How do U.S. companies respond to incentives intended to encourage domestic manufacturing? I study the Domestic Production Activities Deduction (DPAD), which was enacted in the American Jobs Creation Act of 2004 and was the third largest U.S. corporate tax expenditure as of 2017. Using confidential data from the U.S. Bureau of Economic Analysis, I find greater average domestic investment spending of $95.5-143.6 million, but only within the sample of domestic-only firms and not until 2010, when the greatest statutory DPAD benefits were available. Additional evidence suggests that U.S. multinational claimants invest abroad rather than in the U.S. and that the increased investment by DPAD firms is accompanied by a reduction in the domestic workforce, consistent with a substitution of capital for labor. I show that the delayed investment response is due to firms engaging in other responses first, such as changing corporate reporting to shift income across time and borders. Quantifying the extent of these effects contributes to the literature that studies this tax deduction and informs policy makers as to the effectiveness of both manufacturing incentives and U.S. corporate income tax rate reductions in stimulating real domestic activity.

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1. Introduction

This paper studies how U.S. companies respond to domestic production incentives. Encouraging domestic manufacturing is a central goal of policymakers, as the industry employs over 12 million U.S. workers and contributes $2.1 trillion to the U.S. GDP (Scott, 2015; Bureau of Labor Statistics, 2017). To evaluate the effectiveness of such incentives in increasing domestic investment and employment, I study the Domestic Production Activities Deduction (Section 199 deduction or hereafter the “DPAD”) passed as part of the American Jobs Creation Act of 2004 (H. Rept. 108-393). Firms have claimed over $70 billion in DPAD benefits since enactment, making the deduction the third largest corporate tax expenditure as of the end of 2017 (Joint Committee on Taxation, 2017). However, because the law did not require firms to commit to new domestic investment or employment, companies could claim the deduction with few, if any, operational changes. Firms could also choose other less costly channels, such as shifting income across time and countries, to increase the amount of qualifying domestic income. In this paper, I examine 1) the extent of the domestic investment and employment effects and 2) whether and to what extent firms engage in other less costly income shifting activities first so as to maximize the domestic manufacturing benefit claimed.

As a brief overview, the DPAD allows firms to deduct a portion of income related to domestic production when determining their U.S. income tax liability. To calculate the amount of the deduction, firms identify domestic production gross receipts and the associated direct and indirect domestic expenses. The deduction equals net domestic production income (revenues minus expenses), times the statutory deduction percentage of 3% (2005–2006), 6% (2007–2009), or 9%

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1H. Rept. 108-393 confirms that this incentive was intended to increase domestic investment and employment. This report states: “The Committee [on Ways and Means] believes that a reduced tax burden on domestic manufacturers will improve the cash flow of domestic manufacturers and make investments in domestic manufacturing facilities more attractive. Such investment will create and preserve U.S. manufacturing jobs.”
(2010–2017). Thus, once fully phased in, the deduction effectively lowers the corporate tax rate on qualifying income by 3.15% (35% x 9% = 3.15%). The DPAD was repealed as part of the 2017 tax legislation H.R. 1 (referred to as the Tax Cuts and Jobs Act of 2017, or TCJA), even though the intended goals of stimulating domestic manufacturing and creating jobs are central to the new tax law (Oliphant, 2017; Ryan, 2017; White House, 2018). Therefore, understanding the extent to which the incentive induced changes in corporate reporting, in lieu of the intended real activities, is relevant to anticipating and evaluating the effects of tax reform.

The literature (Kemsley, 1998) and other papers that study the DPAD (Blouin et al., 2014; Ohrn 2018) suggest that firms will respond to a domestic tax incentive by increasing domestic production. However, Slemrod (1992) states that taxpayers often take less costly actions first. The least costly response is for firms to shift transactions in time (inter-temporal shifting). Second, firms may use accounting discretion to re-characterize transactions within the firm (accounting re-characterization). Finally, the costliest action is to make real operational changes (real changes).

I test the extent to which firms claiming the DPAD (“DPAD firms”) engage in each of these activities, and I compare these responses to a set of matched control firms that never disclose claiming the benefit.

My first hypothesis tests whether DPAD firms engage in inter-temporal income shifting to maximize the amount of the tax benefit. The literature shows that firms will shift the timing of transactions to recognize income in lower tax rate periods, thereby reducing the associated cash tax payments (Scholes et al., 1992; Guenther, 1994; Maydew, 1997). The DPAD provides similar incentives for shifting because income related to domestic production is effectively subject to a lower tax rate once firms can claim the tax benefit. I predict that DPAD firms shift more income into the first year of claiming the DPAD, as well as subsequent years in which the statutory DPAD
rate increases (i.e., 2007 and 2010), relative to the matched sample of control firms. However, I may not observe inter-temporal shifting because this action can be costly: the firm may have capital market or debt contracting incentives that mitigate shifting (Scholes et al., 1992; Maydew, 1997). Furthermore, firms may not shift income forward if they received greater benefits by retaining income in the pre-DPAD period to claim other tax incentives phased-out in 2005 and 2006.

My second hypothesis tests whether DPAD firms re-characterize internal transactions to increase the amount of the tax benefit. One way this can occur is for firms to re-characterize foreign income as domestic by changing their internal transfer prices, which can be used to facilitate income shifting across jurisdictions. For example, a firm’s U.S. divisions could pay a lower price to foreign subsidiaries for inputs used in domestic manufacturing, thereby shifting less income into the foreign jurisdiction and increasing total domestic income that qualifies for the DPAD (Jenks, 2006; Sherlock, 2012).2 My second hypothesis predicts that DPAD firms shift less income out of the United States post-DPAD to increase the amount of qualifying domestic revenue, relative to the matched sample of control firms. However, because statutory foreign tax rates were generally lower than the effective U.S. tax rate even after taking into account the DPAD benefit, I may observe no such effect. Furthermore, altering a firm’s income shifting strategies results in transfer pricing adjustment costs (De Simone et al., 2017) and important cash tax and financial reporting costs otherwise deferred by retaining foreign earnings offshore (Foley et al., 2007; Graham et al., 2011; Blouin et al., 2012).

My third hypothesis tests whether DPAD firms increase real domestic activity, measured with

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2 Jenks (2006) notes that the U.S. government “has to be concerned about taxpayers who structure their affairs to overstate qualified production activities income through transfer pricing strategies; if a company were to arrange things in such a way as to understate its true costs in acquiring good or services from abroad, its Section 199 deduction might go up.” Sherlock (2012) states that “given that production activities are tax favored, firms have an incentive to shift profits among divisions, and characterize income as being related to domestic production activities, where possible.”
domestic investment and employment, after claiming the DPAD, relative to the matched sample of control firms. Empirical work shows that tax rate decreases are associated with increases in aggregate corporate investment (Hassett and Hubbard, 2002; Hassett and Newmark, 2008) and firm employment (Giroud and Rauh, 2018). The literature studying U.S. export subsidies (Kemsley, 1998; Desai and Hines, 2001) and related DPAD studies (Blouin et al., 2014; Ohrn, 2018; Fich et al., 2017; Dobridge et al., 2018) further suggests a positive relation between claiming the DPAD and the amount of domestic investment and employment in the post-DPAD period. However, firms will forego domestic opportunities if instead the tax incentive results in higher prices for the same capital goods (Goolsbee, 1998) or if U.S. labor and input costs exceed the tax benefit (Suarez Serrato and Zidar, 2016). It is unclear if the (at most) effective 3.15% DPAD corporate tax benefit is sufficient to induce such real effects.

I identify DPAD firms from companies’ 2004–2013 annual financial statements using several search terms (see Appendix A). For each firm, I obtain public data from Compustat to construct key variables. I also obtain confidential data from the Bureau of Economic Analysis (BEA) to precisely measure domestic investment and employment, which are otherwise publicly unobservable. I then match the sample of DPAD firms with a control sample of firms that are similar in size, performance, and industry affiliation in the two years preceding the DPAD firm’s first disclosure of the tax benefit, but that are precluded from claiming the DPAD due only to a statutory limitation contained within the tax law (Lester and Rector, 2016). The final sample includes 21,462 firm-years for 1,002 DPAD firms and their matched control firms.

Results from testing my first hypothesis confirm that DPAD firms shift income into the first year that the firm claims the DPAD as well as subsequent years in which the benefit increases. Specifically, the DPAD benefit is associated with greater operating income and gross margin
shifting equal to 0.077% and 0.098% of firms’ total assets, relative to the matched sample of control firms. This is equivalent to shifting $5.0 million to $13.7 million for the average DPAD firm in the sample. Additional tests show that this shifting begins shortly after the benefit was first available in 2005, documenting that this is a relatively low-cost approach to maximizing the domestic tax benefit. I interpret these results as evidence that inter-temporal shifting is an important means by which firms increase the amount of income that qualifies for the tax benefit.

Second, I find that multinational DPAD firms engage in accounting re-characterization by shifting less income out of the United States after claiming the DPAD. I first confirm that both DPAD and the matched control firms shifted income out of the United States in the pre-DPAD period. However, once the incentive is in place, DPAD firms shift less income out of the United States, whereas the matched control firms shift even greater amounts to foreign jurisdictions. A 1.0-3.15 percentage point decrease in the domestic tax rate attributable to the DPAD benefit results in DPAD firms reporting approximately $4.9 to $20.6 million of additional income in the United States post-DPAD, relative to the matched sample of control firms. Cross-border shifting does not begin until 2007 when the DPAD incentive increases to 6% of qualified production income, and the change in income-shifting behavior occurs in the subset of DPAD firms with relatively higher foreign effective tax rates. These results are consistent with DPAD firms increasing the amount of domestic income reported to taxing authorities, thereby maximizing the production tax benefit.

Finally, I observe that domestic investment by DPAD firms increases relative to the matched sample of control firms, but only for the sample of domestic-only firms that lack an existing foreign presence in which to invest and expand. These firms report greater capital expenditure spending equivalent to 7.7%-8.4% of total plant, property, and equipment, or approximately $95.5-$143.6 million of additional spending by the average domestic-only DPAD firm, relative to the matched
sample of control firms. This effect is delayed until the greatest DPAD benefit is in place in 2010, consistent with real activities being the costliest response and requiring the greatest tax incentive to do so. I find that multinational DPAD firms also increase investment spending by 1.9% (equivalent to $58.1 million), but this occurs in foreign jurisdictions, suggesting that these firms have lower cost or better growth opportunities abroad. Finally, I find that claiming the DPAD is associated with a lower level of domestic employment, consistent with firms substituting capital for existing domestic labor (Arrow et al., 1961; Chirinko, 2002; Antras, 2004).

My paper makes several contributions to the academic literature studying production incentives and to policy makers evaluating the effectiveness of such incentives. There is little empirical evidence on the DPAD, despite the large number of claimants and the large aggregate amount of tax benefits. I quantify the investment and employment responses to the DPAD, using a larger sample of firms and a longer sample period, relative to three papers that also study this tax benefit (Blouin et al., 2014; Fich et al., 2017; Ohrn, 2018). Specifically, my use of jurisdiction-specific data and firm-level (rather than industry-level) measurement results in a more precise estimate of the investment effects, which I find are 6.0 percentage points lower than documented by Ohrn (2018). Further, I test and quantify the employment effects. This evidence can be used to assess the policy’s two fundamental goals of increasing domestic investment and creating jobs.

I next explain why the investment responses are delayed – firms initially respond to the incentive through accounting and reporting channels. While I find that domestic-only firms increased investment spending, the DPAD did not provide sufficiently large incentives to encourage this activity until 2010. Instead, firms initially engaged in inter-temporal shifting beginning in 2005 and 2006. For the multinationals in the sample, I observe less income shifting out of the United States from 2007 to 2009, which is the same period in which I observe greater
foreign investment spending. These results suggest that the cross-border shifting generates
domestic tax savings, which are associated with investment offshore.

Finally, I provide evidence to inform expectations regarding the anticipated effects of the TCJA. Among other provisions, the 2017 act lowered the U.S. corporate income tax rate from 35% to 21%. Because the Section 199 deduction was viewed as a proxy for a lower corporate tax rate (Gimigliano, 2016; Ohrn, 2018), my results suggest how companies may respond to the new law. I show that a subset of DPAD firms with the highest foreign tax burdens were motivated to shift less income out of the United States with a 3.15 percentage point effective corporate income tax rate reduction. Thus, my evidence implies that the larger U.S. corporate tax rate cut in 2017 may be successful in retaining income that multinationals with relatively higher tax burdens would otherwise shift offshore. I further show that the real activity responses to the tax reform will vary based on the firm’s domestic presence. While the immediate expensing of fixed assets included in the TCJA will certainly affect domestic investment decisions, the results show that the reduction in the corporate rate could motivate foreign investment spending by some multinational firms. Finally, the empirical results support recent press evidence that the United States is unlikely to experience significant increases in domestic employment, in part to due to the substitution of capital for labor (Tangel and McGroarty, 2018). My study shows that firms have responded to tax incentives with real changes in corporate investment, but that accounting and workforce effects are statistically and economically significant as well.

2. Institutional Details

Since 1971, the United States has provided special tax breaks to domestic exporters that deferred or exempted some portion of foreign income from U.S. taxation. These tax incentives were intended to help domestic companies compete with lower-taxed foreign firms. (See Online Appendix A for a discussion of these regimes.) In response to pressure by the international
community, which had challenged these tax benefits as uncompetitive illegal export subsidies, the United States passed the American Jobs Creation Act in 2004. This law replaced the existing export tax incentive with the Domestic Production Activities Deduction. Unlike the export tax subsidies, for which firms had to earn some foreign income to claim the benefit, any U.S. firm that had qualifying domestic production income was eligible for the DPAD.

Lester and Rector (2016) discuss the deduction, providing the legislative history of the law, the mechanics of the calculation, and details of the firms that claimed the Sec. 199 deduction in tax year 2012. In brief, the deduction equals a percentage of the firm’s qualified production activities income, which is calculated as follows:

\[
\text{Revenues (for tax purposes) from the sale of domestically produced goods} - \text{COGS (for tax purposes) attributable to domestic production} - \text{Other expenses (for tax purposes) allocable to domestic production} = \text{Qualified Production Activities Income (QPAI)}
\]

The deduction equals QPAI, times the statutory deduction percentage of 3% (2005–2006), 6% (2007–2009), or 9% (2010 and thereafter). The benefit is limited by i) the firm’s wages and ii) the amount of the firm’s taxable income. Specifically, the deduction cannot exceed 50% of the firm’s W-2 wages related to production revenues, and firms must report positive taxable income to claim the deduction. Firms with negative taxable income (from a current year tax loss) or no taxable income (due to use of a prior year loss carryforward) are ineligible. I exploit this latter limitation, which precludes otherwise eligible firms from claiming the DPAD, to construct the control sample.

Many firms report a Section 199 deduction, and the aggregate amount of the benefit is

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3 Legislative history confirms that the DPAD was intended to provide relief in response to the ETI repeal. H. Rept. 108-548, Part 1 states: “The Committee [on Ways and Means] believes that it is important to use the opportunity afforded by the repeal of the ETI regime to reform the U.S. tax system in a manner that makes U.S. businesses and workers more productive and competitive than they are today. To this end, the Committee believes that it is important to provide tax cuts to U.S. domestic manufacturers and to update the U.S. international tax rules, which are over 40 years old and make U.S. companies uncompetitive in the United States and abroad.” The AJCA also included a repatriation tax holiday; see Online Appendix B.
economically significant. For example, approximately 47,000 C corporations filed a DPAD tax form (IRS Form 8903) in 2012, and these corporations reported $685 million, or 80%, of the total taxable income reported by all U.S. C corporations in 2012. The aggregate 2012 Section 199 deduction claimed by C corporations was $32 billion (estimated tax savings of $11 billion), of which publicly traded companies accounted for 75.0% (Lester and Rector, 2016).

Although Congress intended the tax incentive to help the manufacturing sector, approximately 40.0% of publicly-traded C corporations that claim the deduction are in nonproduction industries and include wholesale, retail, information, financial services, utilities, and services firms. Given the size, scope, and complexity of this incentive, the IRS identified the DPAD as a key audit area, and the DPAD was one of the top four items listed by firms when reporting Uncertain Tax Positions to the IRS (IRS, 2015).

3. Research Design

3.1 Research design for tests of inter-temporal shifting

My first hypothesis (H1) predicts that DPAD firms will shift more income into the first year of claiming the deduction, as well as any subsequent year in which the benefit increases, relative to a matched sample of control firms. I test this hypothesis with the following OLS regression:

\[
\text{TimeShift}_{i,t} = \alpha + \beta_1 \text{DPADFirm}_i + \beta_2 \text{ShiftPeriod}_{i,t} + \beta_3 \text{DPADFirm}_i \times \text{ShiftPeriod}_{i,t} + Controls_{i,t-1} + \varepsilon_{i,t}
\]

\[(1)\]

\(\text{TimeShift}_{i,t}\) is the amount of shifted gross margin (\(\text{Gross\_Margin\_Shift}_{i,t}\)) or shifted operating income (\(\text{Op\_Inc\_Shift}_{i,t}\)). Following Maydew (1997), I calculate a firm’s gross margin and operating income using quarterly data for the first quarter of year \(t\) (for example, the first quarter

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4Firms in these industries may claim some benefit if they identify certain qualifying income within their business. For example, Starbucks is permitted to claim the deduction for gross receipts related to the sale of coffee beans that it roasts and packages, whereas receipts from the sale of brewed coffee qualify only to the extent of the value of the roasted beans used in the brewing (H. Rept. 108-755).
of 2005) and for the fourth quarter of year \( t-1 \) (for example, the fourth quarter of 2004). Gross margin equals the firm’s total sales (SALEQ), less total cost of goods sold (COGSQ); operating income is the firm’s gross margin, less SG&A expense (XSGAQ), where missing values are set equal to zero. I use the amount of third quarter gross margin or operating income prior to the expected shifting quarter as the baseline income. I then measure the amount of shifted income by separately comparing the following two quarters of earnings to this baseline. The overall estimate of Gross\(_{Margin}\text{Shift}_{i,t}\) and Op\(_{Inc}\text{Shift}_{i,t}\) is one half of the negative of the fourth-quarter shift, plus the first quarter reversal, scaled by the prior year’s total assets. I multiply these values by 100 for ease of interpretation and use the scaled variables (GMS\(\text{Shift}\%_{i,t}\) and OpIn\(\text{cShift}\%_{i,t}\)) when estimating Eq. (1).

\( DPADFirm \) is an indicator equal to one for firms that discuss the DPAD in at least one of their annual financial statements, and zero otherwise. \( ShiftPeriod_{i,t} \) is a firm-specific indicator equal to one for both a DPAD firm and its matched control firm in the first year in which the former discloses the benefit, as well as any subsequent year in which the statutory DPAD benefit increases. The term \( DPADFirm_i \times ShiftPeriod_{i,t} \) is the interaction of the prior two terms. The

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5 Following Maydew, Gross\(_{Margin}\text{Shift}_{i,Q4} = G_{0,4} - G_{0,3}\), where the first term is the amount of shifted gross margin in the fourth quarter of the prior year, and the second term is the unshifted income in the third quarter of the prior year (“benchmark” quarter). Gross\(_{Margin}\text{Shift}_{i,Q1} = G_{1,1} - G_{0,3}\), which is the total shifted income in the first quarter of year \( t \), less the benchmark gross margin. Total shifted income is \((Gross\text{Margin}\text{Shift}_{i,Q1} - Gross\text{Margin}\text{Shift}_{i,Q4})/2\). For example, assume a firm would normally report (without any inter-temporal shifting) gross margin of $50 in the third and fourth quarters of 2004 as well as the first quarter of 2005. In response to the DPAD, the firm shifts $30 into the first quarter of 2005, such that the gross margin in the third and fourth quarters of 2004 is $50 and $20 ($50 unshifted - $30 shifted), respectively, and the gross margin in the first quarter of 2005 is $80 ($50 unshifted plus $30 shifted). Total shifted income equals ($(80-50)-(20-50))/2$, or $30. Op\text{Inc}\text{Shift}_{i,t} \) is calculated in the same manner, and results are robust to dropping missing values of XSGA as well as including R&D expense (XRDQ).

6 While the law permitted firms to begin claiming the DPAD in 2005, they may not actually begin to take the deduction until a later year, due to lack of qualifying revenue, net operating loss position, or other statutory limitations (such as not meeting the required W-2 wage threshold). Therefore, I define \( ShiftPeriod_{i} \) based on the initial year in which the firm discusses the benefit in its financial statements, as well as any subsequent period in which the firm has incentives to shift income. For example, if a DPAD firm first discusses the DPAD benefit in 2006, then \( ShiftPeriod_{i} \) equals one in 2006, 2007, and 2010 for both the DPAD firm and its matched control; it equals zero in years 1997–2005, 2008–2009, and 2011–2013. Defining the indicator as a function of the initial year the benefit is discussed likely results in measurement error because firms could be claiming the benefit in prior period but not disclosing it. Consequently, I may inadvertently define some years as “pre-DPAD,” even though the firm actually claimed the DPAD in that year.
coefficient $\beta_3$ captures the different inter-temporal shifting by DPAD firms in the periods with an inter-temporal shifting incentive and is predicted to be positive.

Control variables follow those of Maydew (1997), including $Leverage_{i,t-1}$ and $RD\_Credit_{i,t}$, both of which control for other tax benefits the firm may claim. $Leverage_{i,t-1}$ is total firm debt (DLTT + DLC) scaled by the market value of equity (PRCC_F*CSHO) in year $t-1$. $RD\_Credit_{i,t}$ is an indicator equal to one for firms that report a positive value for the sum of the firm’s estimated R&D tax credit over the three preceding years, scaled by domestic tax expense for the same period. $Size_{i,t-1}$, calculated as the natural logarithm of total assets (AT) in year $t-1$, and $MTB_{i,t-1}$, the ratio of the market value of equity to the book value of equity (SEQ) in year $t-1$, account for variation in shifting related to size and growth opportunities. $ROA_{i,t-1}$ is calculated as operating income (OIADP) scaled by the firm’s assets in year $t-1$ and controls for firm performance that may affect operating income and gross margin as well as the firm’s taxable income. I also include industry-by-year fixed effects and report standard errors clustered by industry. Online Appendix C shows that results are robust to alternative standard error corrections.

3.2 Research design for tests of cross-border shifting

My second hypothesis (H2) predicts that DPAD firms shift less income out of the United States, post-DPAD, relative to a matched sample of control firms. I test this prediction using a model from Collins et al. (1998) that was adapted by Klassen and Laplante (2012), who measure income shifting over multiple periods so as to reduce measurement error related to annual fluctuations in reported accounting numbers. I estimate the following equation:

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7 I calculate the average R&D tax benefit by dividing the sum of the firm’s R&D tax credit over the prior three years by the sum of a firm’s domestic tax expense (TXFED) over the same period. I use firms’ disclosed R&D tax credit for years 1997 through 2010 from Hoopes (2018). I supplement these data with estimates of the R&D tax credit for 2011 through 2013 based on the Alternative Simplified Credit methodology under IRC Sec. 41(c)(5). Specifically, for each firm-year from 2011 through 2013, I calculate the average R&D expense (XRD) over the preceding three years and multiply this amount by 50%. I then subtract this average (base period amount) from the current year’s R&D expenses and multiply the difference by 14% to estimate a firm’s current year R&D tax credit.
\[
\text{DomROS}_{i,(t,t+n)} = \alpha + \beta_1 \text{DPADFirm}_i + \beta_2 \text{PostDPAD}_{i,t} + \beta_3 \text{DPADFirm}_i \ast \text{PostDPAD}_{i,t} + \\
\beta_4 \text{RateDiff}_{i,(t,t+n)} + \beta_5 \text{PostDPAD}_{i,t} \ast \text{RateDiff}_{i,(t,t+n)} + \beta_6 \text{DPADFirm}_i \ast \\
\text{RateDiff}_{i,(t,t+n)} + \beta_7 \text{DPADFirm}_i \ast \text{PostDPAD}_{i,t} \ast \text{RateDiff}_{i,(t,t+n)} + \\
\text{Controls}_{i,(t,t+n)} + \varepsilon_{i,(t,t+n)}
\] (2)

where \( \text{DPADFirm}_i \) is as defined above and \( \text{DomROS}_{i,(t,t+n)} \), \( \text{PostDPAD}_{i,t} \), \( \text{RateDiff}_{i,(t,t+n)} \), and \( \text{Controls}_{i,(t,t+n)} \) are discussed below. I include industry-by-year fixed effects, and I report standard errors that are clustered by industry.

The dependent variable is a firm’s domestic return on sales, \( \text{DomROS}_{i,(t,t+n)} \), calculated as total pre-tax domestic income (PIDOM) divided by total domestic segment sales measured over both a two-year and five-year period \((n = 1 \text{ or } 4)\). It implicitly assumes that the amount of pre-tax domestic income should increase relative to the total amount of domestic sales after tax rates decrease because firms have greater incentives to report income in the reduced-tax jurisdiction. While the location of sales does not actually determine the appropriate taxing jurisdiction, I use this measure because I assume that sales are a valid benchmark for the location of the firm’s economic activity.

Collins et al. (1998) and Klassen and Laplante (2012) show that income reported in a foreign jurisdiction increases with the difference in the U.S. statutory rate and firms’ lower foreign effective tax rates. By extension, \( \text{DomROS}_{i,(t,t+n)} \) should be negatively associated with the domestic-foreign tax rate differential prior to the DPAD; that is, as the difference between the U.S. statutory rate and firms’ lower effective foreign tax rate increases, firms should report less income in the U.S. The term \( \text{RateDiff}_{i,(t,t+n)} \) is equal to the difference in the U.S. statutory rate of 35%.

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8 Klassen and Laplante (2012) measure income shifting over a five year period. I also test Eq. (2) using variables measured over a two year period to allow for estimation on a larger sample of observations.
during the sample period and a firm’s average foreign effective tax rate, which is calculated as the sum of foreign income tax expense (TXFO) from year \( t \) to \( t+n \), divided by the firm’s foreign income (PIFO) over the same period. During the pre-DPAD period, I expect that both DPAD firms and control firms shift income out of the U.S.; thus, \( \beta_4 \) (for control firms) and \( \beta_4 + \beta_6 \) (for DPAD firms) should be negative.

After the DPAD is in place, the effective U.S. tax rate on domestic production income decreases for qualifying firms. Therefore, I expect to observe an attenuated negative relation (a positive coefficient) between \( DomROS_{i,(t,t+n)} \) and \( Rate\_Diff_{i,(t,t+n)} \) for DPAD firms, relative to the matched set of control firms, post-DPAD. To test this prediction, I include several additional terms in Eq. (2). The term \( PostDPAD_{i,t} \) is a firm-specific indicator equal to one for both a DPAD firm and its matched control firm beginning in the year in which the DPAD firm first discloses the DPAD benefit.\(^9\) I also include the interactions of \( DPADFirm_i \), \( Rate\_Diff_{i,(t,t+n)} \), and \( PostDPAD_{i,t} \); the triple interaction term \( DPADFirm_i*PostDPAD_{i,t}*Rate\_Diff_{i,(t,t+n)} \) captures the change in the sensitivity of DPAD firms’ domestic income to the tax rate differential post-DPAD, relative to the control sample of firms. I predict \( \beta_7 > 0 \).

Eq. (2) includes a measure of a firm’s worldwide return on sales (\( WW\_ROS \)) over the two-year or five-year period, which controls for the firm’s overall profit margin and is calculated as total pretax income (PI) divided by total sales (SALE). Additional control variables follow Dyreng and Markle (2016) and include \( Size_{i,(t,t+n)} \), \( Leverage_{i,(t,t+n)} \), \( RD_{i,(t,t+n)} \), \( Cash_{i,(t,t+n)} \), and the percentage of domestic sales (\( %Dom\_Sales_{i,(t,t+n)} \)). \( RD_{i,(t,t+n)} \) is calculated as R&D expense (XRD), divided by the firm’s total assets and captures a firm’s ability to shift income due to placement of intellectual

\(^9\) For example, if a DPAD firm first discloses the DPAD benefit in 2006, then \( PostDPAD_{i,t} \) equals one for 2006–2013 (that is, all years in the post-period) for both the DPAD firm and its matched control. This differs from the research design in Eq. (1), as I expect inter-temporal shifting to only be present in discrete periods when the effective tax rate on production income changes, whereas I expect cross-border shifting effects to persist throughout the post-period.
property (created through R&D activity) in foreign jurisdictions. \( \text{Cash}_{i,(t,t+n)} \) is total cash holdings (CHE), divided by the firm’s total assets and reflects that firms’ income shifting may be affected by offshore cash holdings. \( \% \text{Dom}_{-} \text{Sales}_{i,(t,t+n)} \) controls for the level of domestic sales and is calculated as the amount of domestic segment sales to total worldwide sales.

3.3 Research design for tests of real activity

My third hypothesis predicts that firms will invest more (H3a) and employ more workers (H3b) in the United States, post DPAD, relative to a matched sample of control firms. To test these predictions, I estimate the following OLS regression:

\[
\text{DomActivity}_{i,t} = \alpha + \beta_1 \text{DPADFirm}_i + \beta_2 \text{PostDPAD}_{i,t} + \beta_3 \text{DPADFirm}_i \times \text{PostDPAD}_{i,t} + \text{DomActivity}_{i,t-1} + \epsilon_{i,t}
\]

(3)

where \( \text{DPADFirm}_i \), \( \text{PostDPAD}_{i,t} \), and \( \text{DPADFirm}_i \times \text{PostDPAD}_{i,t} \) are as defined above, and \( \text{DomActivity}_{i,t} \) and \( \text{Controls}_{i,t-1} \) are discussed below. As before, I include industry-by-year fixed effects and report standard errors that are clustered by industry. The coefficient \( \beta_3 \) captures the difference-in-differences estimate and is predicted to be positive.

\( \text{DomActivity}_{i,t} \) is measured in the following two ways: i) \( \text{DomInv}_{i,t} \), the ratio of domestic capital expenditures to total plant, property, and equipment (PPE) in year \( t-1 \) (Almeida and Campello, 2007), and ii) \( \text{DomEmp}_{i,t} \), the log of the number of domestic employees. For firms with only domestic operations, I use Compustat data on capital expenditures (CAPX), PP&E (PPENT), and employees (EMP). For multinationals, I use confidential firm-level panel data on the U.S. parent’s domestic capital expenditures, fixed assets, and employees from the BEA benchmark and annual surveys of U.S. Direct Investment Abroad. These surveys include financial, trade, and intercompany transaction data on U.S. parent companies’ domestic activity as well as the activity of all foreign affiliates in which the U.S. parent owns at least 10% of the voting securities or an
I select control variables for investment and employment following McNichols and Stubben (2008), Biddle et al. (2009), and Edgerton (2010). I include $\text{Size}_{i,t-1}$ and $\text{ROA}_{i,t-1}$ to capture differences in investment and employment based on size and performance of the firm. $\text{Cash}_\text{Flow}_{i,t-1}$, calculated as a firm’s operating cash flows (OANCF) divided by total assets in year $t-1$, captures a firm’s ability to finance investment and hire employees out of operating cash flows. $\text{MTB}_{i,t-1}$ (as a proxy for Tobin’s Q) controls for a firm’s investment opportunity set, and $\text{Leverage}_{i,t-1}$ controls for investment financing. The employment tests also include $\text{Inventory}_{i,t-1}$ and $\text{Tangibility}_{i,t-1}$, calculated as total inventory (INVT) or equipment (PPENT) scaled by total assets in year $t-1$, as capital-intensive firms may have a different demand for workers.

4. Sample

4.1 DPAD Firms

Table 1, Panel A, outlines the sample selection steps. I identify firms likely to claim the DPAD by first obtaining and reading text disclosures that contain key search terms from publicly traded firms’ 2004–2013 annual financial statements (n=5,153 firm-years for 1,494 firms). I retain U.S.-incorporated firms and restrict the sample to firm-years with positive pre-tax income (as a proxy for unobservable taxable income) to reflect the requirement that firms with current year losses cannot claim the incentive. I also require firm-years to have positive total assets, positive total sales, and non-missing data for construction of control variables and the inter-temporal shifting variables used to test H1 (n=3,821 firm-years; 1,125 firms). Finally, I require DPAD firms to have at least $100 million of average assets over the sample period, as IRS data show that these firms

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10 The BEA data are collected for the purpose of producing publicly available aggregate statistics on the operations of U.S. multinational companies. Due to penalties for failure to file, the BEA believes that the data coverage is substantially complete and accurate. The level of data collected varies based on certain BEA reporting thresholds.
claimed approximately 88.0% of the total Sec. 199 deduction reported by all public firms in 2012 (Lester and Rector, 2016). The final sample is comprised of 1,002 distinct DPAD firms from 2004 to 2013.

To confirm that this sample of firms represents the true population of Sec. 199 firms, I compare descriptive statistics for this sample to 2012 IRS statistics. Table 1, Panel B shows that the industry distribution is similar; for example, approximately 56.0% (59.7%) of firms in the sample (the IRS sample) are in manufacturing, and 7.4% (7.2%) of firms in the sample (the IRS sample) are in information industries. The samples differ in the proportion of wholesale and services firms. In Panel C, approximately 56.6% (59.7%) of firms in the sample (the IRS sample) report over $1 billion in assets.

Lester and Rector (2016) show that public multinational firms report approximately 95% of qualified production activities income in 2012. Given this high percentage and the relative importance of these MNCs as DPAD claimants, I next compare the proportion of firms reporting an international presence across the two samples in Panel D. IRS statistics report that 81.5% of public DPAD claimants have some foreign activity, where a firm is identified as an MNC based on reported ownership of or by a foreign entity in the tax data. To construct an analogous measure, I identify a firm as a multinational based on financial statement disclosure of at least one material foreign subsidiary in Exhibit 21 data (Dyreng and Lindsey, 2009). I further identify any firm reporting non-missing, non-zero foreign segment sales or foreign segment assets as a multinational firm. This methodology results in a very similar percentage of firms with a foreign presence

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11 The IRS statistics are calculated by an employee of the U.S. Treasury using 2012 confidential tax return data (Lester and Rector, 2016). For purposes of comparing the 2004–2013 sample used in this paper to the 2012 IRS statistics, I select the last year that a DPAD firm is in the sample. Differences across the samples may be attributable to differences in classification across these two data sources; for example, firms self-report industry codes in Compustat, whereas the IRS assigns codes to some companies.
(78.5%), validating that this approach most closely aligns with the domestic/multinational classification based on reported tax data. However, because this definition uses foreign segment sales data that may inaccurately identify some domestic exporters as multinational firms, I alternatively calculate the proportion of firms identified as domestic-only based on zero or missing values for pre-tax foreign income (PIFO) and foreign tax expense (TXFO). This latter methodology results in a much higher 29.3% of the DPAD sample being classified as a multinational, implying some misclassification of firms relative to the IRS definition used in Lester and Rector (2016). I present results throughout the paper for both domestic-only samples.

In summary, the statistics presented in Table 1, Panels B through D confirm that the sample constructed from financial statement disclosures resembles the true population of publicly traded firms claiming the Section 199 deduction.

4.2 Pool of Possible Control Firms

I exploit a statutory limitation in the tax law to construct the control sample. Recall from Section 2 that firms that are otherwise eligible for the deduction—profitable firms with qualifying production income—are precluded from claiming the DPAD if the firm uses a tax net operating loss (NOL) carryforward generated in a prior tax year. IRS statistics that compare DPAD firms to non-claimant firms provide evidence of this control group: in 2012, over 1,000 large, publicly traded C corporations would have been eligible for the DPAD, except for the fact that these firms reported no U.S. taxable income due to use of an NOL (Table 6 of Lester and Rector, 2016).

The literature shows that many firms have an NOL carryforward at some point in a firm’s lifecycle (Cooper and Knittel, 2010; Edgerton, 2010), and recent work documents that almost 90% of the largest public companies report an NOL in at least one jurisdiction (Heitzman and Lester, 2019). Thus, the existence and use of a loss carryforward should not imply that the DPAD firms
and control firms inherently differ. This difference instead suggests that the DPAD and control firms have simply incurred and used NOL carryforwards at different times.

To construct the sample of possible control firms, I retain observations in Compustat from 2004 to 2013 that meet the same data restrictions as those listed for DPAD firms (U.S.-incorporated, positive pre-tax income, data for key variables, and $100 million of assets). I exclude any firm from this sample if it ever discloses the DPAD during the period 2004–2013.12

4.3 Matching Procedure and Validation of Control Firms

I match DPAD firms to control firms in the year preceding a DPAD firm's first discussion of the tax benefit. I require an exact match on industry to ensure that control firms have similar types of income that qualify for the DPAD. I use Mahalanobis distance measures to match the DPAD firms to control firms with replacement based on $Size_i$ and firm performance ($ROA_i$) in year $t-1$; Online Appendix D shows that results are robust to alternative matching procedures. The matching produces a final sample of 21,462 matched DPAD and control firm-years for the period 1997 through 2013. Table 2, Panel A, provides a summary of this sample by year.13 Table 2, Panel B, shows the sample construction for each of the three hypotheses, starting with the 21,462 firm-years from H1; imposing additional data requirements and requiring matches for the treatment firms results in samples of 4,605 (H2), 8,274 (H3a), and 8,296 (H3b) observations, respectively. This

12 While I attempt to identify all DPAD firms by searching firm financial statements with many different search terms, this method results in a sample selection bias because I only observe firms that discuss the benefit in their financial statements. As a result, the control sample may be contaminated if some of these firms actually claim DPAD but do not disclose. Because my tests compare DPAD firms’ responses to the contaminated control sample, this contamination is likely to bias against finding results for the DPAD firms, although the actual sign or magnitude of the bias is not estimable.

13 Table 1, Panel A shows that there are 3,454 firm-years in which a firm specifically discusses or discloses the deduction in its financial statements. Because I treat all years following the first disclosure of the DPAD as a post-DPAD firm year for tests of H2 and H3, I classify an additional 1,292 firm-years (for 4,746 total firm-years in Table 2, Panel A) as post-DPAD. This assumes that i) once a firm is eligible, it will continue to claim the benefit in future periods, and ii) to the extent the firm incurs a tax loss that precludes it from claiming the deduction in a subsequent year, it will return to claiming the DPAD once the tax loss is used. This design also captures cross-border and real activity effects, which could be delayed relative to the initial year in which the DPAD is claimed.
Comparison of descriptive statistics in Table 3, Panel A, validates that the matching procedure produces control firms similar to the DPAD firms. In addition to requiring an exact match on industry, there are no statistically significant differences in the mean values of the matching variables Size or ROA between the DPAD and control firm samples in the two pre-treatment years. Furthermore, the samples have similar means on all other variables used in the empirical tests, except for Leverage and WW_ROS in year t-1 and %DomSales in year t-2.

Panel B presents descriptive statistics that compare the incidence and level of tax loss carryforwards across the two samples. I expect these values to be statistically different if indeed control firms did not claim the deduction due to NOL use. The indicator $NOL_{\text{Indicator}t,i}$ equals one if a firm reports any NOL carryforward in its financial statements ($tlcf$) and zero otherwise. Approximately 41.3% of DPAD firms report some amount of tax loss carryforward (including federal, state, and foreign tax losses) as compared to 49.1% of control firms, and the difference is statistically significant in the first year the firm claims the DPAD, as well as in the two preceding years. Furthermore, while the median value of the indicator is 0.000 for both samples, equality-of-median tests confirm that the samples exhibit a statistically different distribution.

I construct two additional measures using hand-collected data on firms’ federal tax loss carryforwards: $Dom_{\text{NOL}_{\text{Indicator}}}t,i$, which is an indicator equal to one for firms that report a domestic NOL carryforward and zero otherwise, and $Dom_{\text{NOL}_{\text{Amount}}}t,i$, the dollar amount of the federal NOL carryforward, scaled by a firm’s total assets. DPAD firms also report significantly lower values for both of these measures.14 The descriptive statistics in Panel A confirm that the

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14 Untabulated statistics show that control firms report over twice the amount of NOLs - $80.3 million as compared to $37.7 million for DPAD firms in year t. There are at least two reasons why a DPAD firm would report some nonzero level of domestic tax loss carryforwards. First, the amount of tax loss carryforward that the DPAD firm can claim in any particular year could be limited under IRC Section 382; in this case, the DPAD firm may only be able to claim
matching produced control firms of similar size, similar financial performance, and similar types of qualifying income but that differ predictably based on the incidence and level of domestic NOL carryforwards, as seen in Panel B.

4.4 Parallel Trends Assumption

A key identifying assumption in using a difference-in-differences estimation is that treatment and control firms would have exhibited similar outcomes in the treatment period, absent any treatment effect. While this assumption cannot be explicitly tested, similar trends in the outcome variables in the period preceding treatment provide insight into the similarity of the groups. Table 3, Panel C, shows that pre-treatment trends for the outcome variables of interest are not statistically different across the DPAD and control samples in the three years prior to treatment.15

Figures 1–3 present graphical evidence of these trends and the treatment effect. The top graph in Figure 1 plots the amount of gross margin that is shifted from the fourth quarter of a year into the first quarter of the following year using annual data, and the bottom graph incorporates quarterly data.16 The plots in the top (firm-year) graph at t-2 and t-1 correspond to the bottom graph plots in quarters t-8 (i.e., two years prior to claiming DPAD) and t-4 (one year prior to claiming some portion of its domestic tax loss carryforward in any year. To the extent that the allowable amount of carryforward does not completely absorb the DPAD firms’ taxable income, then the firm could also claim the Section 199 deduction in that tax year. Furthermore, some firms blend state and federal tax loss carryforwards as “domestic” in their financial statements, such that even the hand-collection of these data results in some measurement error.

15 Because cross-border income shifting is tested by examining the relation between reported income and a firm’s domestic-foreign tax rate differential, an assessment of parallel trends in the pre-treatment period is included in the discussion of the H2 results in Section 5.2. For completeness, I also include ∆DomROSi,(t-3,t) in Table 3, Panel C to mitigate concerns that the observed results are attributable to differences in the pre-period trend of DomROSi,(t,t+n).

16 To demonstrate the parallel trends in the pre-period, I present the graphs of inter-temporal shifting (H1) around the first DPAD year but do not include subsequent periods in which shifting incentives exist. While an event period graph that aligns all shifting periods at t=0 would provide graphical evidence of the shifting effect consistent with the empirical tests, it would not provide a clean visual of the parallel trends because the pre-period graphs would be confounded by earlier inter-temporal shifting effects. Similarly, the graphs cannot include post-period years for H1 beyond t=0 because, while I expect the inter-temporal shifting differences to revert in years without shifting incentives, the graphs will be confounded by any subsequent shifting. I mitigate these concerns by also graphing the pre-period inter-temporal shifting effects at the quarterly level. In contrast, because I expect that the cross-border shifting and real activity responses persist throughout the post-DPAD period, Figures 2 through 4 include all three years following first discussion of the DPAD benefit.
DPAD), respectively. While treatment and control firms exhibited similar trends in shifting in the pre-DPAD periods, Panel A (B) shows that DPAD firms report a higher amount of shifted gross margin, relative to the matched sample of control firms in the first year (quarter) in which DPAD is claimed, consistent with the H1 prediction. Figure 1 (2, 3, 4) also presents the graphs that correspond to the statistics presented in Table 1, Panel C, for \( \text{OpIncShift}_{i,t} \), \( \text{DomROS}_{i,(t,t+n)} \), \( \text{DomInv}_{i,t} \), and \( \text{DomEmp}_{i,t} \).

4.5 Descriptive Statistics

Table 4, Panel A (B, C) presents descriptive statistics for the variables used to test H1 (H2, H3). All continuous variables are winsorized at 1% and 99% of the distribution. The average amounts of shifted gross margin \( (\text{GMShift}\%) \) and shifted operating income \( (\text{OpIncShift}\%) \) as a percentage of the firm’s assets are -0.053% and -0.012%, respectively, evidence that on average firms shift income from the first quarter into the fourth quarter of the preceding year, perhaps for earnings management purposes (Dechow et al. (2010), Section 3.1.5). Panel B shows that average \( \text{DomROS} \) \( (\text{WW}_\text{ROS}) \) is 14.9% (12.7%) for the sample used in testing H2. Panel C presents descriptives for the full H3 sample as well as the subsamples of domestic-only and multinational firms. I present only the mean and standard deviation due to BEA restrictions on disclosure. The average firm spends 20.6% of their fixed asset book value on domestic capital expenditures per year, or approximately $289.9 million. Domestic-only firms spend $240.9 million annually on capital expenditures, whereas multinational firms spend $328.4 million. The average domestic-only firm employs 3,200 workers, whereas the average MNC has 15,387 domestic employees.

5. Empirical Results

5.1 Tests of Inter-temporal shifting (H1)

Table 5 presents the results obtained from estimating Eq. (1). Columns (1) through (4) present
results using \( GMShift\%_{it} \) as the measure of income shifting, and Columns (5) through (8) present results using \( OpIncShift\%_{it} \). Column (1) shows a positive and significant coefficient of 0.098 on \( DPAD\_Firm*Shift\_Period_{it} \), which means that the DPAD benefit is associated with gross margin shifting equal to 0.098% of firms’ total assets. I confirm this result in Column (3), where I re-estimate the results at the firm-quarter level; that is, I compare shifting in the first quarter of years with shifting incentives to all other quarters in the pre- and post-DPAD period for treatment and control firms. Estimation at the quarterly level increases the sample size to 85,521 observations. When using this larger sample, I find a statistically significant coefficient of 0.209, which means that the DPAD benefit is associated with gross margin shifting equal to 0.209% of firms’ total assets. Columns (5) and (7) repeat the analyses for \( OpIncShift\% \); the coefficients of 0.077 and 0.111 mean that the DPAD benefit is associated with operating income shifting ranging from 0.077%–0.111% of firms’ total assets. For the average DPAD firm that reports total assets of $6.5 billion in the year prior to claiming the incentive, the coefficients across these four columns are equivalent to shifting of $5.0 million to $13.7 million per firm.

Columns (2), (4), (6), and (8) present results from tests that examine how firm responses varied across time. I replace the indicator \( Shift\_Period_{it} \) in Eq. (1) with three separate indicator variables. For example, \( ShiftPeriod\_0506_{it} \) is an indicator equal to one in the 2005 (2006) firm-year for each matched pair if the DPAD firm first claimed the incentive in 2005 (2006) when the statutory benefit was 3%. The indicator \( ShiftPeriod\_0709_{it} \) is equal to one in 2007 for firms that first disclose the DPAD benefit in 2007, as well as for firms that previously disclosed the benefit in 2005 or 2006. The interaction term captures the additional shifting for DPAD firms in the year that they first discuss the tax incentive in their financial statements or in any subsequent year with a shifting incentive. The results show that there is a statistically significant effect in the first years of the tax
benefit, suggesting that inter-temporal shifting was a relatively low-cost way to maximize the amount of the DPAD. I also observe statistically significant shifting in the more recent period since 2010 once the greatest DPAD benefit is available.

I present results from two additional tests of inter-temporal shifting in Panel B. I first partition the sample based on whether the DPAD firm is a domestic-only or multinational company in Columns (1)–(4) to mitigate concerns that multinationals (whose inter-temporal shifting measures may capture activities other than domestic shifting) are driving the results. As in Table 1, Panel D I identify domestic-only firms in Column (1) as those that report no foreign subsidiary in Exhibit 21 (Dyreng and Lindsey, 2009), no foreign segment sales, nor any foreign segment assets. In Column (3), I alternatively identify domestic-only firms as those that report zero or missing values for pre-tax foreign income, and foreign tax expense, which results in more firms being classified as domestic-only. I observe a positive coefficient of similar magnitude for the domestic-only firms in both Columns (1) and (3), although the effect is only significant in Column (3). Note that the coefficients on the interaction terms are not significantly different between the domestic-only and multinational sub-samples (p=0.546 and p=0.162), suggesting that both groups contribute to the overall significance observed in Panel A. The results provide some evidence that the inter-temporal shifting effect is present for firms in which the inter-temporal shifting measures reflect purely domestic activity.17

I also test how shifting differs based on an expiring tax incentive, the Extraterritorial Income Exclusion (ETI), which was repealed as part of the American Jobs Creation Act of 2004. Firms claiming this incentive may not have shifted income into the post-DPAD period if they received

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17 Multinationals have an additional channel through which to inter-temporal shift: deferring sales to (or accelerating purchases from) their foreign subsidiaries. However, because neither Compustat nor the BEA collect quarterly data on domestic segment revenues and expenses, I cannot empirically test this possible channel.
greater tax savings from the ETI incentive. I limit the sample to firms first claiming the DPAD incentive in years 2004 through 2006, as these were years in which firms could still receive an ETI benefit prior to its phase-out, and I partition the sample based on an indicator ETI Firmi, which equals one for firms that discuss this incentive in their financial statements or zero otherwise. In Columns (5) and (7), I find statistically insignificant coefficients for inter-temporal shifting by ETI-DPAD firms relative to the sample of matched control firms. In contrast, the coefficients on the interaction terms in Columns (6) and (8) are statistically significant, although the coefficients are not statistically different from those in Columns (5) and (7).

The collective evidence from Table 5 shows that DPAD firms shift more income into the post-DPAD period relative to the matched sample of control firms to maximize the tax benefit, and that this activity varies across the sample period and based on DPAD firms’ geographic presence and expiring tax incentives.

5.2 Tests of Cross-border Shifting (H2)

Table 6, Panel A presents results from testing whether DPAD firms changed their income-shifting behavior post-DPAD. Columns (1)–(3) report results using variables measured over a two year period; Columns (4)–(6) report results using variables measured over a five year period. In Columns (1) and (4), I first test whether DPAD firms reported a greater difference in the amount of income reported in the United States per dollar of domestic sales post-DPAD, relative to control firms. I find statistically significant coefficients of 0.022 and 0.027 on the interaction term DPAD_Firmi*PostDPADit in Columns (1) and (4), respectively, which means that claiming the DPAD is associated with an increase in firms’ domestic return-on-sales of 2.2-2.7 percentage points relative to the control sample. Based on the average amount of domestic sales of $4.06

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18 I search financial statements for the phrases “extraterritorial,” “ETI,” “foreign sales corporation,” “FSC,” “export tax,” and “export subsidy” and retain those observations that correctly relate to the Extraterritorial Income Exclusion.
billion, this is equivalent to the average DPAD firm reporting approximately $89.3-$109.7 million more in income in the United States, post DPAD. Figure 2 depicts this effect graphically.

To explicitly test how much of this additional income is attributable to changes in DPAD firms’ tax-motivated income-shifting, I estimate Eq. (2). For validation, I first include only \( \text{Rate}_\text{Diff}_{i,(t,t+n)} \) in Columns (2) and (5), which captures the difference in firms’ domestic-foreign tax rates. The negative and statistically significant coefficients of -0.107 and -0.130 in Columns (2) and (5), respectively, show that reported domestic income is negatively associated with the domestic-foreign tax rate differential. This association is consistent with prior literature and confirms that DPAD and control firms shifted income out of the U.S. over the sample period.

Columns (3) and (6) present results from separately measuring DPAD firms’ income shifting behavior relative to the matched control firms in the pre- and post-DPAD period; for ease of interpretation, the separate group coefficients are presented at the bottom of the table. In Column (3), the negative coefficient of -0.085 on \( \text{Rate}_\text{Diff}_{i,(t,t+1)} \) confirms that, pre-DPAD, control firms shifted income out of the United States. DPAD firms also shifted income out of the United States in this pre-DPAD period (\( \beta_4 + \beta_6 = -0.100 \)). Untabulated tests confirm that the difference of 0.015 was not statistically different (p=0.73), further evidence that the DPAD firms and the matched control firms exhibited similar pre-treatment trends in income shifting.

After the DPAD was in place, control firms shift even more income out of the United States; the negative association between reported domestic income and \( \text{Rate}_\text{Diff}_{i,(t,t+1)} \) changes from -0.085 to -0.164, and this difference of -0.079 is statistically significant (p=0.10). In contrast, DPAD firms shift less income out of the U.S., as the negative association between reported income and the tax rate changes from -0.100 to -0.058. While this change for DPAD firms (0.042) is not statistically significant, the difference in the DPAD and control firms in the post-period is (p=0.03).
The positive and statistically significant coefficient on \( \beta_7 \) of 0.121 confirms that the change in income shifting for DPAD firms is statistically different than the change in income shifting for control firms. Results from measuring income shifting over the five-year period in Column (6) yield similar inferences.

In terms of economic magnitude, a one percentage point change in the domestic-foreign rate differential attributable to the DPAD incentive would result in DPAD firms shifting approximately $4.9-$6.5 million less income out of the U.S. post-DPAD, relative to the matched sample of control firms.\(^{19}\) A 3.15 percentage point change in the domestic-foreign rate differential (equivalent to the full DPAD rate benefit if 100% of DPAD firms’ income qualified for the incentive) would have resulted in approximately $15.5-$20.6 million less income shifted out of the U.S. post-DPAD, relative to the matched sample of control firms.

A natural question relates to which types of firms would be willing to forego presumably lower foreign taxes and shift less income out of the United States in response to the DPAD. Columns (1) through (4) in Table 6, Panel B present results from cross-sectional tests that study the type of firms that respond to the DPAD by changing their cross-border shifting. I partition the sample based on DPAD firms’ average foreign effective tax rates over the sample period and present results in Columns (1)-(4). I find that the increase in the amount of reported income in the U.S. occurs within the sample of firms that have a relatively higher foreign effective tax rates (coefficient of 0.038). Further, in Column (3), I observe a statistically significant coefficient on

\(^{19}\) The amounts are calculated as follows: in the pre-DPAD period, DPAD firms reported \( DomROS_{it} \) of 19.2%. Assuming a 1.0 percentage point change in the domestic-foreign tax rate differential, the coefficient of -0.100 for DPAD firms implies a 0.1 percentage point reduction in reported \( DomROS_{it} \) pre-DPAD. Post-DPAD, the reported \( DomROS_{it} \) decreases by only 0.058 percentage points. Based on the average domestic sales for DPAD firms during the pre-DPAD period of $4.06 billion, this implies an increase in reported income of $1.7 million. By comparison, applying the coefficients for the control firm results in an additional amount of income shifted out of the U.S. in the post-DPAD period of $3.2 million. Thus, the difference-in-difference amount is approximately $4.9 million. The coefficients from Column (6) imply an estimate of $6.5 million for a one-percentage-point change in the tax rate.
the triple interaction term for this subsample, confirming that firms with relatively high foreign effective tax rates exhibit an attenuated negative association with the domestic-foreign rate differential post-DPAD. However, the difference in the triple interaction terms across Columns (3) and (4) is not statistically different.\footnote{I also observe similar results (higher reported income; statistically significant coefficient on the triple interaction term) when partitioning based on the proportion of DPAD firms’ subsidiaries that are in a high tax jurisdiction.}

Finally, Column (5) presents results from testing how firm responses varied based on the eligible DPAD benefit. I create indicators for each period with a differing tax rate benefit \((PostDPAD\_0506_{i,t}, PostDPAD\_0709_{i,t}, PostDPAD\_10136_{i,t})\) and interact these with the other terms in Eq. (2). I present only the triple interaction terms in these columns for brevity. The results show that there is a significant income shifting effect beginning in the period 2007 to 2009 when the DPAD percentage increased to 6%, as well as in the period 2010 to 2013 when it increased to 9%. These tests show that a tax benefit of at least 2.1% (6% \times 35\%) is sufficient to induce at least some multinationals to report more income in the United States, but that this response does not occur immediately following the enactment of the incentive because it is costlier, relative to inter-temporal shifting. Results are robust to estimating over a five year period as well.

5.3 Tests of Domestic Investment and Employment (H3)

Table 7, Panel A (B) presents results for studying the investment (employment) effects of the Section 199 deduction. The results in Columns (1) and (2) indicate that across the full sample there is no significantly different average investment spending by DPAD firms after the DPAD, relative to the matched sample of controls. However, I observe different effects based on whether the firm is domestic-only or multinational. Figure 3 and Columns (3)-(8) present graphs and statistical results after partitioning the sample based on firms’ geographic presence. I first identify the multinational subsample based on those observations that can be matched to the BEA multinational
dataset; then, within the sample of Compustat-BEA observations, I retain the matched DPAD-control pairs that have the domestic investment data necessary for these tests (n=5,585).

Of the remaining observations not matched to the BEA data, I construct the domestic-only subsample. As discussed in Section 4.1 when comparing the sample to IRS reported tax data, I drop any observation from this group that reports i) a foreign subsidiary in Exhibit 21 data (Dyreng and Lindsey, 2009); ii) any non-zero, non-missing foreign segment sales; or iii) any non-zero, non-missing foreign segment assets.\(^{21}\) The final domestic-only sample for the investment tests is comprised of 227 DPAD-matched control pairs (n=2,689).

I plot the average domestic investment spending in Panel A of Figure 3 for the domestic-only firms. The graph demonstrates that the DPAD and control firms exhibited similar trends in capital expenditure spending prior to the DPAD. Once the incentive is in place, the amount of spending by DPAD firms increases relative to control firms. These results are confirmed with the results presented in Table 7 Panel A, Columns (3) and (4). While the coefficient for domestic-only firms is statistically insignificant in Column (3), I observe a positive and statistically significant effect in Column (4) after refining the interaction term based on the different DPAD rates across time. The investment effect occurs from 2010 through 2013, consistent with this activity being the costliest response and thus requiring the greatest tax benefit.\(^{22}\) Specifically, the coefficient of 0.084 on \(DPAD\_Firm_i*PostDPAD\_1013_{i,t}\) in Column (4) means that claiming the DPAD firm is associated with greater capital expenditures equivalent to 8.4% of total PPE. Given the average

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\(^{21}\) These steps result in the exclusion of some multinational DPAD firms from the Table 7 analysis because there are multinational observations without the requisite BEA data due to BEA reporting thresholds and/or missing BEA data.

\(^{22}\) Results are robust to using a measure of incremental capex, which captures investment spending on projects beyond that required to maintain the firm's fixed asset base. I measure this as total capex, less annual depreciation, following Richardson (2006). I also find similar results when testing the effect of domestic R&D: I observe greater R&D spending of 0.9% by domestic-only firms in the post-DPAD period, but no effect for multinationals. Finally, I examine the investment behavior of DPAD firms that repatriated under the American Jobs Creation Act of 2004; see Online Appendix B for a discussion of these tests.
DPAD firm in the domestic-only subsample reports fixed assets of $1.71 billion in the year prior to claiming the DPAD (untabulated), this is equivalent to greater spending of $143.6 million by the average domestic-only DPAD firm over the four year period 2010-2013.23

Columns (5)-(6) present results using an alternative definition of domestic-only firms; the sample used omits any DPAD-control pairs with positive, non-missing values for pre-tax foreign income (PIFO) and foreign tax expense (TXFO), resulting in a larger sample (n=4,360). I observe similar results; based on reported fixed assets of $1.24 billion for this sample in the year prior to claiming the DPAD, the coefficient of 0.077 in Column (6) implies greater spending of $95.5 million by the average firm.24

In contrast, I do not observe any additional domestic capital expenditure spending by multinational DPAD firms, relative to their matched control firms, in Figure 3, Panel B. The pre-period trends are generally parallel (with the exception of year t-3); two years after the incentive is in place, control firms begin to invest more relative to the DPAD firms. However, the graphs do not show amounts that are statistically different. Results for multinationals are presented in Columns (7) and (8) of Table 7 and are consistent with the graphical evidence.

This lack of domestic investment activity could be attributable to these multinationals instead investing offshore.25 The results in Column (10) confirm this: multinationals report a positive and

23 Ohrn (2018) calculates an increase in investment of 10.06% for a one percentage point increase in the effective DPAD benefit. He uses industry-level measures to identify the DPAD benefits and measures investment with worldwide (not domestic) capital expenditures. Given that he calculates an effective DPAD tax rate benefit (industry-level measurement of QPAI, multiplied by the effective DPAD rate, multiplied by the corporate income tax rate) of 1.432 percentage points in the period from 2010, his results imply approximately 14.4% greater investment for firms. Refining the measurement of the effects to the firm-level (rather than industry-level) and using jurisdiction-specific capital expenditures, I find an effect that is 6.0 percentage points lower (8.4%).

24 Online Appendix E shows results of similar significance and magnitude using two additional definitions of domestic-only firms: one based on zero or missing values for PIFO, TXFO, and foreign segment sales (n=3,418), and one in which all five fields indicating a foreign presence are equal to zero or are missing (PIFO, TXFO, foreign segment sales, foreign segment assets, and Exhibit 21; n=2,181).

25 Desai et al. (2005) use data on domestic and foreign capital expenditures in the 1980s and 1990s to show that foreign and domestic investment by U.S. multinational firms are complements rather than substitutes. Observing a substitution effect for the multinational DPAD firms suggests that i) the relation between foreign and domestic investment
statistically significant effect for foreign investment, relative to the matched control firms, in the 2007 to 2009 period. The coefficient of 0.019 suggests that being a multinational DPAD firm is associated with greater foreign capital expenditures equivalent to 1.9% of total plant, property, and equipment. Given the average DPAD firm in the multinational subsample reports fixed assets of $3.06 billion in the year prior to claiming the DPAD (untabulated), this is equivalent to greater foreign investment spending of $58.1 million by the average multinational DPAD firm. Notably, the period in which this effect occurs is the same period in which multinationals report different cross-border shifting (Table 6, Panel B), suggesting that the domestic tax savings from the DPAD are associated with this foreign investment spending.

Table 7, Panel B present the employment results. For the pooled sample of firms, I observe a statistically significant reduction in the level of employment by DPAD firms post-DPAD, relative to the sample of matched control firms. The coefficient of -0.144 in Column (1) means that claiming the DPAD is associated with a 14.4% lower level of employment after the DPAD, relative to the matched sample of control firms. Given that the average DPAD firm employs approximately 11,400 workers, this coefficient translates into approximately 1,640 fewer domestic workers at the average DPAD firm in the post-DPAD period, relative to the matched sample of control firms.26

I also test how these results vary based on the geographic presence of the firm. Figure 4 first shows that the DPAD and control firms within the domestic-only sample exhibited very similar trends pre-DPAD; however, after the DPAD was in place, the lines diverge, with DPAD firms reporting significantly fewer workers relative to the control firms. Consistent with this graphical spending is different in the more recent period (as seen in the literature on the repatriation tax, which shows that U.S. multinationals were more likely to invest offshore rather than in the U.S. (Edwards et al., 2016; Hanlon et al., 2015)), and/or ii) that DPAD firms’ investment patterns differ from other multinationals (which could be an impetus for providing this targeted type of tax incentive).

26 Using the unlogged number of employees, untabulated tests of differences-in-means show that the control firms increased employment by approximately 1,100 workers, whereas the DPAD firms reduced their labor force by 921 workers; thus these tests (regression specification) estimate a difference-in-difference of 2,201 (1,640) workers.
evidence, I observe a negative and statistically significant coefficient of -0.272 in Column (4) of Table 7, Panel B implying a 27.2% decrease in the level of employment; based on the average employment of 3,200 workers for this subsample, this coefficient means that domestic-only DPAD firms employed 870 fewer workers since 2010, relative to the matched sample of control firms.

Columns (5)-(6) present results using the alternative definition of domestic-only firms based on zero or missing values for pretax foreign income and foreign tax expense. In this larger sample, I continue to find a coefficient of similar significance and magnitude.\(^{27}\)

Notably, the negative coefficient in Column (4) occurs in the same period in which I observed greater domestic investment by this same sample of firms (Panel A, Column (4)). One interpretation is that these domestic-only firms substitute productive capital for labor; the greater domestic investment spending observed in Panel A is associated with a lower demand for domestic employees. This finding is consistent with studies in economics examining the relation between the demand for capital and labor (Arrow et al., 1961; Chirinko, 2002; Antras, 2004) as well as a recent study of the DPAD using matched employee-firm IRS data (Dobridge et al., 2018). Assuming that the relative prices of labor and capital remain constant, these results imply a change in the log of the capital/labor ratio of approximately 0.403. This amount resembles recent estimations of the elasticity of factor substitution between capital and labor; for example, Leon-Ledesma et al., (2010) estimate a range of 0.491–1.702, and Chirinko and Mallick (2016) provide a range from 0.12–0.55 with a preferred point estimate of 0.40.\(^{28}\)

\(^{27}\) Online Appendix E confirms the robustness of the employment results to two additional ways of identifying domestic-only firms.

\(^{28}\) The CES production function, introduced by Dickinson (1954) and Solow (1956), includes a term σ that measures the elasticity of substitution between capital K and labor N. This ratio is defined as the following: \(d\log(K/N)/d\log(F_N/F_K)\), where F captures the factor prices. That is, the elasticity of substitution is the percentage change in capital and labor factor proportions due to a change in the marginal products (or factor price ratio). I make a simplifying assumption that the change in the factor price ratio equals one.
Additional untabulated results reveal two important findings related to this result. First, I confirm that the statistically significant investment and employment effects occur within the same subset of firms – those in the top quartile based on the number of domestic employees. Second, I observe that the industry distribution for the domestic-only firms differs from that for the full sample. While manufacturing firms continue to comprise the largest proportion of this subsample, it is lower relative to the full sample (36.6% as compared to 56.0% from Table 1, Panel B). Further, two additional industries – Oil & Gas and Utilities – comprise a much larger proportion of this subsample (27.8 percent and 14.1%, respectively).\(^{29}\)

Multinational DPAD firms also report a decline in domestic employment relative to control firms, as seen in Figure 4, Panel B. However, the pre-period trends for these firms are not as clearly parallel, with the difference narrowing in year \(t-1\). This graph suggests that there could possibly be other factors contributing to the differences in multinational DPAD firm employment, and therefore, the results should be interpreted with this in mind. The statistically significant coefficient of -0.150 in Column (5) means that claiming the DPAD is associated with a 15.0% lower level of employees post-DPAD, relative to the matched sample of firms; given that the average multinational DPAD firm employs approximately 15,800 domestic workers, this is equivalent to 2,370 fewer domestic workers for this subsample of DPAD claimants. The results

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\(^{29}\) Anecdotal evidence confirms increased automation in these three sectors. For example, a 2012 article on manufacturing stated that “firms benefit from new materials, cheaper robots, smarter software, and abundance of online services and 3D printers” (Economist, 2012). As another example, a 2009 article stated that “today’s power plant control room is evolving into an almost office-like setting, typically quiet and with few staff…decisions are made by a team of experts, most of whom will not be on site” (Leimbach, 2009). More recent articles discuss persistent job losses in the energy sector since 2010, attributing the layoffs to “automation and the rise of computer technology” (Eaton, 2016; DiChristopher, Wells, and Schoen, 2016). As a specific example, DTE Energy, a Michigan power company, began claiming the DPAD in 2007. In the post-DPAD period, the company announced a $2 billion annual capital investment program to “upgrade its aging power plants, improve its pollution controls, and add 1,000 megawatts of renewable energy.” However, financial statement employment data show that the firm’s employment dropped by 1,500 workers from the pre-DPAD period to the end of 2013.
imply a change in the log of the capital/labor ratio of approximately 0.18, which is also within the range from Chirinko and Mallick (2016).

I observe no statistically significant effect for foreign labor in Columns (7) and (8). Given the foreign investment results in Panel A, these results mean that there is not a substitution of foreign capital for foreign labor. One possible explanation is that the foreign investment relates to firm expansion in foreign jurisdictions, and that the DPAD firms shift or transfer existing foreign employees to new foreign establishments. Unfortunately, because foreign establishment-level details are not available in the BEA data, I am unable to empirically test this possible explanation.

The domestic employment results are subject to one important caveat. The BEA data do not include information on contract labor; therefore, to the extent that the DPAD firms substitute domestic employees for domestic contractors or foreign outsourced workers, I would be unable to detect and measure such effects.

6. **Robustness Tests**

6.1 **Positive Shocks at DPAD Firms and Falsification Tests**

One potential alternative explanation for the results I document is that the DPAD firms experience a positive performance shock that drives differences in inter-temporal shifting, cross-border shifting, domestic investment, and domestic employment. For this to occur, these positive shocks must occur at the same time as the firm is eligible for and claims the DPAD, and the shocks must disproportionately affect the DPAD firms, relative to the matched control firms. While matching on performance and controlling for $ROA_{t:t}$ throughout the regression specifications mitigates the potential effects of these shocks, I perform two tests to rule out this alternative explanation. First, I first construct three measures of good news and positive shocks and test whether the proportion of DPAD firms reporting these positive shocks is greater relative to the
matched control sample. I find that the overall proportion of both DPAD and control firms reporting these shocks is low (approximately 1.5%–3.2% of the samples) and is not statistically different across the two groups, such that it is unlikely these shocks are driving the results I document. Furthermore, all results hold after dropping firms reporting such good news shocks. This analysis is presented in Online Appendix F.

Second, I conduct a falsification test in which I re-estimate all results over the pre-DPAD period from 1997 through 2003 and use placebo treatment dates of 1999 and 2002. When using these alternative dates, I do not observe similar effects in these earlier years as those documented in Tables 5 through 7 (see Online Appendix G). Thus, the effects I find are specific to the true post-DPAD period and do not appear to be persistent or systematic performance differences between the DPAD and control firms.

6.2 Additional Analysis of Real Activities: Bonus Depreciation

Another alternative explanation is that the bonus depreciation tax incentive, which permits firms to accelerate the depreciation of their fixed assets even more quickly than regular tax rules stipulate, could drive the investment results. In 2011, the bonus depreciation rules permitted firms to expense the entire cost of new assets completely (Edgerton, 2010; Zwick and Mahon, 2017).30 To address concerns that DPAD firms were more likely or able to claim bonus depreciation relative to control firms and that, by extension, this alternative tax incentive could drive the investment results, I test the difference in DPAD firms and control firms’ deferred tax expense in 2011 when the bonus depreciation incentive was the greatest. I examine deferred tax expense because this

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30 Bonus depreciation was first allowed in 2001 at a rate of 30%. This means that 30% of the cost of an asset could be depreciated immediately, with the remaining amount to be depreciated using the Modified Accelerated Cost Recovery System (MACRS) depreciation schedule, based on the life of the asset. During the sample period, the bonus depreciation percentage was 0% (1997–2000, 2005–2007), 30% (2001–2002), 50% (2003–2004, 2008–2010, 2012–2014), and 100% (2011).
financial accounting accrual captures the amount of book/tax difference attributable to deferred tax assets and liabilities and therefore should increase when firms claim bonus depreciation. If DPAD firms claimed significantly more bonus depreciation in 2011, then I would expect to observe much higher levels of deferred tax expense in that year. However, I find no statistically significant difference in deferred tax expense reported by DPAD firms relative to the control firms in 2011 (t=1.14), nor when testing the difference in deferred tax expense over the entire sample period (t=0.97). While this does not completely refute the possible alternative explanation for the results (given that actual tax depreciation is unobservable), it supports the conclusion that the DPAD is associated with the greater domestic investment spending.

7. Conclusion

This paper studies how firms have responded to the DPAD and whether this tax incentive resulted in the intended increases in U.S. investment and employment. I find that the DPAD is associated with an increase in the amount of domestic investment spending, but that this result only occurs within the sample of domestic-only firms. Multinationals claiming the incentive exhibit an increase in foreign investment spending post-DPAD. One explanation for the delayed investment spending is that firms initially engage in other accounting responses, such as shifting income across time and across borders. These channels enable firms to quickly respond to the incentive and maximize the tax savings in the first years that the DPAD benefit was available.

These results contribute to the literature that studies the DPAD by extending the analysis beyond investment decisions. The results inform expectations of how firms will respond to the lower domestic corporate income tax rate: I show that some firms respond with greater domestic investment, but this result is concentrated within the sample of firms that do not have foreign operations. Furthermore, I show that these results are accompanied by economically significant
amounts of inter-temporal and cross-border shifting as well as changes in domestic employment. The reduction in domestic employment suggests a capital-labor substitution, inconsistent with the objective of the tax incentive to create and preserve U.S. jobs.

This incentive was repealed as part of the Tax Cuts and Jobs Act of 2017. Ignoring the other changes implemented by this law, a repeal of the DPAD alone may have resulted in lower investment spending by some firms, as well as a reduced incentive to retain income in the U.S. However, the TCJA implemented several features that magnify the incentives previously introduced by the Section 199 deduction. For example, the corporate tax rate dropped to 21%, thereby offering a 14% statutory tax rate reduction (as opposed to 3.15% for DPAD firms). Further, the TCJA introduced immediate expensing of capital expenditures, thereby providing very large tax incentives for investment. In addition to studying the effects of these changes, I look forward to future research that further studies how accounting rules and tax policies interact to affect U.S. domestic production and, more broadly, worldwide corporate location decisions.
Appendix A
Search Terms to Identify DPAD Firms

The following search terms are used to identify DPAD firms based on discussion of the tax benefit in firms’ publicly filed financial statements. I then read each item and retain those that relate to the Section 199 deduction.

Search Terms:

Section 199/Sec. 199
Section 199 manufacturing deduction/credit
DPAD
DMD
Domestic Production/Domestic Production Activities/Domestic Production Deduction
Domestic Manufacturing Deduction
Domestic Production Activity Deduction
Manufacturing Deduction/Manufacturer’s Deduction/Manufacturers Deduction/Manufacturers’ Production Deduction
Manufacturing Benefit/Manufacturers Benefit/Manufacturer’s Benefit/
Activities Deduction/Activity Deduction
Production Benefit/Deduction
Production Activities
Qualified Production
Qualified Domestic Production
Qualified Activities
QPAI
Qualified Manufacturing Activities
Production Exclusion
Manufacturing Exclusion
FSP 109-1
### Appendix B
Variable Definitions

<table>
<thead>
<tr>
<th><strong>variable</strong></th>
<th><strong>Definition</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash(_{t-1})</td>
<td>Total cash holdings (CHE) in year (t-1), divided by total assets in year (t-1)</td>
</tr>
<tr>
<td>Cash_Flow(_{t-1})</td>
<td>Operating cash flow (OANCF), divided by total assets in year (t-1)</td>
</tr>
<tr>
<td>DomEmp(_{t})</td>
<td>The log of the number of domestic employees in year (t). For domestic-only firms, this variable equals the number of employees (EMP) in Compustat. For multinational firms, the variable equals the number of employees reported by U.S. parent companies on the BEA Survey of U.S. Direct Investment Abroad.</td>
</tr>
<tr>
<td>(\Delta)DomEmp(_{(t-3,t)})</td>
<td>The difference in the level of DomEmp(_{t}) from year (t-3) to year (t).</td>
</tr>
<tr>
<td>DomInvi(_{t})</td>
<td>Domestic capital expenditures in year (t), divided by net plant, property, and equipment (PPENT) in year (t-1). For domestic-only firms, domestic capital expenditures equal total capital expenditures (CAPX) in Compustat. For multinational firms, domestic capital expenditures equal the amount of domestic capital expenditures reported by U.S. parent companies on the BEA Survey of U.S. Direct Investment Abroad.</td>
</tr>
<tr>
<td>(\Delta)DomInvi(_{(t-3,t)})</td>
<td>The difference in the level of DomInvi(_{t}) from year (t-3) to year (t).</td>
</tr>
<tr>
<td>Dom_NOL_Amount(_{t})</td>
<td>The amount of a firm’s domestic tax loss carryforward reported in its financial statements in year (t), scaled by total assets in year (t). Domestic tax loss carryforwards are hand collected from firms’ financial statements.</td>
</tr>
<tr>
<td>Dom_NOL_Indicator(_{t})</td>
<td>An indicator equal to one if the firm reports a domestic tax loss carryforward in its financial statements in year (t), and zero otherwise. Domestic tax loss carryforwards are hand collected based on a firms’ financial statements.</td>
</tr>
<tr>
<td>DomROS(_{t})</td>
<td>Domestic return on sales, measured as pre-tax domestic income in year (t) (PIDOM), divided by total domestic segment sales in year (t).</td>
</tr>
<tr>
<td>(\Delta)DomROS(_{(t-3,t)})</td>
<td>The difference in the level of DomROS(_{t}) from year (t-3) to year (t).</td>
</tr>
<tr>
<td>%DomSales(_{t})</td>
<td>The percentage of sales that are domestic, calculated as domestic segment sales in year (t), divided by total sales in year (t) (SALE).</td>
</tr>
<tr>
<td>DPAD_Firm(_{t})</td>
<td>An indicator equal to one if the firm ever discusses the DPAD benefit in its annual financial statements and zero otherwise.</td>
</tr>
<tr>
<td>ForEmp(_{t})</td>
<td>The log of the sum of the number of foreign employees in year (t). The number of foreign employees is reported by each foreign affiliate on the BEA Survey of U.S. Direct Investment Abroad.</td>
</tr>
<tr>
<td>ForInvi(_{t})</td>
<td>The sum of foreign capital expenditures in year (t), divided by net plant, property, and equipment (PPENT) in year (t-1). Foreign expenditures are equal to the amount of capex reported by each foreign affiliate reported on the BEA Survey of U.S. Direct Investment Abroad.</td>
</tr>
<tr>
<td>GMShift%(_{t})</td>
<td>The amount of shifted gross margin, where gross margin is defined as quarterly sales (SALEQ), less quarterly cost of goods sold</td>
</tr>
</tbody>
</table>
(COGSQ) following Maydew (1997). The shifted amount is one half of the negative of the fourth-quarter shift, plus the first quarter reversal, scaled by total assets in year $t-1$.

$$\Delta GM_{\text{Shift}}(t-3,t)$$

The difference in the level of $GM_{\text{Shift}}$ from year $t-3$ to year $t$.

$$\text{Inventory}_{i,t-1}$$

Total inventory (INVT) in year $t-1$, divided by total assets in year $t-1$.

$$\text{Leverage}_{i,t-1}$$

Total debt in year $t-1$ (DLTT+DLC), divided by the firm’s market value of equity in year $t-1$ (PRCC_F*CSHO).

$$\text{MTB}_{i,t-1}$$

The ratio of the market value of equity in year $t-1$ (PRCC_F*CSHO) to the book value of equity in year $t-1$ (SEQ).

$$\text{NOL}_{\text{Indicator}}_{i,t}$$

An indicator equal to one if the firm reports a tax loss carryforward (TLCF) in its financial statements in year $t$ and zero otherwise.

$$\text{OpIncShift}_i$$

The amount of shifted operating income, where operating income is defined as quarterly sales (SALEQ), less quarterly cost of goods sold (COGSQ) and quarterly SG&A (XSGAQ). The shifted amount is one half of the negative of the fourth-quarter shift, plus the first quarter reversal, scaled by total assets in year $t-1$.

$$\Delta \text{OpIncShift}_{i}(t-3,t)$$

The difference in the level of $\text{OpIncShift}_{i}$ from year $t-3$ to year $t$.

$$\text{PostDPAD}_{i,t}$$

An indicator equal to one for each DPAD firm and its matched control beginning in the year that the DPAD firm first discloses/discusses the benefit in its annual financial statements, and zero otherwise.

$$\text{PostDPAD}_{0506, i,t}$$

An indicator equal to one for each DPAD firm and its matched control if the DPAD firm first discloses/discusses the DPAD benefit in its 2005 (2006) annual financial statements, and zero otherwise.

$$\text{PostDPAD}_{0709, i,t}$$

An indicator equal to one for each DPAD firm and its matched control if the DPAD firm first discloses/discusses the DPAD benefit in its 2007 (2008, 2009) annual financial statements, and zero otherwise. The indicator is also equal to one for the DPAD firm and its matched control firm if the DPAD firm first discusses the DPAD in its 2005 or 2006 financial statements.

$$\text{PostDPAD}_{1013, i,t}$$

An indicator equal to one for each DPAD firm and its matched control if the DPAD firm first discloses/discusses the DPAD benefit in its 2010 (2011, 2012, 2013) annual financial statements, and zero otherwise. The indicator is also equal to one for the DPAD firm and its matched control firm if the DPAD firm first discusses the DPAD in its 2005, 2006, 2007, 2008, or 2009 financial statements.

$$\text{Rate}_{\text{Diff}}_{i}(t,t+n)$$

The difference in the U.S. statutory rate in effect during the sample period (35%) and each firm’s average foreign effective tax rate, calculated as the sum of foreign income tax expense (TXFO) from year $t$ to either $t+1$ or $t+4$, divided by the firm’s foreign income (PIFO) over the same five year period.

$$\text{RD}_{i,t-1}$$

Total R&D expense (XRD), divided by the firm’s total assets in year $t-1$.

$$\text{RD}_{\text{Credit}}_{i,t-1}$$

An indicator equal to one if the firm had estimated R&D tax credits in year $t-1$. For years 1997 through 2010, firms are identified as
having R&D tax credits based on financial statement disclosures collected by Hoopes (2018). For years 2011 through 2013, firms are identified as having R&D tax credits based on a non-zero estimated amount of credit. This amount is equal to the average R&D tax credit over the prior three years, divided by the sum of a firm’s domestic tax expense (TXFED) over the same period based on the Alternative Simplified Credit Methodology under IRC Sec. 41(c)(5). The amount is multiplied by 50% and then subtracted from the current year’s R&D expenses. The difference is multiplied by 15%. If this amount is positive, then the indicator is equal to one and zero otherwise.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>( ROA_{t-1} )</td>
<td>The ratio of pre-tax income in year ( t-1 ) (OIADP), divided by the firm’s total assets in year ( t-1 ).</td>
</tr>
<tr>
<td>( ShiftPeriod_{i,t} )</td>
<td>An indicator equal to one for each DPAD firm and its matched control for the year in which the DPAD firm first discusses the DPAD benefit in its annual financial statements, as well as any other year in which the statutory DPAD benefit increases, and zero otherwise.</td>
</tr>
<tr>
<td>( ShiftPeriod_{0506i,t} )</td>
<td>An indicator equal to one for each DPAD firm and its matched control in 2005 (2006) if the DPAD firm first discusses the DPAD benefit in its 2005 (2006) annual financial statements, and zero otherwise.</td>
</tr>
<tr>
<td>( ShiftPeriod_{0709i,t} )</td>
<td>An indicator equal to one for each DPAD firm and its matched control in 2007 (2008, 2009) if the DPAD firm first discusses the DPAD benefit in its 2007 (2008, 2009) annual financial statements, and zero otherwise. The indicator is also equal to one in 2007 for each DPAD firm and its matched control if the DPAD firm first discusses the DPAD benefit in its 2005 or 2006 financial statement, and zero otherwise.</td>
</tr>
<tr>
<td>( Size_{t-1} )</td>
<td>Log of total assets in year ( t-1 ).</td>
</tr>
<tr>
<td>( Tangibility_{t-1} )</td>
<td>Total plant, property, and equipment (PPENT) in year ( t-1 ), divided by total assets in year ( t-1 ).</td>
</tr>
<tr>
<td>( WW_{ROS_{t}} )</td>
<td>Worldwide return on sales, measured as total pre-tax income in year ( t ) (PI), divided by total sales (SALE) in year ( t ).</td>
</tr>
</tbody>
</table>
References


These figures in Panels A and B plot the pre-treatment trends in $GMShift_{i,t}$, one measure used to test inter-temporal shifting (H1). $GMShift_{i,t}$ is first regressed on control variables, and the residual amount is then plotted for DPAD firms and the matched control firms. The top graph shows the pre-treatment trends using a firm-year sample and captures the residual intertemporal shifting over the three years preceding the first year the DPAD is claimed. The bottom graph incorporates quarterly data; in this graph, $t-8$ ($t-4$) captures the residual shifting eight (four) quarters prior to the first year the DPAD is claimed and corresponds to years $t-2$ ($t-1$) in the top graph. Statistical tests of the pre-treatment trends are presented in Table 3, Panel C.
These figures in Panels C and D plot the pre-treatment trends in $\text{OpIncShift}_{i,t}^{\%}$, one measure used to test inter-temporal shifting (H1). $\text{OpIncShift}_{i,t}^{\%}$ is first regressed on control variables, and the residual amount is then plotted for DPAD firms and the matched control firms. The top graph shows the pre-treatment trends using a firm-year sample and captures the residual intertemporal shifting over the three years preceding the first year the DPAD is claimed. The bottom graph incorporates quarterly data; in this graph, $t-8$ ($t-4$) captures the shifting eight (four) quarters prior to the first year the DPAD is claimed and corresponds to years $t-2$ ($t-1$) in the top graph. Statistical tests of the pre-treatment trends are presented in Table 3, Panel C.
This figure plots the pre-treatment trends in $\text{DomROS}_{i,t}$, the proxy used to test cross-border shifting (H2). The graph includes firm-year observations with sufficient data to measure $\text{DomROS}_{i,t}$ over two periods for the multi-year specification following Klassen and Laplante (2012). $\text{DomROS}_{i,t}$ is first regressed on control variables, and the residual amount is then plotted for DPAD firms and the matched control firms. The graph shows the pre-treatment trends in this variable over the three years preceding the first year the DPAD is claimed. Statistical tests of the pre-treatment trends are presented in Table 3, Panel C.
This figure plots the pre-treatment trends in $DomInvt_i$, the proxy used to test domestic investment (H3). $DomInvt_i$ is first regressed on control variables, and the residual amount is then plotted separately for DPAD firms and the matched control firms. The top graph shows the pre-treatment trends for the domestic subsample of firms over the three years preceding the first year the DPAD is claimed; the bottom graph presents the pre-treatment trends for multinational firms. Statistical tests of the pre-treatment trends are presented in Table 3, Panel C.
Figure 4
Domestic Employment

Panel A: Domestic-only Firms

This figure plots the pre-treatment trends in $\text{DomEmp}_{i,t}$, the proxy used to test domestic employment (H3). $\text{DomEmp}_{i,t}$ is first regressed on control variables, and the residual amount is then plotted separately for DPAD firms and the matched control firms. The top graph shows the pre-treatment trends for the domestic sub-sample of firms over the three years preceding the first year the DPAD is claimed; the bottom graph presents the pre-treatment trends for multinational firms. Statistical tests of the pre-treatment trends are presented in Table 3, Panel C.
Table 1  
Identification of DPAD Firm Sample and Firm Characteristics

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Panel A: Identification of DPAD Firms

<table>
<thead>
<tr>
<th>Data Requirements to Identify Sec. 199 Firms</th>
<th>DPAD Firm-Years</th>
<th>DPAD Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Obs. Dropped</td>
<td>Obs. Remaining</td>
</tr>
<tr>
<td>Initial sample of DPAD firms in Compustat</td>
<td>5,153</td>
<td>5,090</td>
</tr>
<tr>
<td>Eliminate non-U.S. incorporated firms</td>
<td>(63)</td>
<td>(350)</td>
</tr>
<tr>
<td>Eliminate obs. with missing data to calculate variables</td>
<td>(1,269)</td>
<td>(382)</td>
</tr>
<tr>
<td>Eliminate obs. for firms &lt; $100 million in assets</td>
<td>(367)</td>
<td>(123)</td>
</tr>
<tr>
<td>Total firm-years (firms) in which DPAD is disclosed</td>
<td>3,454</td>
<td>1,002</td>
</tr>
</tbody>
</table>

Panel B: Comparison of DPAD Firms to 2012 IRS Statistics – Industry Distribution

<table>
<thead>
<tr>
<th>Industry Description</th>
<th>DPAD Firms</th>
<th>2012 IRS Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Obs</td>
<td>% Obs</td>
</tr>
<tr>
<td>Manufacturing (SIC 2000–3999)</td>
<td>561</td>
<td>56.0%</td>
</tr>
<tr>
<td>Information (SIC 3650–3670, 4800)</td>
<td>74</td>
<td>7.4%</td>
</tr>
<tr>
<td>Wholesale &amp; Retail (SIC 5000–5999)</td>
<td>41</td>
<td>4.1%</td>
</tr>
<tr>
<td>Financial (SIC 6000–6200, 6700)</td>
<td>21</td>
<td>2.1%</td>
</tr>
<tr>
<td>Services (SIC 7000–8999)</td>
<td>124</td>
<td>12.4%</td>
</tr>
<tr>
<td>Other Industries</td>
<td>181</td>
<td>18.0%</td>
</tr>
<tr>
<td>Total Firms</td>
<td>1,002</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Panel C: Comparison of DPAD Firms to 2012 IRS Statistics – Size Categories

<table>
<thead>
<tr>
<th>Size Category</th>
<th>DPAD Firms</th>
<th>2012 IRS Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Obs</td>
<td>% Obs</td>
</tr>
<tr>
<td>$100M–$250M</td>
<td>109</td>
<td>10.9%</td>
</tr>
<tr>
<td>$250M–$500M</td>
<td>153</td>
<td>15.3%</td>
</tr>
<tr>
<td>$500M–$1B</td>
<td>173</td>
<td>17.2%</td>
</tr>
<tr>
<td>Greater than $1B</td>
<td>567</td>
<td>56.6%</td>
</tr>
<tr>
<td>Total Firms</td>
<td>1,002</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Panel D: Comparison of DPAD Firms to 2012 IRS Statistics – Proportion of Firms with Foreign Presence

<table>
<thead>
<tr>
<th>MNCs as Percentage of Sample</th>
<th>DPAD Firms</th>
<th>2012 IRS Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Obs</td>
<td>% Obs</td>
</tr>
<tr>
<td>Domestic-only Firms</td>
<td>215</td>
<td>21.5%</td>
</tr>
<tr>
<td>Multinational Firms</td>
<td>787</td>
<td>78.5%</td>
</tr>
<tr>
<td>Total Firms</td>
<td>1,002</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

---
This table presents the selection steps to identify the DPAD firms (Panel A) as well as descriptive statistics to validate that the DPAD sample resembles the true population of publicly-traded DPAD firms (Panels B, C, and D). In Panel A, a firm is included as a “DPAD firm” if it discusses the DPAD in any of its annual financial statements from 2004 (the year in which the DPAD was enacted) through 2013. The sample includes firm-year observations for DPAD firms that meet the following requirements: i) U.S.-incorporated; ii) data to calculate inter-temporal shifting measures and control variables for H1, including positive total assets, sales, and pre-tax income; and iii) greater than $100 million of assets. Panel B (C, D) compares industry (size, foreign presence) statistics to 2012 IRS statistics from Lester and Rector (2016). Size is determined based on total assets. A firm is identified as a multinational in the IRS sample based on reporting of a foreign affiliate, subsidiary, or foreign parent to the U.S. tax authorities; to identify a similar set of multinational firms, a firm in this sample is identified as a multinational based on either financial statement disclosure of at least one material foreign subsidiary using Exhibit 21 data (Dyreng and Lindsey, 2009), non-missing, non-zero foreign segment sales, or non-missing, non-zero foreign segment assets.
Table 2  
Sample of DPAD and Control Firms

Panel A: DPAD & Control Firm-Year Observations

<table>
<thead>
<tr>
<th>Year</th>
<th>DPAD Firms</th>
<th>Control Firms</th>
<th>Total Firm-Years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td># Firms</td>
<td># Firm-Years in Post-DPAD Period</td>
<td># Firm-Years (Pre- and Post-DPAD)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1997</td>
<td>468</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998</td>
<td>571</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1999</td>
<td>588</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2000</td>
<td>616</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001</td>
<td>589</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td>596</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td>658</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2004</td>
<td>52</td>
<td>730</td>
<td></td>
</tr>
<tr>
<td>2005</td>
<td>385</td>
<td>763</td>
<td></td>
</tr>
<tr>
<td>2006</td>
<td>93</td>
<td>761</td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>107</td>
<td>733</td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>43</td>
<td>642</td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>39</td>
<td>594</td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>65</td>
<td>705</td>
<td></td>
</tr>
<tr>
<td>2011</td>
<td>66</td>
<td>709</td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>62</td>
<td>684</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>90</td>
<td>600</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>1,002</td>
<td>11,007</td>
<td></td>
</tr>
</tbody>
</table>
Panel B: Firm-Year Sample for Tests of H1–H3

<table>
<thead>
<tr>
<th>Sample of DPAD &amp; Control Firm-Years, 1997–2013</th>
<th>( H1 ) Inter-temporal Shifting</th>
<th>( H2 ) Cross-country Shifting</th>
<th>( H3a ) Investment Effects</th>
<th>( H3b ) Employment Effects</th>
</tr>
</thead>
<tbody>
<tr>
<td>21,462</td>
<td>21,462</td>
<td>21,462</td>
<td>21,462</td>
<td></td>
</tr>
<tr>
<td>Less: Observations missing data to calculate dependent and control variables</td>
<td>-</td>
<td>(14,559)</td>
<td>(9,014)</td>
<td>(9,011)</td>
</tr>
<tr>
<td>Less: Observations without matched firm after data restrictions imposed</td>
<td>-</td>
<td>(2,298)</td>
<td>(4,174)</td>
<td>(4,155)</td>
</tr>
<tr>
<td>Total Firm-Year Observations for tests of H1–H3</td>
<td>21,462</td>
<td>4,605</td>
<td>8,274</td>
<td>8,296</td>
</tr>
<tr>
<td>Domestic-only Observations</td>
<td>4,456</td>
<td>-</td>
<td>2,689</td>
<td>2,731</td>
</tr>
<tr>
<td>Multinational Observations</td>
<td>16,993</td>
<td>4,605</td>
<td>5,585</td>
<td>5,565</td>
</tr>
</tbody>
</table>

This table presents the sample composition and sample selection steps. A firm is identified as a “DPAD firm” if it discusses the DPAD in any of its annual financial statements from 2004 (the year in which DPAD was enacted) through 2013. Panel A shows the number of DPAD and matched control observations by year. The number of DPAD firm-years in the post-DPAD period includes all observations for the DPAD firm following the first time this tax incentive is discussed in the financial statements (3,454 firm-years from Table 1, plus 1,292 additional years in the post-period). Each DPAD firm is matched to a control firm on Size, performance (ROA), and industry in the year preceding the first year in which the firm discusses the DPAD. Panel B outlines the selection steps for the samples used to test each of the three hypotheses after the corresponding data restrictions are imposed. Appendix B provides definitions of all variables.
Table 3
Matching Characteristics and Parallel Trends Assumption

Panel A: Comparison of Matching Characteristics for DPAD Firms and Control Firms in the Pre-DPAD Periods

<table>
<thead>
<tr>
<th>Variables</th>
<th>DPAD Firms</th>
<th></th>
<th>Control Firms</th>
<th></th>
<th>Difference</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
</tr>
<tr>
<td>Size&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>6.935</td>
<td>6.704</td>
<td>6.932</td>
<td>6.746</td>
<td>0.003</td>
<td>-0.042</td>
</tr>
<tr>
<td>ROA&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.112</td>
<td>0.103</td>
<td>0.110</td>
<td>0.101</td>
<td>0.002</td>
<td>0.002</td>
</tr>
<tr>
<td>MTB&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>3.255</td>
<td>2.353</td>
<td>3.317</td>
<td>2.421</td>
<td>-0.062</td>
<td>-0.068</td>
</tr>
<tr>
<td>Leverage&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.317</td>
<td>0.147</td>
<td>0.424</td>
<td>0.157</td>
<td>-0.107*</td>
<td>-0.010</td>
</tr>
<tr>
<td>Rate_Diff&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.049</td>
<td>0.089</td>
<td>0.057</td>
<td>0.092</td>
<td>-0.008</td>
<td>-0.003</td>
</tr>
<tr>
<td>WW_ROS&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.139</td>
<td>0.116</td>
<td>0.115</td>
<td>0.100</td>
<td>0.024*</td>
<td>0.016*</td>
</tr>
<tr>
<td>RD&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.034</td>
<td>0.019</td>
<td>0.035</td>
<td>0.022</td>
<td>-0.001</td>
<td>-0.003</td>
</tr>
<tr>
<td>Cash&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.148</td>
<td>0.093</td>
<td>0.170</td>
<td>0.127</td>
<td>-0.022</td>
<td>-0.034**</td>
</tr>
<tr>
<td>%DomSales&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.615</td>
<td>0.614</td>
<td>0.585</td>
<td>0.541</td>
<td>0.030</td>
<td>0.073***</td>
</tr>
<tr>
<td>Cash_Flow&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.136</td>
<td>0.116</td>
<td>0.141</td>
<td>0.125</td>
<td>-0.005</td>
<td>-0.009</td>
</tr>
<tr>
<td>Inventory&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.109</td>
<td>0.090</td>
<td>0.108</td>
<td>0.076</td>
<td>0.001</td>
<td>0.014</td>
</tr>
<tr>
<td>Tangibility&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.338</td>
<td>0.260</td>
<td>0.316</td>
<td>0.220</td>
<td>0.022</td>
<td>0.040*</td>
</tr>
<tr>
<td>Size&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>6.878</td>
<td>6.637</td>
<td>6.874</td>
<td>6.642</td>
<td>0.004</td>
<td>-0.005</td>
</tr>
<tr>
<td>ROA&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.100</td>
<td>0.092</td>
<td>0.107</td>
<td>0.100</td>
<td>-0.007</td>
<td>-0.008*</td>
</tr>
<tr>
<td>MTB&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>4.118</td>
<td>2.344</td>
<td>3.358</td>
<td>2.451</td>
<td>0.760</td>
<td>-0.107</td>
</tr>
<tr>
<td>Leverage&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.330</td>
<td>0.149</td>
<td>0.590</td>
<td>0.157</td>
<td>-0.260</td>
<td>-0.008</td>
</tr>
<tr>
<td>Rate_Diff&lt;sub&gt;i,t-1&lt;/sub&gt;</td>
<td>0.062</td>
<td>0.084</td>
<td>0.067</td>
<td>0.106</td>
<td>-0.005</td>
<td>-0.022*</td>
</tr>
<tr>
<td>WW_ROS&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.138</td>
<td>0.113</td>
<td>0.132</td>
<td>0.105</td>
<td>0.006</td>
<td>0.008</td>
</tr>
<tr>
<td>RD&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.037</td>
<td>0.021</td>
<td>0.039</td>
<td>0.030</td>
<td>-0.002</td>
<td>-0.009</td>
</tr>
<tr>
<td>Cash&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.159</td>
<td>0.109</td>
<td>0.173</td>
<td>0.120</td>
<td>-0.014</td>
<td>-0.011</td>
</tr>
<tr>
<td>%DomSales&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.627</td>
<td>0.634</td>
<td>0.578</td>
<td>0.544</td>
<td>0.049**</td>
<td>0.009***</td>
</tr>
<tr>
<td>Cash_Flow&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.131</td>
<td>0.117</td>
<td>0.134</td>
<td>0.120</td>
<td>-0.003</td>
<td>-0.003</td>
</tr>
<tr>
<td>Inventory&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.109</td>
<td>0.092</td>
<td>0.107</td>
<td>0.083</td>
<td>0.002</td>
<td>0.009</td>
</tr>
<tr>
<td>Tangibility&lt;sub&gt;i,t-2&lt;/sub&gt;</td>
<td>0.328</td>
<td>0.261</td>
<td>0.308</td>
<td>0.208</td>
<td>0.020</td>
<td>0.053*</td>
</tr>
</tbody>
</table>
### Panel B: Comparison of Tax Loss Carryforwards for DPAD Firms and Control Firms in Pre-DPAD Periods

<table>
<thead>
<tr>
<th>Variables</th>
<th>DPAD Firms</th>
<th>Control Firms</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>( NOL_{\text{Indicator}}_{i,t} )</td>
<td>0.413</td>
<td>0.000</td>
<td>0.491</td>
</tr>
<tr>
<td>( NOL_{\text{Indicator}}_{i,t-1} )</td>
<td>0.401</td>
<td>0.000</td>
<td>0.473</td>
</tr>
<tr>
<td>( NOL_{\text{Indicator}}_{i,t-2} )</td>
<td>0.383</td>
<td>0.000</td>
<td>0.437</td>
</tr>
<tr>
<td>( \text{Dom}<em>NOL</em>{\text{Indicator}}_{i,t} )</td>
<td>0.208</td>
<td>0.000</td>
<td>0.310</td>
</tr>
<tr>
<td>( \text{Dom}<em>NOL</em>{\text{Indicator}}_{i,t-1} )</td>
<td>0.211</td>
<td>0.000</td>
<td>0.277</td>
</tr>
<tr>
<td>( \text{Dom}<em>NOL</em>{\text{Amount}}_{i,t} )</td>
<td>0.019</td>
<td>0.000</td>
<td>0.048</td>
</tr>
<tr>
<td>( \text{Dom}<em>NOL</em>{\text{Amount}}_{i,t-1} )</td>
<td>0.023</td>
<td>0.000</td>
<td>0.057</td>
</tr>
</tbody>
</table>

### Panel C: Pre-DPAD Trends in Inter-temporal & Cross-border Shifting, Domestic Investment, and Domestic Employment

<table>
<thead>
<tr>
<th>Variables</th>
<th>DPAD Firms</th>
<th>Control Firms</th>
<th>Difference</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
</tr>
<tr>
<td>( \Delta \text{GMShift}_{i,(t-3,t)} )</td>
<td>0.004</td>
<td>0.028</td>
<td>-0.026</td>
</tr>
<tr>
<td>( \Delta \text{OpIncShift}_{i,(t-3,t)} )</td>
<td>0.013</td>
<td>0.024</td>
<td>-0.036</td>
</tr>
<tr>
<td>( \Delta \text{DomROS}_{i,(t-3,t)} )</td>
<td>0.039</td>
<td>0.168</td>
<td>0.000</td>
</tr>
<tr>
<td>( \Delta \text{DomInv}_{i,(t-3,t)} )</td>
<td>0.007</td>
<td>-0.002</td>
<td>0.019</td>
</tr>
<tr>
<td>( \Delta \text{DomEmp}_{i,(t-3,t)} )</td>
<td>-0.063</td>
<td>0.008</td>
<td>-0.053</td>
</tr>
</tbody>
</table>

This table presents and compares descriptive statistics for DPAD and matched control firms. Panel A presents mean and median statistics for the matching variables of Size and ROA, as well as for other variables used in the empirical tests, in the two years prior to the DPAD firm first disclosing information related to the tax incentive. Panel B compares descriptive statistics for \( NOL_{\text{Indicator}}_{i,t} \), which is an indicator equal to one for firms that report a tax loss carryforward in Compustat (\( tlcf \)) or zero otherwise. This panel also compares descriptive statistics for \( \text{Dom}_NOL_{\text{Indicator}}_{i,t} \), which is an indicator equal to one for firms that report a domestic tax loss carryforward in their financial statements, for treatment and control firms, as well as \( \text{Dom}_NOL_{\text{Amount}}_{i,t} \), which is the amount of a firm’s domestic NOL carryforward, scaled by total assets. Panel C presents the average change in the measures of inter-temporal shifting (\( \text{GMShift}_{i,(t-3,t)} \) and \( \text{OpIncShift}_{i,(t-3,t)} \)), cross-border shifting (\( \text{DomROS}_{i,(t-3,t)} \)), domestic investment (\( \text{DomInv}_{i,(t-3,t)} \)), and domestic employment (\( \ln(\text{DomEmp}_{i,(t-3,t)}) \)) from year \( t-3 \) to year \( t \) for purposes of assessing the parallel trends in the DPAD and control firm samples in the pre-DPAD period. The median amount presented reflect the median value of the average change; tests of the differences in medians reflect whether the samples were drawn from populations with the same median value. Appendix B provides the definitions of all variables. * , ** , and *** denote significance at the 10%, 5%, and 1% levels, respectively.
Table 4  
Descriptive Statistics

Panel A: Inter-temporal shifting variables (H1)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obs</th>
<th>Mean</th>
<th>Median</th>
<th>Std.Dev.</th>
<th>P25</th>
<th>P75</th>
</tr>
</thead>
<tbody>
<tr>
<td>GMShift%_{i,t}</td>
<td>21,462</td>
<td>-0.053</td>
<td>-0.002</td>
<td>1.236</td>
<td>-0.459</td>
<td>0.396</td>
</tr>
<tr>
<td>OpIncShift%_{i,t}</td>
<td>21,462</td>
<td>-0.012</td>
<td>-0.003</td>
<td>0.997</td>
<td>-0.399</td>
<td>0.349</td>
</tr>
<tr>
<td>DPAD_{Firm_{i}}</td>
<td>21,462</td>
<td>0.513</td>
<td>1.000</td>
<td>0.500</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>ShiftPeriod_{i,t}</td>
<td>21,462</td>
<td>0.173</td>
<td>0.000</td>
<td>0.378</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>ShiftPeriod_{0506_{i,t}}</td>
<td>21,462</td>
<td>0.049</td>
<td>0.000</td>
<td>0.217</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>ShiftPeriod_{0709_{i,t}}</td>
<td>21,462</td>
<td>0.053</td>
<td>0.000</td>
<td>0.225</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>ShiftPeriod_{1013_{i,t}}</td>
<td>21,462</td>
<td>0.070</td>
<td>0.000</td>
<td>0.255</td>
<td>0.000</td>
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</tr>
<tr>
<td>DPAD_{Firm_{i}}*ShiftPeriod_{0506_{i,t}}</td>
<td>21,462</td>
<td>0.088</td>
<td>0.000</td>
<td>0.284</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>DPAD_{Firm_{i}}*ShiftPeriod_{0709_{i,t}}</td>
<td>21,462</td>
<td>0.027</td>
<td>0.000</td>
<td>0.163</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>DPAD_{Firm_{i}}*ShiftPeriod_{1013_{i,t}}</td>
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<td>0.036</td>
<td>0.000</td>
<td>0.187</td>
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<tr>
<td>Size_{i,t-1}</td>
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<td>6.934</td>
<td>6.752</td>
<td>1.729</td>
<td>5.649</td>
<td>8.049</td>
</tr>
<tr>
<td>ROA_{i,t-1}</td>
<td>21,462</td>
<td>0.111</td>
<td>0.101</td>
<td>0.077</td>
<td>0.064</td>
<td>0.149</td>
</tr>
<tr>
<td>MTB_{i,t-1}</td>
<td>21,462</td>
<td>3.134</td>
<td>2.277</td>
<td>2.901</td>
<td>1.524</td>
<td>3.600</td>
</tr>
<tr>
<td>Leverage_{i,t-1}</td>
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<td>0.167</td>
<td>0.577</td>
<td>0.023</td>
<td>0.432</td>
</tr>
<tr>
<td>RD_Credit_{i,t-1}</td>
<td>21,462</td>
<td>0.042</td>
<td>0.000</td>
<td>0.201</td>
<td>0.000</td>
<td>0.000</td>
</tr>
</tbody>
</table>

This panel presents descriptive statistics for the dependent and control variables used to test inter-temporal shifting (H1). All continuous variables are winsorized at 1% and 99% and are defined in Appendix B.
Panel B: Cross-border shifting variables (H2)

<table>
<thead>
<tr>
<th>Variables</th>
<th>Obs</th>
<th>Mean</th>
<th>Median</th>
<th>Std.Dev.</th>
<th>P25</th>
<th>P75</th>
</tr>
</thead>
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<tr>
<td>DomROSi,t</td>
<td>4,605</td>
<td>0.149</td>
<td>0.098</td>
<td>0.189</td>
<td>0.053</td>
<td>0.172</td>
</tr>
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<td>DPAD_Firmi</td>
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<td>0.504</td>
<td>1.000</td>
<td>0.500</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>PostDPADi,t</td>
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<td>0.475</td>
<td>0.000</td>
<td>0.500</td>
<td>0.000</td>
<td>1.000</td>
</tr>
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<td>DPAD_Firmi*PostDPADi,t</td>
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<td>0.243</td>
<td>0.000</td>
<td>0.429</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Rate_Diffi,(t,t+n)</td>
<td>4,605</td>
<td>0.053</td>
<td>0.082</td>
<td>0.196</td>
<td>-0.010</td>
<td>0.166</td>
</tr>
<tr>
<td>DPAD_Firmi*Rate_Diffi,(t,t+n)</td>
<td>4,605</td>
<td>0.022</td>
<td>0.000</td>
<td>0.135</td>
<td>0.000</td>
<td>0.073</td>
</tr>
<tr>
<td>Rate_Diffi,(t,t+n)*PostDPADi,t</td>
<td>4,605</td>
<td>0.033</td>
<td>0.000</td>
<td>0.141</td>
<td>0.000</td>
<td>0.095</td>
</tr>
<tr>
<td>DPAD_Firmi<em>PostDPADi,t</em>Rate_Diffi,(t,t+n)</td>
<td>4,605</td>
<td>0.014</td>
<td>0.000</td>
<td>0.095</td>
<td>0.000</td>
<td>0.000</td>
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<td>PostDPAD_0506i,t</td>
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<td>0.000</td>
<td>0.275</td>
<td>0.000</td>
<td>0.000</td>
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<tr>
<td>PostDPAD_0709i,t</td>
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<td>0.139</td>
<td>0.000</td>
<td>0.346</td>
<td>0.000</td>
<td>1.000</td>
</tr>
<tr>
<td>PostDPAD_1013i,t</td>
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<td>0.000</td>
<td>0.435</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>DPAD_Firmi*PostDPAD_0506i,t</td>
<td>4,605</td>
<td>0.042</td>
<td>0.000</td>
<td>0.200</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>DPAD_Firmi*PostDPAD_0709i,t</td>
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<td>0.072</td>
<td>0.000</td>
<td>0.259</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>DPAD_Firmi*PostDPAD_1013i,t</td>
<td>4,605</td>
<td>0.129</td>
<td>0.000</td>
<td>0.335</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Rate_Diffi,(t,t+n)*PostDPAD_0506i,t</td>
<td>4,605</td>
<td>0.005</td>
<td>0.000</td>
<td>0.056</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Rate_Diffi,(t,t+n)*PostDPAD_0709i,t</td>
<td>4,605</td>
<td>0.012</td>
<td>0.000</td>
<td>0.070</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>Rate_Diffi,(t,t+n)*PostDPAD_1013i,t</td>
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<td>0.016</td>
<td>0.000</td>
<td>0.114</td>
<td>0.000</td>
<td>0.000</td>
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<tr>
<td>DPAD_Firmi<em>PostDPAD0506i,t</em>RateDiffi,(t,t+n)</td>
<td>4,605</td>
<td>0.003</td>
<td>0.000</td>
<td>0.040</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>DPAD_Firmi<em>PostDPAD0709i,t</em>RateDiffi,(t,t+n)</td>
<td>4,605</td>
<td>0.004</td>
<td>0.000</td>
<td>0.051</td>
<td>0.000</td>
<td>0.000</td>
</tr>
<tr>
<td>DPAD_Firmi<em>PostDPAD1013i,t</em>RateDiffi,(t,t+n)</td>
<td>4,605</td>
<td>0.008</td>
<td>0.000</td>
<td>0.078</td>
<td>0.000</td>
<td>0.000</td>
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<td>WW_ROSi,t</td>
<td>4,605</td>
<td>0.127</td>
<td>0.106</td>
<td>0.085</td>
<td>0.069</td>
<td>0.161</td>
</tr>
<tr>
<td>SiZe_i,t-1</td>
<td>4,605</td>
<td>7.972</td>
<td>7.820</td>
<td>1.614</td>
<td>6.770</td>
<td>9.083</td>
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<tr>
<td>RD_i,t-1</td>
<td>4,605</td>
<td>0.038</td>
<td>0.022</td>
<td>0.043</td>
<td>0.003</td>
<td>0.055</td>
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<td>Cash_i,t-1</td>
<td>4,605</td>
<td>0.147</td>
<td>0.097</td>
<td>0.145</td>
<td>0.040</td>
<td>0.211</td>
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<tr>
<td>Leverage_i,t-1</td>
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<td>0.222</td>
<td>0.148</td>
<td>0.263</td>
<td>0.050</td>
<td>0.290</td>
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<tr>
<td>%DomSalesi,t-1</td>
<td>4,605</td>
<td>0.602</td>
<td>0.591</td>
<td>0.221</td>
<td>0.451</td>
<td>0.765</td>
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</tbody>
</table>

This panel presents descriptive statistics for the dependent and control variables used to test cross-border shifting (H2) by DPAD and control firms. All continuous variables are winsorized at 1% and 99% and are defined in Appendix B.
## Table 4 (cont’d.)
### Descriptive Statistics

### Panel C: Investment and employment variables (H3)

<table>
<thead>
<tr>
<th>Variables</th>
<th>All Firms</th>
<th>Domestic-only Firms</th>
<th>Multinational Firms</th>
</tr>
</thead>
<tbody>
<tr>
<td>DomInv_{it}</td>
<td>8,274</td>
<td>0.206</td>
<td>0.335</td>
</tr>
<tr>
<td>DomCapex_{it} (SM)</td>
<td>8,274</td>
<td>289.88</td>
<td>669.99</td>
</tr>
<tr>
<td>PPE_{it} (SM)</td>
<td>8,274</td>
<td>2,513.44</td>
<td>5,273.75</td>
</tr>
<tr>
<td>#Domestic Employees</td>
<td>8,296</td>
<td>11,357.8</td>
<td>20,174.4</td>
</tr>
<tr>
<td>DomEmp_{it}</td>
<td>8,296</td>
<td>8.224</td>
<td>1.63</td>
</tr>
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<td>DPAD_Firm_{it}</td>
<td>8,274</td>
<td>0.510</td>
<td>0.500</td>
</tr>
<tr>
<td>PostDPAD_{it}</td>
<td>8,274</td>
<td>0.399</td>
<td>0.490</td>
</tr>
<tr>
<td>PostDPAD_0506_{it}</td>
<td>8,274</td>
<td>0.090</td>
<td>0.286</td>
</tr>
<tr>
<td>PostDPAD_0709_{it}</td>
<td>8,274</td>
<td>0.134</td>
<td>0.341</td>
</tr>
<tr>
<td>PostDPAD_1013_{it}</td>
<td>8,274</td>
<td>0.174</td>
<td>0.379</td>
</tr>
<tr>
<td>DPAD_Firm_{it}*PostDPAD_{it}</td>
<td>8,274</td>
<td>0.205</td>
<td>0.404</td>
</tr>
<tr>
<td>DPAD_Firm_{it}*PostDPAD_0506_{it}</td>
<td>8,274</td>
<td>0.046</td>
<td>0.209</td>
</tr>
<tr>
<td>DPAD_Firm_{it}*PostDPAD_0709_{it}</td>
<td>8,274</td>
<td>0.068</td>
<td>0.252</td>
</tr>
<tr>
<td>DPAD_Firm_{it}*PostDPAD_1013_{it}</td>
<td>8,274</td>
<td>0.091</td>
<td>0.288</td>
</tr>
<tr>
<td>Size_{it-1}</td>
<td>8,274</td>
<td>7.607</td>
<td>1.793</td>
</tr>
<tr>
<td>ROA_{it-1}</td>
<td>8,274</td>
<td>0.111</td>
<td>0.071</td>
</tr>
<tr>
<td>Cash_Flow_{it-1}</td>
<td>8,274</td>
<td>0.132</td>
<td>0.084</td>
</tr>
<tr>
<td>MTB_{it-1}</td>
<td>8,274</td>
<td>3.254</td>
<td>2.934</td>
</tr>
<tr>
<td>Leverage_{it-1}</td>
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<td>0.556</td>
</tr>
<tr>
<td>Inventory_{it-1}</td>
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<td>0.124</td>
</tr>
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<td>Tangibility_{it-1}</td>
<td>8,296</td>
<td>0.328</td>
<td>0.245</td>
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</tbody>
</table>

This panel presents descriptive statistics for the dependent and control variables used to test investment and employment activity (H3). Descriptives are provided for the full sample, as well as for the subsamples of domestic-only and multinational firms. Due to restrictions on data disclosure for the variables constructed from BEA data, only mean values and standard deviations are presented. All continuous variables are winsorized at 1% and 99% and are defined in Appendix B.
### Table 5
Inter-temporal Shifting

**Panel A: Regression Analysis of Inter-temporal Shifting**

<table>
<thead>
<tr>
<th>Dependent Variable: GMShift%_{it}</th>
<th>(1)</th>
<th>(2)</th>
<th>(3)</th>
<th>(4)</th>
<th>(5)</th>
<th>(6)</th>
<th>(7)</th>
<th>(8)</th>
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<tbody>
<tr>
<td>DPAD_Firm_it</td>
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<td>0.080</td>
<td>-0.034**</td>
<td>-0.034**</td>
<td>0.023</td>
<td>0.023</td>
<td>-0.013**</td>
<td>-0.012**</td>
</tr>
<tr>
<td>(1.055)</td>
<td>(1.056)</td>
<td>(-2.500)</td>
<td>(-2.492)</td>
<td>(0.379)</td>
<td>(0.381)</td>
<td>(-2.018)</td>
<td>(-2.006)</td>
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</tr>
<tr>
<td>ShiftPeriod_it</td>
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<td>-0.401***</td>
<td>-0.042</td>
<td>-0.192***</td>
<td>(2.303)</td>
<td>(-3.990)</td>
<td>(-1.651)</td>
<td>(-2.679)</td>
</tr>
<tr>
<td>(1.055)</td>
<td>(1.056)</td>
<td>(-2.500)</td>
<td>(-2.492)</td>
<td>(0.379)</td>
<td>(0.381)</td>
<td>(-2.018)</td>
<td>(-2.006)</td>
<td></td>
</tr>
<tr>
<td>DPAD_Firm_it*Shift_Period_it</td>
<td>0.098**</td>
<td>0.209**</td>
<td>0.077**</td>
<td>0.111*</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.261)</td>
<td>(1.945)</td>
</tr>
<tr>
<td>(2.198)</td>
<td>(2.360)</td>
<td>(2.198)</td>
<td>(2.360)</td>
<td>(2.198)</td>
<td>(2.360)</td>
<td>(2.198)</td>
<td>(2.360)</td>
<td>(2.198)</td>
</tr>
<tr>
<td>ShiftPeriod_0506_it</td>
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<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
</tr>
<tr>
<td>ShiftPeriod_0709_it</td>
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<td>(-3.225)</td>
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<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
</tr>
<tr>
<td>ShiftPeriod_1013_it</td>
<td>-0.052</td>
<td>-0.352***</td>
<td>-0.005</td>
<td>-0.126</td>
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<tr>
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<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
</tr>
<tr>
<td>DPAD_Firm_it*ShiftPeriod_0506_it</td>
<td>0.165**</td>
<td>0.261***</td>
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<td>0.165**</td>
<td>(2.202)</td>
<td>(3.126)</td>
<td>(2.476)</td>
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<td>(2.360)</td>
<td>(2.198)</td>
<td>(2.360)</td>
<td>(2.198)</td>
<td>(2.360)</td>
<td>(2.198)</td>
<td>(2.360)</td>
<td>(2.198)</td>
</tr>
<tr>
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<td>0.127</td>
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<td>0.053</td>
<td>(0.408)</td>
<td>(1.100)</td>
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</tr>
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<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
</tr>
<tr>
<td>DPAD_Firm_it*ShiftPeriod_1013_it</td>
<td>0.099*</td>
<td>0.230**</td>
<td>0.065</td>
<td>0.114*</td>
<td>(1.797)</td>
<td>(2.205)</td>
<td>(1.485)</td>
<td>(1.719)</td>
</tr>
<tr>
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<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
<td>(2.360)</td>
<td>(2.098)</td>
</tr>
<tr>
<td>Size_{i,t-1}</td>
<td>-0.043**</td>
<td>-0.043**</td>
<td>-0.055***</td>
<td>-0.055***</td>
<td>-0.017</td>
<td>-0.017</td>
<td>-0.029***</td>
<td>-0.029***</td>
</tr>
<tr>
<td>(-2.408)</td>
<td>(-2.408)</td>
<td>(-10.266)</td>
<td>(-10.259)</td>
<td>(-1.231)</td>
<td>(-1.229)</td>
<td>(-8.392)</td>
<td>(-8.413)</td>
<td></td>
</tr>
<tr>
<td>ROA_{i,t-1}</td>
<td>-2.833***</td>
<td>-2.830***</td>
<td>-0.779***</td>
<td>-0.778***</td>
<td>-2.867***</td>
<td>-2.865***</td>
<td>-0.873***</td>
<td>-0.871***</td>
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<tr>
<td>(-6.104)</td>
<td>(-6.123)</td>
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<td>(-4.420)</td>
<td>(-7.627)</td>
<td>(-7.649)</td>
<td>(-6.940)</td>
<td>(-6.967)</td>
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</tr>
<tr>
<td>MTB_{i,t-1}</td>
<td>0.055***</td>
<td>0.055***</td>
<td>0.032***</td>
<td>0.032***</td>
<td>0.042***</td>
<td>0.042***</td>
<td>0.020***</td>
<td>0.020***</td>
</tr>
<tr>
<td>Leverage_{i,t-1}</td>
<td>0.063</td>
<td>0.063</td>
<td>-0.037***</td>
<td>-0.037***</td>
<td>0.034</td>
<td>0.034</td>
<td>-0.020***</td>
<td>-0.020***</td>
</tr>
<tr>
<td>(1.263)</td>
<td>(1.263)</td>
<td>(-4.452)</td>
<td>(-4.450)</td>
<td>(9.32)</td>
<td>(9.33)</td>
<td>(-4.006)</td>
<td>(-3.999)</td>
<td></td>
</tr>
<tr>
<td>RD_Credit_{i,t-1}</td>
<td>-0.023</td>
<td>-0.023</td>
<td>0.018</td>
<td>0.018</td>
<td>-0.002</td>
<td>-0.002</td>
<td>0.014</td>
<td>0.014</td>
</tr>
<tr>
<td>(-0.294)</td>
<td>(-0.299)</td>
<td>(1.290)</td>
<td>(1.296)</td>
<td>(-0.022)</td>
<td>(-0.028)</td>
<td>(1.053)</td>
<td>(1.053)</td>
<td></td>
</tr>
<tr>
<td>Year-by-Ind FE?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>21,462</td>
<td>21,462</td>
<td>85,521</td>
<td>85,521</td>
<td>21,462</td>
<td>21,462</td>
<td>85,521</td>
<td>85,521</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.059</td>
<td>0.059</td>
<td>0.023</td>
<td>0.023</td>
<td>0.071</td>
<td>0.072</td>
<td>0.016</td>
<td>0.016</td>
</tr>
</tbody>
</table>
Panel B: Analysis of Inter-temporal Shifting by firms' geographic presence and other shifting incentives

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Inter-temporal Income Shifting Measures</th>
<th>GMShift%i,t</th>
<th>GMShift%i,t</th>
<th>GMShift%i,t</th>
<th>OpIncShift%i,t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Domestic MNCs</td>
<td>Domestic MNCs</td>
<td>ETI Firms</td>
<td>Other Firms</td>
<td>ETI Firms</td>
</tr>
<tr>
<td>DPAD_Firm,t</td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
<td>(5)</td>
</tr>
<tr>
<td></td>
<td>0.126</td>
<td>0.072</td>
<td>0.095</td>
<td>0.072</td>
<td>0.212*</td>
</tr>
<tr>
<td></td>
<td>(0.883)</td>
<td>(0.932)</td>
<td>(1.067)</td>
<td>(0.843)</td>
<td>(1.746)</td>
</tr>
<tr>
<td>ShiftPeriod,t</td>
<td>-0.131</td>
<td>-0.067*</td>
<td>-0.159**</td>
<td>-0.046</td>
<td>-0.136</td>
</tr>
<tr>
<td></td>
<td>(-1.581)</td>
<td>(-1.706)</td>
<td>(-2.425)</td>
<td>(-1.327)</td>
<td>(-1.478)</td>
</tr>
<tr>
<td>DPAD_Firm,t*Shift_Period,t</td>
<td>0.127</td>
<td>0.087*</td>
<td>0.170**</td>
<td>0.060</td>
<td>0.136</td>
</tr>
<tr>
<td></td>
<td>(1.264)</td>
<td>(1.713)</td>
<td>(2.592)</td>
<td>(1.163)</td>
<td>(1.306)</td>
</tr>
<tr>
<td>Size,t-1</td>
<td>-0.045</td>
<td>-0.041**</td>
<td>-0.059***</td>
<td>-0.033</td>
<td>-0.071**</td>
</tr>
<tr>
<td></td>
<td>(-1.668)</td>
<td>(-2.315)</td>
<td>(-2.691)</td>
<td>(-1.565)</td>
<td>(-2.335)</td>
</tr>
<tr>
<td></td>
<td>(-3.244)</td>
<td>(-6.404)</td>
<td>(-4.389)</td>
<td>(-5.979)</td>
<td>(-1.520)</td>
</tr>
<tr>
<td>MTB,t-1</td>
<td>0.063***</td>
<td>0.054***</td>
<td>0.055***</td>
<td>0.054***</td>
<td>0.048**</td>
</tr>
<tr>
<td>Leverage,t-1</td>
<td>0.029</td>
<td>0.076</td>
<td>0.042</td>
<td>0.078</td>
<td>0.114</td>
</tr>
<tr>
<td></td>
<td>(0.536)</td>
<td>(1.417)</td>
<td>(0.604)</td>
<td>(1.562)</td>
<td>(1.000)</td>
</tr>
<tr>
<td>RD_Credit,t-1</td>
<td>0.124</td>
<td>-0.042</td>
<td>0.052</td>
<td>-0.040</td>
<td>-0.111</td>
</tr>
<tr>
<td></td>
<td>(0.614)</td>
<td>(-0.584)</td>
<td>(0.361)</td>
<td>(-0.508)</td>
<td>(-0.934)</td>
</tr>
</tbody>
</table>

| | Difference | | | | 0.040 | 0.110 | 0.004 | 0.008 |
| p-value | 0.546 | 0.162 | 0.980 | 0.923 |
| Year-by-Ind FE? | Y | Y | Y | Y |
| Observations | 4,456 | 16,993 | 7,025 | 14,413 | 3,788 | 8,293 | 3,788 | 8,293 |
| R-squared | 0.088 | 0.057 | 0.090 | 0.050 | 0.072 | 0.089 | 0.078 | 0.105 |

This table presents results of OLS regressions that test inter-temporal income shifting by DPAD firms, relative to a matched sample of control firms, in the first year in which the DPAD firm claims the tax incentive, as well as any subsequent year with an increased statutory DPAD benefit. Panel A presents results using a firm-year sample (Columns (1)–(2) and (5)–(6)) and a firm-quarter sample (Columns (3)–(4) and (7)–(8)). Panel B tests inter-temporal shifting using a firm-year sample after partitioning firms based on their geographic presence (Columns (1) through (4)) and on whether the DPAD firm claimed the Extraterritorial Income Exclusion (Columns (5)–(8)), an expiring tax subsidy that provided incentives to shift income into the pre-DPAD period. In Panel B, firms are identified as domestic-only in Columns (1)-(2) based on no reported foreign subsidiaries per Exhibit 21 data and zero or missing values for both foreign segment sales and foreign segment assets. Columns (3)-(4) identify domestic-only firms based on zero or missing values for pre-tax foreign income (PIFO) and foreign tax expense (TXFO). All variables are defined in Appendix B. T-statistics are presented in parentheses. Each specification includes year-by-industry fixed effects, with standard errors clustered by industry. The superscript asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The specification is as follows: TimeShift_{i,t} = \alpha + \beta_1 DPAD_Firm_{i,t} + \beta_2 ShiftPeriod_{i,t} + \beta_3 DPAD_Firm_{i}*ShiftPeriod_{i,t} + Controls_{i,t-1} + \epsilon_{i,t}.
### Table 6

Cross-border Shifting

**Panel A: Regression Analysis of Cross-border Shifting**

<table>
<thead>
<tr>
<th></th>
<th>Dependent Variable: DomROSi,((t,t+1))</th>
<th>Dependent Variable: DomROSi,((t,t+4))</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td><strong>DPAD_Firmi</strong></td>
<td>(\beta_1)</td>
<td>0.020**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.149)</td>
</tr>
<tr>
<td><strong>PostDPAD_i,t</strong></td>
<td>(\beta_2)</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.124)</td>
</tr>
<tr>
<td><strong>DPAD_Firmi*PostDPAD_i,t</strong></td>
<td>(\beta_3)</td>
<td><strong>0.022</strong>*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.301)</td>
</tr>
<tr>
<td><strong>Rate_Diff_i,(t,t+n)</strong></td>
<td>(\beta_4)</td>
<td><strong>-0.107</strong>*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-4.100)</td>
</tr>
<tr>
<td><strong>PostDPAD_i,t*Rate_Diff_i,(t,t+n)</strong></td>
<td>(\beta_5)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>DPAD_Firm_i*Rate_Diff_i,(t,t+n)</strong></td>
<td>(\beta_6)</td>
<td>-0.015</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-0.345)</td>
</tr>
<tr>
<td><strong>DPAD_Firmi<em>PostDPAD_i,t</em>Rate_Diff_i,(t,t+n)</strong></td>
<td>(\beta_7)</td>
<td><strong>0.121</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(2.075)</td>
</tr>
<tr>
<td><strong>WW_ROSi,((t,t+n))</strong></td>
<td>(\beta_8)</td>
<td>1.416***</td>
</tr>
<tr>
<td><strong>Size_i,((t,t+n))</strong></td>
<td>(\beta_9)</td>
<td>-0.008**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-2.164)</td>
</tr>
<tr>
<td><strong>RD_i,((t,t+n))</strong></td>
<td>(\beta_{10})</td>
<td>0.312</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1.336)</td>
</tr>
<tr>
<td><strong>Cash_i,((t,t+n))</strong></td>
<td>(\beta_{11})</td>
<td>0.033</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.518)</td>
</tr>
<tr>
<td><strong>Leverage_i,((t,t+n))</strong></td>
<td>(\beta_{12})</td>
<td>0.046***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(3.130)</td>
</tr>
<tr>
<td><strong>%Dom_Sales_i,((t,t+n))</strong></td>
<td>(\beta_{13})</td>
<td>-0.227***</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(-4.591)</td>
</tr>
</tbody>
</table>

**Separate group coeff. from Col. (3) & (6)**

<table>
<thead>
<tr>
<th>Group Coeff.</th>
<th>Group Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Control firm-years, pre-DPAD ((\beta_4))</td>
<td>-0.085</td>
</tr>
<tr>
<td>DPAD firm-years, pre-DPAD ((\beta_4 + \beta_6))</td>
<td>-0.100</td>
</tr>
<tr>
<td>Control firm-years, post-DPAD ((\beta_4 + \beta_5))</td>
<td>-0.164</td>
</tr>
<tr>
<td>DPAD firm-years, post-DPAD ((\beta_4 + \beta_5 + \beta_6 + \beta_7))</td>
<td>-0.058</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Year-by-Ind FE?</th>
<th>Group Coeff.</th>
<th>Group Coeff.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observations</td>
<td>4,605</td>
<td>4,605</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.515</td>
<td>0.436</td>
</tr>
</tbody>
</table>
### Panel B: Analysis of Cross-border Shifting based on high tax foreign subsidiaries and the domestic-foreign tax rate differential

<table>
<thead>
<tr>
<th>Dependent Variable: ( \text{DomROS}_{(t,t+1)} )</th>
<th>Above Median Foreign ETR</th>
<th>Below Median Foreign ETR</th>
<th>Above Median Foreign ETR</th>
<th>Below Median Foreign ETR</th>
<th>Variation by DPAD Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>( DPAD_{Firm_i} )</td>
<td>( \beta_1 )</td>
<td>0.025** (2.527)</td>
<td>0.026 (1.065)</td>
<td>0.019** (2.174)</td>
<td>0.035 (1.540)</td>
</tr>
<tr>
<td>( PostDPAD_{it} )</td>
<td>( \beta_2 )</td>
<td>-0.018 (-0.669)</td>
<td>0.024 (1.453)</td>
<td>-0.015 (-0.608)</td>
<td>0.031 (1.651)</td>
</tr>
<tr>
<td>( DPAD_{Firm_i} \times PostDPAD_{it} )</td>
<td>( \beta_3 )</td>
<td>0.038** (2.074)</td>
<td>-0.005 (-0.359)</td>
<td>0.032* (1.971)</td>
<td>-0.034 (-1.157)</td>
</tr>
<tr>
<td>( Rate_{Diff, (t,t+1)} )</td>
<td>( \beta_4 )</td>
<td>-0.085*** (-2.791)</td>
<td>-0.142* (-1.915)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( PostDPAD_{it} \times Rate_{Diff, (t,t+1)} )</td>
<td>( \beta_5 )</td>
<td>-0.011 (-1.560)</td>
<td>-0.025 (-0.628)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( DPAD_{Firm_i} \times Rate_{Diff, (t,t+1)} )</td>
<td>( \beta_6 )</td>
<td>0.153*** (2.748)</td>
<td>0.220 (1.270)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>( DPAD_{Firm_i} \times PostDPAD_{it} \times Rate_{Diff, (t,t+1)} )</td>
<td>( \beta_7 )</td>
<td>0.040 (0.926)</td>
<td>0.185** (2.208)</td>
<td>0.118* (1.941)</td>
<td></td>
</tr>
</tbody>
</table>

| \(|\text{Difference}|\) | 0.043 | 0.067 |
| p-value | 0.009 | 0.637 |

| Other Interaction Terms? | N | N | N | N | Y |
| Controls? | Y | Y | Y | Y | Y |
| Ind-by-Year FE? | Y | Y | Y | Y | Y |
| Observations | 2,170 | 2,170 | 2,174 | 2,174 | 4,605 |
| R-squared | 0.528 | 0.539 | 0.529 | 0.539 | 0.527 |

This table presents results of OLS regressions that test cross-border income shifting by DPAD firms, relative to a matched sample of control firms, in the post-DPAD period. Panel A present results from estimating Eq. (2) for the sample of firms with requisite data. Panel B presents results after partitioning DPAD firms based on the firms’ foreign effective tax rates (Columns (1)–(4)). Column (5) presents results from testing how the effects vary across time. All variables are defined in Appendix B. T-statistics are presented in parentheses. Each specification includes year-by-industry fixed effects, with standard errors clustered by industry. The superscript asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The regression specification is as follows: \( \text{DomROS}_{(t,t+1)} = \alpha + \beta_1 \text{DPAD}_{Firm_i} + \beta_2 \text{PostDPAD}_{it} + \beta_3 \text{DPAD}_{Firm_i} \times \text{PostDPAD}_{it} + \beta_4 \text{Rate}_{Diff,(t,t+1)} + \beta_5 \text{PostDPAD}_{it} \times \text{Rate}_{Diff,(t,t+1)} + \beta_6 \text{DPAD}_{Firm_i} \times \text{Rate}_{Diff,(t,t+1)} + \beta_7 \text{DPAD}_{Firm_i} \times \text{PostDPAD}_{it} \times \text{Rate}_{Diff,(t,t+1)} + \text{Controls}_{it-1} + \epsilon_{it} \).
Table 7
Real Effects: Investment & Employment

Panel A: Regression Analysis of Domestic Investment

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>All Firms</th>
<th>Domestic-only Firms</th>
<th>Multinational Firms</th>
<th>ForInvl,t</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>DPAD_Firm_i,t</td>
<td>0.001</td>
<td>0.001</td>
<td>0.001</td>
<td>-0.030***</td>
</tr>
<tr>
<td></td>
<td>(0.092)</td>
<td>(0.024)</td>
<td>(-1.085)</td>
<td>(-3.956)</td>
</tr>
<tr>
<td>PostDPAD_i,t</td>
<td>-0.013</td>
<td>-0.026</td>
<td>-0.004</td>
<td>-0.006</td>
</tr>
<tr>
<td></td>
<td>(-0.733)</td>
<td>(-0.794)</td>
<td>(-1.515)</td>
<td>(-1.342)</td>
</tr>
<tr>
<td>DPAD_Firm_i*PostDPAD_i,t</td>
<td>-0.004</td>
<td>0.033</td>
<td>0.040</td>
<td>-0.014</td>
</tr>
<tr>
<td></td>
<td>(-0.264)</td>
<td>(1.149)</td>
<td>(1.294)</td>
<td>(0.011)</td>
</tr>
<tr>
<td>PostDPAD_0506_i,t</td>
<td>-0.016</td>
<td>-0.007</td>
<td>0.042</td>
<td>-0.026</td>
</tr>
<tr>
<td></td>
<td>(-0.540)</td>
<td>(-1.010)</td>
<td>(0.664)</td>
<td>(0.298)</td>
</tr>
<tr>
<td>PostDPAD_0709_i,t</td>
<td>0.006</td>
<td>0.001</td>
<td>0.013</td>
<td>0.018</td>
</tr>
<tr>
<td></td>
<td>(0.272)</td>
<td>(0.232)</td>
<td>(0.447)</td>
<td>(0.852)</td>
</tr>
<tr>
<td>PostDPAD_1013_i,t</td>
<td>-0.024</td>
<td>-0.050</td>
<td>-0.092**</td>
<td>-0.018*</td>
</tr>
<tr>
<td></td>
<td>(-1.110)</td>
<td>(-1.595)</td>
<td>(-2.015)</td>
<td>(-1.695)</td>
</tr>
<tr>
<td>DPAD_Firm_i*PostDPAD_0506_i,t</td>
<td>-0.008</td>
<td>-0.008</td>
<td>0.060</td>
<td>0.009</td>
</tr>
<tr>
<td></td>
<td>(-0.253)</td>
<td>(-1.030)</td>
<td>(0.734)</td>
<td>(0.495)</td>
</tr>
<tr>
<td>DPAD_Firm_i*PostDPAD_0709_i,t</td>
<td>-0.031</td>
<td>-0.026</td>
<td>-0.030</td>
<td>-0.031</td>
</tr>
<tr>
<td></td>
<td>(-1.541)</td>
<td>(-1.594)</td>
<td>(-0.856)</td>
<td>(1.650)</td>
</tr>
<tr>
<td>DPAD_Firm_i*PostDPAD_1013_i,t</td>
<td>0.019</td>
<td>0.084***</td>
<td>0.077**</td>
<td>-0.011</td>
</tr>
<tr>
<td></td>
<td>(0.967)</td>
<td>(2.836)</td>
<td>(2.266)</td>
<td>(0.591)</td>
</tr>
<tr>
<td>Size_{i,t-1}</td>
<td>-0.043***</td>
<td>-0.043***</td>
<td>-0.043*</td>
<td>-0.015***</td>
</tr>
<tr>
<td></td>
<td>(-5.387)</td>
<td>(-5.377)</td>
<td>(-1.762)</td>
<td>(-3.972)</td>
</tr>
<tr>
<td>ROA_{i,t-1}</td>
<td>0.011</td>
<td>0.014</td>
<td>0.036</td>
<td>0.000</td>
</tr>
<tr>
<td></td>
<td>(0.042)</td>
<td>(0.054)</td>
<td>(0.108)</td>
<td>(0.007)</td>
</tr>
<tr>
<td>Cash_Flow_{i,t-1}</td>
<td>0.313</td>
<td>0.311</td>
<td>0.388</td>
<td>0.223</td>
</tr>
<tr>
<td></td>
<td>(1.309)</td>
<td>(1.303)</td>
<td>(1.037)</td>
<td>(0.713)</td>
</tr>
<tr>
<td>MTB_{i,t-1}</td>
<td>0.008***</td>
<td>0.008***</td>
<td>0.022***</td>
<td>0.004**</td>
</tr>
<tr>
<td></td>
<td>(3.925)</td>
<td>(3.939)</td>
<td>(2.845)</td>
<td>(2.877)</td>
</tr>
<tr>
<td>Leverage_{i,t}</td>
<td>-0.029***</td>
<td>-0.029***</td>
<td>-0.040***</td>
<td>-0.020***</td>
</tr>
<tr>
<td></td>
<td>(-3.008)</td>
<td>(-3.035)</td>
<td>(-3.126)</td>
<td>(-2.885)</td>
</tr>
<tr>
<td>Year-by-Ind FE?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>8,274</td>
<td>8,274</td>
<td>2,689</td>
<td>4,360</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.167</td>
<td>0.167</td>
<td>0.174</td>
<td>0.175</td>
</tr>
</tbody>
</table>
### Panel B: Regression Analysis of Domestic Employment

**Dependent Variable:**
- \( \text{DomEmpi,t} \)
- \( \text{ForEmpi,t} \)

#### All Firms

<table>
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<td>0.077</td>
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<td>-0.121</td>
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<td>-0.035</td>
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<td>0.121</td>
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<td>( \text{Size}_{i,t-1} )</td>
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<td>0.754***</td>
<td>0.740***</td>
<td>0.743***</td>
<td>0.741***</td>
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<td>0.805***</td>
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<td>( \text{ROA}_{i,t-1} )</td>
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<td>1.531***</td>
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<td>1.866***</td>
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<td>0.164</td>
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<td>(2.744)</td>
<td>(2.744)</td>
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<td>(2.887)</td>
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<td>( \text{Tangibility}_{i,t-1} )</td>
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<td>-0.241</td>
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<td>-0.225</td>
<td>-0.779</td>
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<td>(-0.572)</td>
<td>(-0.576)</td>
<td>(-0.388)</td>
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<td>(-0.468)</td>
<td>(-0.465)</td>
<td>(0.169)</td>
<td>(0.174)</td>
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**Year-by-Ind FE?**
- \( \text{Y} \) \( \text{Y} \) \( \text{Y} \) \( \text{Y} \) \( \text{Y} \) \( \text{Y} \) \( \text{Y} \) \( \text{Y} \)

**Observations**
- 8,296 8,296 2,731 2,731 4,666 4,666 5,565 5,565 5,337 5,337

**R-squared**
- 0.740 0.740 0.647 0.649 0.616 0.617 0.685 0.685 0.469 0.470
This table presents results of OLS regressions that test domestic activity, including domestic capital expenditures (Panel A) and domestic employment (Panel B), by DPAD firms, relative to a matched sample of control firms, in the post-DPAD period. In both panels, Columns (1)-(2) include all firms; Columns (3)-(6) include domestic-only firms; and Columns (7)-(10) include multinational firms in the BEA data. Any observation that i) is matched to multinational BEA data, ii) reports at least one material foreign subsidiary in Exhibit 21 data, or iii) reports non-zero, non-missing foreign sales or segment foreign assets based on Compustat segment data is dropped from the sample for purposes of identifying domestic-only firms in Columns (3)-(4). Columns (5)-(6) excludes any observation that i) is matched to multinational BEA data, ii) reports positive pre-tax foreign income (PIFO), or iii) reports positive foreign tax expense (TXFO). Columns (9)-(10) in Panel A (B) present results from testing foreign investment (employment). All variables are defined in Appendix B. T-statistics are presented in parentheses. Each specification includes year-by-industry fixed effects, and standard errors are clustered by industry. The superscript asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The regression specification is as follows: \( \text{DomActivity}_{i,t} = \alpha + \beta_1 \text{DPADFirm}_i + \beta_2 \text{PostDPAD}_{i,t} + \beta_3 \text{DPADFirm}_i \ast \text{PostDPAD}_{i,t} + \text{Controls}_{i,t-1} + \epsilon_{i,t} \).
Online Appendix
Prior to the Tax Cuts and Jobs Act of 2017, the United States had a worldwide tax system with deferral. This system subjected domestic multinational firms to U.S. taxation on their active worldwide income at the time of repatriation and permitted companies to claim foreign tax credits for tax paid on foreign income.

The U.S. had also historically provided special tax benefits to U.S. exporters, which generate foreign sales from domestically manufactured products. Congress enacted the first export subsidy, the Domestic International Sales Corporation (“DISC”) regime, in 1971. The DISC regime allowed for up to 50% of the qualifying income related to foreign sales of domestically produced goods to be deferred and taxed only at the shareholder level once distributed. If instead the firm reinvested the foreign earnings, U.S. taxation on the earnings would be deferred indefinitely (Bittker and Lokken, 2005).

In 1984, the General Agreement on Tariffs and Trade (GATT) deemed the DISC provisions to constitute an illegal export subsidy. However, Congress asserted that certain income attributable to economic activities occurring outside the United States should be exempt from domestic taxation to afford treatment comparable to that of foreign exporters operating under a territorial tax system (Bittker and Lokken, 2005). Thus, Congress repealed the DISC rules and passed new provisions for Foreign Sales Corporations (FSC). The FSC regime continued to provide tax subsidies to U.S. exporters by permitting foreign subsidiaries to repatriate earnings related to export activities to the U.S. with no incremental U.S. tax liability.

The World Trade Organization (the successor to GATT) challenged the FSC provisions on the grounds that they also constituted an illegal export subsidy. In 2000, Congress repealed the FSC
Online Appendix A (cont’d.)
Summary of Prior Export Tax Subsidy Regimes

provisions and passed the Extraterritorial Income Exclusion (ETI). This provision permitted U.S. firms to claim a deduction equal to a portion of foreign gross receipts or income. Unlike the DISC and FSC regimes, these provisions did not require that the foreign revenue relate to export products; that is, firms could take the ETI benefit for foreign revenues earned on both foreign-manufactured and exported products. However, the foreign manufacturer (for example, a foreign subsidiary of the U.S. multinational) had to agree to be taxed as a U.S. corporation and waive treaty benefits to receive the deduction. Given that the U.S. tax system is generally regarded as unfavorable, in practice only true exporters claimed the ETI benefit (Angus and Kies, 2000).

Again, the WTO argued that these provisions constituted an illegal export subsidy and began to assess retaliatory customs penalties in 2004. The ETI was repealed shortly thereafter by the American Jobs Creation Act of 2004 and replaced with the Domestic Production Activities Deduction.
Online Appendix B
Repatriation Tax Holiday

This Appendix discusses results of tests related to whether the repatriation tax holiday affected DPAD firms’ investment spending. The repatriation tax holiday was another important provision (in addition to the Section 199 deduction) included in the American Jobs Creation Act of 2004. The repatriation tax holiday permitted U.S. multinational companies to repatriate offshore cash at an effective tax rate of 5.25% by permitting an 85% deduction for dividends paid from foreign subsidiaries to the U.S. parent. Blouin and Krull (2009), Dharmapala et al. (2011), and Graham et al. (2011) provide evidence that a significant portion of the repatriated funds was distributed to shareholders; Faulkender and Petersen (2014) show that domestically constrained firms used the repatriated cash for domestic investment.

Table 7 shows that I observe no statistically significant investment effect in the five years following the repatriation tax holiday (2005-2009) for either domestic-only or multinational firms. I further test whether the investment results differed for the 143 DPAD firms that I identify that also repatriated under this tax holiday. Estimation of Eq. (3) on this subsample of repatriating MNCs and their matched control firms shows no positive investment effect in the 2005-2006 period, consistent with the results presented in Table 7, Panel A. Thus, the DPAD does not seem to stimulate any investment effect among this sample above and beyond that documented in the prior literature. Furthermore, after dropping all repatriating firms (both DPAD and control firms) from the sample, I continue to observe no statistically significant investment effect in the 2005–2006 period. Thus, it does not appear that any investment activity stimulated by repatriating DPAD firms affects the results previously discussed.

I thank Michelle Hanlon for generously sharing AJCA repatriation tax data from Graham et al. (2011) for purposes of this test. The number of repatriating DPAD firms is slightly higher than the 101 firms in Blouin et al. (2014), as their hand-collection process to identify DPAD firms is limited to the 2-3 years immediately following the AJCA.
Online Appendix C
Robustness to Alternative Standard Error Corrections

The results presented in the paper reflect standard errors that are clustered by industry. I cluster the standard errors by a large group such as the industry to more appropriately capture dependence within the data. Specifically, Conley et al. (2017) state that the selection of large clusters results in group boundaries that are small relative to the interior of the group; therefore, the amount of neglected correlation should also be small relative to the correlation captured by the clustered standard error estimator (p. 1157).

As noted in Conley et al., (2017), a trade-off in selecting a large group for clustering is that these large clusters may not meet the homogeneity restriction that requires similarity in variance within a cluster. Therefore, for robustness, I also present results below in Table 1 of this Appendix when clustering by firm, as this approach more likely reflects a higher level of homogeneity within each cluster. Finally, I present results after bootstrapping the standard errors with 1,000 iterations.

In general, I find that the results hold across these different standard error corrections. The results presented reflect those for the full sample, without time-specific indicators; additional untabulated analyses further confirm that the increase in domestic investment and reduction in domestic employment in the 2010-2013 period also hold. Specifically, the coefficient for the domestic-only subsample on the interaction term $DPAD_{Firm} \times PostDPAD_{1013i,t}$ for $DomInv_{i,t}$ is 0.086, with t-statistics of 2.604 (clustering by industry), 1.771 (clustering by firm), and 2.416 (bootstrapping standard errors). The coefficient for the domestic-only subsample on the interaction term $DPAD_{Firm} \times PostDPAD_{1013i,t}$ for $DomEmp_{i,t}$ is -0.287, with t-statistics of -2.055 (cluster by industry), -1.979 (cluster by firm), and -2.925 (bootstrapping standard errors).
### Online Appendix C: Table 1
Robustness to Alternative Standard Error Corrections

<table>
<thead>
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<th>Dependent Variable:</th>
<th>Tests of H1</th>
<th>Tests of H2</th>
<th>Tests of H3a</th>
<th>Tests of H3b</th>
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<td>OpIncShift%_{it}</td>
<td>DomROS_{it}</td>
<td>DomROS_{it}</td>
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<td>(Domestic)</td>
<td>(MNCs)</td>
<td>(Domestic)</td>
<td>(MNCs)</td>
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<tr>
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<tr>
<td>Cluster by industry</td>
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<td>0.077**</td>
<td>0.022***</td>
<td>0.121**</td>
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<tr>
<td>(Year-by-Industry FE)</td>
<td>2.098</td>
<td>2.261</td>
<td>3.301</td>
<td>2.075</td>
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<td>Cluster by industry</td>
<td>0.101**</td>
<td>0.079**</td>
<td>0.023***</td>
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<td>(Year &amp; Industry FE)</td>
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<td>Cluster by firm</td>
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<td>0.079**</td>
<td>0.023</td>
<td>0.113*</td>
</tr>
<tr>
<td>(Year &amp; Industry FE)</td>
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<td>2.160</td>
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<td>Bootstrap (n=1,000)</td>
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<td>0.079***</td>
<td>0.023***</td>
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<tr>
<td>(Year &amp; Industry FE)</td>
<td>2.725</td>
<td>2.582</td>
<td>2.818</td>
<td>2.510</td>
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This table presents results of estimating Eq. (1)–(3) using different standard error corrections. The first two rows repeat results from Tables 5 through 7, presenting the coefficient of interest $\beta_3$ in Columns (1)–(3) and (5)–(8); in Column (4), results are presented for the coefficient of interest $\beta_7$. The remaining rows present the coefficient of interest from Eq. (1)–(3) using different matching characteristics and methods. All variables are defined in Appendix B. T-statistics are presented in parentheses. Fixed effects are denoted in the parenthetical below each label. The superscript asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.
Online Appendix D
Robustness to Alternative Matched Samples

This appendix presents the robustness of results to alternative matching approaches that match on additional characteristic related to a firm’s geographic presence. Table 1 of this Appendix presents results for the full sample, without time-specific indicators. The main results generally hold.

Additional untabulated analyses further confirm the increase in domestic investment in the 2010-2013 period by domestic-only firms. Specifically, the coefficient (t-statistic) for the domestic-only subsample on the interaction term \(DPAD\_Firm_i*PostDPAD\_1013_{i,t}\) for \(DomInv_{i,t}\) is 0.094 (2.342) (Mahalanobis match with MNC indicator), 0.083 (2.529) (Mahalanobis match with MNC measure based on foreign subsidiaries), and 0.070 (1.718) (propensity score match with MNC indicator). For the domestic employment results in the 2010-2013 period, I find that the coefficient is consistently negative using different matching approaches. However (and as discussed in Online Appendix E), the statistical significance varies based on the sample used. The coefficient (t-statistic) for the domestic-only subsample on \(DPAD\_Firm_i*PostDPAD\_1013_{i,t}\) for \(DomEmp_{i,t}\) is -0.203 (-1.535) (Mahalanobis match with MNC indicator), -0.174 (-1.331) (Mahalanobis match with MNC measure based on foreign subsidiaries), and 0.080 (0.640) (propensity score match with MNC indicator).
### Online Appendix D: Table 1
Robustness to Alternative Matched Samples

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Tests of H1</th>
<th>Tests of H2</th>
<th>Tests of H3a</th>
<th>Tests of H3b</th>
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<td>OpIncShift%_{i,t}</td>
<td>DomROSi_{i,t}</td>
<td>DomROSi_{i,t}</td>
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<td>0.077**</td>
<td>0.022***</td>
<td>0.121**</td>
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<td>(2.261)</td>
<td>(3.301)</td>
<td>(2.075)</td>
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<td>(1.951)</td>
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This table presents results of estimating Eq. (1)–(3) using different matched samples. The first two rows repeat results from Tables 5 through 7, presenting the coefficient of interest $\beta_3$ in Columns (1)–(3) and (5)–(8); in Column (4), results are presented for the coefficient of interest $\beta_7$. The remaining rows present the coefficients of interest from Eq. (1)–(3) using different matching characteristics and methods. All variables are defined in Appendix B. T-statistics are presented in parentheses. Each specification includes year-by-industry fixed effects, and standard errors are clustered by industry. The superscript asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.
Online Appendix E
Alternative Definitions of Domestic-only Firms

This appendix presents the robustness of results to two additional methodologies for identifying domestic-only firms. Table 7, Columns (3)-(4) present investment and employment results after using a methodology to identify domestic-only firms that results in a similar and comparable proportion relative to the proportion reported from IRS data (see Table 1, Panel D and Section 4.1). Specifically, this methodology identifies domestic-only firms as those without any material foreign subsidiary in Exhibit 21 data (Dyreng and Lindsey, 2009), nor any non-zero values for foreign segment sales or foreign segment assets. Table 7, Columns (5)-(6) also presents results after identifying domestic-only firms based on zero or missing values for pre-tax foreign income (PIFO) and foreign tax expense (TXFO). The investment (employment) results in Table 7 Panel A (B) are robust across these different definitions.

Table 1 of this Appendix reports results from two additional definitions of domestic-only firms. Columns (1)-(4) of Panel A and B report the results from Table 7 for ease of reference. In Columns (5)-(6) of each panel, results are reported after identifying domestic-only firms with zero or missing values for foreign segment sales data, pre-tax foreign income, and foreign tax expense. Columns (7)-(8) report results after requiring zero or missing values for all five data fields indicative of a foreign presence: foreign segment sales, foreign segment assets, pre-tax foreign income, foreign tax expense, and Exhibit 21 data. Results continue to hold in Panel A across these two additional definitions, with coefficients ranging from 0.078 to 0.099 – similar magnitudes as that presented in Table 7, Panel A. Panel B shows that the coefficient on the interaction term is of a similar magnitude across all four samples of domestic-only firms. These results are also statistically significant in three of the four samples, with similar but weaker effects only on the smallest sample for which all five data requirements are imposed (t=-1.388).
Online Appendix E: Table 1
Alternative Definitions of Domestic-only Firms

**Panel A: Regression Analysis of Domestic Investment**

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>AS REPORTED IN TABLE 7 PANEL A, COL. (3)-(6)</th>
<th>OTHER METHODOLOGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ex.21 &amp; ForSegment</td>
<td>PIFO &amp; TXFO</td>
</tr>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td>DPAD <em>Firm</em>{it}</td>
<td>0.001</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(0.024)</td>
<td>(0.022)</td>
</tr>
<tr>
<td>PostDPAD_{it}</td>
<td>-0.026</td>
<td>-0.004</td>
</tr>
<tr>
<td></td>
<td>(-0.794)</td>
<td>(-0.151)</td>
</tr>
<tr>
<td>DPAD <em>Firm</em>{it}*PostDPAD_{it}</td>
<td>0.033</td>
<td>0.040</td>
</tr>
<tr>
<td></td>
<td>(1.149)</td>
<td>(1.294)</td>
</tr>
<tr>
<td>PostDPAD_0506_{it}</td>
<td>-0.007</td>
<td>0.042</td>
</tr>
<tr>
<td></td>
<td>(-0.101)</td>
<td>(0.664)</td>
</tr>
<tr>
<td>PostDPAD_0709_{it}</td>
<td>0.001</td>
<td>0.013</td>
</tr>
<tr>
<td></td>
<td>(0.023)</td>
<td>(0.447)</td>
</tr>
<tr>
<td>PostDPAD_1013_{it}</td>
<td>-0.050</td>
<td>-0.092**</td>
</tr>
<tr>
<td></td>
<td>(-1.595)</td>
<td>(-2.015)</td>
</tr>
<tr>
<td>DPAD <em>Firm</em>{it}*PostDPAD_0506_{it}</td>
<td>-0.008</td>
<td>0.060</td>
</tr>
<tr>
<td></td>
<td>(-0.103)</td>
<td>(0.734)</td>
</tr>
<tr>
<td>DPAD <em>Firm</em>{it}*PostDPAD_0709_{it}</td>
<td>-0.026</td>
<td>-0.030</td>
</tr>
<tr>
<td></td>
<td>(-0.594)</td>
<td>(-0.856)</td>
</tr>
<tr>
<td>DPAD <em>Firm</em>{it}*PostDPAD_1013_{it}</td>
<td>0.084***</td>
<td>0.077**</td>
</tr>
<tr>
<td></td>
<td>(2.836)</td>
<td>(2.266)</td>
</tr>
</tbody>
</table>

Controls? | Y | Y | Y | Y | Y | Y | Y | Y
Year-by-Ind FE? | Y | Y | Y | Y | Y | Y | Y | Y
Observations | 2,689 | 2,689 | 4,360 | 4,360 | 3,418 | 3,418 | 2,181 | 2,181
R-squared | 0.174 | 0.175 | 0.174 | 0.175 | 0.156 | 0.158 | 0.182 | 0.183
**Panel B: Regression Analysis of Domestic Employment**

**Dependent Variable:** DomEmp_{it}

<table>
<thead>
<tr>
<th></th>
<th>AS REPORTED IN TABLE 7 PANEL B</th>
<th>OTHER METHODOLOGIES</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
</tr>
<tr>
<td><strong>DPAD_Firm_{it}</strong></td>
<td>-0.122</td>
<td>-0.121</td>
</tr>
<tr>
<td></td>
<td>(-1.037)</td>
<td>(-1.034)</td>
</tr>
<tr>
<td><strong>PostDPAD_{it}</strong></td>
<td>-0.021</td>
<td>0.028</td>
</tr>
<tr>
<td></td>
<td>(-0.145)</td>
<td>(0.220)</td>
</tr>
<tr>
<td>*<em>DPAD_Firm_{it}<em>PostDPAD_{it}</em></em></td>
<td>-0.116</td>
<td>-0.073</td>
</tr>
<tr>
<td></td>
<td>(-1.072)</td>
<td>(-0.800)</td>
</tr>
<tr>
<td><strong>PostDPAD_{0506}_{it}</strong></td>
<td>-0.231**</td>
<td>-0.199</td>
</tr>
<tr>
<td></td>
<td>(-2.125)</td>
<td>(-1.610)</td>
</tr>
<tr>
<td><strong>PostDPAD_{0709}_{it}</strong></td>
<td>-0.044</td>
<td>0.001</td>
</tr>
<tr>
<td></td>
<td>(-0.177)</td>
<td>(0.007)</td>
</tr>
<tr>
<td><strong>PostDPAD_{1013}_{it}</strong></td>
<td>0.185</td>
<td>0.275</td>
</tr>
<tr>
<td></td>
<td>(1.170)</td>
<td>(1.457)</td>
</tr>
<tr>
<td>*<em>DPAD_Firm_{it}<em>PostDPAD_{0506}_{it}</em></em></td>
<td>0.230</td>
<td>0.182</td>
</tr>
<tr>
<td></td>
<td>(1.141)</td>
<td>(1.375)</td>
</tr>
<tr>
<td>*<em>DPAD_Firm_{it}<em>PostDPAD_{0709}_{it}</em></em></td>
<td>-0.131</td>
<td>-0.025</td>
</tr>
<tr>
<td></td>
<td>(-0.750)</td>
<td>(-0.194)</td>
</tr>
<tr>
<td>*<em>DPAD_Firm_{it}<em>PostDPAD_{1013}_{it}</em></em></td>
<td>-0.272*</td>
<td>-0.230*</td>
</tr>
<tr>
<td></td>
<td>(-1.909)</td>
<td>(-1.794)</td>
</tr>
</tbody>
</table>

**Controls?** | Y | Y | Y | Y | Y | Y | Y | Y |
**Year-by-Ind FE?** | Y | Y | Y | Y | Y | Y | Y | Y |
**Observations** | 2,731 | 2,731 | 4,366 | 4,366 | 3,432 | 3,432 | 2,173 | 2,173 |
**R-squared** | 0.647 | 0.649 | 0.616 | 0.617 | 0.632 | 0.633 | 0.682 | 0.685 |

This table presents results of OLS regressions that test domestic activity, including domestic capital expenditures (Panel A) and domestic employment (Panel B), by domestic-only DPAD firms, relative to a matched sample of control firms, in the post-DPAD period. Columns (1)–(4) repeat results from Table 7, Columns (3)-(6). Columns (5)-(8) of each panel include domestic-only firms as those with zero or missing values for foreign segment sales, PIFO, and TXFO; Columns (7)-(8) present results after limiting the sample to observations with zero or missing values for all five multinational criteria: foreign segment sales, foreign segment assets, pre-tax foreign income, foreign tax expense, and Exhibit 21 data. All variables are defined in Appendix B. T-statistics are presented in parentheses. Each specification includes year-by-industry fixed effects, and standard errors are clustered by industry. The superscript asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. The regression specification is as follows: \( DomActivity_{it} = \alpha + \beta_1 DPADFirm_{it} + \beta_2 PostDPAD_{it} + \beta_3 DPADFirm_{it} \times PostDPAD_{it} + Controls_{it-1} + \epsilon_{it} \).
Online Appendix F
Analysis of Positive Performance Shocks

This appendix studies whether DPAD firms experience more positive performance shocks relative to the matched sample of control firms, such that these shocks drive the observed results. To test this possible alternative explanation, I construct three measures of positive performance shocks and test 1) whether the proportion of DPAD and control firms reporting these shocks differs, and 2) whether the results hold after dropping firms that report these shocks.

The first measure is constructed by searching DPAD firms’ financial statements for terms that indicate that the firm had positive performance or significant investment activity. After reviewing each excerpt, I construct $\text{Good\_news\_firm}_i$, which is an indicator equal to one for firms that disclose news related to positive shocks, and zero otherwise. I also construct two measures that identify firms that have reported a surprise domestic profit following Drake et al., 2016. $\text{First\_profit}_{i,t-1}$ is an indicator equal to one for firms that record a profit in year $t-1$ relative to three prior years of losses, and zero otherwise; $\text{First\_dom\_profit}_{i,t-1}$ is similarly defined and is based on a surprise domestic profit.

Table 1, Panel A of this Appendix presents descriptive statistics of these three measures. Approximately 1.6% of the DPAD firms are classified as $\text{Good\_news\_firm}_i$, as compared to 1.5% of control firms. Prior to the first year DPAD is claimed, approximately 2.1% of the DPAD firms report $\text{First\_dom\_profit}_{i,t-1}$ as compared to 1.8% of the control firms; these percentages are similar to the 3.0% reported in Drake et al. (2016). These descriptive statistics show that the proportion of DPAD firms reporting these positive shocks is relative small, such that they are unlikely to be

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32 Examples of these terms include “large expenditures,” “domestic investment,” “large investment,” “domestic expenditures,” and “favorable investment climate.”

33 Recall that the sample selection requires DPAD and control firm years to have positive pre-tax income; thus, the preceding loss years for any firm with a surprise profit are excluded from the sample, consistent with the statutory requirement that DPAD can only be claimed if the firm has positive (taxable) income.
driving the results I document. Tests of these differences across the DPAD and control samples confirm that none are statistically significant.

I also re-estimate Eq. (1)–(3) after excluding DPAD firms for which $Good\_news\_firm_i$ is equal to one, as well as their matched control firm and present these results in Table 1, Panel B of this Appendix. I find that the results are consistent with those presented in the paper. For example, in the main text, I find that the DPAD is associated with operating income shifting equivalent of 0.77% of firms’ total assets; after dropping firms with positive shocks, I observe an effect equivalent to 0.069% of firms’ total assets. For the second hypothesis, I find that $DomROS_{i,(t,t+2)}$ increases by approximately 2.2 percent; after dropping positive shock firms, I find an even larger increase of 2.7 percent. The results presented reflect those for the full sample, without time-specific indicators; additional untabulated analyses further confirm that the increase in domestic investment and reduction in domestic employment in the 2010-2013 period also hold. Specifically, the coefficients for the domestic-only subsample on the interaction term $DPAD\_Firm_i*PostDPAD\_1013_{i,t}$ for $DomInv_{i,t}$ and $DomEmp_{i,t}$ are 0.77 (t=2.361), and -0.278 (t=-1.930), respectively. Finally, results from re-estimating Eq. (1)–(3) after dropping firms for which $First\_dom\_profit_{i,t-1}$ is equal to one (untabulated) are also consistent.
Online Appendix F: Table 1
Positive Performance Shocks

Panel A: Descriptive statistics on positive performance shocks

<table>
<thead>
<tr>
<th></th>
<th>Number of Obs.</th>
<th>Good_news_firm_i,t</th>
<th>First_profit_i,t-1</th>
<th>First_dom_profit_i,t-1</th>
</tr>
</thead>
<tbody>
<tr>
<td>DPAD Firms</td>
<td>1,002</td>
<td>0.015</td>
<td>0.025</td>
<td>0.018</td>
</tr>
<tr>
<td>Control Firms</td>
<td>1,002</td>
<td>0.016</td>
<td>0.032</td>
<td>0.021</td>
</tr>
<tr>
<td>Difference</td>
<td></td>
<td>-0.001</td>
<td>-0.007</td>
<td>-0.003</td>
</tr>
<tr>
<td>t-statistic</td>
<td></td>
<td>0.181</td>
<td>0.940</td>
<td>0.485</td>
</tr>
</tbody>
</table>

Panel B: Robustness of results to dropping firms classified as Good_news_firm_i

<table>
<thead>
<tr>
<th>Tests of H1</th>
<th>Tests of H2</th>
<th>Tests of H3a</th>
<th>Tests of H3b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dependent Variable:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GMShift%_{i,t}</td>
<td>OIShift%_{i,t}</td>
<td>DomROS_{i,t}</td>
<td>DomROS_{i,t}</td>
</tr>
<tr>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>As reported in Tables 5-7</td>
<td>0.098**</td>
<td>0.077**</td>
<td>0.022***</td>
</tr>
<tr>
<td></td>
<td>(2.098)</td>
<td>(2.261)</td>
<td>(3.301)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(1.149)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-1.072)</td>
</tr>
<tr>
<td>After dropping Good_news_firm_i</td>
<td>0.077*</td>
<td>0.069**</td>
<td>0.027***</td>
</tr>
<tr>
<td></td>
<td>(1.761)</td>
<td>(2.158)</td>
<td>(3.342)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(0.963)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(-1.052)</td>
</tr>
<tr>
<td>Controls?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Industry-by-Year FE?</td>
<td>Y</td>
<td>Y</td>
<td>Y</td>
</tr>
<tr>
<td>Observations</td>
<td>21,016</td>
<td>21,016</td>
<td>4,454</td>
</tr>
<tr>
<td></td>
<td>21,016</td>
<td>4,454</td>
<td>2,639</td>
</tr>
<tr>
<td>R-squared</td>
<td>0.059</td>
<td>0.073</td>
<td>0.516</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>0.156</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

This table presents results to address the potential alternative explanation that positive performance shocks could be driving the results in the paper. Panel A presents tests of differences between DPAD and control firms for three measures of positive shocks. Panel B presents results of estimating Eq. (1)–(3) after dropping DPAD firms for which Good_news_firm_i is equal to one, as well as the matched control firms. The first two rows repeat results from Tables 5 through 7, presenting the coefficient of interest $\beta_3$ in Columns (1)–(3) and (5)–(8); in Column (4), results are presented for the coefficient of interest $\beta_7$. 
This appendix studies whether the effects documented in the paper reflect persistent differences in DPAD and control firms, such that the effects cannot be attributed to the DPAD incentive. To address this concern, I perform two falsification tests in which I re-estimate the results over the period 1997 through 2003 and use placebo treatment dates of 1999 and 2002. These results for 1999 and 2002 are presented in Table 1 of this Appendix. I do not observe similar effects as those in the paper, suggesting that the effects I find are specific to the post-DPAD period.
Online Appendix G: Table 1
Falsification Tests

<table>
<thead>
<tr>
<th>Dependent Variable:</th>
<th>Tests of H1</th>
<th>Tests of H2</th>
<th>Tests of H3a</th>
<th>Tests of H3b</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(1)</td>
<td>(2)</td>
<td>(3)</td>
<td>(4)</td>
</tr>
<tr>
<td>0.098**</td>
<td>0.077**</td>
<td>0.022***</td>
<td>0.121**</td>
<td>-0.033</td>
</tr>
<tr>
<td>(2.098)</td>
<td>(2.261)</td>
<td>(3.301)</td>
<td>(2.075)</td>
<td>(-0.739)</td>
</tr>
<tr>
<td></td>
<td>(8)</td>
<td>(9)</td>
<td>(10)</td>
<td>(11)</td>
</tr>
<tr>
<td>1999 Placebo Date</td>
<td>-0.232*</td>
<td>-0.135</td>
<td>0.000</td>
<td>0.148</td>
</tr>
<tr>
<td>(-1.852)</td>
<td>(-1.294)</td>
<td>(0.025)</td>
<td>(0.665)</td>
<td>(1.184)</td>
</tr>
<tr>
<td>2002 Placebo Date</td>
<td>-0.029</td>
<td>-0.094</td>
<td>0.005</td>
<td>0.042</td>
</tr>
<tr>
<td>(-0.286)</td>
<td>(-1.354)</td>
<td>(0.470)</td>
<td>(-0.663)</td>
<td>(0.782)</td>
</tr>
<tr>
<td>0.010</td>
<td>0.109*</td>
<td>0.019</td>
<td>0.012</td>
<td>0.158**</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

This table presents results of falsification tests, in which Eq. (1)–(3) are re-estimated in the pre-DPAD period from 1997 through 2003. The first two rows repeat results from Tables 5 through 7, presenting the coefficient of interest \( \beta_3 \) in Columns (1)–(3) and (5)–(8); in Column (4), results are presented for the coefficient of interest \( \beta_7 \). Results are then presented with PostDPAD, equal to one for i) fiscal years 1999 through 2003 (1999 placebo date), and ii) fiscal years 2002 and 2003 (2002 placebo date). All variables are defined in Appendix B. T-statistics are presented in parentheses. Each specification includes industry fixed effects, and standard errors are clustered by industry. The superscript asterisks *, **, and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.