

THE BUSINESS CYCLE AND THE DEDUCTION FOR FOREIGN DERIVED INTANGIBLE INCOME: A HISTORICAL PERSPECTIVE

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Public Law 115-97, commonly known as the Tax Cuts and Jobs Act, was passed at the end of 2017 and drastically altered the taxation of corporate income with fundamental changes to the treatment of cross-border income flows. We focus on the potential impact of one particular provision, the deduction for Foreign Derived Intangible Income (FDII) which provides a deduction for high return income derived from exports of goods and services. We form a historical panel of corporate tax returns and simulate the deduction for FDII had it been in place from 2000–2015. We find that the deduction would have provided significant benefits, particularly to firms in the manufacturing, information, and professional services sectors. We find these benefits to be highly concentrated. In addition, we find that deemed intangible income (DII) is pro-cyclical in nature — declining significantly as a share of income during recessions. The deduction for FDII exacerbated the pro-cyclical nature of DII during the 2001 recession, whereas during the Great Recession, exports moderated the pro-cyclical nature of FDII.

Keywords: international taxation, tax reform, business cycle

JEL Codes: H25, H32

I. INTRODUCTION

Congressional efforts to reform the international tax system culminated with the passage of Public Law 115-97, commonly referred to as the Tax Cuts and Jobs Act of 2017 (TCJA). In an effort to address concerns about reduced competitiveness of U.S. multinational companies and a shrinking tax base at home,¹ Congress lowered the corporate tax rate from 35 percent to 21 percent and radically changed the tax treatment

¹ In two different papers, Kimberly Clausing discusses the vexing issues of a high statutory tax rate and low tax liabilities for multinational corporations as well as estimates the reduced federal tax liability due to estimated profit shifting of multinational corporations (Clausing 2016a, 2016b).

of cross-border income flows. Under prior law, the United States asserted the right to tax the worldwide income of U.S. multinationals in a system where some of the income was taxed immediately and the rest of the income was taxed only upon repatriation to the United States. Some argued that this hybrid system reduced the competitiveness of U.S. corporations abroad and at the same time increased the share of U.S. corporate earnings reported abroad (Samuels, 2015).

The TCJA fundamentally changed the taxation of cross-border income flows by enacting a participation exemption, or a territorial system, where active business income is no longer taxed except under certain circumstances. The participation exemption provision was meant to bring the U.S. tax system in line with many tax systems around the world by generally exempting foreign-source income from U.S. tax. The common concern in such a system is that it further encourages multinationals to earn income abroad rather than domestically. To counteract this, Congress enacted several provisions to moderate that incentive. In particular, Congress enacted three major provisions that were meant to reduce the incentives for locating real activity and profits offshore: (1) the Base Erosion and Anti-Abuse Tax; (2) a tax on Global Intangible Low Tax Income (GILTI); and (3) the deduction for Foreign Derived Intangible Income (FDII). The Base Erosion and Anti-Abuse Tax is an alternative minimum tax where certain payments to foreign related parties are preference items that are added back to the calculation of income. The intent of this provision was to reduce the ability of multinational corporations to use related party transactions to shift profits to foreign jurisdictions.

The second and third provisions were designed to work in tandem to directly address the shifting of highly mobile earnings to overseas subsidiaries in order to avoid U.S. tax. GILTI is a partial inclusion of high return foreign source income which would otherwise be exempt from U.S. tax. The deduction for FDII acts somewhat symmetrically by allowing a partial exclusion for high return U.S. source income that is derived from foreign sales. Taken together they act as a stick and a carrot to discourage profit shifting out of the U.S.; the first provision dis-incentivizes the location of high return earnings in foreign subsidiaries, while the second incentivizes the location of high return earnings in the United States.

In this paper, we focus our attention on the effects of the “carrot” by simulating FDII on a sample of corporate tax returns from 2000–2015. This enables us to estimate the approximate size of the carrot had it been a part of U.S. tax law over that period. We analyze the impacts of the deduction for FDII across sectors of the economy as well as over the business cycle in an attempt to understand the economic impact of this complex provision in isolation. During our analysis period there were two recessions, which allows us to consider how the FDII deduction changes during the business cycle.

Prior to passage of the TCJA, several congressional reform proposals were crafted by legislators looking to address issues in the corporate tax code that were perceived to be driving base erosion and decreased competitiveness of U.S. corporations.² Dave

² Some of the more prominent proposals include Wyden-Coats S. 727 introduced in 2011, the Camp discussion draft, the House Republican Blueprint introduced in 2016 (Tax Reform Task Force, 2016), Republican Senate Finance Committee “Comprehensive Tax Reform for 2015 and Beyond” (Republican Staff Committee on Finance, 2014). See Gravelle (2012) for a discussion of an early version of the Camp discussion draft, and the Wyden-Coats proposal. Alan Auerbach (2017) provides a discussion of the House Republican Blueprint and Elena Patel and John McClelland (2017) simulate the effects of a cash flow tax using tax return data.

Camp, Chairman of the Committee on Ways and Means in the House of Representatives, released a discussion draft tax reform proposal on February 26, 2014 (Joint Committee on Taxation, 2014) that garnered considerable attention and included a deduction for a U.S. domestic corporation's foreign intangible income. The deduction for foreign intangible income was, in spirit, a predecessor to the deduction for FDII, which was eventually enacted.³

Major changes in tax policy are always likely to create relative winners and losers, so it is useful to look at likely beneficiaries of the deduction for FDII and how those benefits change over the business cycle. We begin with a detailed look at the industry composition of beneficiaries using tax year 2014 tax return data, the year for which we have the most complete information. In order to isolate the effects of FDII, we examine it in the context of the tax code as it existed prior to 2018. Next, we make some simplifying assumptions to simulate FDII beneficiaries over the period 2000–2015, with the objective of understanding how the FDII deduction would change over the business cycle. Because the deduction amount is based on an excess return on tangible assets, if assets adjust more slowly than income during contractions, the share of income receiving the deductions would decline in recessions. The high-return structure of FDII makes it possible that this provision will exacerbate any cyclical variations in corporate income by increasing average tax rates for some taxpayers during recessionary periods.

The primary objective of a tax system is to collect revenue, but a secondary benefit of many tax systems is that they act as an automatic stabilizer for the economy and limit business cycle volatility. Automatic stabilizers are counter-cyclical and go into effect without any underlying change in economic policy; they provide additional income to stimulate demand or investment in downturns and do the opposite in expansions to act as a drag on aggregate demand. Generally the main mechanism for the U.S. tax system to act as an automatic stabilizer is through a progressive individual tax system; as incomes rise taxpayers run up through the graduated tax brackets, which results in less after tax income per dollar of pre-tax income. This effectively means taxpayers have a lower average tax rate during downturns and a higher average tax rate during expansions. Follette and Lutz (2010) estimate that the elasticity of federal taxes to GDP is 1.6; a 1 percent increase in GDP results in a 1.6 percent increase in tax liability. Thus, tax liabilities rise and fall by more than the change in GDP, making the tax system act as a stabilizer. Auerbach and Feenberg (2000) argue that the corporate tax system can also act as a counter-cyclical automatic stabilizer, particularly for firms that are liquidity constrained.

Prior to January 1, 2018 the corporate tax could act as an automatic stabilizer primarily through the net operating loss carryback rules and the progressive statutory rates. The progressive rate structure of the pre-2018 tax code functioned in a similar manner to progressive individual rates; as corporate income rises, the higher tax rates result in less after tax profits per dollar of pre-tax profits. The carryback provision provided immediate cash refunds to firms in a net operating loss position, potentially softening the impact of recessions.

³ The FDII provision can also be seen as incorporating elements of the border adjustment in the House Republican Blueprint (Tax Reform Task Force, 2016).

Congress has also attempted to use the tax code to stimulate the economy during recessions including individual credits and refunds as well as stimulus aimed at business investment incentives. One tool used repeatedly over the last decade has been accelerated depreciation, commonly known as bonus depreciation, to provide firms larger up front deductions for investment. In March 2002, Congress enacted an additional 30 percent bonus depreciation and an increase in the carryback period for net operating losses from two to five years. In February 2008, Congress enacted a 50 percent bonus depreciation for property placed in service in 2008 and then extended the provision an additional year in February 2009 and again in September 2010. Also in February 2009 and November 2009, Congress extended the carryback period for net operating losses from two to five years for losses incurred in 2008 or 2009.⁴

Researchers have exploited these changes in tax treatment to determine their efficacy. Several studies looked at the enactment of bonus depreciation during the last two recessions and conclude that bonus depreciation had widely differential effects across firms. Zwick and Mahon (2016) find that bonus depreciation increased investment by as much as 17 percent and that the effects were concentrated in small firms in need of cash and firms that would likely have liquidity constraints. Hines and Park (2017) find that bonus depreciation for equipment was considerably less effective in stimulating investment for firms that were at risk of defaulting on their debt. Kitchen and Knittel (2016) find that firms in a loss position were much less likely to take up bonus depreciation during the periods 2002–2004 and 2008–2009. Edgerton (2010) finds that cash flow and loss positions of firms reduce the effectiveness of bonus depreciation.

Dobridge (2016) finds that extension of the two year net operating loss carryback period to five years resulted in increased investment after the 2001 recession and reduced measures of financial distress for firms during the most recent recession. This indicates that the carryback extension played a role in alleviating firm finances during recessionary periods, suggesting that the underlying two year carryback window also acts as an automatic stabilizer.

Enactment of the TCJA changed the ability of the tax system to stabilize the economy counter-cyclically, either automatically or through legislation. First, the reduction in the corporate rate on its own makes the tax system less counter-cyclical. The lower rate means that the tax base volatility has less of an impact on liabilities. In addition, both the graduated rates and the two year carryback were eliminated. Moreover, to the extent that bonus depreciation was effective in achieving policy goals during recessions, the implementation of 100 percent bonus depreciation through 2026 deprives policy makers of one tested channel of fiscal policy should there be an intervening downturn. Several economists at the New York Federal Reserve recently argued that enactment of the TCJA increased the cyclicity of bank capital and firm cash flows (Aragon et al., 2018). They argue that the main channels for the increased cyclicity is through the denial of the net operating loss carryback and the newly enacted limit on net interest deductions. Finally, the introduction of FDII similarly has the potential to decrease the counter-cyclicity of the tax system if incomes decline more dramatically than tangible assets in downturns. Additionally, the most recent recession was global in nature and

⁴ See Joint Committee on Taxation (2002, 2008, 2011) for details on the enacted proposals.

accompanied by a collapse in global trade, raising the possibility that in certain circumstances, the export requirement in FDII could exacerbate this effect.

The remainder of the paper is organized as follows. In Section II, we outline the details of the FDII deduction. In Section III, we describe our data and discuss the methodology for imputing FDII to tax returns. In Section IV, we present results of a simulation of FDII had it been in place in 2014. In Section V, we simulate the new law on historical tax data from 2000 to 2015. We conclude that FDII will likely act pro-cyclically and that while most of the benefit accrues to the manufacturing sector, the deduction is important to a number of other sectors as well.

II. FOREIGN DERIVED INTANGIBLE INCOME

The TCJA instituted a deduction for FDII in an attempt to create greater incentives for firms to locate intangible profits domestically rather than overseas. This type of incentive is motivated by the fact that, as discussed earlier, intangible profits are potentially highly mobile and difficult to define, making them of particular concern in policies aimed at preventing base erosion and profit shifting. The deduction for FDII achieves this incentive by measuring income with a high return over a tangible asset base and exempting a portion of it from U.S. tax.⁵

The first step in calculating FDII is to determine the amount of deduction eligible income and qualified base asset investment (QBAI). Deduction eligible income is gross income less a number of exceptions and less any deductions properly allocable to that income. The exceptions are the following: passive foreign income taxed when it is earned, commonly referred to as subpart F income; GILTI income; financial services income; dividends from U.S. controlled foreign corporations (CFCs); oil and gas extraction income; and foreign branch income. QBAI is the basis of tangible depreciable assets using the alternative depreciation system under the Internal Revenue Code. With these two variables determined, a taxpayer then applies the excess return concept to arrive at deemed intangible income (DII):

$$(1) \quad \text{DII} = \text{Deduction Eligible Income} - 0.1 * \text{QBAI}$$

DII is essentially the high return amount intended to act as a proxy for highly mobile, intangible income. To arrive at FDII, a taxpayer has to account for how much of this income is attributable to foreign sales by applying the following formula:

$$(2) \quad \text{FDII} = \text{DII} * \frac{\text{Foreign Derived Deduction Eligible Income}}{\text{Deduction Eligible Income}}$$

The numerator, foreign derived deduction eligible income, is exactly what it sounds like, deduction-eligible income that is sold to foreign parties. As a result, the ratio on the right-hand side of the equation is the share of deduction eligible income that is sold

⁵ It is worth noting that this novel approach is substantially different from the variety of patent boxes and innovation boxes implemented around the world that are similarly intended to address concerns about intangible and mobile income.

for export. Mechanically, corporations are then allowed a 37.5 percent deduction on FDII for years before 2026, and a 21.875 percent deduction for years after 2025. Those deduction rates work out to effective rates of 13.125 and 16.406 percent, respectively.

The following example shows how these calculations would work for an illustrative, hypothetical corporation. Suppose that Corporation A earns \$1 million in profits manufacturing and selling widgets both domestically and directly to an unrelated foreign entity. Further, suppose that 25 percent of the corporation's earnings are from the sale of widgets to the foreign entity and that it has \$5 million in tangible depreciable assets. Then following Equation (1), DII is equal to $\$500K = \$1M - .1 * \$5M$. Following Equation (2) FDII is equal to $\$125K = \$500K * \left(\frac{\$250K}{\$1M} \right)$. Corporation A would report a deduction of $\$46,875 = .375 * \$125K$ on its tax return.

The deduction for FDII is likely to be pro-cyclical because business profits respond sharply to businesses cycles whereas a taxpayer's adjusted basis in tangible depreciable assets is likely to be substantially less cyclical. When the economy is doing well and profits are high, DII is likely to be high as well. During a downturn profits will decline yet the taxpayer's adjusted basis in tangible assets is unlikely to fall commensurately. Consequently, during downturns the average tax rate on deduction-eligible income, and hence overall income, is likely to increase.⁶ Continuing with our Corporation A example, suppose that in the next year U.S. sales of widgets declined substantially resulting in a 25 percent decline in total earnings to \$750,000. Further assume that foreign earnings and QBAI remained constant at \$250,000 and \$5 million. As a result of declining U.S. profits, FDII in year two for the corporation would be $\$83,333 = (\$750K - 0.1 * \$5M) * \left(\frac{\$250K}{\$750K} \right)$, instead of the prior year's \$125,000. Corporation A would then have a \$31,250 FDII deduction on their tax return instead of the prior year \$46,875 deduction. Assuming that there are no other income or deduction items on the return, and assuming a 21 percent corporate tax rate, the average rate of tax for Corporation A would increase from 20.02 percent to 20.13 percent. As the example illustrates, during a shock to U.S. income the FDII deduction acts pro-cyclically by increasing the average tax rate to eligible corporations.

III. DATA AND IMPUTATIONS

We start our analysis with a stratified statistical sample of corporate tax returns, from which we form an unbalanced panel of corporate tax returns for the years 2000 through 2015.⁷ These data include information on income and deduction items reported

⁶ There is one additional limitation on the usage of FDII deduction: the deduction cannot exceed taxable income. Firms with a net operating loss carryforward or other special deductions might be limited in their use of the deduction. We find that this limitation is small in practice and our general results hold even after including this additional limitation.

⁷ For this analysis we look only at C corporations filing Form 1120. This excludes S corps, Real Estate Investment Trusts, Regulated Investment Companies, insurance companies, and foreign owned branches in the United States.

on the corporate tax return, Form 1120, as well as a summary balance sheet of assets and liabilities reported on Schedule L.⁸ There are nearly 800,000 observations over the 16 year period. We exclude tax returns in which the taxpayer is identified as being in the finance and insurance sector or mining sector because financial services income and oil and gas extraction income is excluded from the calculation of FDII.⁹ These unique data allow us to estimate qualified business asset investments and DII. There are a number of issues with using the available data reported on corporate tax returns to estimate QBAI, basis of tangible depreciable assets, and deduction eligible income. First, Schedule L of Form 1120 only reports depreciable assets and accumulated depreciation on a book basis, which does not precisely line up with the definition of QBAI, causing us to measure QBAI with error. Second, we are not able to perfectly determine what items of income would be classified as deduction eligible income or what expenses would be allocated to those deductions. In addition to dropping firms from certain industries to deal with the exceptions, we also exclude dividends from CFCs and subpart F income. For purposes of this paper, we allocate deductible expenses between eligible and excepted income on a pro-rata basis,¹⁰ though this is certainly an oversimplification.¹¹

While the calculation of FDII hinges on the value of foreign sales for each firm, we do not observe all exports directly in the tax data. To overcome this, we use tax return information on related party exports reported on Forms 5471 and 5472 combined with information from three other sources. The first is the Profile of U.S. Importing and Exporting Companies, which provides a breakdown of the number of exporters and value of exports by industry and firm size cells (United States Census Bureau, 2012, 2013, and 2015). The second source is a 2012 Bureau of Economic Analysis report on the profile of service exporters by Barefoot and Koncz-Bruner (2012) that contains similar information on service exports. Finally, the Census Bureau's Statistics of U.S. Business Employment and Payroll (United States Census Bureau, 2018), which provides a breakdown of firms, employment, compensation, and receipts by size and legal form of organization. Combining these three sources allows us to determine aggregate exports in cells defined by firm size, industry, and organizational form. We then impute

⁸ Some very large corporations are sampled with certainty and have weights of one, while other smaller corporations are sampled at lower probabilities and carry larger implied population weights. See the Statistics of Income (SOI) description of the corporate income tax sample (Statistics of Income, 2013) for details on the stratification and sampling criteria.

⁹ For taxpayers classified as holding companies, we attempt to reclassify them into the industry of their primary business by analysis of returns in other years and the industry of their subsidiaries as well as by hand. Because the majority of those we reclassify are in financial services, we exclude the remaining taxpayers we are unable to reclassify.

¹⁰ That is, if 20 percent of a firm's gross income is deduction eligible, we assume 20 percent of their expenses and deductions are allocated to that income.

¹¹ In fact, allocation of expenses and deductions for the purposes of calculating DII are likely to face many of the same complications as allocating expenses for purposes of the domestic production deduction. Lester and Rector (2016) provide some details on the complications in determining what income qualifies for the deduction and which expenses are properly allocated to that income. They note that the domestic production deduction was one of the most common code sections for which corporations claim an uncertain tax position. We abstract from these difficulties in our analysis of FDII.

these aggregate export values to the taxpayers we observe in each cell after accounting for related party transactions observed directly.¹² Our imputation procedure within each cell is intended to match well-known features of the export distribution such as the highly concentrated nature of exports and the wage premium paid by export firms.

Our imputation closely mimics the concentration found in the firm level trade data. In 2014, the top 1 percent of goods exporters accounted for 74.3 percent of total goods exports, while that number was 83.2 percent for service exports.¹³ If we ignore the related party data available for 2014, the concentration at the top gets slightly smaller (66.8 percent and 82.8 percent). Our distribution of export value appears quite sensible, though it is a little less concentrated at the top than the distribution suggested by prior research.¹⁴ When we move from looking at 2014 in isolation to imputing exports over the full sample in Section V, we are forced to confront the limited availability of related party transaction data on Forms 5471 and 5472. At that point we proceed in exactly the same way, but without first accounting for related party exports.

We note that the assumptions we make in order to impute exports and subsequently estimate deduction eligible income, foreign derived deduction eligible income, and QBAI impact our estimates of the amount of FDII that would have been claimed as a deduction during the years that we simulate the policy. Some simplifying assumptions are made due to the lack of detailed data. For example, we assume that deductions would be allocated on a pro-rata basis to deduction eligible income, and foreign derived deduction eligible income. This is a simplifying assumption as expenses for different sources of income vary considerably. Additionally, our exclusion of financial and oil and gas companies as if they would be totally ineligible for the FDII is overly broad since they would likely have some eligible income sources. One particularly important assumption is that we hold constant all firm characteristics and behaviors over the simulation window. In reality, there would almost certainly be behavioral responses by corporations and other business entities to maximize their deduction either through pure tax planning strategies or rearranging of structures to take advantage of the deduction. In sum, here we have purposely chosen assumptions for transparency and expediency. As a consequence, we are likely underestimating the amount of FDII that would have been claimed.¹⁵

IV. FOREIGN DERIVED INTANGIBLE INCOME IN 2014

Because 2014 is the most recent year for which extensive data on related party exports is available, it is useful to look at the composition of DII and FDII in that year. Table 1 presents summary statistics of several variables from tax return Form 1120 and associ-

¹² We use aggregate trade data (Bureau of Economic Analysis, 2017 and 2018) to benchmark our imputations for each of the years of our analysis.

¹³ For example see Bernard, Jensen, Redding, and Schott (2007).

¹⁴ For more details on the export imputation procedure please contact the authors.

¹⁵ A revenue estimate of enactment of the FDII deduction, or changes to the present law provision, would incorporate these types of behaviors.

Table 1
Summary Statistics for 2014 Sample

	All Firms	Firms with DII	Firms with Exports	Firms with FDII
	(1)	(2)	(3)	(4)
Panel A: Average Selected Characteristics				
Total Assets (\$ Millions)	18.2	26.3	428.8	491.6
QBAI (\$ Millions)	3.1	2.8	66.2	51.5
Share claiming DPD	0.0	0.1	0.2	0.3
Share multinationals	0.1	0.1	0.3	0.3
Share foreign owned	0.1	0.0	0.2	0.2
Panel B: Average Income Items (\$ Millions)				
Gross receipts	12.7	19.7	272.9	327.7
Royalties received	0.1	0.3	3.5	5.0
Rents received	0.0	0.0	1.0	0.9
Other income	0.7	1.2	16.5	22.8
Panel C: Average Deduction and Expense Items (\$ Millions)				
Cost of goods sold (excluding labor)	7.9	12.7	174.8	214.7
Non-officer wages	1.7	2.6	34.8	41.0
Compensation of officers	0.1	0.2	1.5	1.7
Advertising	0.1	0.2	3.2	3.8
Other deductions	3.1	4.0	62.9	66.2
Net operating loss deduction	0.1	0.1	1.8	2.2
Sample number of firms (thousands)	42	21	15	9
Weighted number of firms (thousands)	1,384	649	50	31
Firms claiming DPD are those with section 199 DPDs. Multinationals are firms with CFCs or foreign owned. Foreign owned firms are those with at least 50 percent foreign ownership by vote.				

ated schedules for tax year 2014. Panel A includes information on assets and a number of firm characteristics we might expect to affect whether or not a firm has DII, engages in export, or has FDII. Panels B and C include income and expense items that might reasonably be expected to be correlated with the presence of substantial intangible income.

Column 1 presents statistics for the full sample, which comprises nearly 1.4 million corporations when weighted to represent the population. Columns 2, 3, and 4 break down the sample into taxpayers that we estimate will have DII, exports, and FDII,

respectively. Firm size, as measured by asset values, varies considerably across the columns: for the overall sample the average asset value is \$18 million; while for firms with positive DII the average asset value is \$26 million; and for exporters and firms with FDII average assets are \$429 million and \$492 million, respectively. Exporting firms or those with FDII are more likely to claim the domestic production deduction, are more likely to be multinationals, and are more likely to be foreign owned than the overall sample.¹⁶ It may be surprising that only 28.0 percent of the exporting firms are multinationals, that is they report owning a CFC or are foreign owned, but these make up more than 90 percent of the total value of exports. This statistic matches favorably with data from Bernard, Jensen, and Schott (2009) who show that around 90 percent of exports are conducted by multinationals.

In the overall sample 16.9 percent of total assets are in the form of QBAI. Because DII is calculated as the excess earnings over 10 percent of QBAL it is unsurprising that QBAL makes up a somewhat smaller percentage (10.7 percent) of assets for DII firms. As can be seen at the bottom of the table, moving across the columns results in fewer firms in our sample; there are only 649,000 firms with DII, 50,000 exporters, and 31,000 firms with FDII in 2014.

Moving to Panels B and C of Table 1 reveals that the difference in size which was apparent in assets are mirrored on the level of income and expenses. Royalties received, for example, are notably higher for FDII firms than the full sample, but as a share of total assets they are relatively small (around 1 percent) for all firm types. The same is true of advertising, another item we might expect to be a marker for intangible income.

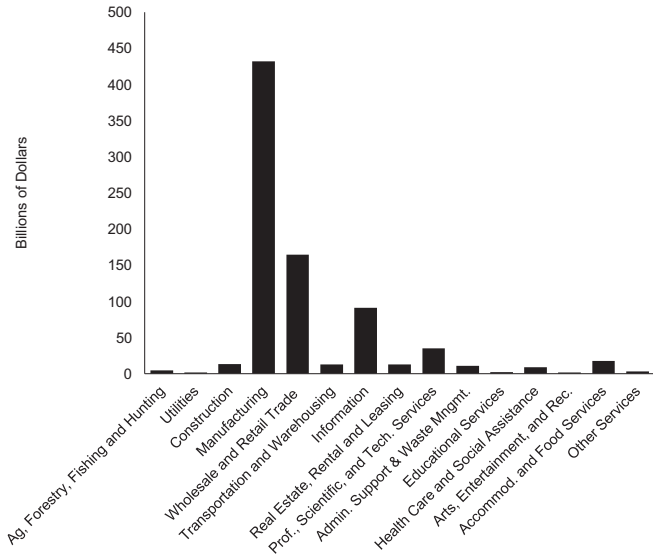
Figure 1 breaks down the distribution of total DII across industries. The manufacturing sector's \$432 billion in DII accounts for more than half the total DII of \$811 billion in 2014. Figure 1 suggests that there are few industries that will benefit from FDII because the bulk of the DII is in those industries. However, there is significant variation in DII measured as a share of deduction eligible gross income, which is simply deduction eligible income prior to allocating any expenses or deductions to that income. This is a helpful construction because it gives a sense of how important DII is relative to the income of a taxpayer. Figure 2 shows that DII as a share of income varies from less than 1 percent for utilities to 8 percent for the information sector, indicating that non-manufacturing industries are likely to benefit significantly from the FDII deduction.

The total amount of FDII in our sample is \$77 billion, 9.5 percent of the total amount of DII. Manufacturing has the largest amount of FDII, \$56 billion, once again far in excess of the other industries, shown in Figure 3. However FDII is more important to the information sector when looking at it as a share of deduction eligible gross income, shown in Figure 4. The industries for which FDII is particularly important are those that earn high returns on assets and have a larger concentration of exports.

Much like the distribution of exports, the distribution of FDII across firms is highly concentrated. Around 85 percent of the FDII would have accrued to the top 1 percent of firms in 2014.

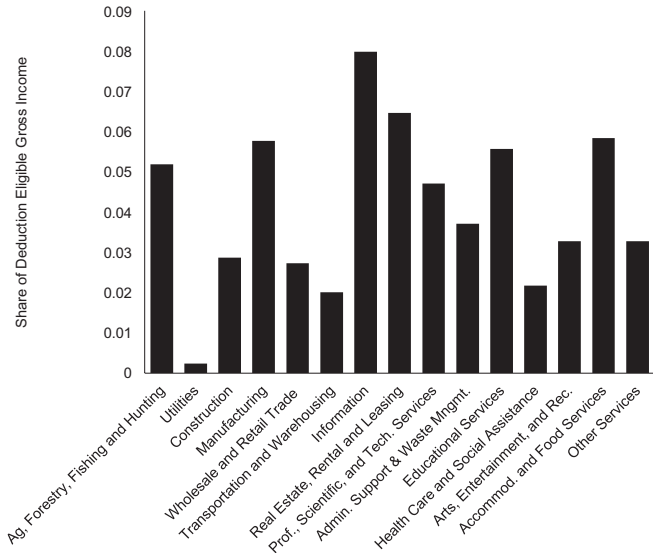
¹⁶ Multinationals are defined as firms who have a controlled foreign corporation for whom they file a Form 5471, or are foreign owned. Foreign owned firms are those for whom foreign owners make up at least 50 percent of the voting stock.

Figure 1
Deemed Intangible Income by Industry for 2014



Notes: Figure 1 shows the amount of DII in billions of dollars by major industry classification. Amounts are based on corporate income tax returns produced by the SOI and authors calculations.

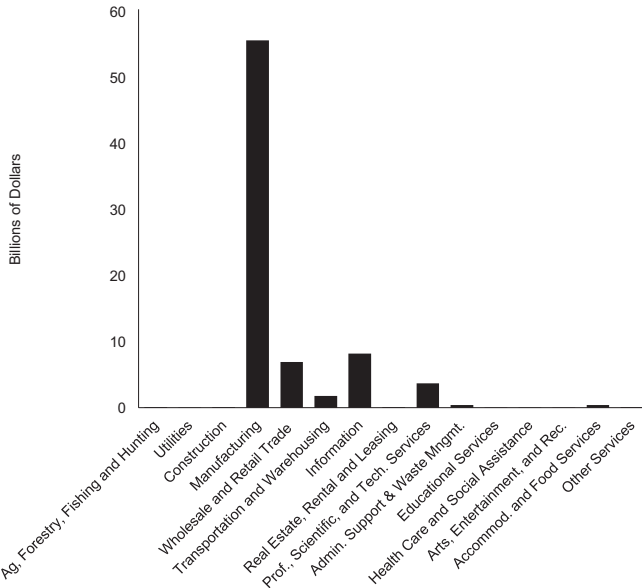
Figure 2
Deemed Intangible Income as a Share of Deduction Eligible Gross Income for 2014



Notes: Figure 2 shows DII as a share of deduction eligible gross income by major industry classification. Shares are based on corporate income tax returns produced by the SOI and authors calculations.

Figure 3

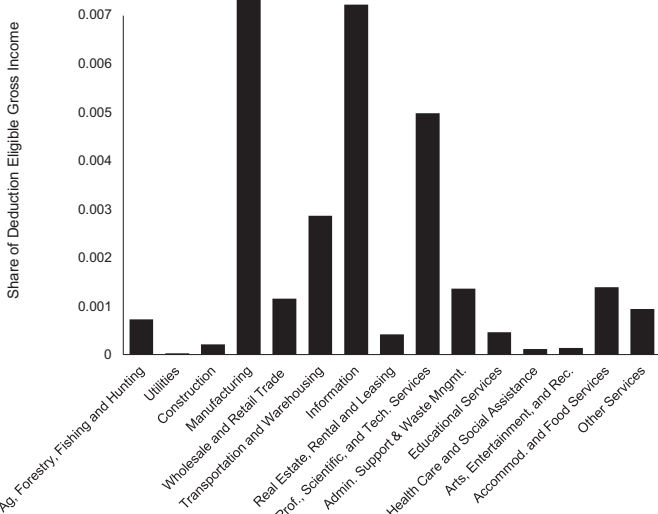
Foreign Derived Intangible Income by Industry for 2014



Notes: Figure 3 shows the amount of FDII in billions of dollars by major industry classification. Amounts are based on corporate income tax returns produced by the SOI and authors calculations.

Figure 4

Foreign Derived Intangible Income as a Share of Deduction Eligible Gross Income for 2014



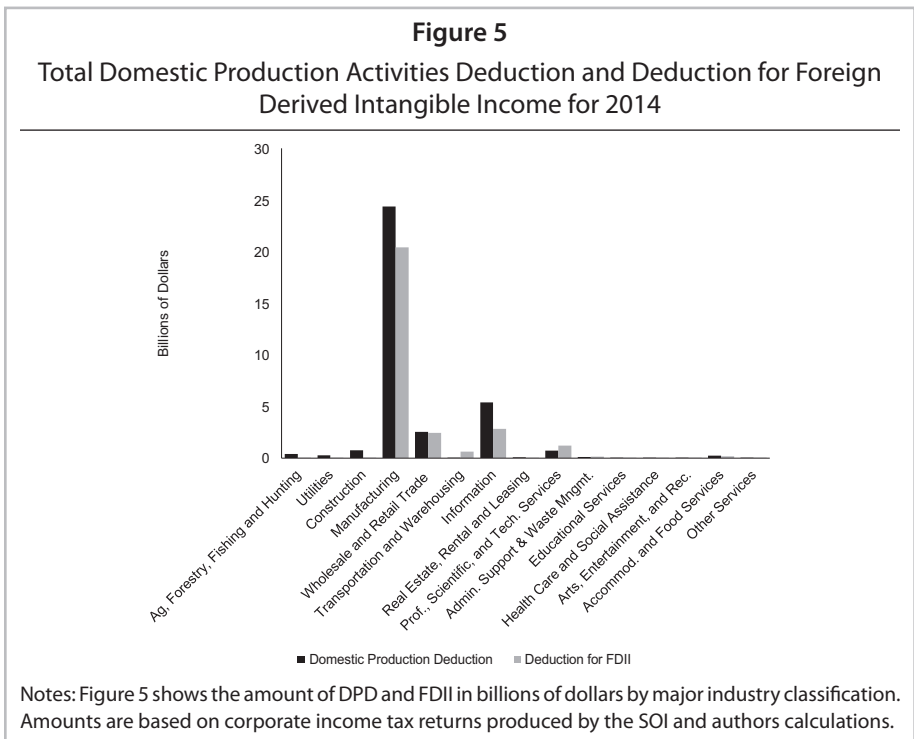
Notes: Figure 4 shows FDII as a share of deduction eligible gross income by major industry classification. Shares are based on corporate income tax returns produced by the SOI and authors calculations.

A. Comparison of FDII and the Domestic Production Deduction

Along with instituting the deduction for FDII, the TCJA also repealed the domestic production activities deduction (DPD). This was a 9 percent deduction available to firms engaged in production within the United States and was originally implemented as a replacement for the domestic international sales corporation, foreign sales corporation, and extraterritorial income exclusion regimes, all of which were deemed non-compliant with World Trade Organization commitments. Lester and Rector (2016) provide a history of the deduction as well as an analysis of the types of firms claiming the deduction.

While the FDII regime was not conceived as a replacement for the DPD, it does share many similar properties in terms of structure. Table 1 shows that there is significant overlap between firms that claim the DPD and firms that have positive FDII. This leads to many of the same industries benefiting from both the DPD and the deduction for FDII. Figure 5 compares deduction amounts for the DPD and FDII across industries. We estimate that around \$23 billion in FDII deduction would have been taken by the firms in our sample, compared with \$35 billion in DPD. The aggregate deduction amounts decline in every industry except in professional, scientific, and technical services.

The number of beneficiaries at the industry level generally follow a similar pattern. In our sample we estimate that around 31 thousand firms would have claimed the deduction for FDII compared to 44 thousand firms claiming the DPD. This difference is even more striking because more than half of the FDII beneficiaries are in the Wholesale and Retail



Trade sectors, who claim the DPD relatively infrequently.¹⁷ Despite the large number of firms in the Retail and Wholesale sector with positive FDII, it makes up a relatively small share of the total value of the deduction. We might expect an increase in top end concentration of FDII relative to the domestic production deduction due to the excess return and export requirements, but that does not appear to be the case. In our sample, the top 1 percent realizes 85 percent of the total of both deductions.

Looking more closely at characteristics of beneficiaries, Table 2 reproduces the final column of Table 1, and allows a more detailed comparison of the populations benefitting from FDII with those benefitting from the DPD in 2014. For the most part, the profile

Table 2
Summary Statistics for 2014 Sample

	Firms with FDII	Firms with DPD
	(1)	(2)
Panel A: Average Selected Characteristics		
Total assets (\$ Millions)	491.6	316.1
QBAI (\$ Millions)	51.5	38.7
Share claiming DPD	0.3	1.0
Share multinationals	0.3	0.1
Share foreign owned	0.2	0.1
Panel B: Average Income Items (\$ Millions)		
Gross receipts	327.7	193.9
Royalties received	5.0	2.9
Rents received	0.9	0.7
Other income	22.8	12.9
Panel C: Average Deduction and Expense Items (\$ Millions)		
Cost of goods sold (excluding labor)	214.7	126.4
Non-officer wages	41.0	22.8
Compensation of officers	1.7	1.0
Advertising	3.8	2.2
Other deductions	66.2	41.3
Net operating loss deduction	2.2	0.6
Sample number of firms (thousands)	9	6
Weighted number of firms (thousands)	31	44

Firms claiming DPD are those with section 199 DPDs. Multinationals are firms with CFCs or foreign owned. Foreign owned firms are those with at least 50 percent foreign ownership by vote.

¹⁷ This is driven by the fact that wholesale and retail trade sectors comprise a significant share of exporters and have relatively low levels of QBAI, resulting in high returns.

of taxpayers taking the deduction looks quite similar, with FDII firms perhaps being slightly larger on average. However, one difference that jumps out in Table 2 is that a far smaller share of DPD claimants are multinationals and/or foreign owned. Despite somewhat different goals and very different mechanics, it appears that the deduction for FDII and the domestic production deduction benefit similar groups of taxpayers with some important and interesting differences. In the aggregate, the total value of FDII deductions and the total number of taxpayers benefitting appears smaller than the DPD.

V. FOREIGN DERIVED INTANGIBLE INCOME 2000–2015

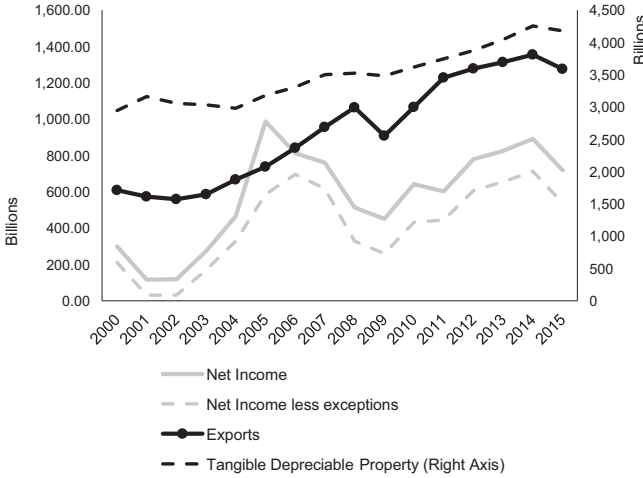
The prior imputations and simulations analyzed the components of FDII for tax year 2014. To understand how companies will benefit from FDII over time and through the business cycle, in this section we present the results of simulating FDII over tax years 2000 through 2015. As discussed earlier, the benefits of the deduction for FDII are likely to be cyclical. Here we show that DII fluctuates with the volatility of the economy and that FDII fluctuates due to volatility in the U.S. economy as well as foreign demand.

Figure 6 highlights the major moving aggregates that contribute to calculating the deduction for FDII. There are four aggregates on the graph. The solid gray line shows how net income for our sample fluctuated over the period. During the 2001 recession, net income fell from its 2000 level by 62 percent.¹⁸ Net income also fell from its 2006 level by 45 percent to the trough in 2009. Net income hit a peak in 2005, but this includes income from the one time repatriation holiday enacted in 2004. The dashed gray line removes that income as well as the other income excepted from the calculation of DII. The 64 percent decline in the modified net income from its peak in 2006 to its trough in 2009 is very similar to the drop in 2001. After 2009, the firms in our sample had steady increases in net income. However, only after five years, in 2014, did net income surpass its 2006 peak. Next we turn to aggregate exports that we have imputed to corporations. Here we can see that exports remained relatively robust in the 2001 recession and also stayed strong in 2008, reflecting that the world economies lagged behind the United States in entering the great recession. During 2009 there were still \$912 billion in exports for the firms in our sample despite the trough in net income; exports continued apace despite the U.S. downturn. This export value is 8 percent larger than the amount of exports we impute for 2006, the peak year for net income. The continued growth in exports is likely to moderate the pro-cyclical effect of the U.S. downturn on FDII deductions. Returning to our hypothetical Corporation A, assuming earnings declined to \$750,000 in year two but exports increased by 8 percent from \$250,000 to \$270,000 would result in an average tax rate of 20.06 instead of 20.13 percent when exports remained constant. Finally, the top line in Figure 6 is tangible depreciable property amounts as reported on Form 1120. As expected, tangible property does not appear to have a pronounced cyclical component. It actually increased in 2001 and it remained flat from 2007 through 2009.

Figure 7 reproduces the net income less exceptions line from Figure 6 but includes our calculations of DII and FDII. Because of increases in tangible assets, DII peaks in

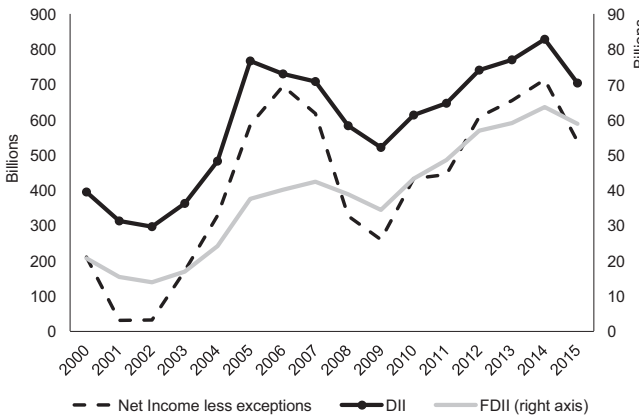
¹⁸ The National Bureau of Economic Research dates the beginning of the Great Recession as December 2007 and the end as June 2009, and the 2001 recession as beginning in March and ending in November (National Bureau of Economic Research, 2010).

Figure 6
Net Income, Exports, and Assets



Notes: Figure 6 shows the total amount of net income, net income less exceptions, and the one-time repatriation holiday amounts, exports, and tangible depreciable property over the years 2000–2015. Amounts are based on corporate income tax returns produced by the SOI and authors calculations.

Figure 7
Deemed Intangible Income, Foreign Derived Intangible Income, and Net Income



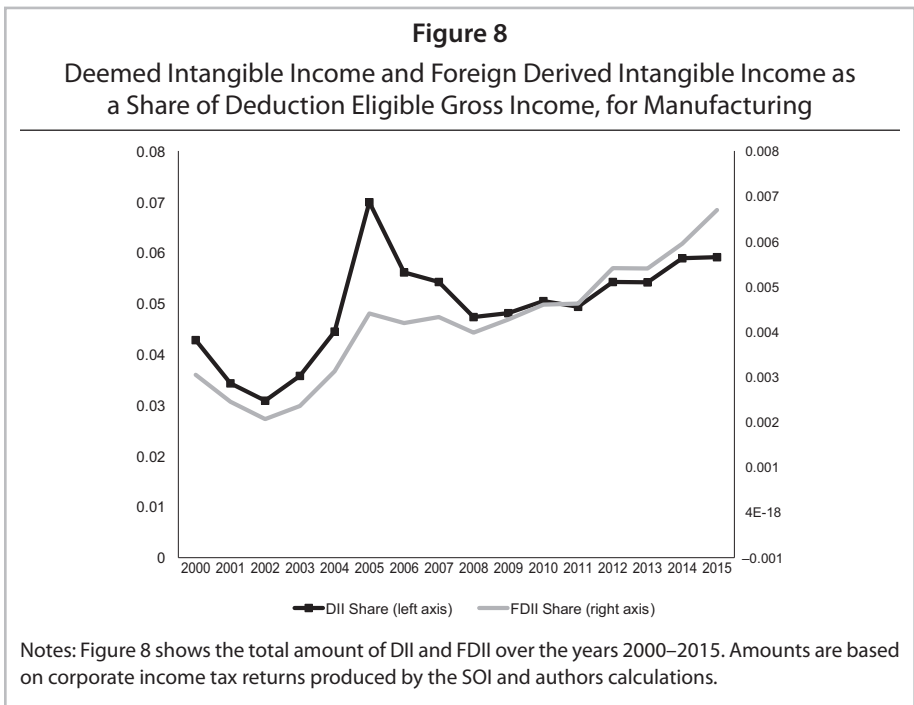
Notes: Figure 7 shows the total amount of net income less exceptions and the one-time repatriation holiday amounts, DII, and FDII over the years 2000–2015. Amounts are based on corporate income tax returns produced by the SOI and authors calculations.

2005, a year earlier than net income. DII is quite volatile; DII declined by 29 percent from 2006 to 2009 and 32 percent from 2005 to 2009.

Similarly, the fluctuations in FDII are substantial, but they are less volatile than DII. As expected the strong pace of exports from 2006 to 2009 muted the decline in FDII between 2006 and 2009 (15 percent decline) relative to the changes in DII. The cyclical pattern for FDII mirrors the pattern for DII. However, because exports continued to increase through 2008, as the world economies lagged behind the U.S. economy in entering the Great Recession, the decline in FDII occurs later than the decline in DII.

The industrial composition of DII and FDII over time is similar to that in 2014, with the manufacturing sector comprising the lion’s share of both items. In Figure 8 we focus on that sector, showing DII and FDII as a share of deduction eligible gross income over the period 2000–2015. Comparing DII and FDII to deduction eligible gross income, as in Figures 2 and 4, is particularly useful in the context of thinking about the provision over the business cycle. In particular, comparing to gross rather than net income means that we abstract from changes over that period which really had nothing to do with the particular situation of a taxpayer. For example, changes to depreciation rules discussed earlier would increase DII as a share of net income even absent any change in behavior by the taxpayer.

DII as a share of deduction eligible gross income declines substantially during the two recessions in our sample, by 28 percent from 2000 to 2002, and by 33 percent from 2005 to 2008. FDII as a share follows suit with a decline from 0.3 percent to 0.2 percent



from 2000 to 2002. However, during the Great Recession, the decline is somewhat muted from 0.44 percent to 0.39 percent, an 11 percent decline. Exports propped up FDII during 2008; exports for the manufacturing sector increased from \$445 billion in 2005 to \$640 billion in 2008. Meanwhile, manufacturing sector DII declined from \$436 billion in the peak in 2005 to \$270 billion in the 2009 trough. The interaction between downturns and exports can result in offsetting effects and can be seen clearly during 2008 and 2009; when exports finally collapsed in 2009, DII was already beginning to recover. In contrast, during the 2001 recession while DII was falling, manufacturing exports were also declining from \$372 billion in 2000 to \$349 billion and \$337 billion in 2001 and 2002, respectively. As a result unlike during the great recession, the pro-cyclical nature of DII was not moderated by strong export growth during the 2001 recession.

VI. CONCLUSION

The wide ranging tax changes enacted by Congress at the end of 2017 instituted a number of novel provisions affecting the taxation of cross-border income. In this paper we analyze a single provision from that far-reaching bill, the deduction for FDII, and examine what that provision might have looked like had it been a part of the tax code from 2000–2015. We find that the majority of the benefit of this deduction would have accrued to manufacturing firms, but that it would have been an important driver of reductions in taxable income across a number of industries. We also find that the deduction is highly concentrated among taxpayers, with 85 percent of the benefit going to the top 1 percent of beneficiaries in 2014.

Our simulation suggests that certain features of the deduction lead to it acting as a pro-cyclical element of the tax code, with the value of the deduction relative to income declining during the past two recessions. The calculation of FDII relies on a return over tangible assets. We show that through the course of the business cycle earnings are more volatile than tangible assets. As a result, the value of the deduction and the associated tax benefit will decline during downturns; the deduction for FDII is therefore pro-cyclical. This occurs along both the extensive margin, as less taxpayers find themselves crossing the 10 percent return threshold, and the intensive margin, as beneficiaries earn lower returns. Furthermore, we find that an important component of the cyclical nature of FDII is the robustness of U.S. exports during a recession. We show that during the 2001 recession exports remained relatively constant, but that through 2008, during the great recession, exports grew rapidly. Because the deduction for FDII is dependent on the share of earnings owing to foreign sales, the rapid growth in exports through 2008 moderated the pro-cyclical effects of the recession on FDII which otherwise would have declined sharply. In contrast, the modest decline in exports during the 2001 recession exacerbated the pro-cyclical nature of the deduction. In sum, the deduction for FDII is pro-cyclical and highly dependent on the demand for U.S. exports.

Recent research suggests that, in general, the corporate tax code prior to 2018 acted as an automatic stabilizer over the peaks and troughs of the business cycle. This counter-cyclical effect of the tax code operated primarily through the carryback of net operating

losses as well as the progressivity of the rate schedule, both of which were eliminated in the recent tax reform. Our analysis here suggests that the implementation of the deduction for FDII moved further to reduce the counter-cyclical nature of the corporate tax code, even while providing a large tax benefit to certain taxpayers.

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This research embodies work undertaken for the staff of the Joint Committee on Taxation, but as members of both parties and both houses of Congress comprise the Joint Committee on Taxation, this work should not be construed to represent the position of any member of the Committee. This work is integral to the Joint Committee on Taxation staff's work and its ability to model and estimate the effects of changes in the tax treatment of U.S. multinational corporations.

DISCLOSURES

The authors have no financial arrangements that might give rise to conflicts of interest with respect to the research reported in this paper.

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