporation's fiscal year that started in calendar year 2017. As noted above, my article refers to that fiscal year as "2017." But because the TCJA was complex and enacted late in the calendar year, the SEC staff issued SEC Staff Accounting Bulletin 118 (SAB 118), authorizing corporations to make reasonable estimates of the law's one-time effects for 2017. Revisions (if any) to the initial estimates of the one-time adjustments made in 2017 would then be reflected in the corporation's financial statements for 2018.

Regarding the permanent effects of the TCJA, the reduction in the federal statutory rate from 35 percent to 21 percent was effective as of January 1, 2018. For a corporation using the calendar year as its fiscal year, the statutory federal tax rate is 35 percent for 2017 and 21 percent for 2018. For a corporation with a fiscal year starting in 2017 and ending in 2018, the statutory rate for that fiscal year is a blended rate that depends on the number of months that occur in calendar years 2017 and 2018. For example, a corporation with a fiscal year beginning April 1, 2017, and ending March 31, 2018, has nine months at the 35 percent rate for calendar year 2017 and three months at the 21 percent rate for calendar year 2018 for a blended statutory rate for the fiscal year of 31.5 percent.

Also, the TCJA's more complex recurring changes (for example, GILTI, BEAT, FDII) are generally effective for the corporation's fiscal year starting in 2018.

To summarize, a corporation's ETR for 2017 reflects its initial estimate of the one-time adjustments resulting from the TCJA and a blended tax rate that reflects the number of months (if any) in the fiscal year that occur in calendar year 2018, rather than calendar year 2017. A corporation's ETR for 2018 reflects the revisions (if any) to its initial estimates of the one-time TCJA adjustments, the TCJA's 21 percent statutory rate, and the effects of the TCJA's complex, permanent changes.

IV. One-Time Adjustments to ETRs for 2017

A. Principal Reasons for One-Time Adjustments

The TCJA's changes in the federal taxation of foreign subsidiaries' earnings resulted in various one-time adjustments to their ETRs in 2017 and 2018:

- *Transition Tax on Foreign Subsidiaries' Post-1986 E&P*. As of December 31, 2017, U.S. corporations were subject to a one-time transition tax on the post-1986 E&P of foreign subsidiaries that had been tax-deferred until December 31, 2017. The rate of the transition tax was 15 percent for post-1986 E&P invested in cash or cash equivalents and 8 percent for post-1986 E&P invested in all other assets. The full amount of the transition tax was assessed as of December 31, 2017, but a corporation could elect to pay the transition tax in installments over eight years. Despite an election to defer payment of the transition tax, under GAAP, 100 percent of the transition tax liability was accrued as a current (not deferred) tax expense as of December 31, 2017.
- *Deferred Tax on Future Dividend Repatriations*. Before 2018, federal tax on a foreign subsidiary's post-1986 E&P was deferred until the earnings were either repatriated or invested in U.S. property. Under U.S. GAAP,

a U.S. corporation was not required to accrue federal tax on future repatriations of foreign subsidiaries' undistributed E&P if it declared that those earnings would be permanently reinvested outside the United States.

- *Release of Previously Accrued Federal Tax*. Some U.S. corporations had not declared that a foreign subsidiary's earnings would be permanently reinvested outside the United States, so they had previously accrued U.S. income tax and foreign dividend withholding tax on future dividends from their foreign subsidiaries. Because U.S. income tax had been previously accrued but was no longer required because the TCJA provided a dividends-received deduction for a foreign subsidiary's dividends paid after 2017, the release of the previously accrued federal tax on future dividends provided a one-time benefit that offset the one-time cost of the TCJA transition tax.
- *Revocation of Previous Declaration of Permanent Reinvestment*. Because dividends from foreign subsidiaries paid after 2017 were effectively exempt from U.S. tax, many U.S. corporations revoked previous declarations that foreign subsidiaries' earnings would be permanently reinvested outside the United States. While those revocations no longer required that the U.S. corporation accrue federal income tax on future dividends from foreign subsidiaries, they did require new one-time accruals of foreign withholding taxes on foreign subsidiaries' future dividend payments.

The TCJA also produced ETR adjustments produced from one-time changes in deferred tax assets and liabilities:

- *One-Time Remeasurement to Deferred Tax Assets and Liabilities*. The deferred federal tax assets and liabilities that U.S. corporations had accrued as of December 31, 2017, were calculated on the assumption that when the initial timing differences reversed in future years, the deferred federal tax expense or tax benefit would reflect a federal statutory rate of 35 percent. When the TCJA reduced that rate from 35 percent to 21 percent, the projected future benefit of deferred federal tax assets and the projected future burden of deferred federal tax liabilities were both reduced by 40 percent of the recorded values as of December 31, 2017.[8] Corporations with net deferred tax liabilities reported a one-time tax reduction, while those with net deferred tax assets reported a one-time tax increase. As explained below, those one-time adjustments often had a large effect on the ETRs that U.S. corporations reported for 2017.
- *Adjustments to Valuation Allowances*. Some corporations concluded that the enactment of the TCJA would make it difficult to realize the projected benefit of an existing deferred tax asset (for example, a foreign tax credit carryforward), so they recorded a new valuation allowance to offset the value of an existing deferred tax asset. The creation of a new valuation allowance produces a one-time increase in the corporation's ETR. Conversely, as a result of the TCJA, other corporations devised strategies for realizing the benefit of a deferred tax asset for which they had previously established a valuation allowance. The release of a previously established valuation allowance produces a one-time reduction in the corporation's ETR.

B. The Effect of One-Time Adjustments

To determine the magnitude of the one-time TCJA adjustments to corporations' ETRs described above, I compiled a database of information derived mainly from the income tax notes to the SEC Form 10-K financial statements for large U.S. nonfinancial corporations for 2017 and 2018 (if available by March 31, 2019). My 2017 database, listed in Table 1 in the appendices, included 151 U.S. corporations that met all the following selection criteria:

[8] The reduction in the federal statutory rate was 14 percentage points — that is, 35 percent minus 21 percent — which is 40 percent of the 35 percent tax rate reflected in the deferred federal tax liabilities and assets as of December 31, 2017.

- an SEC Form 10-K was available for 2017;
- a U.S. corporation was the parent company of the consolidated group;
- the Standard Industrial Classification (SIC) Code was not for financial services (SIC Codes 6XXX); and
- the market capitalization of the U.S. corporation's equity as of October 3, 2018, was at least $25 billion.

Every GAAP financial statement reflected in my database includes an income tax note that reconciles the corporation's total income tax expense with the income tax expense the corporation would hypothetically have accrued if its GAAP pretax income from continuing operations had been taxed at the applicable federal statutory tax rate. Some corporations present their effective tax reconciliation data in dollars, while others present effective tax rates — that is, effective tax dollars expressed as a percentage of pretax income from continuing operations. To facilitate comparisons, I have converted effective tax reconciliation tables expressed in dollars to effective tax rates expressed as a percentage of pretax income from continuing operations.

Most of the corporations in my 2017 database included in the text of their income tax notes (as opposed to their ETR reconciliation tables) more detailed information about the nature and dollar amounts of the one-time adjustments to their 2017 income tax expense resulting from the TCJA. The TCJA's one-time transition adjustments presented in Table 2 are generally based on the more detailed dollar-amount data in the text of the corporations' income tax notes, rather than the adjustments shown in the ETR reconciliation tables. The dollar amounts of the various transition adjustments shown in Table 2 are always expressed as a percentage of the corporation's pretax income from continuing operations for 2017 and thus represent adjustments to the 2017 ETR expressed as a percentage.

As noted above, under SAB 118, U.S. corporations could present initial estimates of the TCJA effects in their financial statements for 2017, then true-up those initial estimates in their financial statements for 2018. As of March 31, 2019, 110 of the 151 U.S. corporations included in my 2017 database had filed their SEC Forms 10-K for 2018. Of those, 104 used the calendar year as their fiscal year, and six had fiscal years ending in January or February 2019. For those 110 corporations, I included not only the initial estimates of the one-time TCJA tax effects reported in their 2017 financial reports, but also the true-up adjustments reported in their 2018 financial reports. I then expressed the cumulative 2017-2018 amount for each type of adjustment (for example, the transition tax) as a percentage of the corporation's pretax income from continuing operations for 2017.

Table 2 shows the results of my analysis of the one-time TCJA adjustments. By way of overview:

- The various types of one-time adjustments enumerated above are reflected in columns <A> through <D>, and Column <E> reflects the combined (net) effect of all one-time adjustments.
- Although I analyzed the results for 151 corporations, four of those corporations reported pretax losses for 2017, so their ETRs could not be meaningfully compared to the ETRs for the 147 corporations reporting positive pretax income for 2017.[9]
- Although the average impact of all TCJA one-time adjustments taken together was a small reduction (-2.6 percentage points), there were large variations in the 2017 ETR around that mean value for individual corporations and specific adjustments. For example:
  - One hundred eleven corporations reported the amounts of their one-time adjustments for the transition tax, with the average adjustment to the 2017 ETRs being 40.3 percentage points.
  - All but six of the 147 corporations reported the amounts of their one-time adjustment for the remeasurement of their deferred tax assets or liabilities resulting from the reduction from 35 percent to 21 percent in the statutory federal tax rate. Forty-one reported one-time increases in their 2017 ETRs, with the average increase being 17.8 percentage points. One

[9] *Compare* lines 1 and 2.

hundred reported one-time decreases in their 2017 ETRs, with the average decrease being 56.2 percentage points.

- For all one-time adjustments taken together, 87 corporations reported one-time increases in their 2017 ETRs, with the average increase being 45.3 percentage points. Sixty corporations reported one-time decreases in their 2017 ETRs, with the average decrease being 72.0 percentage points.

In summary, most large U.S. nonfinancial corporations reported ETRs for 2017 that were significantly affected by one-time adjustments resulting from the TCJA.

V. Permanent Adjustments to 2018 ETRs

A. Principal Types of Permanent Adjustments

Broadly speaking, the TCJA made several permanent changes to federal tax law that affected (or will affect) U.S. corporations' ETRs. The only permanent change reflected in the 2017 ETRs was the reduction in the statutory rate from 35 percent to 21 percent, which reduced the blended federal tax rate for 2017 for corporations whose fiscal year did not correspond to the calendar year. For calendar-year corporations, ETRs for 2017 reflected only the TCJA's (often large) one-time transition effects.

Based on the results presented below, the TCJA's principal permanent changes affecting 2018 ETRs are the reduction in the federal statutory rate from 35 percent to 21 percent, the additional federal tax on GILTI, the new BEAT, and the reduction in federal tax on FDII.

B. Adjustments in ETR Reconciliation Tables

My analysis of the TCJA's permanent provisions is based on data derived from the 2018 ETR reconciliation tables of the 110 large U.S. nonfinancial corporations that as of March 31, 2019, had filed SEC Forms 10-K for 2018. That group includes 104 calendar-year corporations plus six corporations with fiscal years starting in January or February 2018.

The level of detail about the TCJA's permanent effects shown in the 2018 ETR reconciliation tables varied widely from one corporation to another.[10] Consider three examples from tables 3-5.

Table 3 provides the ETR reconciliation table from the 2018 SEC Form 10-K for Roper Technologies Inc. The TCJA's GILTI provisions produced a 1.1 percentage point increase in Roper's 2018 ETR, while the FDII provisions produced a 1.2 percentage point decrease. Roper is an example of what I will refer to as a Type A reporter because its 2018 ETR reconciliation table includes at least one itemized TCJA permanent adjustment.

Table 4 provides the ETR reconciliation table from the 2018 SEC Form 10-K for Mondelez International Inc. No separate category is indicated for any itemized TCJA provision, but the third-from-last line shows the combined (net) effect of foreign tax provisions under the TCJA (GILTI, FDII, and BEAT). The one-time adjustments to Mondelez's ETRs in 2017 and 2018 are shown separately in the three lines preceding the line showing the impact of the TCJA's permanent provisions. Mondelez is an example of what I refer to as a Type B reporter because its ETR reconciliation table includes a single adjustment based on the TCJA's combined permanent effects but provides no itemization of the TCJA's separate provisions.

Table 5 provides the ETR reconciliation table from the 2018 SEC Form 10-K for Alphabet Inc. (Google's parent). Given the significant reduction in Alphabet's ETRs in 2016-2017 for foreign income taxed at different rates (shown in the second line), I suspect that the GILTI and BEAT

[10] CFR Regulation S-X, section 210.4-08(h)(2), states that the income tax note must:

> Provide a reconciliation between the amount of reported total income tax expense (benefit) and the amount computed by multiplying the income (loss) before tax by the applicable statutory Federal income tax rate, *showing the estimated dollar amount of each of the underlying causes for the difference*. If no individual reconciling item amounts to more than five percent of the amount computed by multiplying the income before tax by the applicable statutory Federal income tax rate, and the total difference to be reconciled is less than five percent of such computed amount, no reconciliation need be provided unless it would be significant in appraising the trend of earnings. *Reconciling items that are individually less than five percent of the computed amount may be aggregated in the reconciliation. The reconciliation may be presented in percentages rather than in dollar amounts*. [Emphasis added.]

The differences among types A, B, and C corporations that I have noted reflect differences about whether the TCJA's separate provisions on GILTI, BEAT, and FDII should be considered separate underlying causes (or reconciling items) when and if their separate effects exceed the SEC's 5 percent materiality threshold.

provisions, considered separately from other TCJA permanent changes, had a significant effect on Alphabet's ETR in 2018. But Alphabet's ETR reconciliation table for 2018 does not identify on separate lines either the separate or combined overall effects of all permanent TCJA provisions — that is, the TCJA's permanent effects are embedded in one or more of the broad categories in Table 5 (for example, the second line, foreign income taxed at different rates).[11] Alphabet is an example of what I refer to as a Type C reporter because it does not separately report either itemized adjustments or even a single (net) adjustment for the TCJA's permanent effects on its ETR for 2018.

Table 6 summarizes the results of my analysis of the impact on corporations' 2018 ETRs attributed in their ETR reconciliation tables to permanent TCJA changes. My results are based on the 110 corporations (104 of which used the calendar year as their fiscal year) that as of March 2019 had filed SEC Forms 10-K for 2018. Because three of those 110 corporations reported a pretax loss for 2018, I could calculate meaningful ETRs for 107 corporations.

Columns <A> through <E> summarize my results for the 21 Type A reporting corporations (including Roper):

- Eleven Type A corporations reported a GILTI adjustment to their 2018 ETR, the average value of which was 2.7 percent of the corporation's 2018 pretax income.
- Fifteen corporations reported an FDII adjustment to their 2018 ETR, the average value of which was -2.6 percent of the corporation's 2018 pretax income.
- Only one corporation reported a BEAT adjustment to its 2018 ETR, the value of which was 3.5 percent of its 2018 pretax income.
- Two corporations reported some other itemized TCJA provision (specifically, nondeductible officers compensation[12] and tax reform impact on differential membership interests[13]). The average value of those two adjustments to the corporations' 2018 ETRs was 1.3 percent.
- For all 21 Type A corporations, the net value of all itemized TCJA adjustments was -0.1 percent. That is to say, even when the GILTI or BEAT provisions considered separately had a significant impact on a corporation's 2018 ETR, the average net effect of all TCJA provisions was small because the permanent tax benefit of the TCJA's FDII provision offset the permanent tax cost of the GILTI or BEAT provisions.

Column <F> summarizes the results for the nine corporations classified as Type B corporations (including Mondelez). For those nine, the combined net effect on the 2018 ETR of all TCJA permanent changes averaged 0.4 percent. But based on the results for Type A reporting corporations, the fact that the net effect of the TCJA's provisions was only 0.4 percent does not imply that the separate adjustments for GILTI, BEAT, and FDII, had they been disclosed, would also have been small. In other words, significant TCJA increases in the 2018 ETR may have been offset by significant decreases, leaving a small net effect.

Seventy-seven of the 107 corporations with positive before-tax income in 2018 (including Alphabet Inc.) were classified as Type C reporting corporations because they did not separately report permanent adjustments to their ETRs based on the TCJA. For Type C reporters, there is no way of determining either the separate effects of various TCJA permanent changes or the combined (net) effect of all TCJA permanent provisions taken together.

To obtain a better understanding of how many U.S. corporations are like Mondelez or Alphabet

[11] *See* Michael P. Donohoe, Gary A. McGill, and Edmund Outslay, "Through a Glass Darkly: What Can We Learn About a U.S. Multinational Corporation's International Operations From Its Financial Statement Disclosures?" 65(4) *Nat'l Tax J.* 961 (Dec. 2012):

> The foreign tax rate differential component of the tax rate reconciliation can contain other items. For example, Google stated in its December 13, 2010, response to the SEC that its foreign rate differential also contained any U.S. tax expense incurred on subpart F income and tax benefits of foreign tax credits used on its U.S. tax return. IBM states in its income tax note that its foreign tax rate reconciliation includes foreign export incentives, U.S. tax impacts of non-U.S. earnings repatriation, any net impacts of intercompany transactions and audit settlements or changes in the amount of unrecognized tax benefits associated with each of those items.

[12] See the 2018 SEC Form 10-K ETR reconciliation table for Netflix Inc.

[13] See the 2018 SEC Form 10-K ETR reconciliation table for NextEra Energy Inc.

in failing to disclose itemized adjustments for material TCJA permanent changes, I calculated the reduction in a corporation's average ETRs for two years (2015-2016) that the corporation's ETR reconciliation tables attributed to foreign earnings taxed at rates below the U.S. statutory rate.[14] I then assumed that any corporation whose average ETR for 2015-2016 had been reduced by at least 5 percentage points because of low foreign tax rates would be a prime candidate for reporting a significant increase in its 2018 ETR as a result of the GILTI and BEAT provisions, had they chosen to itemize the TCJA's effects.[15]

Table 7, lines 1 and 2 are based on the total number of corporations in my database that as of March 31, 2019, had filed their SEC Forms 10-K for 2018, according to their reporting type (A, B, or C). The numbers on Line 1 are the same as those on Table 6, Line 3, columns <E> through <G>.

Table 7, lines 3 and 4 are based on the 46 prime candidates for reporting significant GILTI and BEAT adjustments to their 2018 ETRs, given that low foreign tax rates had reduced their average ETR for 2015-2016 by more than 5 percentage points. Nine of the prime candidates were Type A reporters that itemized the separate effects of the TCJA's permanent provisions, four were Type B reporters (like Mondelez), and 33 were Type C (like Alphabet).

In other words, more than 71 percent of the large U.S. nonfinancial corporations[16] that enjoyed foreign-income-related reductions of 5 percentage points or more in their average ETRs for 2015-2016 and filed their SEC Forms 10-K for 2018 by March 31, 2019, concluded that the SEC's regulations did not require them to treat the TCJA's separate provisions on GILTI, BEAT, and FDII as potentially separate items in their ETR reconciliation tables.

VI. Statistical Analysis of Normalized ETRs

A. Definition and Calculation

I also statistically analyzed how ETRs varied from one U.S. corporation to another in any given year and how that variation changed between 2015-2016 (the last two fiscal years before the TCJA) and 2018 (the first fiscal year that all permanent TCJA provisions were in effect). As is apparent from the ETR reconciliation tables reproduced in tables 3-5, corporations' reported ETRs in any given year reflect not only permanent and recurring aspects of tax laws then in effect, but also significant one-time and other transitory adjustments in the various years.

Because my ultimate objective was to evaluate the ETR effect of the permanent and recurring provisions of tax laws before and after the TCJA, I concluded that I should calculate what corporations' ETRs would have been had the federal statutory tax rates been adjusted to reflect only permanent and recurring adjustments. That is, I disregarded the ETR effects of all one-time and other transitory adjustments, whether or not they resulted from the TCJA. I refer to the ETR obtained by considering only permanent and recurring adjustments as a corporation's normalized ETR.

For example, Table 8 shows the reported ETRs for 2015-2018 in the reconciliation schedules of Roper, Mondelez, and Alphabet, as well as the normalized ETRs I calculated taking into account only the permanent and recurring adjustments in those corporations' ETR reconciliation schedules.[17] Section VII summarizes the specific types of ETR reconciliation adjustments that I treated as one-time or transitory. The statistical results reported below are all based on corporations' normalized ETRs, rather than the

[14] For 2016 only, see the second line in Table 3, the third line in Table 4, and the second line in Table 5.

[15] I believe the 5 percent threshold is conservative. In Table 3, Roper reports an ETR reduction of 3.2 percentage points for 2016 but still reports a 1.1 percentage point increase in its 2018 ETR because of GILTI.

[16] Thirty-three Type C of 46 total prime candidates (71.7 percent).

[17] For Roper, my normalized ETR on Line 3 disregards the ETR reconciliation adjustments in Table 3 labeled "Tax Cuts and Jobs Act of 2017 — enactment date and measurement period adjustments" and "Tax on planned remittances of foreign earnings."

For Mondelez, my normalized ETR on Line 5 includes the ETR reconciliation adjustments in Table 4 labeled "State and local income taxes, net of federal tax benefit," "Foreign rate differences," "Excess tax benefits from equity compensation," "Foreign tax provisions under TCJA (GILTI, FDII and BEAT)," and "Other."

For Alphabet, my normalized ETR on Line 7 disregards the two ETR reconciliation adjustments in Table 5 titled "Effect of the Tax Act," the "European Commission fine," and the "Deferred tax asset valuation allowance."

ETRs reported on the last line of the reconciliation tables.

B. Analysis of Normalized ETRs for 2015-2016

My first statistical analysis focuses on the variation in corporations' weighted average normalized ETRs for 2015 and 2016. I started with 2015 and 2016 because they were the last two fiscal years with ETRs that were unaffected by the TCJA. Broadly speaking, my statistical analysis of the 2015-2016 data concluded that a corporation's weighted-average normalized ETRs for 2015-2016 tended to be lower the higher the corporation's foreign share of EBT, and the higher the U.S. corporations' R&D expense margin.

In both instances, the reasons for those statistical correlations are easy to understand. ETR reconciliation tables often attribute significant reductions in a corporation's ETR to foreign tax rates that are lower than the U.S. statutory rate — see tables 3-5. Thus, it seems reasonable to assume that the higher the foreign share of EBT, the lower the corporation's normalized ETR will likely be. Also, the R&D expense margin yields lower ETRs not only because of the federal tax credit for R&D performed in the United States but also by creating opportunities to shift income from the United States to low-tax jurisdictions by implementing R&D cost-sharing agreements[18] and other tax minimization strategies.

I used a popular statistical method, linear regression analysis, to quantify the separate effects in 2015-2016 of a corporation's foreign share of EBT and its R&D expense margin on its normalized ETR. Because the impact of R&D expense margin on the normalized ETR showed diminishing marginal returns, the explanatory variable in my regression analysis was the square root of each corporation's R&D expense margin, rather than the R&D expense margin per se.

Table 9 summarizes the results of my regression analysis of the effects in 2015-2016 of corporations' foreign shares of EBT and R&D expense margins on their normalized ETRs. My regression coefficients are summarized in the footnote to Table 9.[19]

Table 9 shows the normalized ETR that my regression analysis predicts a U.S. corporation would have in 2015-2016 based on the foreign share of EBT shown in the first row of the table and the R&D expense margin shown in Column <A>. For example, if the corporation's foreign share of EBT were 60 percent and its R&D expense margin were 10 percent, my regression equation predicts that the corporation's weighted-average normalized ETR for 2015-2016 would be 22.9 percent. While a corporation's reported normalized ETR for 2015-2016 may be higher or lower than the predicted value, predictions based on the regression equation provide a convenient way of summarizing the results of my statistical analysis.

Reading across lines 2-6, the predicted value of the normalized ETR clearly diminishes as the foreign share of EBT increases, holding constant the R&D expense margin shown in Column <A>. Reading down columns <B> through <G>, the predicted value of the normalized ETR also diminishes as the R&D expense margin increases, holding constant the foreign share of EBT shown on Line 1.

C. Analysis of Normalized ETRs for 2018

Table 10 presents my regression analysis of the normalized ETRs for the 107 large U.S. nonfinancial corporations that as of March 31, 2019, had filed their SEC Form 10-Ks for 2018 and reported positive EBT for that year.[20] As explained above, the ETRs for 2018 reflect not only a federal statutory tax rate of 21 percent, rather than 35 percent, but also the combined effect of the TCJA's permanent provisions. To facilitate comparisons, I have again included the same two explanatory variables in my regression analysis of the 2018 normalized ETRs reported in Table 10 as in my

[18] *See, e.g.*, *Amazon.com Inc. v. Commissioner*, 148 T.C. No. 8 (2017).

[19] My 2015-2016 database includes data derived from SEC Forms 10-K for 151 U.S. corporations. Eleven of those corporations reported negative cumulative EBT for 2015-2016, so my regression analysis was based on the normalized ETRs and other data for the 140 U.S. corporations with positive cumulative EBT for 2015-2016.

[20] My 2018 database includes the data derived from SEC Forms 10-K for 110 U.S. corporations. Three of those corporations reported negative EBTs for 2018, so my regression analysis of normalized ETRs for 2018 is based on the 107 U.S. corporations reporting positive EBTs for 2018.

regression analysis of 2015-2016 normalized ETRs reported in Table 9.

The most striking result in Table 10 is that for 2018, a corporation's foreign share of EBT has no significant impact on the predicted value of its normalized ETR.[21] However, corporations with higher R&D expense margins continued to enjoy lower normalized ETRs in 2018 than corporations with lower R&D expense margins.[22]

D. 2018 vs. 2015-2016

Finally, Table 11 shows my statistical analysis of the reduction the normalized ETR between 2015-2016 and 2018 for the 98 U.S. corporations having positive EBTs in both periods.[23]

Under most circumstances, the predicted result is a reduction in a corporation's normalized ETR for 2018 in comparison to its weighted average normalized ETR for 2015-2016. The largest predicted reductions in normalized ETRs were for corporations with the lowest foreign shares of EBT in 2015-2016. Simply put, the TCJA's tax rate reductions benefited U.S. corporations mainly if their EBTs were allocated to their U.S. — rather than their foreign — affiliates. Even so, the U.S. corporations that increased their foreign shares of EBT between 2015-2016 and 2018 enjoyed larger reductions in their normalized ETRs over that period.

The last result leads me to conclude that while the TCJA reduced the overall tax benefit of shifting income from U.S. to foreign affiliates, many U.S. corporations in 2018 still continued to increase their foreign shares of EBT and, because of low foreign tax rates, further reduced their overall normalized ETRs because they did so. In other words, the TCJA did not end policy concerns about U.S. corporations shifting EBT to low-tax jurisdictions.

[21] Compare the predicted values of the normalized ETR on any given line in Table 10.

[22] Compare the predicted values of the normalized ETR on any given column in Table 10.

[23] As noted, my 2018 database included 107 corporations with positive EBTs in 2018. Nine of those reported negative cumulative EBTs for 2015-2016, so I could calculate an economically meaningful change in the normalized ETRs for the 98 U.S. corporations reporting positive EBTs in both 2015-2016 and 2018.

VII. Technical Concerns

This section summarizes how I resolved significant technical concerns I encountered in making the calculations summarized in sections IV-VI.

A. 2017 Database

As noted in Section IV, my 2017 database included the 151 U.S. corporations in Table A that met all the following selection criteria:

- an SEC Form 10-K was available for 2017;
- a U.S. corporation was the parent of the consolidated group;
- the SIC Code was not for financial services; and
- the market capitalization of the corporation's equity as of October 3, 2018, was at least $25 billion.

My analysis of the TCJA's one-time effects on corporations' 2017 ETRs in Section IV is based mainly on data from those corporations' 2017 GAAP financial statements. The ETR for a corporation that reports negative EBT for a year cannot be meaningfully compared with the ETRs for corporations reporting positive EBTs. Accordingly, the one-time TCJA adjustments described in Section IV are based on the 147 U.S. corporations that reported positive EBTs for 2017 and exclude the four U.S. corporations that reported negative EBTs in that year.

Corporations' SEC Forms 10-K for 2017 include income statements and income tax notes not only for the current year (2017), but also for the two preceding years (2015-2016). Accordingly, my statistical analysis of normalized ETRs for 2015-2016 in Section VI.B is also based on data included in the SEC Forms 10-K for 2017. My normalized ETR for 2015-2016 is the sum of a corporation's normalized income tax expense for 2015 and 2016, expressed as a percentage of its combined pretax income from continuing operations for those same two years. Because 11 of the 151 U.S. corporations in my 2017 database had a cumulative loss in 2015-2016,[24] my regression results reported in Table 9 are based on the 140

[24] The large number of corporations reporting pretax losses in 2015-2016 included major oil and gas producers, which suffered low commodity prices in those years.

corporations reporting positive EBTs for that two-year period.

B. 2018 Database

My 2018 database included the 110 corporations in my 2017 database that had also filed SEC Forms 10-K for 2018 by March 31, 2019 (marked by an asterisk in Table 1). Broadly speaking, the information in those forms resulted in my making two types of revisions to the data obtained from the SEC Forms 10-K for 2017. First, I reflected restatements made in 2018 of income and tax data for 2016 and 2017. Second, I trued-up the 2017 provisional estimates of the TCJA's one-time effects to reflect revisions reported in the 2018 income tax notes.

Because three of the 110 corporations for which I had SEC Form 10-K data for 2018 reported negative EBT, my regression analysis of normalized ETRs for 2018 reported in Table 10 was based on the results of only 107 corporations.

My analysis of the increase in corporations' normalized ETRs between 2015-2016 and 2018 in Table 11 was limited to the 98 corporations that had positive EBTs not only in 2018 but also in 2015-2016.

C. Sources of Income and Tax Data

A corporation's R&D expense margin is its R&D expense expressed as a percentage of its net sales. The amount of net sales was derived from the U.S. corporation's consolidated statement of income. For R&D expense, some corporations reported R&D expense as a line item on their consolidated statement of income. For others, I determined R&D expense by performing word searches of the text of the corporation's SEC Form 10-K. I assumed R&D expense was zero for any remaining corporations.

A corporation's total EBT for a year, which must be positive to calculate an economically meaningful ETR, was generally obtained from a table or the text of a corporation's income tax note. Those EBT amounts generally matched the amounts of income before tax from continuing operations reported as a line item on the corporation's consolidated statement of income.

The foreign share of EBT was based on a corporation's allocation of its total EBT between domestic and foreign operations, which was reported in the income tax notes to the corporation's financial statements. If a corporation did not provide that allocation, I (reasonably) assumed the foreign share of EBT was 0 percent.

The TCJA's one-time adjustments evaluated in Section IV were generally derived from the text of the income tax notes included with the corporation's financial statements for 2017 and 2018 (when available). When and if a corporation combined the amounts of two or more separate adjustments, I assigned the combined amount to what appeared to be the most significant category (typically, the transition tax or the remeasurement of deferred tax assets and liabilities).

D. Transitory ETR Reconciliation Adjustments

The greatest challenge was categorizing ETR reconciliation adjustments as either permanent adjustments, which are reflected in the normalized ETR for that corporation, or one-time or transitory adjustments, which were disregarded. That difficulty was heightened because each corporation seems to have its own often cryptic name for its reconciliation adjustments.[25]

Broadly speaking, I treated an ETR reconciliation adjustment as a one-time or transitory adjustment (which was disregarded in calculating the normalized ETR) if it fell into one of the following general categories:

- one-time adjustments resulting from the enactment of the TCJA or any other tax legislation;
- other one-time adjustments to, or remeasurements of, previously accrued deferred tax assets or liabilities;
- adjustments in prior-year tax accruals for unrecognized tax benefits (for example, adjustments resulting from the completion of a tax audit, the expiration of a statute of limitations, or a court decision in a tax case);
- increases or decreases in valuation allowances;
- tax effects of corporate mergers, acquisitions, divestitures, reorganizations, and so forth;

[25]For example, "credit monetization" or "tax adjustment credit."

- one-time recognitions of foreign exchange gains and losses;
- one-time effects of changes in financial or tax accounting methods;
- impairments of goodwill;
- fines and penalties;
- tax effects of the equity (and other) methods of accounting for investments in affiliated companies; and
- any other apparent one-time ETR reconciliation adjustment.

E. Variables Ceilings and Floors

The coefficients derived from linear regression analysis are sensitive to very high or low values of the regression variables. To prevent extreme values from having an undue influence on my regression-based predictions in Section VI, I limited my regression variables to the following ranges[26]:

- the foreign share of EBT could not exceed 100 percent or be less than 0 percent;
- the normalized ETR for 2015-2016 could not exceed 45 percent or be less than 10 percent;
- the normalized ETR for 2018 could not exceed 30 percent or be less than 10 percent; and
- the (algebraic) increase in the normalized ETR between 2015-2016 and 2018 could not exceed 10 percent or be less than -20 percent.

Appendices

Table 1. 151 Large U.S. Non-Financial Corporations in Author's 2017 Database

U.S. Parent Corporation	FYE Last 10-K As of March 31, 2019
3M Company	2018*
Abbott Laboratories	2018*
AbbVie Inc.	2018*
Activision Blizzard Inc.	2018*
Adobe Inc.	Nov. 2018
Advanced Micro Devices Inc.	2018*

[26]"Winsorizing" is the technical term for setting upper and lower limits on variables used in a statistical analysis.

Table 1. 151 Large U.S. Non-Financial Corporations in Author's 2017 Database *(Continued)*

U.S. Parent Corporation	FYE Last 10-K As of March 31, 2019
Air Products and Chemicals Inc.	Sept. 2018
Alphabet Inc.	2018*
Altria Group Inc.	2018*
Amazon.com Inc.	2018*
American Electric Power Company Inc.	2018*
Amgen Inc.	2018*
Amphenol Corporation	2018*
Anadarko Petroleum Corporation	2018*
Analog Devices Inc.	Nov. 2018
Apple Inc.	Sept. 2018
Applied Materials Inc.	Oct. 2018
Archer-Daniels-Midland Company	2018*
AT&T Inc.	2018*
Automatic Data Processing Inc.	June 2018
Baxter International Inc.	2018*
Becton, Dickinson and Company	Sept. 2018
Biogen Inc.	2018*
Boeing Company	2018*
Booking Holdings Inc.	2018*
Boston Scientific Corporation	2018*
Bristol-Myers Squibb Company	2018*
Broadcom Inc.	Nov. 2018
Caterpillar Inc.	2018*
Celgene Corporation	2018*
Charter Communications Inc.	2018*
Chevron Corporation	2018*
Cisco Systems Inc.	July 2018
Coca-Cola Company	2018*

Table 1. 151 Large U.S. Non-Financial Corporations in Author's 2017 Database *(Continued)*

U.S. Parent Corporation	FYE Last 10-K As of March 31, 2019
Cognizant Technology Solutions Corporation	2018*
Colgate-Palmolive Company	2018*
Comcast Corporation	2018*
ConocoPhillips	2018*
Constellation Brands Inc.	Feb. 2018
Corning Incorporated	2018*
Costco Wholesale Corporation	Sept. 2018
CSX Corporation	2018*
CVS Health Corporation	2018*
Danaher Corporation	2018*
Deere & Company	Oct. 2018
Delta Air Lines Inc.	2018*
Dollar General Corporation	Feb. 2019*
Dominion Energy Inc.	2018*
DowDuPont Inc.	2018*
Duke Energy Corporation	2018*
DXC Technology Company	Apr. 2018
Ebay Inc.	2018*
Ecolab Inc.	2018*
Electronic Arts Inc.	Mar. 2018
Eli Lilly and Company	2018*
Emerson Electric Co.	Sept. 2018
EOG Resources Inc.	2018*
Estée Lauder Companies Inc.	June 2018
Exelon Corporation	2018*
Express Scripts Holding Company	2017
Exxon Mobil Corporation	2018*
Facebook Inc.	2018*
FedEx Corporation	May 2018
Fidelity National Information Services Inc.	2018*

Table 1. 151 Large U.S. Non-Financial Corporations in Author's 2017 Database *(Continued)*

U.S. Parent Corporation	FYE Last 10-K As of March 31, 2019
Fiserv Inc.	2018*
Ford Motor Company	2018*
Fortive Corporation	2018*
General Dynamics Corporation	2018*
General Electric Company	2018*
General Mills Inc.	May 2018
General Motors Company	2018*
Gilead Sciences Inc.	2018*
Halliburton Company	2018*
HCA Healthcare Inc.	2018*
Home Depot Inc.	Feb. 2019*
Honeywell International Inc.	2018*
HP Inc.	Oct. 2018
Illinois Tool Works Inc.	2018*
Intel Corporation	2018*
International Business Machines Corporation	2018*
Intuit Inc.	July 2018
Iqvia Holdings Inc	2018*
Johnson & Johnson	2018*
Kimberly-Clark Corporation	2018*
Kinder Morgan Inc.	2018*
Kraft Heinz Company	2017
Las Vegas Sands Corp.	2018*
Lockheed Martin Corporation	2018*
Lowe's Companies Inc.	Feb. 2018
Marathon Petroleum Corporation	2018*
Marriott International Inc.	2018*
McDonald's Corporation	2018*
McKesson Corporation	Mar. 2018
Merck & Co. Inc.	2018*

Table 1. 151 Large U.S. Non-Financial Corporations in Author's 2017 Database *(Continued)*

U.S. Parent Corporation	FYE Last 10-K As of March 31, 2019
Micron Technology Inc.	Aug. 2018
Microsoft Corporation	June 2018
Mondelez International Inc.	2018*
Netflix Inc.	2018*
Nextera Energy Inc.	2018*
Nike Inc.	May 2018
Norfolk Southern Corporation	2018*
Northrop Grumman Corporation	2018*
Nvidia Corporation	Jan. 2019*
Occidental Petroleum Corporation	2018*
Oneok Inc.	2018*
Oracle Corporation	May 2018
O'Reilly Automotive Inc.	2018*
PayPal Holdings Inc.	2018*
Pepsico Inc.	2018*
Pfizer Inc.	2018*
Philip Morris International	2018*
Phillips 66	2018*
Pioneer Natural Resources Company	2018*
PPG Industries Inc.	2017
Praxair Inc.	2017
Procter & Gamble Company	June 2018
Public Service Enterprise Group Incorporated	2018*
Qualcomm Inc.	Sept. 2018
Raytheon Company	2018*
Regeneron Pharmaceuticals Inc.	2018*
Roper Technologies Inc.	2018*
Ross Stores Inc.	Feb. 2018
S&P Global Inc.	2018*

Table 1. 151 Large U.S. Non-Financial Corporations in Author's 2017 Database *(Continued)*

U.S. Parent Corporation	FYE Last 10-K As of March 31, 2019
Salesforce.Com Inc.	Jan. 2019*
Sempra Energy	2018*
Sherwin-Williams Company	2018*
Southern Company	2018*
Southwest Airlines Co.	2018*
Starbucks Corporation	Oct. 2018
Stryker Corporation	2017
Sysco Corporation	July 2018
Target Corporation	Jan. 2019*
Tesla Inc.	2018*
Texas Instruments Incorporated	2018*
Thermo Fisher Corporation	2018*
TJX Companies Inc.	Feb. 2018
Twenty-First Century Fox Inc.	June 2018
Union Pacific Corporation	2018*
United Parcel Service Inc.	2018*
United Technologies Corporation	2018*
V.F. Corporation	2017
Valero Energy Corporation	2018*
Verizon Communications Inc.	2018*
Walgreens Boots Alliance Inc.	Aug. 2018
Walmart Inc.	Jan. 2019*
Walt Disney Company	Sept. 2018
Waste Management Inc.	2018*
Williams Companies Inc.	2018*
Yum! Brands Inc.	2018*
Zimmer Biomet Holdings Inc.	2018*
Zoetis Inc.	2018*
*Also included in 2018 database	

Table 2. Impact of TCJA One-Time Adjustments on 2017 ETRs of Large Nonfinancial Companies

		<A>	<B>	<C>	<D>	<E>
		Transition Tax on Foreign Sub Post-1986 E&P	**Tax Accrued on Foreign Sub Dividends**	**Deferred Tax Remeasurement**	**Valuation Allowance Adjustments**	**All TCJA One-Time Adjustments**
1	Number of Companies Evaluated	151	151	151	151	151
Companies With Positive EBT						
2	Number of Companies	147	147	147	147	147
3	Average Net Impact on ETR	30.4%	-6.2%	-33.2%	0.3%	-2.6%
Companies Reporting Increased Taxes						
4	Number of Companies	111	25	41	15	87
5	Average Net Impact on ETR	40.3%	6.4%	17.8%	9.5%	45.3%
Companies Reporting Reduced Taxes						
6	Number of Companies	0	19	100	12	60
7	Average Impact on ETR	N/A	-56.5%	-56.2%	-8.6%	-72.0%
Companies Reporting No Adjustment						
8	Number of Companies	36	103	6	120	0

Table 3. ETR Reconciliation Table for Roper Technologies Inc. (2018)

	2018	2017	2016
Federal statutory tax rate	21.0%	35.0%	35.0%
Foreign rate differential	0.3	(2.6)	(3.2)
R&D tax credits	(0.9)	(0.8)	(0.7)
State taxes, net of federal beneifts	2.4	1.9	1.9
Section 199 deduction	—	(1.3)	(1.5)
Stock-based compensation	(3.1)	(3.9)	(1.6)
Tax Cuts and Jobs Act of 2017 — enactment date and measurement period adjustments	(1.2)	(20.8)	—
Global intangible low taxed income (GILTI) inclusion	1.1	—	—
Foreign-derived intangible income (FDII) deduction	(1.2)	—	—
Tax on planned remittances of foreign earnings	1.3	—	—
Other, net	1.5	(1.4)	0.1
	21.2%	6.1%	30.0%

Table 4. ETR Reconciliation Table for Mondelez International Inc. (2018)

	For the Years Ended December 31,		
	2018	2017	2016
U.S. federal statutory rate	21.0%	35.0%	35.0%
Increase/(decrease) resulting from:			
State and local income taxes, net of federal tax benefit	0.4%	0.8%	0.8%
Foreign rate differences	(1.9)%	(10.8)%	(18.6)%
Changes in judgment on realizability of deferred tax assets	(0.4)%	3.2%	—
Reversal of other tax accruals no longer required	(1.8)%	(1.7)%	(7.6)%
Tax accrual on investment in Keurig (including tax impact of the gain from the KDP transaction)	8.4%	1.2%	1.2%
Excess tax benefits from equity compensation	(0.8)%	(1.2)%	—
Tax legislation (non-U.S. tax reform)	0.3%	(2.6)%	(4)%
U.S. tax reform — deferred benefit from tax rate change	—	(41.5)%	—
U.S. tax reform — transition tax	(1.3)%	42.2%	—
U.S. tax reform — changes in indefinite reinvestment assertion	2.1%	(2.0)%	—
Foreign tax provisions under TCJA (GILTI, FDII, and BEAT)	1.1%	—	—
Other	0.1%	(1.3)%	1.0%
Effective tax rate	27.2%	21.3%	7.8%

Table 5. ETR Reconciliation Table for Alphabet Inc. (2018)

	Year Ended December 31,		
	2016	**2017**	**2018**
U.S. federal statutory tax rate	35.0%	35.0%	21.0%
Foreign income taxed at difference rates	(11.0)	(14.2)	(4.9)
Effect of the Tax Act			
One-time transition tax	0.0	37.6	(0.1)
Deferred tax effects	0.0	(1.4)	(1.2)
Federal research credit	(2.0)	(1.8)	(2.4)
Stock-based compensation expense	(3.4)	(4.5)	(2.2)
European Commission fine	0.0	3.5	3.1
Deferred tax asset valuation allowance	0.1	0.9	(2.0)
Other adjustments	0.6	(1.7)	0.7
Effective tax rate	19.3%	53.4%	12.0%

Table 6. Average Impact of TCJA Permanent Adjustments on 2018 ETRs of Large Nonfinancial Companies

		<A>	<B>	<C>	<D>	<E>	<F>	<G>
		Type A (One or More Itemized TCJA Adjustments)					Type B	Type C
		GILTI	FDII	BEAT	Any Other TCJA Adjustment	Sum of Itemized TCJA Impacts	Overall TCJA Impact Only (Not Itemized)	TCJA Impact Not Separately Identified
1	Number of Companies Evaluated	110	110	110	110	110	110	110
2	Number of Companies With Positive EBT	107	107	107	107	107	107	107
3	Number of Companies Reporting This Adjustment	11	15	1	2	21	9	77
4	Average ETR Impact of Reporting Companies	2.7%	-2.6%	3.5%	1.3%	-0.1%	0.4%	N/A

Table 7. Distribution of All Corporations and Prime Candidates by Reporting Types

		<A>	<B>	<C>	<D>
		Type of Reporter			
		Type A	Type B	Type C	All Types
1	Companies With 2018 SEC 10-Ks & EBT > 0	21	9	77	107
2	Percent of Total	19.6%	8.4%	72.0%	100.0%
3	Prime Candidates for Material GILTI and/or BEAT	9	4	33	46
4	Percent of Total	19.6%	8.7%	71.7%	100.0%

Prime candidates for material GILTI and/or BEAT are corporations reporting reduction of more than 5 percentage points in average ETR for 2015-2016 because of lower tax on foreign income.

Table 8. Reported vs. Normalized ETRs (2015-2018) for Roper Technologies Inc., Mondelez International Inc., and Alphabet Inc.

		<A>	<B>	<C>	<D>
		2015	**2016**	**2017**	**2018**
1	**Federal Statutory Rate**	35.0%	35.0%	35.0%	21.0%
Roper Technologies Inc.					
2	Reported ETR (fully adjusted)	30.6%	30.0%	6.1%	21.2%
3	Normalized ETR (only recurring adjustments)	30.6%	30.0%	26.9%	21.1%
Mondelez International Inc.					
4	Reported ETR (fully adjusted)	30.6%	7.8%	21.3%	27.2%
5	Normalized ETR (only recurring adjustments)	32.5%	18.2%	22.5%	19.9%
Alphabet Inc.					
6	Reported ETR (fully adjusted)	16.8%	19.3%	53.4%	12.0%
7	Normalized ETR (only recurring adjustments)	16.8%	19.2%	12.8%	12.2%

Table 9. Predicted Normalized ETRs for Large U.S. Nonfinancial Corporations (2015-2016)

	<A>	<B>	<C>	<D>	<E>	<F>	<G>
	R&D Expense Margin	**Foreign Share of EBT**					
1		0%	20%	40%	60%	80%	100%
2	0%	34.7%	32.0%	29.3%	26.5%	23.8%	21.1%
3	5%	32.1%	29.4%	26.7%	23.9%	21.2%	18.5%
4	10%	31.0%	28.3%	25.6%	22.9%	20.2%	17.4%
5	15%	30.2%	27.5%	24.8%	22.0%	19.3%	16.6%
6	20%	29.5%	26.8%	24.1%	21.4%	18.6%	15.9%

Predicted normalized ETRs are based on a regression equation with the following coefficients:		
Regression Coefficient	t-Statistic	Explanatory Variable
-0.136	-8.55	Foreign share of EBT
-0.116	-3.54	Square root of [R&D expense margin]
0.347	41.34	Constant term

Observations	140
Adj. R-Squared	48.1%

Table 10. Predicted Normalized ETRs for Large U.S. Nonfinancial Corporations (2018)

	<A>	<B>	<C>	<D>	<E>	<F>	<G>
	R&D Expense Margin	**Foreign Share of EBT**					
1		0%	20%	40%	60%	80%	100%
2	0%	21.5%	21.4%	21.4%	21.3%	21.3%	21.2%
3	5%	18.7%	18.6%	18.6%	18.5%	18.4%	18.4%
4	10%	17.5%	17.5%	17.4%	17.3%	17.3%	17.2%
5	15%	16.6%	16.6%	16.5%	16.4%	16.4%	16.3%
6	20%	15.9%	15.8%	15.7%	15.7%	15.6%	15.6%

Predicted normalized ETRs for 2018 are based on a regression equation with the following coefficients:		
Regression Coefficient	t-Statistic	Explanatory Variable
-0.003	-0.19	Foreign share of EBT
-0.126	-3.88	Square root of [R&D expense margin]
0.215	26.04	Constant term

Observations	107
Adj. R-Squared	13.7%

Table 11. Predicted Change in Normalized ETRs for Large U.S. Nonfinancial Corporations (2018 vs. 2015-2016)*

	<A>	<B>	<C>	<D>	<E>	<F>	<G>
	Change in Foreign Share of EBT, 2018 vs. 2015-2016	**Foreign Share of EBT in 2015-2016**					
1		0%	20%	40%	60%	80%	100%
2	-20%	**	-8.5%	-6.3%	-4.0%	-1.7%	0.5%
3	-10%	**	-9.5%	-7.2%	-5.0%	-2.7%	-0.4%
4	0%	-12.7%	-10.4%	-8.2%	-5.9%	-3.7%	-1.4%
5	10%	-13.7%	-11.4%	-9.1%	-6.9%	-4.6%	**
6	20%	-14.6%	-12.4%	-10.1%	-7.8%	-5.6%	**

*Predicted change in normalized ETRs is based on regression of reported range in normalized ETR on foreign share of EBT in 2015-2016 and reported change in foreign share of EBT, 2018 vs. 2015-2016.

**Value of foreign share of EBT in 2018 is assumed to be no less than 0 percent and no more than 100 percent, so change from 2015-2016 is constrained.

Regression Coefficient	t-Statistic	Explanatory Variable
0.113	7.64	Foreign share of EBT in 2015-2016
-0.096	-3.03	Change in foreign share of EBT, 2018 vs. 2015-2016
-0.127	-16.60	Constant term

Observations	98
Adj. R-Squared	43.9%