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**“U.S. Worldwide Taxation and Domestic Mergers and Acquisitions”  
A Discussion<sup>1</sup>**

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**Abstract**

Harris and O’Brien (2018) investigate whether U.S. tax policy distorts U.S. multinationals’ (MNCs) investment. They find that MNCs facing higher repatriation tax costs engage in fewer domestic acquisitions. The study re-examines the results in two prior studies that found no effect (Hanlon et al. 2015) and a positive effect (Martin et al. 2015) by introducing a new proxy for repatriation tax costs: A binary variable for whether the MNC uses the Double Irish structure. We critique the theory underlying the prediction as well as the proxy. We conclude that caution should be exercised in taking the results at face value.

**JEL Classification:**

**Keywords:** Repatriation tax costs, M&A, domestic acquisitions

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<sup>1</sup> We thank Alex Edwards and participants of the Tax Reading group at the University of California-Irvine for feedback on the conference paper. We thank Michelle Hanlon for providing some of her notes from the conference.

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**Abstract**

Harris and O’Brien (2018) investigate whether U.S. tax policy distorts U.S. multinationals’ (MNCs) investment. They find that MNCs facing higher repatriation tax costs engage in fewer domestic acquisitions. The study re-examines the results in two prior studies that found no effect (Hanlon et al. 2015) and a positive effect (Martin et al. 2015) by introducing a new proxy for repatriation tax costs: A binary variable for whether the MNC uses the Double Irish structure. We critique the theory underlying the prediction as well as the proxy. We conclude that caution should be exercised in taking the results at face value.

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## 1. Introduction

This study by Harris and O'Brien (2018) examines whether the U.S. worldwide tax system affects domestic investment.<sup>2</sup> More specifically, Harris and O'Brien identify a U.S. multinational firm-initiated repatriation tax increasing event, namely, the establishment and use of a Double Irish structure (hereafter DI), and link DI to domestic mergers and acquisitions (hereafter M&A).<sup>3</sup> Because firms adopt DI in different years, the setting can be viewed as a difference-in-differences design with treatment events staggered over time. The authors find that, firms that establish DI experience a decrease in domestic M&A relative to non-DI users. The authors conclude that their evidence is consistent with the worldwide taxation system impeding domestic investment.

Harris and O'Brien start by arguing that theoretically we should expect a *negative* association between repatriation taxes and domestic M&A. Prior studies (Hanlon et al. 2015 and Martin et al. 2015) do not find such a negative relation using a widely accepted repatriation tax proxy, *REPAT*. The authors attribute the lack of result to the fact that *REPAT* is confounded by foreign growth. The authors propose *DoubleIrish* as a "cleaner" measure of repatriation tax rate and argue that it is less likely to be confounded by foreign growth compared to *REPAT*. The new *DoubleIrish* measure is the key motivation and innovation of the paper. The authors first validate that the establishment of DI is indeed correlated with increased repatriation tax rates. Next, they show that *DoubleIrish* is negatively associated with domestic M&A volume and value. The authors also compare and contrast *DoubleIrish* with *REPAT* and explain why results differ using the two measures. In Section 2, we begin our discussion with an overview of the broad research question and related literature. We next critique the theory underlying the study's main prediction. Then we discuss whether it is reasonable to attribute the lack of a negative relation between repatriation taxes and domestic M&A to proxies used. We also discuss and compare *DoubleIrish* and *REPAT* in more details in Section 3. Finally, because of concerns about the construct validity of the *DoubleIrish* proxy, we caution the reader not to take the results at face value.

## 2. Comments on the broader question, related literature, and this study

### 2.1 The broader question

This study is related to two broad questions. First, whether and how taxes affect business decisions including investment, M&A, and capital structure. Second, the effect of tax policy (and firms' rational response to tax policy) on the macroeconomy.

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<sup>2</sup> Our discussion is based on the version presented at the 2017 JAE Conference and the discussion presented by Shevlin. The paper has been revised since and we reference the revision throughout our discussion. As an example of the revision, the Conference version included an analysis of low visibility deals in which the authors found an increase in such deals (which they assume to be pseudo-reorganization acquisitions) among DI-users. Our discussant comments and questions at the conference suggested this analysis be removed from the manuscript.

<sup>3</sup> Following Harris and O'Brien, we use DI when we discuss the establishment and use of the Double Irish structure, and use *DoubleIrish* for the indicator variable used in empirical tests.

## 2.2 Literature on repatriation taxes and business decisions

Under a worldwide tax system with credit and deferral, if foreign reinvestment is funded by retained foreign earnings, the only factor that matters in the *repatriation versus reinvestment* decision is the after-local-tax rate of return in foreign jurisdictions and in the U.S.,  $r_f$  and  $r_d$ , respectively (Hartman 1985). The Hartman (1985) model suggests that repatriation taxes are irrelevant. However, the Hartman result is based on two explicit assumptions and ignores an important input into managers' decisions. The analysis assumes that all foreign earnings will be subject to repatriation taxes sooner or later and that tax rates are inter-temporally constant. In reality, firms can access foreign funds without triggering repatriation taxes (e.g., Altshuler and Grubert 2002; Kleinbard 2011; Martin et al. 2015), and firm-specific tax rates could vary through time either through statutory tax rate changes - as evidenced in the "tax holiday" under the American Jobs Creation Act (AJCA 2004) which provided for a temporary lower U.S. tax rate on repatriations and the cut in the top statutory tax rate under the Tax Cuts and Jobs Act of 2017 - or through firm-specific declines in their tax rates because of domestic losses (Shevlin 1990; Graham 1996).

Because the two explicit assumptions in Hartman (1985) often do not hold in practice, empirical studies generally find that repatriation taxes are associated with firms' repatriation, reinvestment, and location decisions. For example, Hines and Hubbard (1990) and Desai et al. (2001) find that repatriation taxes are negatively associated with dividend payments from foreign subsidiaries. Foley et al. (2007) find that repatriation taxes are positively associated with foreign cash holdings.

Managers' incentives to report higher after-tax earnings also increase MNCs' sensitivity to repatriation taxes. Graham et al.'s (2011) survey evidence indicates that the ability to classify foreign earnings as indefinitely reinvested under APB 23 (aka the "PRE" designation) which results in firms not having to accrue the deferred U.S. repatriation tax on foreign earnings leading to lower book tax expense and higher after-tax reported earnings is another important consideration when corporate executives make repatriation versus reinvestment decisions. Blouin et al. (2012) provide empirical evidence consistent with firms facing stronger incentives to report higher earnings (i.e., public firms) via the PRE designation being more sensitive to repatriation tax rates when making repatriation decisions.

Another stream of research examines the "distortionary effect" of repatriation taxes. Hanlon et al. (2015) find that foreign cash locked out due to repatriation taxes are positively associated with foreign M&A volume and negatively associated with the stock returns around the announcement of foreign M&A deals. Using a comprehensive set of profitability measures, Edwards et al. (2016) document that firms with higher trapped cash make less profitable acquisitions of foreign targets. Amberger et al. (2018) examine subsidiary-level investments and find that when the parent company faces repatriation taxes, foreign subsidiaries make less efficient investments. Bird et al. (2017) find that U.S. firms with locked out foreign earnings are

more likely to be acquired by foreign companies than U.S. companies. Focusing on country-level tax characteristics, Feld et al. (2016) find that multinationals from countries with worldwide tax system are disadvantaged in acquiring foreign firms, because future profits from the target will be subject to repatriation taxes lowering the bid price. Repatriation taxes also affect the location of headquarters. For example, Voget (2011) finds that repatriation taxes are positively associated with the probability that headquarters are relocated to another country (i.e., inversions). In addition to investment inefficiencies, another “distortionary effect” of repatriation taxes is MNCs’ high foreign cash holdings. Foley et al. (2007) find that repatriation taxes are positively associated with foreign cash holdings and Blouin et al. (2017) show that about 50% of permanently reinvested foreign earnings are in the form of cash.

Recent studies also use the AJCA 2004 as a natural experiment to examine how firms respond to a temporary reduction in the U.S. repatriation tax rate. If, as corporate executives claim, repatriation taxes impede domestic investment, we should expect firms to take advantage of AJCA and increase domestic investment. However, the results seem to suggest that U.S. multinationals are not financially constrained because of the repatriation taxes. Blouin and Krull (2009) find that firms that repatriated during AJCA face limited investment opportunities both in the U.S. and abroad. As a result, they find that repatriating firms increase stock repurchase rather than increase domestic investment. Dharmapala et al. (2011) find that repatriations did not increase domestic investment, even for financially constrained firm and firms that lobbied for the AJCA. Consistent with Blouin and Krull (2009), Dharmapala et al. (2011) also document increases in shareholder payouts after repatriation. Another AJCA-related study, Faulkender and Petersen (2012) also find that for the average firm, there is little increase in domestic investment under AJCA. However, different from Dharmapala et al. (2011) and Blouin and Krull (2009), Faulkender and Petersen (2012) find that a subset of capital constrained firms use repatriated funds to increase investment.

Taken together, MNCs are sensitive to repatriation taxes. However, repatriation taxes may not always pose a real barrier for many firms for several reasons. First, foreign cash may not be the marginal source of financing for domestic investment. Firms can fund domestic operations using domestic retained earnings, or they could borrow domestically. Second, foreign growth opportunities might be better, i.e.,  $r_f > r_d$ . Third, firms can structure transactions in ways such that they can access foreign cash without triggering repatriation taxes (e.g., consecutive short-term loans).

### 2.3 *This study*

This study is most closely related to Hanlon et al. (2015), Martin et al. (2015), and Edwards et al. (2016), all of which examine the relation between repatriation taxes and the frequency and profitability of foreign/domestic M&As. Table 1 provides a high-level concise summary of these papers. Hanlon et al. (2015) find that estimated total repatriation taxes are positively associated with foreign M&A volume, and such foreign M&As are not perceived to be value-enhancing by investors. In addition, Hanlon et al. (2015) find that repatriation taxes are *not*

significantly associated with domestic M&A volume. Martin et al. (2015) find that repatriation taxes are *positively* associated with the likelihood and frequency of both domestic and foreign acquisitions.<sup>4</sup> Edwards et al. (2016) document a negative association between repatriation taxes and the profitability of foreign M&As. Finally, both Hanlon et al. (2015) and Martin et al. (2015) find that repatriation taxes are negatively associated with deal announcement returns for foreign acquisition but *not* for domestic acquisitions.

The authors argue that repatriation taxes should be *negatively* correlated with a firm's domestic investment. Because repatriation taxes increase the cost of accessing foreign funds, after-tax rates of return are lower and firms may forgo some domestic investments.<sup>5</sup> The lack of evidence on a negative association between repatriation taxes and domestic M&A is the key motivation of this paper. However, first we ask the question: Should repatriation taxes affect MNCs' domestic investment? Hanlon et al. (2015) focus on the relation between repatriation taxes and foreign M&A and use domestic M&A as a placebo test implicitly assuming that repatriation taxes should not be correlated with domestic investment. Here the authors argue that if a domestic M&A deal has an NPV of  $V$ , with repatriation tax  $T$ , NPV decreases to  $V - T$  so managers are likely to reject the deal. This result holds only if: (1) foreign funds are the marginal source of financing; and (2) firms have no other ways to tap into foreign cash.

As discussed in Section 2.2, many MNCs are not capital constrained because of repatriation taxes (Blouin and Krull 2009; Dharmapala et al. 2011), so foreign funds are not necessarily the marginal source of financing for domestic M&As. In addition, various studies and anecdotes suggest that MNCs can access foreign cash without triggering repatriation taxes. Altshuler and Grubert (2002) and Kleinbard (2011) discuss some of these techniques although as noted in footnote 4 many of these methods have been shut down by the IRS in the last decade. Anecdotes also suggest that some MNCs can borrow at low costs to fund domestic cash needs (e.g., Apple and Microsoft) or take out consecutive short-term loans from foreign subsidiaries (e.g., Hewlett-Packard). These arguments suggest on average there might be no relation between repatriation taxes – estimated either as total repatriation taxes or the estimated repatriation tax rate, and domestic M&A. Even if there is a negative relation, it should hold only in the subsample of capital constrained firms for which foreign cash is likely to be the marginal source of financing (as in Faulkender and Petersen 2012). Hence, the lack of a negative association between repatriation taxes (assuming properly measured) and domestic M&A in the overall sample could be due to either of the two assumptions being violated and is not surprising. However, Harris and O'Brien attribute the lack of evidence to one single factor (measurement issue in *REPAT* as discussed in more detail below) without ruling out these other possibilities.

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<sup>4</sup> Martin et al. (2015) argue that MNCs could access foreign cash tax-free through properly-structured domestic M&As (especially stock-financed deals). Consistent with the conjecture, they find that the positive association between repatriation taxes and domestic M&A activity is driven by stock-financed M&As. We note that Martin et al. (2015) focus on M&As before 2004, and many of the schemes discussed by Martin et al. (2015) as a way to have M&A related tax-free repatriations have been shut down by the IRS.

<sup>5</sup> We also note that under Section 956 of the Tax Code, acquisition of U.S. firms is a non-permitted use of foreign cash and will trigger repatriation taxes. <https://www.law.cornell.edu/uscode/text/26/956>

Finally, Harris and O'Brien argue that the underlying construct in their study is "repatriation tax rate" (domestic and foreign tax rate differential) rather than "repatriation tax burden" (tax rate differential times foreign pretax earnings, i.e., *REPAT*). The former is only affected by the U.S. and foreign tax rate difference while the latter is also a function of accumulated unrepatriated foreign pretax earnings. This is the reason why Harris and O'Brien propose *DoubleIrish* as an alternative measure that they argue better captures repatriation tax rates. We agree that *DoubleIrish* is associated with decreases (increases) in foreign (repatriation) tax rates hence it might serve as a clean measure here. However, we need to keep in mind that not all prior studies rely on *REPAT*. Earlier studies that do not rely on *REPAT* also fail to find an association between repatriation tax rates and domestic investment. In the U.S. setting, the American Jobs Creation Act (AJCA) of 2004 allows firms to repatriate foreign funds at a much lower tax rate. Studies generally find that firms increase shareholder payouts, but do not increase domestic investment after AJCA (Blouin and Krull 2009; Dharmapala et al. 2011). In the non-U.S. setting, the UK and Japan switched to a territorial system in 2009, leading to a reduction of repatriation taxes faced by firms incorporated in the two countries. Arena and Kutner (2015) find that after the switch, firms accumulate less cash, invest less abroad, increase payouts, but do *not* increase domestic investments. Arguably the two repatriation tax rate reduction events are more exogenous than a firm-initiated Double Irish structure and therefore provides clean identification, yet studies still fail to find evidence that such rate reduction is associated with increases in domestic investment. Hence, we are not convinced why, from both theory and empirical perspectives, we should expect to find a negative relation between repatriation tax and domestic investment, and why we should attribute the lack of such relation to measurement issues in *REPAT*.

#### 2.4 Does the study answer the two broad questions?

The authors attempt to quantify the macro-level effects of DI-use. For example, in Section 7.3 of the conference paper, the authors estimate that a total of \$150.7 billion domestic M&A is "missing" due to repatriation tax increases related to the use of DI. An important question remains unanswered: What is the overall welfare consequence of DI use? More specifically, what happen to these "missing" deals? Do foreign acquirers (as in Bird et al. 2017) and other domestic non-DI users step in? If non-DI users increase domestic M&A, maybe the overall domestic M&A volume is not affected. The main regression specification (Table 2) indicates that DI-users experience a larger decline in domestic M&A *relative to* control firms. So it could be that control firms' domestic M&A remain relatively constant, or increase over time. Figure 3 plots DI-users' foreign and domestic M&A volume over time, however, we do not know the M&A trend for non-DI users.

Another unanswered question is, from the firm's perspective, is the decrease in domestic M&A suboptimal? Assuming that firms rationally respond to tax policy, any observed "distortion" can be viewed as non-tax cost of tax planning (Scholes et al. 2014). For example, both Hanlon et al. (2015) and Edwards et al. (2016) find that firms with trapped foreign cash make less profitable foreign acquisitions. The lower profitability of these foreign M&A deals



could be viewed as implicit taxes of avoiding (or temporarily deferring) repatriation taxes. As long as the domestic after-tax rate of return  $r_d$  is greater than the firm's cost of capital,  $r^*$ , the firm should pursue the domestic M&A deal (even if  $r_d < r_f$ ), consistent with the null result that repatriation taxes are not associated with domestic M&A in Hanlon et al. (2015). If establishing Double Irish increases the firm's overall cost of capital, we should observe a decrease in domestic M&A volume. But is there a reason to expect that Double Irish increases capital providers' required rate of return? (Note that repatriation taxes should only increase the cost of internal capital, not the cost of external capital.)

### 3. Comments on research design and empirical results

#### 3.1 *DoubleIrish* versus *REPAT*

The *DoubleIrish* measure is the key contribution of the paper. The authors argue that this measure only captures an increase in repatriation tax *rates*, but does not capture foreign growth (i.e., increase in foreign pretax earnings). Prior studies that examine the effect of repatriation taxes typically rely on *REPAT*, a measure first used by Foley et al. (2007). *REPAT* is usually computed as:  $\max((.35 * pifo - txfo) / at, 0)$  where *pifo* denotes pretax foreign earnings, *txfo* denotes the current portion of foreign tax expense, and *at* denotes total assets.<sup>6</sup> *REPAT* is an increasing function of pretax foreign earnings and a decreasing function of the average foreign tax rate. The authors argue that IF firms with large foreign earnings pursue growth by M&A in foreign markets and IF domestic acquisitions are positively correlated with U.S. firms' foreign acquisitions then one could find no or even a positive association between *REPAT* and U.S. domestic acquisitions (i.e., *REPAT* suffers from a correlated omitted variable problem). Hence, *REPAT* will fail to detect a negative association between repatriation taxes and domestic M&A even if there is one. Evidence on the first IF is provided in Hanlon et. (2015) and Martin et al. (2015), as well as in Table 6 of Harris and O'Brien. Evidence on the second IF was provided in the conference version where "the correlation between total domestic and foreign change-of-control acquisitions is 0.272 in MNC observations" (p.30). The authors also provide some evidence on this conjecture in the forthcoming paper: In footnote 36, they report that when they include foreign acquisition counts to their main model, the estimated coefficient is significantly positive while presumably *DoubleIrish* remains significantly negative. They also report that *REPAT* and lagged foreign income (foreign income scaled by sales) is much more highly correlated ( $r=.627$ ) than *DoubleIrish*'s correlation with lagged foreign income ( $r=0.214$ ). We note that the forthcoming version does a better job explaining the correlated omitted variable problem for *REPAT*.

In our conference discussion, we were very critical of the *DoubleIrish* measure for reasons outlined below. Our concern seemed to be echoed by the tax researchers in the audience at the conference as numerous comments were made about the validity of the measure and why it

<sup>6</sup> This calculation assumes that the firm will face the top U.S. corporate statutory tax rate which has been 35% for nearly the entire sample period of Harris and O'Brien. Firms with domestic losses or with expiring domestic NOL's likely face a lower rate. However, this calculation is standard in the literature.

might *not* be considered a better measure than the traditional *REPAT* measure (introduced to the literature by Foley et al. 2007).

As more clearly explained in the forthcoming version, *DoubleIrish* is a binary variable intended to capture an increase in the repatriation tax rate faced by U.S. multinationals. The Double Irish structure is used to reduce foreign taxes on the firms' foreign earnings. If the foreign tax rate,  $t_f$ , is lowered on foreign earnings, then the U.S. repatriation tax rate (basically  $t_{us} - t_f$ ) increases. Below we discuss *DoubleIrish* and *REPAT* in more detail, pointing out five issues that might affect how one interprets the results.

First, we note that the Double Irish structure is complex but is well described in Harris and O'Brien (2018). Under this structure Harris and O'Brien state that one of the Irish subsidiaries must be tax resident in some other country (usually a tax haven country where the corporate tax rate is very low or zero such as Bermuda or Cayman Islands) which then exempts the Irish subsidiary from Irish corporate taxation. Harris and O'Brien classify a U.S. multinational as likely having a Double Irish structure if it discloses the existence of two Irish subsidiaries and a subsidiary in either the Netherlands or Luxembourg in Exhibit 21 of the 10K.<sup>7</sup> However, they must assume that one of the Irish subsidiaries is managed from Bermuda (or other tax haven) thus not classified as Irish tax resident as this information is not publicly available, likely leading to some misclassifications. Also, it is likely that some firms have a Dutch or Luxembourg subsidiary but the subsidiary is not disclosed in Exhibit 21 because it does not contain material operations – causing some DI users to be classified as non-DI firms.

Second, Harris and O'Brien argue that DI firms face higher repatriation taxes relative to non-DI firms. However, non-DI firms that operate in other tax havens (e.g., Singapore and Hong Kong) may still face high repatriation taxes. To see this, in our Table 2, we construct a sample of U.S.-based multinational firms (1993-2012) and rank estimated repatriation taxes (*REPAT*) into deciles by year. The calculation of *REPAT* is described in notes to Table 1. We rely on Scott Dyreng's Exhibit 21 data to identify DI users using the Harris and O'Brien algorithm.<sup>8</sup> The percentage of firm-year observations with *DoubleIrish*=1 increases as total estimated repatriation taxes increase as we would expect, consistent with the .212 correlation between *DoubleIrish* and *REPAT* reported by Harris and O'Brien. We also note that Tax Haven usage increases as repatriation taxes increase. In the highest repatriation tax decile with 1,659 firm-year observations, 19.9% of observations have *DoubleIrish* = 1, while the remaining 80.1% are non-

<sup>7</sup> Harris and O'Brien (2018) discuss the problem when some firms recently reduced their disclosures on the location of their foreign subsidiaries (Gramlich and Whiteaker-Poe 2013). To address this problem, they forward fill *DoubleIrish*=1 for MNCs that stopped disclosing subsidiaries required for the Double Irish structure if they were previously classified as *DoubleIrish*=1. They conduct their analyses both with and without forward filling with inferences unchanged.

<sup>8</sup> Harris and O'Brien use an algorithm to parse Exhibit 21s and they also manually check the list of subsidiaries, while we rely on Exhibit 21 data available from Scott Dyreng's website, so our *DoubleIrish* measure might not be directly comparable to that used by the authors. The authors identify 442 (149) DI users before (after) merging with M&A data while we have 533 before merging with M&A. It is possible that we classify some non-DI firms as DI, but for the point we intend to make in this paragraph, our calculation provides a lower-bound estimate of the percentage of high repatriation tax firms *not* being classified as DI users.

DI firms. Further, over 58% of firm-year observations in deciles 9 and 10 have  $TaxHaven = 1$  which also presumably reduces the firm's foreign tax rate even though some of them are not classified as DI users. Hence, we have many high repatriation tax firm-years being classified as non-DI users. We suggest dropping these (high repatriation tax, non-DI) firms because conceptually these high repatriation tax firms do not serve as good controls. We also report the estimated foreign tax rate (estimated as current portion of foreign tax expense/pretax foreign book income, and total foreign tax expense/pretax foreign book income) for each *REPAT* decile. Foreign tax rates vary inversely with repatriation taxes, as expected.

Third, *DoubleIrish* is used as a proxy for firms facing a lower foreign tax rate,  $t_f$  (or equivalently a higher U.S. repatriation tax rate). The authors argue that *REPAT* is related to both firms' tax and growth actions. They further argue that *DoubleIrish* is only related to "tax actions" (clarified in the forthcoming version to proxy for foreign tax rate decreases) so it is a better measure to identify the effect of "tax actions" on domestic M&A. However, the establishment of a Double Irish structure also gives firms strong incentives to move profits to the Irish subsidiaries. Figure 2d suggests that Double Irish establishment is associated with a significant increase in foreign income. Hence, it is possible that *DoubleIrish* is also a function of foreign profitability. Finally, if *DoubleIrish* captures the repatriation tax rate, it should be strongly correlated with  $(.35 - t_f)$ , which we denote by *REPAT\_Rate*. However, in our Table 2, we show that *DoubleIrish* is only weakly correlated with *REPAT\_Rate* ( $r=-0.012$ ) while *REPAT* is strongly correlated with *REPAT\_Rate* ( $r=0.530$ ). Overall, we find the argument that *DoubleIrish* better captures the firm's repatriation tax rate debatable. At least as a robustness test, we would like to see the tests rerun using an estimate of the firms' foreign tax rate,  $t_f$ , or  $(.35 - t_f)$ .

In addition, because *REPAT* is a function of both tax and growth options, if we control for "growth," *REPAT* should only capture tax actions and be negatively associated with domestic M&A. However, In Table 5 Panel A Columns 1 and 3 of the conference version, after controlling for lagged foreign income (i.e., the "growth" action), *REPAT* is still positively correlated with domestic M&A.<sup>9</sup> Overall, although the authors spend a lot of time discussing the differences between *DoubleIrish* and *REPAT*, we are still confused about why they have different signs in the regression. Finally, in Table 5, the authors include both *DoubleIrish* and *REPAT* and their interaction in the regression and find that *REPAT* is positively associated with domestic M&A volume only when *DoubleIrish* = 1, suggesting that firms with Double Irish structure tend to make more domestic acquisitions when *REPAT* is higher. We find this result counter-intuitive. For DI-users, they should find domestic deals (assuming foreign cash is the marginal source of financing) less profitable when *REPAT* is higher – implying a negative coefficient on the interaction term *DoubleIrish\*REPAT*.

Fourth, we also note, as do the authors in the revised version, that the plot in Figure 2a shows the U.S. repatriation tax rate increasing dramatically in year -1 before the DI establishment in year 0. While the authors offer a conjecture, that the firms were already tax

<sup>9</sup> We note that the estimated coefficient on lagged foreign income is no longer reported in the forthcoming version, but the other reported estimated coefficients are the same.

planning before the introduction of the Double Irish structure we do not find this explanation compelling. But it does raise the question of when do we expect the foreign tax rate to decrease after the structure is introduced: immediately or with a lag?

Fifth, while *DoubleIrish* proxies for a decrease in the foreign tax rate it does not capture the estimated total repatriation tax costs facing the firm, which *REPAT* is intended to capture because it includes an estimate of the firm's foreign earnings (albeit not total accumulated foreign earnings). To measure whether a firm is bounded by repatriation taxes, both the tax rate and the dollar amount should be taken into account. Imagine that firm A needs to repatriate \$100 (and pay 20% repatriation tax) to fund a domestic M&A while firm B needs to repatriate \$1,000 (and pay 10% repatriation tax), it is debatable which firm is more affected by repatriation taxes albeit firm A faces a higher tax *rate*. In some settings *REPAT* is the appropriate variable – for example, how costly is it to get funds back to the US, or how much locked out or trapped cash/earnings is available to firms to undertake investment activities (for example, in Hanlon et al. 2015, and Edwards et al. 2016).

### 3.2 Inclusion of stock deals

In the conference version, there was much discussion of trapped cash (sometimes referred to by others as locked-out earnings) but Harris and O'Brien claimed their study was not about trapped cash. However, this was not at all clear in the writeup because trapped cash was mentioned several times as a reason why they expected a negative association between DI-use and domestic M&A. This discussion led us (and some conference participants) to ask why are stock deals included – why is the sample not restricted to cash only deals? Conceptually we should expect repatriation taxes to matter only when foreign funds are the marginal source of financing for a domestic M&A deal, yet in a stock-financed transaction this condition does not hold. Further, if it is a trapped cash story, we might expect positive NPV domestic deals to be stock deals, suggesting a positive association between *DoubleIrish* and domestic M&A transactions funded by stock.

In the forthcoming version, Harris and O'Brien spend some time discussing the inclusion of the stock deals and justify their inclusion on two grounds: First, sample size would be much smaller if stock deals were excluded but this is not a good justification if these deals would confound the tests (biasing against the findings if we expect a positive association between stock deals and *DoubleIrish*). Second, Harris and O'Brien argue that target firms are on average cash constrained (i.e., have high cash burn rates), so the acquirer will use stock in the acquisition to conserve its cash to help the target fund its operations after the merger. Following this logic, firms should rarely use cash to fund M&As because acquirers always have incentives to conserve cash for targets' subsequent cash needs. In any event, we would like to see a sensitivity test where stock deals are analyzed separately from cash deals.

In the forthcoming version, while the authors keep saying that it is a repatriation tax “rate” story, and not a trapped cash story, we believe it is really a trapped cash story: The repatriation tax rate matters only when foreign cash is the marginal source of capital. The manuscript might

benefit by directly testing this trapped cash story. For example, they could interact *DoubleIrish* with total cash holdings or some estimate of excess cash (per Edwards et al. 2016) or some estimate of foreign cash (per Hanlon et al. 2015).

#### 4. Other Comments

The main test (in Table 2) using OLS is essentially a difference-in-differences design. By adding firm fixed effects, the *DoubleIrish* variable is similar to *post\*treatment* in a conventional DiD regression.<sup>10</sup> The coefficient on *DoubleIrish* can be interpreted as the change in domestic M&A after DI establishment for DI-users, relative to control firms. While in the propensity score matched sample (Table 3), the authors only look at the post-DI establishment period, so Table 3 is not testing the same question as Table 2. Table 2 compares the change (pre-DI years to post-DI years) in domestic M&A volume for DI-users versus control firms. Table 3 compares the post-DI establishment domestic M&A volume for DI-users versus closely matched non-users.

Harris and O'Brien also examine U.S. multinational firms' foreign M&A activity as a function of both *DoubleIrish* and *REPAT* with results reported in Table 6. When both *DoubleIrish* and *REPAT* are in the model, the coefficient on *DoubleIrish* is negative although not significant while the coefficient on *REPAT* is positive and significant (columns 1 and 3) consistent with Hanlon et al. (2015). This raises the question as to why is *DoubleIrish* not significant? Would not U.S. MNCs find foreign deals relatively more attractive given that they cannot use foreign cash to fund domestic investment? Further, when lagged foreign income is included in the model (columns 2 and 4), lagged foreign income is significant and *REPAT* is no longer significant. These results suggest that the firm's repatriation tax rate is not relevant, rather just the magnitude of foreign income is relevant. These results further suggest that repatriation tax costs or tax rates are *not* the driving force for MNCs' foreign M&A activity. This result contradicts prior literature and is worthy of further study.

Both Hanlon et al. (2015) and Martin et al. (2015) examine M&A activity prior to 2004 and many of the schemes to repatriate cash tax-free discussed in Martin et al. (2015) have subsequently been shut down. Thus, partitioning the sample into pre- and post-2004 years would shed additional light on the relation between repatriation taxes and domestic M&A. In addition, separately examining pre-2004 years also helps us better reconcile results in Harris and O'Brien with the results in Hanlon et al. (2015) and Martin et al. (2015).

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<sup>10</sup> Harris and O'Brien use two different estimation procedures when they use their count variable (the number of domestic acquisitions for each firm-year) as the dependent variable: negative binomial and OLS regression. In the OLS regression they include firm fixed effects and SIC-year fixed effects which effectively makes the OLS a difference-in-difference test. If a firm has  $DI = 1$  during the entire sample period (i.e. Double Irish is established in or prior to 1993), the *DI* variable is not time-varying so it is subsumed by the firm fixed effect. As a robustness test, we suggest dropping these firms from the sample.

In the conference version of the paper, the years around the AJCA 2004 were excluded. However, we suggested more could be done with these years. For example, did firms with existing Double Irish structures at that time, repatriate more during the tax holiday? And given the author's reasons for predicting a negative association between domestic acquisitions and *DoubleIrish* (as a proxy for high repatriation tax rate), we would expect higher repatriations with the cash possibly being used to acquire domestic firms and/or investment. Prior literature suggests that, except for capital constrained firms in Faulkender and Petersen (2012), firms did not increase their capital expenditure or R&D but rather increased share repurchases. That is, as the analysis of AJCA repatriations in Blouin and Krull (2009) suggests, most U.S. multinationals did not have good investment opportunities in the U.S., which opportunities presumably include domestic M&A activity. Alternatively stated, prior to the AJCA, these firms were not capital constrained due to the possible U.S. repatriation taxes. They had sufficient cash flows or domestic borrowing opportunity to pursue positive domestic positive NPV projects. In the forthcoming MS, Harris and O'Brien add an analysis showing that DI firms repatriated more (both in dollar terms and dollars scaled by total assets to control for firm size) than non-DI users consistent with these firm taking advantage of the lower U.S. repatriation tax rate. However, it is unclear whether DI firms use repatriated funds to increase domestic investment or they simply enjoyed a windfall gain under AJCA.

Finally, Harris and O'Brien include both MNC and pure domestic firms in their main test and conduct robustness tests using a MNC-only sample. Because pure domestic firms do not face any repatriation tax, many of the arguments in the study do not apply to these firms. To align the theory and empirical design, we believe that the MNC-only sample should be used in the main specification.

## 5. Conclusion

Harris and O'Brien address an important and timely research question: when the question was posed, U.S. firms still faced a worldwide tax system which was under review by Congress. The study attempts to provide evidence on the distortionary effects of the U.S. worldwide tax system on firm's domestic investment, specifically domestic M&A. (Researchers cannot directly look at U.S. capital expenditures as they are not separately publicly disclosed unless the researchers have access to U.S. tax return data or Bureau of Economic Analysis survey data). Prior research provides mixed evidence of either no effect (Hanlon et al. 2015) or even a positive association between repatriation tax costs and domestic M&A activity (Martin et al. 2015). Harris and O'Brien predict a negative association and argue that prior studies using estimated total dollar repatriation tax costs face a correlated omitted variable problem. Total repatriation tax costs are associated with growth in foreign markets and this growth is correlated with growth (M&A activity) in the U.S. market resulting in growth being a correlated omitted variable. To address this problem, Harris and O'Brien use the establishment of the Double Irish structure which lowers foreign total taxes and the foreign tax rate (and thus increasing the U.S. repatriation tax rate). Their results appear consistent with their predictions. However, we critique their theory and it is not clear that we should observe a negative association between their proxy and domestic M&A. Further, we argue that the proposed proxy and design is not

without problems, a view shared by most of the tax researchers in the audience at the conference. Thus, we are hesitant to place too much weight on the observed results.

Since the conference in early November 2017, the U.S. revised the tax code in the Tax Cuts and Jobs Act in 2017 (TCJA 2017). U.S. MNCs now face a modified territorial tax system where earnings of U.S.-owned foreign subsidiaries are no longer subject to U.S. incremental taxes (except for a minimum tax on earnings in low tax jurisdictions). Thus U.S. firms no longer have an incentive to defer repatriations to the U.S. due to the deferred U.S. repatriation tax under the prior worldwide system. Harris and O'Brien discuss the implications of their results "it is unclear how the 2017 U.S. move to a territorial tax system will affect U.S. investment. However, our study suggests that domestic acquisition levels (and consequently shareholder value) have been directly and negatively impacted by U.S. tax policy: if even a fraction of previously "trapped" cash reserve is used for domestic investment after the reform, the reform could produce significant benefits for the U.S. economy." (p.31) We have three points with respect to this statement. First, we note the use of the term "trapped" cash consistent with our belief that the paper is about trapped cash and not just the repatriation tax rate. Second, the statement assumes the results can be taken at face value. Third, and more generally, many archival tax studies will continue to research questions using data prior to the TJCA 2017. Some of these papers will address research questions which could shed light on how firms might change their behavior post-TCJA (such as the Harris and O'Brien study). However, other studies might have far less to say about how firms might act after the TJCA. We believe these studies can still make a valuable incremental contribution provided they are testing hypotheses based on sound theory. That is, not all tax research needs to be directly tax policy motivated and not all need to answer the question, why do we care post-TJCA when firms no longer face those tax rules.

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**Table 1 Summary of Harris and O'Brien and related studies (landscape this table?)**

	<b>HO</b> (this study)	<b>HLV</b>	<b>EKW</b>	<b>MRZ</b>	<b>BES</b>
<b>Sample period</b>	1993-2012 matched with M&As 1994- 2013	1987-2003 matched with M&As 1988- 2004	1993-2012	1990-2003 matched with M&As 1991 to 2004	1995-2010
<b>Sample and type of M&amp;As</b>	Domestic M&A by U.S. firms (pure domestic and MNCs) – both cash and stock deals	Foreign and domestic M&As by U.S. MNCs – cash deals only	Foreign and domestic M&As by U.S. MNCs – cash deals only	Foreign and domestic M&As by U.S. MNCs – both cash and stock deals	Domestic M&As (including pure domestic and MNCs) by U.S. acquirers vs. foreign acquirers
<b>Underlying construct (X)</b>	“Repatriation tax rate”	“Locked-out cash”	“Trapped cash”	“Repatriation tax costs”	“Locked-out earnings”
<b>Empirical proxy (X)</b>	<i>DoubleIrish</i> <i>REPAT</i>	<i>REPAT</i> Predicted foreign cash holdings	<i>PRE</i> Excess total cash holdings (interaction)	<i>REPAT</i> <i>PRE</i>	<i>PRE</i> , <i>REPAT</i> of the <u>target</u>
<b>Empirical proxy (Y)</b>	Number and value of domestic deals	Number of deals (split into domestic and foreign) Abnormal return around M&A announcement	Profitability of the deal	Likelihood and number of deals (split into domestic and foreign)	Prob(ForeignAcq) = 1 if the acquirer is foreign and zero otherwise
<b>Main result (1)</b>	Number and value of domestic deals are <u>decreasing</u> in repatriation tax rates (proxied by <i>DoubleIrish</i> )	Number of foreign deals is <u>increasing</u> in repatriation tax costs	<u>Negative</u> association between profitability and <i>REPAT</i> for foreign deals	<u>Positive</u> association between <i>REPAT</i> and likelihood of <u>both</u> foreign and domestic deals	<u>Positive</u> association between locked-out earnings and probability of the acquirer being foreign.
<b>Main result (2)</b>	Number of domestic deals is not decreasing in <i>REPAT</i>	<i>REPAT</i> is not significantly associated with number of domestic <u>deals</u>		The domestic M&A result is driven by stock deals	
<b>Main result (3)</b>	No association between <i>DoubleIrish</i> and number of foreign deals	Negative association between announcement returns and <i>REPAT</i> for foreign but not domestic deals		Negative association between announcement returns and <i>REPAT</i> for foreign but not domestic deals	

Notes: HO denotes Harris and O'Brien (2018), HLV denotes Hanlon, Lester, and Verdi (2015), EKW denotes Edwards, Kravet, and Wilson (2016), MRZ denotes Martin, Rabier, and Zur (2015), and BES denotes Bird, Edwards, and Shevlin (2017).

Table 2

Panel A: Descriptive statistics by repatriation tax (*REPAT*) decile

<i>REPAT</i> Decile	N	<i>REPAT</i>	<i>DoubleIrish</i>	<i>TaxHaven</i>	<i>Irish_Sub</i>	$t_f$ Current	$t_f$ Total
1	15,681	0.000	0.101	0.439	0.125	0.787	0.662
2	1,642	0.000	0.093	0.406	0.114	0.264	0.275
3	1,664	0.001	0.115	0.453	0.135	0.230	0.265
4	1,657	0.001	0.137	0.467	0.164	0.206	0.243
5	1,659	0.002	0.156	0.512	0.180	0.200	0.225
6	1,660	0.003	0.181	0.555	0.216	0.180	0.208
7	1,664	0.005	0.211	0.588	0.235	0.165	0.193
8	1,660	0.008	0.214	0.611	0.243	0.150	0.176
9	1,655	0.013	0.227	0.627	0.276	0.119	0.142
10	1,659	0.029	0.199	0.579	0.237	0.065	0.081

Note: Exhibit 21 subsidiary information is obtained from Scott Dyreng's website. Consistent with Harris and O'Brien, we restrict the sample to years 1993 to 2012. Different from Harris and O'Brien, we only keep U.S.-based multinational firms in the sample. Our sample includes 30,601 firm-years, 4,104 unique firms, of which 533 are classified as *DoubleIrish*=1. *REPAT* is calculated as:  $(0.35 * pifo - txfo) / at$ , reset to zero if *REPAT* is negative.  $t_f$  Current is calculated as:  $txfo / pifo$ , set to missing if *pifo* is non-positive.  $t_f$  Total is calculated as:  $(txfo + txdf) / pifo$ , set to missing if *pifo* is non-positive. *DoubleIrish* is an indicator variable defined similarly to Harris and O'Brien. *TaxHaven* is an indicator variable set to one if the firm-year has at least one tax haven subsidiary. *Irish\_Sub* is an indicator variable set to one if the firm-year has at least one Irish subsidiary. Firm-years with *REPAT*=0 are assigned to decile 1, and the remaining firm-years are assigned to nine equal-sized deciles (deciles 2-10). All continuous variables are winsorized at 1% tails by year.

## Panel B: Correlation

	<i>DoubleIrish</i>	<i>REPAT</i>	<i>REPAT_Rate</i>
<i>DoubleIrish</i>	1	0.095	-0.012
<i>REPAT</i>		1	0.530
<i>REPAT_Rate</i>			1

Note: all Pearson correlation coefficients are significant at the 0.1 level. *REPAT\_Rate* is calculated as:  $.35 - t_f$ , where  $t_f = txfo / pifo$ , and set to missing when *pifo* is non-positive. Negative *REPAT\_Rate* values are reset to zero. All continuous variables are winsorized at 1% tails by year.