Tax Havens and Abnormal Capital Flows of Mergers and Acquisitions*

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Abstract

Tax havens are used for tax minimization. Whether tax havens affect corporate control in the form of cross-border mergers and acquisitions (M&A), or are merely used as conduits between host and destination countries of (greenfield) foreign direct investment and portfolio investment is an open question. We provide new stylized facts through the first comprehensive analysis of cross-border, tax-haven mergers and acquisitions (M&A). Using novel tax residence data, we investigate 13,318 such transactions from 1990 to 2017, totaling $4.2 trillion in deal value, or 29% of cross-border M&A volume. $2.4 of the $4.2 trillion exceeds our prediction based on a gravity model with economic fundamentals. Small havens such as Bermuda alone make up $1.1 trillion or 8% of cross-border M&A volume. For identification, we use a change in US tax law in 2004.

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1 Introduction

Tax havens are known to facilitate both tax evasion (outright violations of tax law) and tax avoidance (violating the spirit but not the letter of tax law) (Hines and Rice, 1994; Desai, Foley, and Hines, 2006; Alstadsæter, Johannesen, and Zucman, 2018). Research on international capital flows has shown that tax havens affect flows of portfolio investment through, for instance, private savings flowing to Swiss banks. Moreover, many multinational firms raise debt financing via subsidiaries that reside in tax havens (Coppola et al., 2021) or use shell companies in tax havens to lower their taxes in other ways. None of the prior work has shown that tax havens affect cross-border mergers and acquisitions (M&A), with the exception of a narrow set of transactions–so-called (M&A) inversions, which are limited in number, such as the 130 transactions in Col et al. (2020) or the 35 in Babkin et al. (2017). But there is no research on the overall sample of cross-border, tax haven M&A, which might be much larger. Importantly, M&A is distinct from other outcome variables that have been studied in relation to tax havens, because M&A affects who controls the production inputs of a firm, which has real effects.

Could it be that tax havens affect corporate control of *real* companies (e.g., a pharmaceutical company) and not just *shell* companies (e.g., a legal entity only related to a mailbox on the Cayman Islands)? Could a firm be more likely to be involved as an acquirer or target in a cross-border M&A if it resides in a tax haven? Could such an effect be quantitatively large enough to show up in the workhorse model for capital flows in international economics, the gravity model? On the one hand, setting up a shell company in a haven is easier to implement than, for instance, a cross-border acquisition between two pharmaceutical firms (with one of these two firms residing in a tax haven). In addition, the unique specialization of tax-haven economies (e.g., reinsurance industry in Bermuda, hedge fund administration in the Cayman Islands, or private wealth management in Switzerland) could have the potential effect that there are few firms outside tax havens for which there are sufficient synergies for tax haven firms to merge with. As a result, the effect of tax havens on the incidence of cross-border

M&A could range from insignificant to negative when compared to similar-sized economies. On the other hand, the effect of tax havens on the incidence of cross-border M&A could be a large positive one, such as, for instance, the effect of tax havens on portfolio investment and tax avoidance. While the costs of involving a tax-haven firm in a cross-border M&A might be higher, the benefits might be higher, too, since the tax savings associated with cross-border M&A could be much larger than those achieved through shell companies or the routing of portfolio investment through a haven. Cross-border, haven M&A can provide a stronger link to a tax haven, enabling greater tax avoidance than what can be achieved through a shell company (Meier and Smith, 2023b), suggesting a quantitatively large effect. Moreover, prior work could have missed such transactions due to data limitations or the omission of some transactions.

Consequently, the research question of this paper is whether tax havens affect cross-border capital flows in the form of cross-border mergers and acquisitions in a quantitatively meaningful way. We define cross-border, tax-haven M&A as cross-border deals where the acquirer or target resides in a tax haven. We use novel tax residence data that allows for a more precise measurement of a firm's tax residence.

Summary statistics alone suggest that the magnitude of cross-border M&A involving tax havens is strikingly large—so large that documenting these stylized facts is an important contribution on its own. From 1990 to 2017, we find 13,318 such deals worth $4.2 trillion in deal value, which is substantial compared to the $10.2 trillion in non-haven, cross-border M&A deal value over the same time period. In Table 1, we plot the top acquirer and target countries by cross-border M&A deal value. The Netherlands and Switzerland each have more cross-border volume than Japan (the third largest economy in 2022 by nominal GDP). Focusing on the acquirer side, Ireland, Bermuda, and Luxembourg have cross-border M&A volumes that are larger or comparable to those of China and Italy. To more meaningfully interpret the data, we distinguish between the five havens with large underlying economies (Hong Kong, Ireland, the Netherlands, Singapore, and Switzerland) and the remaining small-

economy havens (e.g., Bermuda and the Cayman Islands).[1] For a non-haven country, whether large or small, the ratio of cross-border to domestic M&A deal value is 1:2. For a large tax haven (e.g., Ireland), this ratio is 3:1, and for a small haven (e.g., Bermuda), it is 13:1. These numbers suggest that tax havens attract M&A activity beyond what would be expected given their economic fundamentals.

To formally quantify the extent to which cross-border M&A activity in havens is "abnormal," we estimate a gravity model following Portes and Rey (2005) and Silva and Tenreyro (2006) with the help of novel tax residence data. The Poisson pseudo-maximum-likelihood (PPML) approach by Silva and Tenreyro (2006) is the state-of-the-art technique that gives consistent standard errors for a research design like ours that features the related issues of heteroskedasticity, some large and many small countries, and many observations for which the dependent variable equals zero. In particular, the dependent variable is the M&A deal value at the acquirer country $\times$ target country $\times$ year level. Country pairs with a large- (small-) haven *acquirer* have 112% (511%) more deal value than predicted based on their economic fundamentals, and country pairs with a large- (small-) haven *target* have 67% (345%) more deal value. The corresponding total abnormal dollar values are \$1,541 and \$828 billion for large and small havens, respectively, resulting in a total of \$2.4 trillion. Our methodology classifies 57.3% of cross-border M&A deal value involving tax havens as abnormal, with percentages ranging from 29.8% for Switzerland to 97.3% for the British Virgin Islands.

How does tax haven M&A lead to tax savings? One can distinguish tax avoidance resulting from tax-haven M&A by deal type. Deals with a haven acquirer and a non-haven target are referred to as "asset building" deals. A firm in a tax haven has an incentive to acquire firms in non-havens to scale up the asset base exposed to the lower tax rate. In contrast, deals with a tax-haven target are referred to as "haven purchases." Buying

[1]The difference between the GDP of the fifth and sixth largest havens is \$273 billion. This distinction is independent of a country's importance in our sample and its level of taxation. We define a country as a tax haven according to Dharmapala and Hines (2009), and then add the Netherlands given its importance as documented in more recent studies (Damgaard et al., 2019; Tørsløv et al., 2022).

tax-haven firms allows the acquirer to establish a presence in a haven. The scope for tax avoidance is higher for subsidiaries with real operations as opposed to shell companies, since this, for instance, facilitates the manipulation of transfer pricing if actual intra-firm trade is taking place between a firm's haven and non-haven operations (Bartelsman and Beetsma, 2003; Meier and Smith, 2023b). Meier and Smith (2023b) find that for a US firm with no prior cross-border, tax-haven M&A history, buying an Irish firm worth 5% of its total assets would result in an expected decline in its effective tax rate of 3.74 percentage points.

For identification, we exploit variation in the incentives for US firms to engage in haven purchases. Before 2004, a US firm could move its tax residence to a foreign country without having any operations in that country. Since 2004, firms have had to demonstrate substantial operations in the country in which they seek incorporation or merge with a sufficiently large foreign company. This change made renouncing the US tax jurisdiction more difficult for US firms, since they would now have to acquire large or numerous foreign firms if they wanted to relocate via cross-border M&A. Consistent with this, we find that M&A activity involving US firms acquiring large-haven targets increases after 2004, supporting our interpretation that cross-border M&A involving havens is pursued for tax saving motives.

A concern is that differences in tax rates are driving the results and not the haven dummies. For instance, an acquirer in a high-tax country might want to take over a target in a low-tax country, even if the latter is not located in a tax haven. Two pieces of evidence address this issue. First, we find quantitatively large point estimates for the haven dummies regardless of whether they are on the target side (positive tax rate differential) or acquirer side (negative tax rate differential). Second, controlling for the difference in tax rates between the acquirer and target countries hardly effects the estimates of abnormal, tax-haven M&A. The reason is that tax rates are not a good proxy of the tax environment of tax havens (despite them having low or even no taxes), especially given the willingness of a tax haven to help multinational firms avoid taxes in jurisdictions other than the haven itself.

Another concern is whether we misclassify some of the cross-border M&A in havens such

as Switzerland as being tax motivated, when they could be driven by factors such as, in the case of Switzerland, its low level of corruption. First, we conduct a large battery of robustness tests, where we show that the gravity model results hold for different controls (e.g., control of corruption) and subsamples (e.g., economically open countries) that capture many of these non-tax factors that could potentially drive our results. Second, we are not arguing that all tax-haven M&A are tax driven–only that 57.3% are, with values ranging from 29.8% for Switzerland to 97.3% for the British Virgin Islands. We cannot pinpoint whether a particular transaction is "abnormal" or not. However, even if most transactions have a strategic rationale, many of these deals might not occur if the tax environment in havens were less beneficial. For instance, imagine that all haven M&A involving Ireland were Irish pharmaceutical firms buying British pharmaceutical firms in "strategic" deals that unlock operational synergies. If Ireland were no longer a tax haven and thus had higher taxes, then, in an net present value (NPV) framework, some strategic deals would no longer be NPV positive (an increase in taxes will lead to lower investment). Because taxes in Ireland are particularly low, there will be many such "strategic" deals. Our abnormal deal value estimates are thus capturing the dollar amount of deals that would vanish if a country were no longer a tax haven, independently of a deal being "strategic" or not. Lastly, about one third of abnormal, haven deal value is associated with small havens such as Bermuda, for which any other explanation other than tax savings seems unlikely.

A question that is very different in nature is why there are not even more tax-haven M&A if they result in such large tax savings as shown in Meier and Smith (2023b). First, we note that the volume of cross-border M&A involving havens is, by any metric, very large. Second, there are factors that might limit the ability of firms to engage in haven M&A. For instance, some firms cannot engage in cross-border M&A for regulatory or national security reasons. Moreover, complex M&A deals have execution risk that can make them fail, and cross-border M&A transactions are likely to be complex. Lastly, some firms might not engage in a haven acquisition because of reputational concerns or the inability to find a suitable target in the

relatively small haven economies.

Another concern is that haven M&A might primarily involve shell companies. We show that the vast majority of haven purchases involve firms with real operations in these havens. Lastly, we rule out the concern that intangible assets could be moved to havens and then sold in cross-border deals, inflating abnormal, haven M&A.

We contribute to three literatures. First, we add to a nascent literature on abnormal capital flows associated with havens by documenting that havens have $2.4 trillion in abnormal M&A deal value. Coppola et al. (2021) restate the abnormally high portfolio investment positions of havens based on a "nationality" concept (which is different from tax residence). Bertaut et al. (2018) and Damgaard et al. (2019) also document large distortions in official statistics for capital flows.

Second, we contribute to the literature on the determinants of cross-border M&A (Rossi and Volpin, 2004; Di Giovanni, 2005; Erel, Liao, and Weisbach, 2012; Ahern, Daminelli, and Fracassi, 2015; Fresard, Hege, and Phillips, 2017) by documenting that the tax savings provided by havens are a significant determinant of cross-border M&A. With the exception of Di Giovanni (2005), the cross-border M&A literature ignores the M&A activity of small havens. Ignoring these transactions implies missing about 8% of the $14 trillion in total cross-border M&A deal value. Moreover, cross-border M&A involving small *and* large tax havens amounts to 29% of all cross-border M&A deal value–a significant share that has received limited attention in previous research. Addressing this imbalance in coverage is one of our goals.

Third, we contribute to the literature on tax havens (Hines and Rice, 1994; Desai, Foley, and Hines, 2006; Alstadsæter, Johannesen, and Zucman, 2018). Our paper is the first to document that havens affect the actual ownership of assets on a large scale and not just the ownership of assets "on paper." Using firm-level data, Meier and Smith (2023b) estimate the tax savings from buying a firm that resides in a tax haven. Dyreng and Lindsey (2009) investigate the effect of having a tax-haven subsidiary on a firm's tax payments. Coppola

et al. (2021) find that many multinational firms raise debt financing via subsidiaries that reside in tax havens. Bennedsen and Zeume (2018) investigate shareholders' reactions to the increased transparency of corporate tax haven activities. O'Donovan, Wagner, and Zeume (2019) study how firms use secret offshore vehicles. Johannesen and Zucman (2014) document that the end of bank secrecy in some tax havens caused a relocation of bank deposits to the benefit of the least compliant havens. Tørsløv et al. (2022) estimate that close to 40% of the foreign profits of multinational firms were shifted to tax havens in 2015, while Blouin and Robinson (2024) question this figure.

2 Institutional Details and Data

2.1 How can Tax-Haven M&A Result in Tax Savings?

Tax-haven M&A can enable tax avoidance in two distinct ways depending on whether the acquirer or target is in a tax haven.

Haven Purchases. When the target is in a tax haven, we refer to these deals as "haven purchases"(Meier and Smith, 2023b). See Appendix D.1 for examples of haven purchases. Using a global sample of firms, Meier and Smith (2023b) find that haven purchases result in $20.8 billion in tax savings annually. This figure is calculated by identifying incremental tax savings that accrue to the acquirer's global legal parent (GLP) following haven purchases, and aggregating these firm-level savings. These estimates include tax savings resulting from profit shifting and the relocation of the acquirer's tax residence to havens.

Firms resident in countries with worldwide systems of taxation and territorial tax systems have incentives to engage in haven purchases. For firms in territorial countries, haven purchases facilitate profit shifting, which allows firms to book profits in lower-tax countries, thereby lowering their tax bill (Langenmayr and Liu, 2023). For firms in countries with worldwide systems of taxation, haven purchases allow firms to book profits in havens and defer paying home country tax until the profits are repatriated, which would never occur if the funds are continuously used to reinvest in the firms' operations overseas.

Asset Building. When the acquirer is in a tax haven, we refer to these deals as "asset building," since a firm in a tax haven has an incentive to acquire firms in non-havens to scale up its asset base exposed to the lower tax rate. See Appendix D.2 for examples of asset building deals. There are two reasons why the location of the firm's parent matters for tax purposes. First, the tax residence of the parent determines whether the firm is subject to controlled foreign corporation (CFC) rules, which constrain a firm's ability to shift profits. Second, the rate of double taxation on foreign profits varies across countries, depending on whether they have territorial or worldwide systems of taxation, and the degree to which intra-firm payments are assessed withholding taxes. Voget (2011) finds empirical support that firms account for both of these factors in assessing the attractiveness of different parent locations. Since many tax havens do not have CFC rules (PwC, 2017), having a tax-haven parent makes it easier to shift profits. Barrios et al. (2012) document that parent country taxation affects the location decisions for subsidiaries. Moreover, since tax havens generally have territorial tax systems or worldwide tax systems with low corporate income tax rates, and they usually do not have withholding taxes on intra-firm payments, the rate of double taxation on foreign-sourced income is low. This makes tax havens an attractive place for a company's tax residence, and explains why non-haven firms can be worth more from a tax perspective as subsidiaries of tax-haven firms than as standalone companies.

The evidence in Voget (2011) and Barrios et al. (2012) implies that there are benefits to moving a firm's tax residence from a country with a territorial or worldwide system of taxation to a haven. There are numerous examples of firms relocating out of the US (which had a worldwide system of taxation prior to 2018), several of which are listed in Appendix D.1. In addition, firms also choose to relocate their tax residence from countries with territorial systems of taxation to tax havens: Frontline moved from Sweden to Bermuda in 1997, Tyco International moved from Switzerland to Ireland in 2014, and Aptiv moved from the UK to Ireland in 2018.[2]

[2]Frontline Ltd (2011): "Form 20-F for the fiscal year ended December 31, 2010," April 4, `https://www.sec.gov/Archives/edgar/data/0000913290/000091957411002596/d1184224_20-f.htm` (accessed June

2.2 Data

Tax Residence. Since we are interested in investigating tax avoidance, the appropriate measure of a firm's location is the tax residence of its global legal parent (GLP), which depends on the location of the GLP's headquarters and incorporation. There are two challenges in accurately measuring tax residence. First, it is not reported in commercial databases, and firms typically do not disclose it in their annual reports or regulatory filings. Second, to determine a firm's tax residence when it is incorporated and headquartered in different countries, one needs to account for the unilateral tax laws in each country, as well as the bilateral treaties between countries that stipulate tie-breaking provisions in the event the unilateral application of each country's laws renders the firm a dual resident. We overcome these challenges by using the novel tax residence algorithm of Meier and Smith (2023a), which takes a firm's incorporation and headquarters as inputs, and provides the firm's tax residence as the output based on the laws and bilateral tax treaties of 150 countries. The paper by Meier and Smith (2023a) is a "measurement" paper in which this new tax residence algorithm is developed and validated. This paper applies this novel tax residence data.

M&A Data. We obtain M&A data from SDC Platinum. The sample includes deals announced between 1990 and 2017 and subsequently completed. We exclude self-tenders, repurchases, recapitalizations, spin-offs, split-offs, equity issuances, and block purchases. As in Meier and Servaes (2019), we further exclude deals that involve a mutual company, government entity, or supranational organization (e.g., the World Bank). In addition, we exclude deals where the buyer or seller nation is listed as "Multi-National." This typically occurs when the acquirer or target company is listed as "Investor Group." We use the GDP price index from the Bureau of Economic Analysis to convert deal value to 2017 USD, and remove observations with missing deal value or deal value below $1 million. The sample

10, 2021). Tyco International PLC (2015): "Form 10-K for the fiscal year ended September 25, 2015," November 13, `https://www.sec.gov/Archives/edgar/data/833444/000083344415000091/fy1510-k.htm` (accessed June 10, 2021). Aptiv PLC (2018): "Form 10-Q for the quarterly period ended March 31, 2018," May 2, `https://www.sec.gov/Archives/edgar/data/0001521332/000152133218000025/aptv331201810-q.htm` (accessed June 10, 2021).

includes deals where an entire firm is acquired, as well as deals where assets, a subsidiary, or a division of another firm are acquired. Examples of the latter types include deals where a pharmaceutical company buys the generic drug division of another company, or where a retailer buys 100 stores from another retailer.[3] For acquisitions of entire firms, we further require that at least 50% of the target's shares are acquired as part of the transaction or as part of several transactions over the sample period. We exclude deals where the acquirer or target is in the utilities (SIC 4900-4999) or defense (SIC 3760-3769, 3795, and 3480-3489) industries, since many countries have nationality-based ownership restrictions for these industries. Lastly, we remove countries with less than $50 million in aggregate deal value on the acquirer or target side. The final dataset has 173,027 deals from 181 countries,[4] 52,175 of which are cross-border. Intra-country deals are included for comparison only, and are not included in any of the regressions.

For deals flagged as reverse acquisitions in SDC, we classify the acquirer as the target and the target as the acquirer. In this way, the acquirer is always the economic acquirer (the larger company), as opposed to the legal or accounting acquirer.[5]

Country-level Data. We use the CEPII GeoDist Database for country-pair data, which includes geographic distance, a same-country dummy, a previous colonial-relationship dummy, and a common official language dummy. GDP and GDP per capita are from the World Development Indicators (WDI) when available. Otherwise we use estimates from the United Nations (UN). We fill in these variables for additional countries using methods

[3]Unless otherwise stated, the acquirer refers to what SDC considers the acquirer's ultimate parent, and the target refers to the direct target. For example, if Disney Parks, Experiences and Products, a subsidiary of Disney and the owner of the Walt Disney World, purchased Universal Parks and Resorts, then Disney would be the acquirer and Universal Parks and Resorts the target. Had we instead considered the target to be the target's ultimate parent, then the target in this deal would be Comcast. Since Disney is not buying Comcast, but a subsidiary of a subsidiary (NBCUniversal) of Comcast, the appropriate target should be the direct target (Universal Parks and Resorts).

[4]We use the terms nation and country broadly to include both sovereign nations and dependent territories and regions. In short, if SDC considers a geographical entity a country, then we do as well.

[5]If the smaller company in an M&A transaction is listed as the acquirer, then SDC will mark the deal as a reverse acquisition. Reverse acquisitions typically occur when a firm wants the smaller company to be the parent of the combined firm. This is often the case when the smaller firm is in a tax-favored location. If a deal is considered a reverse acquisition in the SEC filings, then the combined firm's financial performance will be compared to that of the larger firm for periods preceding the acquisition.

described in Appendix A.1. Since Ireland's GDP is highly volatile and does not reflect domestic economic activity due to tax avoidance by US multinationals (Lane, 2017), we use GNI instead of GDP for Ireland (see Appendix A.2 for details).

Tax Havens. We start with the list of tax havens from Dharmapala and Hines (2009), and then add the Netherlands given its importance as documented in more recent studies (Damgaard et al., 2019; Tørsløv et al., 2022). Next, we divide the tax havens into large and small havens, thereby approximating whether a haven has a quantitatively important amount of economic activity beyond its haven activities. When sorted by their GDP, the gap between the fifth and sixth largest haven is $273 billion. As such, we define the five largest (Hong Kong, Ireland, the Netherlands, Singapore, and Switzerland) as large havens and the remaining as small havens. Among the 181 countries included in the M&A dataset, the total GDP for the five large havens is $2,446 billion, and the total GDP for the 33 small havens is $435 billion as of 2017. The distinction between large and small havens is therefore independent of a country's importance in our sample and its level of taxation. Given these stark differences in economic activity among tax havens, separating them in this way allows for a more meaningful interpretation of the results.

Firm-Level Data. To accurately classify the tax residence of acquirers and targets in M&A, we need data on firms' headquarters and incorporation. We obtain this data from the Names File of Compustat Snapshot (henceforth Snapshot) and Compustat Global. Snapshot contains the historical firm name, nation of headquarters, and nation of incorporation for firms in Compustat North American. Both Compustat North America and Compustat Global report only current identifying information, and backfill this current data to all prior years. Since, there is no global version of Snapshot, we rely on current identifying information from Compustat Global for firms without data in Snapshot. We supplement this firm-level location data with hand-collected on firms' incorporation and headquarters from Meier and Smith (2023b), along with headquarters data collected from SEC filings by Duchin et al. (2024) and Duchin and Sosyura (2024).

Compustat is merged with SDC using the matched data from Meier and Smith (2023b), which was constructed by first merging by cusip, then sedol, then firm name. Next, Meier and Smith (2023b) use data from Ewens et al. (2019) (which builds on the earlier mapping by Phillips and Zhdanov (2013)) to link the remaining unmatched deals.

3 Gravity Model

3.1 Descriptive Statistics

Simple summary statistics alone suggest that the magnitude of cross-border M&A involving tax havens is strikingly large. In Table 1, we plot the top acquirer and target countries by cross-border M&A deal value. The Netherlands and Switzerland have more cross-border volume than Japan (the third largest economy in 2022 by nominal GDP). Focusing on the acquirer side, Ireland, Bermuda, and Luxembourg have cross-border M&A volumes that are higher or comparable to those of China and Italy. On the acquirer side, 3 (8) tax havens enter the top 10 (30) countries by cross-border M&A volume. On the target side, 2 (8) tax havens enter the top 10 (30) countries by cross-border M&A volume. In general, many tax havens have M&A volumes much larger than non-haven economies that are often one or several magnitudes larger when it comes to GDP or population.

Next, we report the total deal value based on the location of the acquirer and target, and whether the deal is cross-border or intra-country in Table 2.[6] As with all other analyses in this paper, a firm's location is its tax residence based on the novel tax residence algorithm of Meier and Smith (2023a). If one considers intra-country M&A deal value as a proxy for the economic activity in a country, then one can standardize cross-border M&A deal value by dividing it by intra-country M&A deal value. The ratio of cross-border to intra-country M&A deal value when the acquirer is in a non-haven is 0.47. This ratio jumps to 3.17 and 13.66 if the acquirer is in a large haven or a small haven, respectively. Similarly, the ratios

[6]Summing the cross-border deal value on the acquirer and target sides for large and small havens yields \$4.4 trillion and thus will not match the total haven deal value of \$4.2 trillion reported in the abstract. The discrepancy arises since summing the deal value in the acquirer and target columns double counts the \$0.2 trillion in cross-border deal value where both the acquirer and target are in havens.

when the target is in a non-haven, large haven, and small haven are 0.51, 2.18, and 7.22, respectively. Overall, tax havens appear to have unusually high cross-border M&A volume relative to their intra-country deal volume. To highlight the magnitude of this pattern in the summary statistics, we have plotted these ratios in Figure 1. This pattern also holds for the number of M&A deals (Table C1, Panel A).

In Panels B and C of Table C1, we report the mean and median M&A deal value. By construction, the values for the acquirer and target splits are identical for intra-country deals. Independent of the metric or the sample split used, cross-border deals are consistently larger than intra-country deals. The average cross-border deal on the acquirer side is $270 million for non-havens, $303 million for large havens, and $287 million for small havens.

Another pattern in the data is that some tax havens specialize in particular non-haven countries. We report important haven/non-haven pairs in Table 3. We define a pair as important if the deal value is significant relative to the total deal value of the tax haven or the non-haven. For example, the US is the most important non-haven country for Bermuda, with $190.4 billion in deal value between these countries. On the other hand, while Latin American countries are not among the most important non-haven countries for Switzerland, Switzerland is by far the most significant tax haven for this region. The haven-non-haven pair with the highest aggregate deal value is the US and Ireland, with $372.6 billion in deal value. The most significant non-haven for the British Crown Dependencies of Guernsey and the Isle of Man is, perhaps not surprisingly, the UK. Similarly, the most significant tax haven for Western Europe is the Netherlands, and the most important non-havens for Luxembourg are in Western Europe. For Asia-Pacific countries such as China, Australia, and Japan, the two closest tax havens–Singapore and Hong Kong–are quantitatively important. Somewhat surprisingly, the most significant non-haven country for the Cayman Islands is China. Lastly, the most important countries for Cyprus are the culturally and historically related countries of Russia, Ukraine, and Greece. These examples illustrate that geography, culture, and political ties are significant determinants of tax-haven M&A.

3.2 Empirical Strategy

As the summary statistics indicate, there seems to be considerably more cross-border M&A associated with havens than can be explained by the size of their economies. We follow Portes and Rey (2005) in using a gravity model to study a financial outcome variable. Specifically, we estimate the following model:

$$Y_{ij,t} = \exp\left(\beta_0 + \boldsymbol{\kappa_t} + \beta_1 SM_i + \beta_2 LG_i + \beta_3 SM_j + \beta_4 LG_j + \boldsymbol{\theta'} \boldsymbol{X_{ij,t}}\right) + \epsilon_{ij,t}, \tag{1}$$

where i indexes the acquirer countries, j the target countries, t the year, and $i \neq j$. The variables are defined as follows:

- $Y_{ij,t}$: aggregate M&A deal value with the acquirer in country i and the target in country j in year t
- $\boldsymbol{\kappa_t}$: year fixed effects
- SM_k: dummy that equals 1 if country k is a small tax haven
- LG_k: dummy that equals 1 if country k is a large tax haven
- $\boldsymbol{X_{ij,t}}$: controls

The model is estimated using Poisson pseudo-maximum-likelihood following Silva and Tenreyro (2006). This methodology has two advantages compared to estimating the log-linearized version of the model using OLS. First, if the errors are heteroskedastic (which is likely the case), estimating the model in log-linearized form would lead to inconsistent estimates of the parameters. Second, Poisson pseudo-maximum likelihood provides a way to deal with the many zeros in the dependent variable, as most country pairs have no M&A volume in a given year. Had we used OLS, $\ln(Y_{i,j,t})$ would be undefined when $Y_{i,j,t} = 0$, so we would have to drop these observations or modify the dependent variable by defining it as, for instance, $\ln(Y_{i,j,t} + 1)$. Thus, the research design is not only well suited to deal with a dataset that involves some large countries and many small ones such as tax havens, but it is also the state-of-the-art research design for research questions like ours.

The controls are chosen based on factors or proxies known to affect the volume of cross-border M&A (Rossi and Volpin, 2004; Di Giovanni, 2005; Erel et al., 2012; Ahern et al., 2015). Table 4contains the variable definitions.

The variables of interest are the haven dummies. Since the payoffs to asset building increase linearly with the size of the firms acquired, haven firms have an incentive to continually scale up. Thus, we expect β_1 and β_2 to be positive. Moreover, given the tax benefits associated with haven purchases, a firm is more likely to be acquired if it is in a haven than if it is in a non-haven, all else equal. Therefore, havens should see more M&A deal value on the target side. This implies that β_3 and β_4 should be positive as well. Lastly, these estimates are conservative. Absent the abnormally high M&A volume associated with havens, the GDP of these countries would be lower. Since GDP and GDP per capita are some of the predictors of M&A flows, we underestimate the share of total M&A deal value associated with tax avoidance.

3.3 Results

Gravity Model. We present the gravity model in Table 5 and discuss the results for columns 1-3 first. The haven dummies are positive, statistically significant, and economically large in all three specifications. Small havens have 511%-2,130% more deal value on the acquirer side than would be predicted based on economic, cultural, and geographic factors, and large havens have 112%-300% more.[7] The corresponding figures on the target side are 345%-1,258% for small havens and 67%-181% for large havens. The difference between the small- and large-haven coefficients is statistically significant at the 5% level for both the acquirer and target dummies in all specifications. In addition, the difference between the acquirer and target dummies is positive (although not statistically significant) in all specifications for both large and small havens. This difference likely reflects the fact that, while asset building savings increase linearly with the size of the acquired firms, the tax savings from

[7]Going from a non-haven to a haven acquirer is expected to increase the M&A deal value by $(e^{\beta} - 1) \times 100\%$, where β is either the small- or large-haven coefficient.

haven purchases increase at a decreasing rate. The concave nature of the tax savings from haven purchases arises since significant savings can result from establishing a presence in a haven. However, once the firm has sufficient operations in a haven to shift profits or relocate its tax residence, the scope for further savings from haven purchases is lower.

The control variables have the expected signs. Larger economies have significantly more M&A volume; a 1% increase in GDP for either the acquirer or target country results in about a 1% increase in M&A deal value. Countries that are geographically closer or share a common language have more M&A volume between them. In addition, countries with colonial ties tend to have more M&A deal value, as this likely proxies for similar cultures and legal systems. Lastly, richer countries, as indicated by GDP per capita, tend to have greater M&A deal value.

A concern about the results so far might be that differences in tax rates are driving the results and not the haven dummies. For instance, an acquirer in a high-tax country might want to take over a target in a low-tax country, even if the latter is not located in a tax haven. Similar, the incentives for an acquirer of a low tax-country to take over a target from a haven country might be limited. Two pieces of evidence address this issue. First, we find quantitatively large point estimates for the haven dummies, whether they are on the target side (positive tax rate differential) or on the acquirer side (negative tax rate differential). Second, in column 4, we control for the difference between the statutory corporate income tax rate of the acquirer country and that of the target country. This allows us to assess the extent to which differences in tax rates explain our results. If differences in statutory tax rates explain the results, then this should substantially affect the point estimates for the haven dummies, since many tax havens have very low taxes or do not charge income tax at all. Due to data limitations for this variable, the sample drops significantly relative to the results in columns 1-3. The coefficients of the haven dummies hardly change and remain statistically significant, while the tax rate variable is statistically insignificant. This suggests that differences in statutory tax rates do not explain our results. The reason is that tax

rates are not a good proxy of the tax environment of tax havens, especially the willingness of a tax haven to help multinational firms avoid taxes in jurisdictions other than the haven itself, by enabling, for instance, very aggressive profit-shifting techniques. The effective tax rate paid by large foreign multinationals in jurisdictions such as Ireland or Luxembourg is essentially unrelated to the statutory tax rate of these jurisdictions because these firms can strike–maybe not de jure but at least de facto–bespoke tax arrangements. For example, the effective tax rate paid by US multinationals in Ireland is 4%, while the statutory tax rate is 12.5% (Tørsløv et al., 2022).

Aggregation: Method. Next, we estimate the dollar amount of M&A deal value in havens beyond what would be predicted had these countries not been havens. We refer to this as *abnormal deal value*, and estimate it for a particular country pair and year as follows:

$$\alpha_{ij,t} = Y_{ij,t} - e^{\widehat{\ln(Y_{ij,t})} - \beta_1 SM_i - \beta_2 LG_i - \beta_3 SM_j - \beta_4 LG_j}, \tag{2}$$

where all variables are as defined in Equation 1. In addition, we require that at least one of the countries is a haven. We use the point estimates from column 3 given the larger sample relative to column 4 and the statistical insignificance of the tax rate differential variable (the point estimates of the haven dummies also hardly change). Summing over all applicable country pairs and years, we obtain a total abnormal deal value associated with havens of $2,369 billion. We disaggregate this total by haven using the following formula:

$$\sum_i \sum_j \sum_t \alpha_{ij,t} = \sum_{h \in H} \alpha_h, \tag{3}$$

where H is the set of all havens and α_h is the total abnormal deal value for haven h. We define α_h as follows:

$$\alpha_h = \sum_t \left(\sum_{i \notin H} \alpha_{ih,t} + \sum_{j \notin H} \alpha_{hj,t} + \frac{1}{2} \left(\sum_{i \in H} \alpha_{ih,t} + \sum_{j \in H} \alpha_{hj,t} \right) \right). \tag{4}$$

The total abnormal deal value for haven h includes all deals with a non-haven acquirer and h

as the target (the first term of the sum). In addition, it includes the abnormal deal value of all deals with h as the acquirer and a non-haven target (second term). However, what should be done about cross-border deals with h on one side and another haven on the other?[8] We cannot take the sum, since this term would appear for both haven h and the other haven, which would result in double counting and invalidate Equation 3. Thus, we adopt the simple and intuitive approach and take one half of the abnormal deal value associated with these deals (third and fourth terms). The proof of Equation 3 is in Appendix B.

Aggregation: Results. α_h for the top tax havens is reported in column 1 of Table 6. There is $700.8 billion in abnormal deal value for the Netherlands, $328.7 billion for Bermuda, $316.7 billion for Ireland, $248.5 billion for Switzerland, $167.2 billion for Luxembourg, $148.9 billion for Hong Kong, $126.3 billion for Singapore, and $117.3 billion for the Cayman Islands. The remaining small havens have lower abnormal deal values. The total abnormal deal values for small and large havens are $828.0 billion and $1,541.3 billion, respectively.

For comparison, column 2 of Table 6 reports the total cross-border M&A deal value for each haven. As with the abnormal deal value, the total cross-border deal value for haven h is equal to the total deal value when the acquirer is in h and the target is in a non-haven, plus the total deal value when the target is in h and the acquirer is in a non-haven, plus 1/2 of the total deal value when one side of the deal is in h and the other is in another haven. Column 3 reports the ratio of abnormal deal value to total deal value. Our methodology classifies 57.3% of cross-border M&A deal value involving havens as abnormal. This average masks important cross-sectional variation. Of the top havens listed in the table, the haven with the lowest share of abnormal deal value is Switzerland with 29.8%. The Netherlands, Ireland, and Luxembourg have shares of 57.5%, 63.2%, and 68.3%, respectively. Hong Kong and Singapore, have similar shares of 49.2% and 50.9%, respectively. The havens with the highest shares of abnormal deal value are the British Virgin Islands (97.3%), the Netherlands Antilles (97.1%), Bermuda (97.0%), and the Cayman Islands (96.1%). Thus, the ratio of a

[8] $0.2 trillion of the $4.2 trillion in total cross-border, haven M&A deal value has a haven on both sides.

haven's abnormal to total M&A deal value is negatively correlated with its GDP.

To visualize this relationship, we compare the abnormal ratio to the log of GDP for the top havens in Figure 2. The regression line fits the data well (the coefficient of ln(GDP) has a p-value of less than 0.01).

Interpretation. Cross-border, haven M&A makes up 26% of overall cross-border M&A by deal count and 29% by deal value. The $2.4 trillion in abnormal deal value corresponds to about 16% of overall cross-border M&A deal value. Thus, we conclude that the magnitude of tax-haven M&A is quantitatively large—both for large and small havens, and both on the acquirer and target sides. The literature on the determinants of cross-border M&A ignores the role of tax savings as a determinant of cross-border M&A and the role of tax havens in cross-border M&A more broadly. Furthermore, with the exception of Di Giovanni (2005), this literature removes small havens such as Bermuda and the Cayman Islands from its samples, which results in missing deal value that amounts to $1.1 trillion or about 8% of total cross-border M&A over our sample period. One of our goals is to redress this imbalance in coverage.

3.4 Are Some Non-Tax-Driven Deals Misclassified as Tax-Driven?

A potential concern is whether we misclassify some of the cross-border M&A in havens such as Switzerland as being tax motivated when they could be driven by factors such as, in the case of Switzerland, its low level of corruption. There are several arguments against this. First, we conduct a large battery of robustness tests, where we show that the gravity model results hold for different controls (e.g., control of corruption) and subsamples (e.g., economically open countries). Second, we are not arguing that all tax-haven M&A are tax driven–only that 57.3% are. Moreover, the percentage of abnormal deal value relative to total deal value across havens seems in line with the economic fundamentals of these countries, with values ranging from 29.8% in Switzerland to 97.3% in the British Virgin Islands. While we can estimate a haven's aggregate share of abnormal, cross-border M&A, we cannot pinpoint whether an individual transaction is "abnormal" or not. However, even

if some transactions have a strategic rationale, such as asset building acquisitions of US firms by pharmaceutical companies in Switzerland, many of these deals might not occur if the tax environment in havens were less beneficial, since higher taxes would reduce the net present value (NPV) of these transactions. The more extensive argument goes along the following lines. Imagine that all haven M&A involving Ireland were Irish pharmaceutical firms buying British pharmaceutical firms. Assume that all these deals are "strategic" deals that unlock operational synergies. Now, if Ireland no longer had such an attractive tax environment because it ceased to be a tax haven, then, in an NPV framework, some strategic deals would no longer be NPV positive (an increase in taxes will lead to lower investment in a neoclassical framework). Because taxes in Ireland are particularly low, there will be many such "strategic" deals occurring because of the low taxes, but many such transactions would no longer be viable if taxes rise substantially. Our abnormal deal value estimates are thus capturing the dollar amount of deals that would vanish if a country were no longer a tax haven, independently of a deal being "strategic" or not. Lastly, of the $2.4 trillion in abnormal cross-border M&A associated with havens, about one third of this is associated with small havens such as Bermuda and the Cayman Islands, for which any other explanation other than tax avoidance seems unlikely.

4 Identification and Robustness

The findings so far suggest that cross-border M&A involving havens is primarily pursued for tax avoidance purposes. Next, we entertain alternative explanations. However, the number of possible alternative explanations for our results is limited, since such explanations would have to explain why, for instance, Bermuda and the United States have seen cross-border M&A deal value of $190.4 billion from 1990 to 2017 for reasons other than tax avoidance, which seems unlikely. Moreover, any alternative explanation also needs to address why we find an abnormal amount of cross-border M&A deals with haven countries on both the acquirer *and* target sides. Nevertheless, we take multiple approaches to address remaining

concerns that cross-border M&A involving havens is motivated by other economic forces. We also provide evidence that the results in this paper survive a battery of robustness tests.

4.1 US Tax Law Change in 2004

To address alternative explanations, we use a change in US tax law that occurred as part of the American Jobs Creation Act (AJCA) of 2004. Prior to 2004, a US firm could undertake a "naked" inversion whereby it reincorporates in a foreign jurisdiction without having any significant operations there. Since 2004, a firm can move its incorporation outside of the US if (1) it has "substantial operations" in the country in which it seeks incorporation, or (2) in the case of a merger with a foreign firm, the US shareholders make up less than 80% of the combined firm (Marples and Gravelle, 2014). Initially, the IRS did not provide a precise definition of "substantial operations." However, a 2006 regulation defined the substantial operations threshold: this threshold is met if the firm has 10% of its employees, tangible assets, and sales in the foreign country in which it seeks incorporation (VanderWolk, 2010). Despite initial uncertainty surrounding the meaning of "substantial operations," it is clear that, post 2004, "[t]he act effectively ended shifts to tax havens where no real business activity took place" (Marples and Gravelle, 2014). The existence of these thresholds made inversions more difficult for US firms, since they now have to acquire larger or additional foreign firms if they want to invert as a result of cross-border M&A. Only large havens are likely to have a sufficient pool of such firms, so we predict that M&A volume with a US acquirer and a large-haven target will increase after the law change. The prediction for small havens, with their much smaller economies, is unclear. On the one hand, it could be that the few large firms in small havens are acquired by US firms, which would imply a positive effect for small havens. On the other hand, it could be that small-haven firms are not sufficiently large or numerous for US firms to pass the threshold, resulting in a decline in M&A volume for small havens due to a substitution effect at their expense in favor of large havens. We test the hypothesis using a triple differences-in-differences research design, as shown below:

$$Y_{ij,t} = \exp\left(\beta_0 + \boldsymbol{\kappa_{j,t}} + \beta_1 US_i \times LG_j \times Y04_t + \beta_2 US_i \times SM_j \times Y04_t + \boldsymbol{\delta' D_{ij,t}} + \boldsymbol{\theta' X_{ij,t}}\right) + \epsilon_{ij,t}, \tag{5}$$

where i indexes the acquirer countries, j the target countries, t the years, and $i \neq j$. The variables are defined as follows:

- $Y_{ij,t}$: aggregate M&A deal value with the acquirer in country i and the target in country j in year t
- $\boldsymbol{\kappa_{j,t}}$: target country $\times$ year fixed effects
- US_i: dummy that equals 1 if country i is the United States
- LG_j: dummy that equals 1 if country j is a large tax haven
- SM_j: dummy that equals 1 if country j is a small tax haven
- $Y04_t$: dummy that equals 1 if $t \geq 2004$
- $\boldsymbol{D_{ij,t}}$: all other main effects and double interactions involving US_i, LG_j, SM_j, and $Y04_t$ (except $LG_j \times SM_j$, which is always 0, and $Y04_t$, SM_j, LG_j, $SM_j \times Y04_t$, and $LG_j \times Y04_t$, which are absorbed by the fixed effects)
- $\boldsymbol{X_{ij,t}}$: time-varying acquirer-country controls

We include target country $\times$ year fixed effects to account for time-varying macroeconomic conditions in the target countries that would affect the attractiveness of the countries' firms/assets in M&A. As in Section 3.2, we estimate the model using Poisson pseudo-maximum-likelihood. The hypothesis implies that the triple interaction with the large-haven dummy is positive. We have no clear prediction for the sign of the small-haven triple interaction. Since the law was made effective on October 22, 2004, we define years in our data as beginning on October 22. That way, the $Y04_t$ dummy takes on the value 1 when the law is in effect.

The results are reported in column 1 of Table 10. The large-haven triple interaction is positive and significant, confirming our hypothesis. The small-haven triple interaction is insignificant. This result documents that a tax-law change in how easy it is for US firms to use cross-border, tax-haven M&A to invert out of the US results in a change in deal value

consistent with tax avoidance motives driving cross-border, tax-haven M&A.

The AJCA also granted US firms access to a temporarily lower tax on repatriated earnings. Specifically, firms could access the lower tax rate "for either the taxpayer's last taxable year which begins before October 22, 2004, or the taxpayer's first taxable year which begins during the one-year period beginning on October 22, 2004."[9] Thus, firms could potentially repatriate earnings at the reduced rate up to and including October 20, 2006. Given that foreign cash holdings can influence cross-border M&A (Edwards et al., 2016; Hanlon et al., 2015), we rerun the model excluding years 2004 and 2005 to rule out any impact the repatriation holiday might have. Since each year begins on October 22, we compare the post period beginning on October 22, 2006 to the pre-period ending on October 21, 2004. As indicated in column 2 of Table 10, the results are robust to the exclusion of these years.

4.2 Additional Alternative Explanations and Robustness Tests

The Role of Shell Companies. A concern is that the majority of haven entities in M&A are shell companies. This issue mainly affects haven purchases, and, to a lesser extent, asset building transactions. Since firms can easily set up shell companies themselves, it seems unlikely that they would spend nearly $1.7 trillion acquiring haven firms if they could obtain the same benefits by setting up a shell company. The mean deal value in a cross-border deal when the target is in a large (small) haven is $317 million ($377 million), so these cannot be small shell companies on average. For asset deals, the location of the target is the location reported in SDC, which is defined as the location of business activities. Asset deals with a haven target thus involve the acquisition of real haven operations. In the case of M&A transactions where the target is a standalone, haven-resident firm, one could still be concerned that the actual operations of the target might be shell-like, since it could be incorporated but not headquartered in a haven. (We are making the implicit assumption that a firm being headquartered in a haven is not a shell company.) Relatedly, one could be

[9]Internal Revenue Service (2005): "Domestic Reinvestment Plans and other Guidance under Section 965," January 13 `https://www.irs.gov/pub/irs-drop/n-05-10.pdf` (accessed June 27, 2023).

concerned that firms become tax resident in havens without having any real operations, such as their corporate headquarters, in the haven. They then make cross-border acquisitions, which would inflate the abnormal deal value associated with havens.

To address these concerns, we rerun all of the results by dropping acquirers and targets that are tax resident in a haven but not headquartered in a haven. The results are robust to this exclusion; total abnormal deal value falls from $2.4 to $2.1 trillion.

There are too Few Haven M&A. A question that is very different in nature is why there are not even more tax-haven M&A if they result in such large tax savings. First, we note that the volume of cross-border M&A involving havens is by any metric very large. Second, there are factors that might limit the ability of firms to engage in haven M&A, such as constraints in some industries on engaging in cross-border M&A for regulatory or national security reasons. Moreover, complex M&A deals have execution risk that can make them fail and cross-border M&A transactions are likely to be complex. Such factors include cultural differences and exchange rate risk. In addition, some firms might not engage in a haven acquisition because of reputational concerns or because they are unable to find a suitable target in the relatively small haven economies.

Intangible Assets in Tax Havens. One could be concerned that firms move intangible assets, such as intellectual property, to havens and then, potentially at a later point, sell them to other firms in cross-border deals. This would inflate abnormal deal value in havens without any associated real investment or real activity in havens. First, it should be noted that many transactions where intangible assets are sold are not covered by SDC, simply because SDC does not consider them an M&A transaction. This includes the sale of patents, film rights, awards of licenses or rights to operate, and the distribution rights from a manufacturer to a distributor. SDC only includes intangible asset deals involving the sale of pharmaceutical (if post-clinical trials) and other brand rights (Bollaert and Delanghe, 2015). Moreover, this concern only applies to asset deals and not transactions where an entire firm

is sold. There are 2,339 cross-border asset deals[10] worth $582.3 billion where the target is in a haven, compared to $1.1 trillion where an entire haven resident firm is sold. We manually look through the largest of these asset deals and classify 343 deals worth $438.0 billion as not having an intangible target, and 7 deals worth $9.3 billion as having an intangible target. The remaining 1,989 deals worth $135.1 billion we either did not look into (1,961 deals), or, due to a lack of information, could not determine whether the target was an intangible asset (28 deals). To be conservative, we assume that all of these unclassified asset deals involve an intangible target, and rerun the results excluding such deals along with the 7 deals with a verified intangible target. The results are robust to this exclusion–total abnormal deal value falls from $2.4 to $2.2 trillion.

Tax Cuts and Jobs Act of 2017. Another concern could be that the US Tax Cuts and Jobs Act of 2017 might have rendered our paper into one on "economic history" if the results that we document vanish after this tax cut. Several pieces of evidence speak against this concern. First, of the $4.2 trillion in haven M&A, $1.7 trillion (40%) involves the United States on one side of the deal, so even if the US results would completely disappear, 60% of the haven M&A deal value would still be valid. Second, the cash effective tax rates of US multinationals in tax havens is substantially lower than even the new statutory US corporate tax rate of 21%. For example, the effective tax rate of US multinationals in Ireland is 4% (Tørsløv et al., 2022). Thus, very strong incentives for US multinationals to shift profits out of the US tax jurisdiction remain in place. Third, in line with the prior point, Garcia-Bernardo et al. (2021) document that the fraction of US multinationals' profits shifted out of the US has remained stable when comparing the immediate years before and after the 2017 US corporate tax reform. Therefore, it seems unlikely to assume that the 40% of total haven M&A deal value involving the US has completely vanished. Nevertheless, the dollar amount of tax savings for US firms could fall (without a substantial change in M&A volumes) given

[10]A deal is an asset deal if the target is not a standalone firm and there is no sellside PE involvement. A target is a standalone firm if it has the same cusip or the same sedol as its ultimate parent. A deal has sellside PE involvement if the seller is a private equity, venture capital, leveraged buyout, or infrastructure fund. In other words, asset deals are those where the target is selling something that is not itself in a strategic deal.

the lower statutory corporate tax rate.

Are the Results Driven by a Single Tax Haven? One might be worried that the results are driven by a single tax haven. Table 6 can be used to illustrate the sensitivity of the results to individual tax havens. Column 2 of the table contains the abnormal deal value estimate of each haven, which shows how much each haven contributes to the $2.4 trillion in total abnormal deal value.

Secrecy and Anonymity Offered by Havens. Alternative explanations for our results with regards to the pursuit of anonymity and secrecy via havens are not applicable. While many might consider tax avoidance unethical, and companies might not be following the spirit of tax laws, firms are following the letter of the law, making tax avoidance legal. Hiding assets with the help of the anonymity provided by havens only applies to the illegal practices of tax evasion, which are beyond the scope of this paper. Moreover, if multinationals engaging in cross-border, haven M&A were using the secrecy of havens for illegal purposes, we would not have been able to obtain the transaction-level data documented in this paper.

Fraud and Theft from Shareholders. Executives could defraud or steal from (minority) shareholders using the secrecy provided by havens (Bennedsen and Zeume, 2018; O'Donovan et al., 2019). But if executives seeking to defraud shareholders was the main motive in cross-border, haven M&A, the implied fraud and theft would be on such a massive scale—havens have $2.4 trillion in M&A deal value beyond what is predicted based on their economic fundamentals—that either haven M&A fraud and theft would regularly make the headlines, which is not the case, or there would be massive undiscovered amounts of fraud, which seems implausible.

Corporate Governance. One could be concerned that executives use haven M&A to enjoy the "quiet life," undisturbed by shareholders (Bertrand and Mullainathan, 2003), by exploiting the generally worse shareholder protection laws in havens compared to those of major economies such as the US or the UK. This is implausible. First, this concern only applies to haven purchases that result in an inversion of the acquirer to a tax-haven

country, but not to the overwhelming majority of transactions in our sample which are asset building transactions or haven purchases that do not result in an inversion, since the corporate governance of the buyer will not change in these transactions. Second, if executives wanted to enjoy a "quiet life" through bad corporate governance that shields them from demanding shareholders, there are easier ways to do so, such as adopting staggered boards or poison pills, rather than engaging in cross-border, haven M&A (Gompers et al., 2003; Bebchuk and Cohen, 2003). Third, cross-border M&A involving havens such as Bermuda or Ireland implies the opposite of the "quiet life" hypothesis, since executives have to manage a more complex corporate organization and have to spend a substantial amount of time interacting with tax lawyers and accountants to implement and operate these corporate structures.

Political and Economic Instability. Another alternative explanation is that M&A are structured through havens to protect the privacy of rich individuals in countries with a weak rule of law. These individuals might be worried about their safety, for instance, because of fears of kidnapping for a ransom. As such, they might structure M&A through havens not for tax avoidance purposes, but to protect their privacy and identity as owners of large businesses. A related argument is that M&A are structured through havens because the source country is politically or economically unstable. We rerun our main gravity-model specification and restrict the sample such that the acquirer or target is in a stable non-haven or both sides of the deal are in a haven. Stable non-haven countries include the United States, Canada, and non-haven countries in Western Europe, since these countries are both politically and economically more stable than many other parts of the world and rich people in them generally do not fear for their safety if their wealth becomes publicly known. The results reported in Table 9 indicate that our results are robust to this alternative story.

Legal and Regulatory Constraints. M&A could also be structured through havens as intermediaries to avoid legal and regulatory constraints such as capital controls. For instance, this might be the case for M&A between firms in Hong Kong and mainland China

(which are coded by SDC and us as cross-border). To address this, we rerun our main gravity-model specification and restrict the sample such that the acquirer or target is in an economically open non-haven or both sides of the deal are in a haven. Open non-haven countries include the United States, Canada, and non-haven countries in Western Europe, since these countries have liberalized and opened their economies to a much greater extent than many other parts of the world. The results reported in column 1 of Table 8 indicate that our results are robust to this alternative story.

Additional Control Variables and Samples. We test the robustness of the gravity model results by controlling for the following: a measure of corruption from the World Governance Indicators,[11] whether the country has a UK legal origin (La Porta et al., 2008), international trade data from the UN, capital account openness (Chinn and Ito, 2006), double tax treaties and exchange of information agreements from the Exchange of Information Database (2019), bilateral investment treaties (Bian et al., 2021), and economic integration agreements (Kellogg Institute for International Studies, 2019). Tables 7, 8, and 9 indicate that our results are robust to these controls. If we exclude firms in the banking industry (based on the Fama-French 48 definition) from the sample, abnormal deal value falls from \$2.4 to \$2.1 trillion.

Alternative Clustering. We double cluster standard errors in all gravity models at both the acquirer- and target-country-level since this generally results in the largest and thus most conservative standard errors. To document robustness, we replicate column 2 of Table 7 using country-pair clustering and report the results in column 3 of Table 9. The haven coefficients remain statistically significant.

5 Conclusion

Firms and individuals use tax havens to minimize their taxes, both in legal and illegal ways. Whether tax havens affect corporate control in the form of cross-border mergers and

[11] This measure varies from -1.7 to 2.5, so we add 2 to the variable before taking the log.

acquisitions (M&A), or are merely used as conduits between host and destination countries of (greenfield) foreign direct investment and portfolio investment is the research question that this paper answers.

To start, we provide new stylized facts through the first comprehensive analysis of cross-border, tax-haven mergers and acquisitions (M&A). Using novel tax residence data, we document that firms spent $4.2 trillion on 13,318 cross-border, tax-haven M&A from 1990 to 2017.

Next, using a gravity model research design, we classify 57.3%, or $2.4 trillion of this deal value as abnormal, or beyond what is predicted based on the economic fundamentals of these havens. 35% of this abnormal deal value from haven M&A involve small havens such as Bermuda and the Cayman Islands. Given these magnitudes, it is surprising that prior research on cross-border M&A generally omits M&A involving small havens from their samples. For identification, we use a change in US tax law in 2004.

We make three contributions to the literature. First, we add to a nascent literature on abnormal capital flows associated with havens by documenting that havens have $2.4 trillion in abnormal M&A deal value. Second, we contribute to the literature on the determinants of cross-border M&A by documenting that the tax savings provided by havens are a significant determinant of cross-border M&A. Third, we contribute to the literature on tax havens by documenting that havens affect the actual ownership of assets on a large scale and not just the ownership of assets "on paper."

The results in this paper are highly relevant for policy makers, such as the recent OECD-led pact that aims to increase the effective tax rates paid by large multinationals.[12]

One question that might arise is why there are not even more tax haven M&A if they result in such large tax savings. First, the volume of cross-border M&A involving havens is, by any metric, very large. Second, there are factors that might limit the ability of firms to engage in haven M&A, such as regulatory or national security based restrictions on cross-

[12]Financial Times (2021): "136 nations agree to biggest corporate tax deal in a century," October 8, `https://www.ft.com/content/5dc4e2d5-d7bd-4000-bf94-088f17e21936` (accessed November 18, 2021).

border M&A, execution risk inherent in complex transactions such as cross-border M&A (e.g., cultural differences or exchange rate risk), reputational concerns, or a lack of suitable takeover targets in haven jurisdictions. Providing quantitative evidence on this question appears like a fruitful avenue for future research.

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Table 1: Top Countries by Cross-Border M&A Deal Value

This table reports the aggregate cross-border M&A deal value from 1990 to 2017 of the top countries based on the tax residence of the acquirer (columns 1-2) and target (columns 3-4). *Deal Value* refers to total deal value in billions of inflation-adjusted 2017 dollars. Tax-haven jurisdictions are in bold.

Acquirer Country	Deal Value (bn $)	Target Country	Deal Value (bn $)
1. United States	3,070	United States	4,436
2. United Kingdom	2,443	United Kingdom	2,112
3. Germany	1,008	Germany	1,081
4. France	906	Canada	743
5. Canada	816	France	635
6. **Netherlands**	639	**Netherlands**	632
7. **Switzerland**	593	Australia	410
8. Japan	559	Italy	294
9. **Ireland**	336	**Switzerland**	269
10. Australia	326	Sweden	269
11. Belgium	308	Spain	247
12. Spain	278	Japan	197
13. Sweden	255	Brazil	193
14. China	245	**Ireland**	174
15. **Bermuda**	238	China	155
16. Italy	204	Norway	147
17. **Luxembourg**	197	**Hong Kong**	147
18. **Hong Kong**	187	Belgium	133
19. **Singapore**	172	Denmark	128
20. Israel	128	**Bermuda**	126
21. South Africa	113	**Singapore**	103
22. Finland	105	Mexico	98
23. Mexico	95	Russia	95
24. India	94	Finland	88
25. Norway	78	India	80
26. Denmark	77	**Luxembourg**	79
27. Brazil	68	South Korea	75
28. **Cayman Islands**	67	Israel	74
29. Russia	55	Poland	69
30. South Korea	54	**Cayman Islands**	66

Table 2: M&A Summary Statistics

This table reports the total M&A deal value in billions of 2017 USD based on the location of the acquirer/target and whether the deal is cross-border or intra-country.

	Acquirer	Target	
Cross-Border	\$11,682	\$12,639	
Intra-Country	\$24,614	\$24,614	Non-Haven
Ratio	0.47	0.51	
Cross-Border	\$1,927	\$1,325	
Intra-Country	\$608	\$608	Large Haven
Ratio	3.17	2.18	
Cross-Border	\$754	\$399	
Intra-Country	\$55	\$55	Small Haven
Ratio	13.66	7.22	

Table 3: Tax-Haven/Non-Haven Specialization - Important Pairs

This table shows the total M&A deal value in billions of 2017 USD between a selection of important tax-haven/non-haven pairs. A tax-haven/non-haven pair is included if the deal value is significant relative to the total deal value of the tax haven or the non-haven country.

Tax Haven(s)	Non-Haven(s)	Deal Value
Bermuda	United States	190.4
British Crown Dependencies	United Kingdom	20.7
Cayman Islands	China	58.6
Cyprus	Russia, Greece and Ukraine	21.1
Hong Kong and Singapore	Asia-Pacific	227.7
Ireland	United States	372.6
Luxembourg	Western Europe	94.1
Netherlands	Western Europe	252.0
Switzerland	Latin America	21.5

Table 4: Variable Definitions

This table defines the variables. See Section 2.2 for a complete list of sources. Country-level variables defined for the acquirer have an analogous definition for the target. M&A data is from SDC Platinum. Variables defined for small havens have analogous definitions for large havens. M&A dollar figures are inflation-adjusted to 2017.

Country-Pair-Level

Variable	Definition
$\mathbb{1}$(Colonial Relation)	Dummy that equals 1 if the acquirer and target countries have a past colonial relationship.
$\mathbb{1}$(Common Language)	Dummy that equals 1 if the acquirer and target countries have the same official language.
Distance	Geographic distance between each country's most populous city.
M&A Value	Aggregate M&A value at the country-pair level.
$\mathbb{1}$(Same Country)	Dummy that equals 1 if the acquirer and target countries were formerly part of the same country.

Country-Level

Variable	Definition
GDP	GDP.
GDPPC	GDP per capita.
$\mathbb{1}$(Lg Haven Acquirer)	Dummy that equals 1 if the acquirer is in a large tax haven.
$\mathbb{1}$(Sm Haven Acquirer)	Dummy that equals 1 if the acquirer is in a small tax haven.
Tax Rate Differential	Difference between the statutory corporate income tax rate of the acquirer country and that of the target country in decimals.
$\mathbb{1}$(US Acquirer)	Dummy that equals 1 if the acquirer is in the United States.
$\mathbb{1}$(Yr$\geq$ 2004)	Dummy that equals 1 if the year is 2004 or later.

Table 5: Gravity Model

This table documents the effect of tax havens on cross-border M&A deal value. Poisson pseudo-maximum-likelihood estimation is used on this country-pair-year-level panel. All variables are measured contemporaneously and are defined in Table 4. *Year FE* refers to year fixed effects. Standard errors are double clustered at the acquirer and target country level, and reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

	Dep Var: M&A Value			
	(1)	(2)	(3)	(4)
𝟙(Sm Haven Acquirer)	3.10***	2.89***	1.81***	1.77***
	(0.31)	(0.37)	(0.31)	(0.30)
𝟙(Lg Haven Acquirer)	1.36***	1.39***	0.75***	0.74***
	(0.29)	(0.29)	(0.22)	(0.27)
𝟙(Sm Haven Target)	2.61***	2.35***	1.49***	1.48***
	(0.53)	(0.47)	(0.46)	(0.46)
𝟙(Lg Haven Target)	1.02***	1.03***	0.51**	0.51**
	(0.13)	(0.21)	(0.22)	(0.25)
ln(Acquirer GDP)	1.15***	1.11***	0.92***	0.92***
	(0.03)	(0.03)	(0.03)	(0.05)
ln(Target GDP)	1.20***	1.15***	0.99***	0.99***
	(0.09)	(0.07)	(0.06)	(0.07)
ln(Distance)	-0.61***	-0.54***	-0.39***	-0.39***
	(0.03)	(0.08)	(0.08)	(0.08)
𝟙(Same Country)		-0.18	0.37	0.37
		(0.25)	(0.31)	(0.31)
𝟙(Common Language)		0.99***	0.88***	0.88***
		(0.19)	(0.19)	(0.19)
𝟙(Colonial Relation)		0.73***	0.54***	0.55***
		(0.13)	(0.14)	(0.15)
ln(Acquirer GDPPC)			0.69***	0.70***
			(0.11)	(0.11)
ln(Target GDPPC)			0.52***	0.52***
			(0.11)	(0.11)
Tax Rate Differential				-0.07
				(1.35)
Year FE	Yes	Yes	Yes	Yes
N	794,710	794,710	794,710	573,356
Pseudo R^2	0.710	0.737	0.759	0.751
Dep Var Mean	4.48	4.48	4.48	4.48

Table 6: Abnormal M&A Deal Value in Tax Havens

This table compares abnormal to actual deal value in tax havens. *Abnormal Deal Value* equals *Total Deal Value* minus the predicted M&A deal value had the country not been a tax haven using estimates from column 3 of Table 5. *Total Deal Value* is the total cross-border M&A deal value associated with the tax haven. For details on how *Abnormal Deal Value* and *Total Deal Value* are disaggregated by country, see Section 3.3. The Netherlands Antilles includes Curaçao and Sint Maarten after it was dissolved in 2010. Dollar figures are in billions of 2017 USD.

	Abnormal Deal Value	Total Deal Value	Abnormal/Total
Netherlands	700.8	1,218.3	57.5
Bermuda	328.7	339.0	97.0
Ireland	316.7	501.4	63.2
Switzerland	248.5	835.0	29.8
Luxembourg	167.2	244.9	68.3
Hong Kong	148.9	302.8	49.2
Singapore	126.3	248.3	50.9
Cayman Islands	117.3	122.1	96.1
Netherlands Antilles	45.9	47.3	97.1
British Virgin Islands	36.2	37.2	97.3
Guernsey	29.9	48.0	62.3
Panama	28.1	33.5	84.0
Cyprus	26.5	34.5	76.8
Bahrain	24.1	30.7	78.4
Bahamas	13.8	23.5	58.8
All Other Tax Havens	10.2	69.1	14.8
Total	2,369	4,136	57.3

Table 7: Gravity Model Robustness Tests I/III

This is the first of three tables testing the robustness of the results in Table 5. *Control of Corruption* is from the World Governance Indicators. The dummies for whether a country has a UK legal origin are from La Porta et al. (2008). Imports and exports of real goods and services are obtained from the UN. *Baseline Controls* refers to the control variables used in column 3 of Table 5. Standard errors are double clustered at the acquirer and target country level, and reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

	Dep Var: M&A Value		
	(1)	(2)	(3)
𝟙(Sm Haven Acquirer)	2.25***	2.10***	2.13***
	(0.26)	(0.29)	(0.30)
𝟙(Lg Haven Acquirer)	0.68***	0.74***	0.73***
	(0.19)	(0.26)	(0.26)
𝟙(Sm Haven Target)	1.70***	1.45***	1.45***
	(0.48)	(0.38)	(0.35)
𝟙(Lg Haven Target)	0.43***	0.48***	0.47**
	(0.15)	(0.15)	(0.19)
ln(Acquirer Control of Corruption)	2.11***	1.77***	1.76***
	(0.51)	(0.31)	(0.31)
ln(Target Control of Corruption)	1.31***	0.88***	0.88***
	(0.34)	(0.31)	(0.31)
𝟙(Acquirer UK Legal Origin)		0.66***	0.67***
		(0.19)	(0.20)
𝟙(Target UK Legal Origin)		0.82***	0.81***
		(0.17)	(0.17)
ln(Acquirer Exports)			0.03
			(0.05)
ln(Acquirer Imports)			-0.01
			(0.06)
Baseline Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Sample	All	All	All
N	447,434	447,434	447,434
Pseudo R^2	0.753	0.765	0.765
Dep Var Mean	4.50	4.50	4.50

Table 8: Gravity Model Robustness Tests II/III

This is the second of three tables testing the robustness of the results in Table 5. To be included in the *Open* sample, both the acquirer and the target must be in tax havens or at least one side of the deal must be from an economically open/liberalized country, which includes Canada, the United States, and the non-haven countries of Western Europe. *KAOPEN* measures a country's capital account openness (Chinn and Ito, 2006). The *EOI* and *Double Tax Treaty* dummies are from the Exchange of Information Database (2019). *Controls* refers to the controls used in column 2 of Table 7. Standard errors are double clustered at the acquirer and target country level, and are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

	Dep Var: M&A Value		
	(1)	(2)	(3)
𝟙(Sm Haven Acquirer)	2.07***	1.79***	2.03***
	(0.34)	(0.25)	(0.28)
𝟙(Lg Haven Acquirer)	0.72**	0.77**	0.77***
	(0.32)	(0.30)	(0.26)
𝟙(Sm Haven Target)	1.42***	0.86***	1.40***
	(0.36)	(0.29)	(0.36)
𝟙(Lg Haven Target)	0.50***	0.53***	0.46***
	(0.16)	(0.15)	(0.12)
ln(Acquirer KAOPEN)		0.18	
		(0.44)	
ln(Target KAOPEN)		0.63	
		(0.58)	
𝟙(Double Tax Treaty)			-0.03
			(0.16)
𝟙(On Request EOI)			0.31**
			(0.14)
𝟙(Automatic EOI)			0.40
			(0.27)
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Sample	Open	All	All
N	136,864	414,696	447,434
Pseudo R^2	0.755	0.780	0.767
Dep Var Mean	4.78	4.50	4.50

Table 9: Gravity Model Robustness Tests III/III

This is the third of three tables testing the robustness of the results in Table 5. The *Bilateral Investment Treaty* dummy equals 1 if the country pair has a bilateral investment treaty at time t (Bian et al., 2021). The dummies on economic integration agreements in the second column are from the NSF-Kellogg Institute Database on Economic Integration Agreements (Kellogg Institute for International Studies, 2019). *Controls* refers to the controls used in column 2 of Table 7. Standard errors are clustered at the country-pair level or double-clustered at the acquirer- and target-country level, and are reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

	Dep Var: M&A Value		
	(1)	(2)	(3)
𝟙(Sm Haven Acquirer)	2.08***	2.26***	2.10***
	(0.29)	(0.25)	(0.25)
𝟙(Lg Haven Acquirer)	0.74***	0.80***	0.74***
	(0.26)	(0.21)	(0.17)
𝟙(Sm Haven Target)	1.43***	1.59***	1.45***
	(0.38)	(0.38)	(0.24)
𝟙(Lg Haven Target)	0.49***	0.54***	0.48***
	(0.14)	(0.14)	(0.18)
𝟙(Bilateral Investment Treaty)	-0.34***		
	(0.11)		
𝟙(Non-Reciprocal PTA)		-0.30	
		(0.25)	
𝟙(Preferential Trade Agreement)		0.44	
		(0.36)	
𝟙(Free Trade Agreement)		-0.13	
		(0.17)	
𝟙(Customs Union)		0.07	
		(0.24)	
𝟙(Common Market)		0.62**	
		(0.27)	
𝟙(Economic Union)		0.08	
		(0.28)	
Controls	Yes	Yes	Yes
Year FE	Yes	Yes	Yes
Clustering	Two-way	Two-way	Ctry-Pair
Sample	All	All	All
N	447,434	443,828	447,434
Pseudo R^2	0.766	0.768	0.765
Dep Var Mean	4.50	4.51	4.50

Table 10: Identification Using 2004 US Tax Law Change

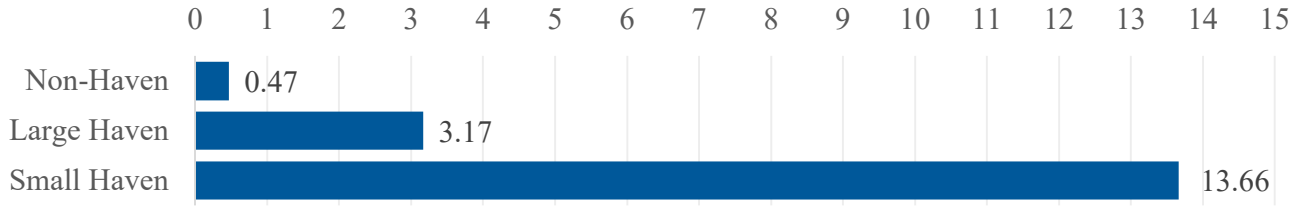
This table tests whether US firms acquired more large-haven firms in response to a US tax-law change implemented on 10/22/2004 that made inversions more difficult. Poisson pseudo-maximum likelihood estimation is used on this country-pair-year-level panel. The first column is the main specification. The second column tests the robustness of the first by excluding the years 2004-2005, since the US implemented a repatriation tax holiday in 2004 that was effective during this time. All variables are measured contemporaneously and are defined in Table 4. *Dummies and Interactions* refers to all other combinations of main effects and interactions of the dummies shown in the table, consistent with a triple differences-in-differences research design. *Time-Varying Controls* includes GDP and GDP per capita of the acquirer country (the target country variables are absorbed by the fixed effects). *Year×Target Ctry FE* refers to fixed effects at the target-country-year level. For the purposes of this regression, calendar years have been replaced with "fiscal" years that begin on October 22 of each year. Standard errors are double clustered at the acquirer and target country level, and reported in parentheses. ***, **, and * denote significance at the 1%, 5%, and 10% levels.

	Dep Var: M&A Value	
	(1)	(2)
$\mathbb{1}$(US Acquiror)×$\mathbb{1}$(Lg Haven Target)×$\mathbb{1}$(Yr≥ 2004)	0.72***	0.72**
	(0.23)	(0.29)
$\mathbb{1}$(US Acquiror)×$\mathbb{1}$(Sm Haven Target)×$\mathbb{1}$(Yr≥ 2004)	-0.35	-0.39
	(0.46)	(0.45)
Sample	All	Excl. 2004/05
Dummies and Interactions	Yes	Yes
Time-Varying Controls	Yes	Yes
Year×Target Ctry FE	Yes	Yes
N	406,738	370,637
Pseudo R^2	0.750	0.751
Dep Var Mean	4.48	4.46

Figure 1: Ratio of Cross-Border to Intra-Country M&A Deal Value

These figures plots the ratio of cross-border to intra-country M&A deal value.

Panel A: Based on Acquirer Location



Panel B: Based on Target Location

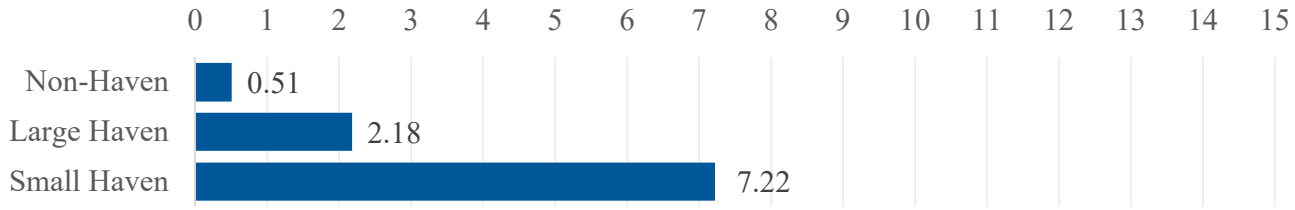
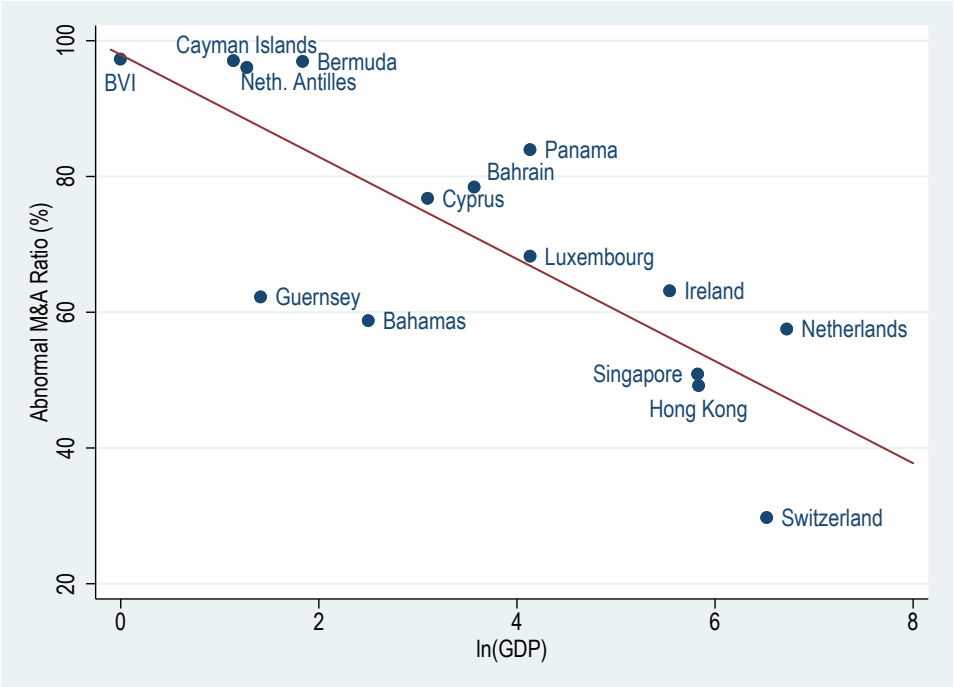


Figure 2: Abnormal to Total M&A Deal Value vs GDP

This figure compares the ratio of abnormal to total M&A deal value with ln(GDP) (in billions) for the havens listed in Table 6. *BVI* refers to the British Virgin Islands.



For Online Publication: Appendix

"Tax Havens and Abnormal Capital Flows of Mergers and Acquisitions"

A Country-Level Data Notes

A.1 Accounting for Missing Data

Gibraltar. We obtain GDP and GDP per capita from the government's website. Since Gibraltar's fiscal year ends on June 30, we denote GDP for the year ending June 30 as actually ending 6 months later, on December 31. The data is available from 2005-2017. Since the Gibraltar Pound is pegged 1-1 with the British Pound, we convert it to US dollars using the GBR-to-USD exchange rate as of June 30 each year.[13]

Guernsey and Jersey. We obtain GDP data from three sources. First, the WDI provides GDP and GDP per capita for the Channel Islands, without separately listing Guernsey and Jersey, from 1998-2007. Second, we obtain data for Jersey from the government of Jersey's website.[14] We use Gross Value Added as a proxy for GDP since it covers more years and is very similar to GDP for the years when both are available. For Guernsey, we obtain GDP data from its government's website.[15] Since the data from both sources is in 2018 units of local currency, we convert this to US Dollars using the GBR-to-USD exchange rate on December 31, 2018. We are left with Guernsey GDP and GDP per capita data from 2009-2018, Jersey GDP data from 1998-2018, and Jersey GDP per capita data from 2000-2018. Next, we fill in missing Jersey population data from 1998-1999, and Guernsey GDP and population data from 1998-2007 using the WDI Channel Islands data. Using data from 2009-2018, we take the average share of Channel Islands GDP and population for Jersey and Guernsey. We then use these shares to disaggregate the Channel Islands data into data for Jersey and Guernsey.

Since Jersey and Guernsey are not in the CEPII GeoDist Database, we gather the necessary data from additional sources. First, we need the bilateral geographic distance between

[13]Statistics Office, HM Government of Gibraltar (2017): "Abstract of Statistics 2016," `https://www.gibraltar.gov.gi/uploads/statistics/2019/Reports/AbstractofStatistics2016wholereport.pdf` (accessed August 11, 2020).

[14]Government of Jersey (2019): "National Accounts: GVA and GDP," October 2 `https://opendata.gov.je/dataset/national-accounts` (accessed August 11, 2020).

[15]States of Guernsey (2019): "Guernsey Annual GVA and GDP Bulletin," August 15 `https://gov.gg/CHttpHandler.ashx?id=120674&p=0` (accessed August 11, 2020).

the most populous cities in Jersey and Guernsey, and those for the remaining countries. We use the distances between the UK and all other countries as an approximation since London is relatively close to the most populous cities of Jersey and Guernsey. We manually fill in the distance between Jersey and Guernsey, which is 43.3 km. Next, we need the official language(s) of each of these countries. Based on information from Encyclopædia Britannica, the official language of Guernsey is English,[16] and the official languages of Jersey are English and French.[17] Based on the definition of the same country dummy, Jersey and Guernsey were never part of another country. Lastly, the colonial relation dummy should equal 1 only when Jersey or Guernsey are paired with the UK.

Luxembourg. The capital account openness measure (KAOPEN) used in Table 8 from Chinn and Ito (2006) is missing for Luxembourg. We replace the missing Luxembourg values with those of Belgium given their longstanding economic union.[18] Since KAOPEN is similarly high across all founding EU countries, we would have obtained similar results if we had instead used the values from France, Germany, or the Netherlands for Luxembourg.

A.2 Ireland

Ireland's GDP is highly volatile and does not reflect domestic economic activity due to tax avoidance by US multinationals, particularly high-tech companies such as Alphabet and Apple (Lane, 2017). For instance, due to a one-off internal reorganization of Apple's tax avoidance operations, Ireland's GDP grew by more than a quarter in 2015. As a result, the Irish Central Bank and the Central Statistics Office Ireland developed alternative macroeconomic indicators to GDP to more accurately measure the development of the Irish economy. We use GNI instead of GDP for Ireland, since Ireland's GNI is less affected by the aforementioned tax avoidance techniques of US firms.

B Proof of Abnormal Deal Value Disaggregation

Define H as the set of all havens. Since we define $\alpha_{ij,t}$ for all country pairs where at least one side is in a haven, we can express the sum as

$$\sum_i \sum_j \sum_t \alpha_{ij,t} = \sum_{i \notin H} \sum_{j \in H} \sum_t \alpha_{ij,t} + \sum_{i \in H} \sum_{j \notin H} \sum_t \alpha_{ij,t} + \sum_{i \in H} \sum_{j \in H} \sum_t \alpha_{ij,t}. \tag{6}$$

[16]Encyclopædia Britannica (2020): "Guernsey," August 12 `https://www.britannica.com/place/Guernsey-island-and-bailiwick-Channel-Islands-English-Channel` (accessed August 12, 2020).

[17]Encyclopædia Britannica (2020): "Jersey," August 12 `https://www.britannica.com/place/Jersey-island-Channel-Islands-English-Channel` (accessed August 12, 2020).

[18]Encyclopædia Britannica (2020): "The Benelux Economic Union," October 9 `https://www.britannica.com/topic/international-trade/The-Benelux-Economic-Union` (accessed October 9, 2020).

Rearranging the order of summation and breaking up the final term into two parts yields

$$\sum_i \sum_j \sum_t \alpha_{ij,t} = \sum_t \left(\sum_{i \notin H} \sum_{j \in H} \alpha_{ij,t} + \sum_{i \in H} \sum_{j \notin H} \alpha_{ij,t} + \frac{1}{2} \left(\sum_{i \in H} \sum_{j \in H} \alpha_{ij,t} + \sum_{i \in H} \sum_{j \in H} \alpha_{ij,t} \right) \right). \tag{7}$$

Changing the index labels, rearranging the order of summation, and substituting for α_h completes the proof.

$$\begin{aligned}
\sum_i \sum_j \sum_t \alpha_{ij,t} &= \sum_t \left(\sum_{i \notin H} \sum_{h \in H} \alpha_{ih,t} + \sum_{h \in H} \sum_{j \notin H} \alpha_{hj,t} + \frac{1}{2} \left(\sum_{i \in H} \sum_{h \in H} \alpha_{ih,t} + \sum_{h \in H} \sum_{j \in H} \alpha_{hj,t} \right) \right) \\
&= \sum_h \sum_t \left(\sum_{i \notin H} \alpha_{ih,t} + \sum_{j \notin H} \alpha_{hj,t} + \frac{1}{2} \left(\sum_{i \in H} \alpha_{ih,t} + \sum_{j \in H} \alpha_{hj,t} \right) \right) \\
&= \sum_h \alpha_h
\end{aligned}$$

References Appendix

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C Additional Results

Table C1: Additional M&A Summary Statistics

This table reports additional M&A summary statistics based on the location of the acquirer/target and whether the deal is cross-border or intra-country.

Panel A: Number of Deals

	Acquirer	Target	
Cross-Border	43,195	46,945	
Intra-Country	116,578	116,578	Non-Haven
Ratio	0.37	0.40	
Cross-Border	6,354	4,174	
Intra-Country	4,043	4,043	Large Haven
Ratio	1.57	1.03	
Cross-Border	2,626	1,056	
Intra-Country	231	231	Small Haven
Ratio	11.37	4.57	

Panel B: Mean Deal Value (Millions of 2017 USD)

	Acquirer	Target	
Cross-Border	\$270	\$269	Non-Haven
Intra-Country	\$211	\$211	
Cross-Border	\$303	\$317	Large Haven
Intra-Country	\$150	\$150	
Cross-Border	\$287	\$377	Small Haven
Intra-Country	\$239	\$239	

Panel C: Median Deal Value (Millions of 2017 USD)

	Acquirer	Target	
Cross-Border	\$31	\$32	Non-Haven
Intra-Country	\$22	\$22	
Cross-Border	\$35	\$31	Large Haven
Intra-Country	\$17	\$17	
Cross-Border	\$42	\$52	Small Haven
Intra-Country	\$31	\$31	

D Examples of Cross-Border, Haven M&A

D.1 Haven Purchases

The table below reports a selection of large haven purchases. For asset deals, the target location reported in SDC is the location of economic activity, which we equate with the headquarters. The incorporation is listed as *Unknown* in cases where it is missing for a standalone firm, which most commonly occurs when the firm is private. *Value* refers to the raw (not inflation adjusted) deal value in millions of USD.

Table C2: Haven Purchases Examples

Company Name	Headquarters	Incorporation	Residence	Year	Value
Acquirer: Bayer AG	Germany	Germany	Germany	2005	$2,961
A pharmaceutical and chemical company.					
Target: Roche Consumer Health	Switzerland	Asset Deal	Switzerland		
The non-prescription drug division of Roche, a multinational pharmaceutical and healthcare company based in Switzerland. It owns over-the-counter medicine brands and five manufacturing sites.					
Acquirer: Deutsche Bank	Germany	Germany	Germany	2010	$1,914
A financial services company.					
Target: Sal. Oppenheim	Luxembourg	Unknown	Luxembourg		
A bank that provided wealth management services for the wealthy. It was founded in Germany, but moved its headquarters to Luxembourg in 2007.					
Acquirer: Eaton Corp	United States	United States	United States	2012	$11,461
A diversified industrial manufacturer.					
Target: Cooper Industries Plc	Ireland	Ireland	Ireland		
An electrical equipment supplier.					
Notes: *Combined firm renamed Eaton Corp Plc, with headquarters and incorporation in Ireland.*					

Table C2: Haven Purchases Examples (Continued)

Company Name	Headquarters	Incorporation	Residence	Year	Value
Acquirer: Exor SpA	Italy	Italy	Italy	2016	$6,715
An Agnelli Family holding company, with stakes in Fiat Chrysler, CNH Industrial, and Cushman & Wakefield.					
Target: PartnerRe	Bermuda	Bermuda	Bermuda		
A global reinsurer.					
Acquirer: Exxon Mobil	United States	United States	United States	2017	$3,952
An international oil and gas company, and one of the largest refiners in the world.					
Target: InterOil Corporation	Singapore	Canada	Singapore		
An oil exploration and production company with operations in Papua New Guinea.					
Acquirer: Giovanni Agnelli & C.	Italy	Unknown	Italy	1999	$1,649
A trust of the Agnelli family.					
Target: Exor Group	Luxembourg	Unknown	Luxembourg		
A holding company. Its assets included 19% of Club Mediterranee, 20.5% of Rockefeller Center Properties Inc., and 75% of Chateaux Margaux at the time of the deal. Subsequently known as Exor SpA.					
Acquirer: Global Marine Inc	United States	United States	United States	2001	$4,044
An offshore drilling contractor with a fleet of 33 offshore drilling rigs worldwide.					
Target: Santa Fe International Corp	United States	Cayman Islands	Cayman Islands		
An offshore and land contract driller of oil and natural gas, with a fleet of 26 marine and 31 land drilling rigs.					
Notes: *The surviving entity was named GlobalSantaFe Corp, and was headquartered in the US, incorporated in the Cayman Islands, and tax resident in the Cayman Islands.*					
Acquirer: Pinault-Printemps-Redoute	France	France	France	2004	$5,964
A luxury goods company.					
Target: Gucci Group NV	Netherlands	Netherlands	Netherlands		
A luxury fashion company.					

D.2 Asset Building

The table below reports a selection of large asset building deals. For asset deals, the target location reported in SDC is the location of economic activity, which we equate with the headquarters. The incorporation is listed as *Unknown* in cases where it is missing for a standalone firm, which most commonly occurs when the firm is private. *Year* refers to the year the deal was completed. *Value* refers to the raw (not inflation adjusted) deal value in millions of USD.

Table C3: Asset Building Examples

Actavis Plc (now Allergan Plc): A pharmaceutical company that relocated their headquarters and incorporation from the US to Ireland in 2013. After merging with Allergan Inc, the combined entity was called Allergan Plc.

Target Name	Headquarters	Incorporation	Residence	Year	Value
Forest Laboratories Inc	United States	United States	United States	2014	$25,440
A pharmaceutical company that marketed branded drugs including treatments for gastrointestinal and respiratory ailments.					
Allergan Inc	United States	United States	United States	2015	$68,445
A pharmaceutical company and the maker of Botox.					

Arcelor SA (now ArcelorMittal): A Luxembourg tax resident and one of the largest producers of steel in the world. After merging with Mittal Steel Company NV in 2006, the combined entity was called ArcelorMittal.

Target Name	Headquarters	Incorporation	Residence	Year	Value
Dofasco Inc	Canada	Canada	Canada	2006	$4,807
A steel producer based in Canada.					
Coal Mines	Russia	Asset Deal	Russia	2008	$720
Mines and associated coal deposit mining rights were acquired from Severstal, a Russian steel and mining company.					
Unicon	Venezuela	Unknown	Venezuela	2008	$350
A manufacturer of welded steel pipes in Venezuela.					

Table C3: Asset Building Examples (Continued)

Bacardi Limited: One of the largest spirits companies in the world. It is headquartered and incorporated in Bermuda.

Target Name	Headquarters	Incorporation	Residence	Year	Value
General Beverage Corp	Italy	Unknown	Italy	1992	$1,500
A holding company and owner of Martini & Rossi, a vermouth and wine company based in Italy.					
Dewar's Scotch and Bombay Gin	United Kingdom	Asset Deal	United Kingdom	1998	$1,935
Acquired from Diago, a UK-based spirits company.					

Glencore Plc: A commodity trader and miner headquartered in Switzerland, incorporated in Jersey, and tax resident in Switzerland.

Target Name	Headquarters	Incorporation	Residence	Year	Value
Manganese Ferroalloys Operations	France	Asset Deal	France	2012	$160
The Manganese Ferroalloys Operations of Vale SA, a Brazilian mining company, were acquired. These operations were located in France and Norway.					
Viterra Inc	Canada	Canada	Canada	2012	$6,089
An agribusiness and one of the largest grain handlers in Canada.					
Caracal Energy Inc	Canada	Canada	Canada	2014	$1,349
An oil company that operated in Chad and had a production capacity of 25,100 barrels of oil per day.					
TRT-ETGO Du Québec Inc	Canada	Unknown	Canada	2015	$143
Operated an oilseed processing plant in Québec, the largest of its kind in eastern Canada.					

Table C3: Asset Building Examples (Continued)

Hutchison Whampoa: An investment holding company that was headquartered and incorporated in Hong Kong.

Target Name	Headquarters	Incorporation	Residence	Year	Value
Felixstowe Dock and Railway Company	United Kingdom	Asset Deal	United Kingdom	1991	$132
A holding company that owned the UK's largest container port. It was acquired from Peninsular & Oriental Steam Navigation Company.					
MTS Holdings	United Kingdom	Asset Deal	United Kingdom	1998	$185
A holding company that owned a container port in the UK. It was acquired from Rutland Trust, a conglomerate holding company.					
ICTSI International Holdings Corp	Philippines	Asset Deal	Philippines	2001	$400
A holding company with eight port operations around the world. It was a subsidiary of International Container Terminal Services, Inc, a Philippines-based port management company.					

SES SA: An owner and operator of satellites that provide telecommunication services. It is headquartered and incorporated in Luxembourg.

Target Name	Headquarters	Incorporation	Residence	Year	Value
GE Americom Communications	United States	Asset Deal	United States	2001	$4,326
The satellite subsidiary of GE (General Electric), a US-based conglomerate.					
RR Media	Israel	Israel	Israel	2016	$231
A provider of digital media services.					

Table C3: Asset Building Examples (Continued)

Shire Plc: A biotechnology company that relocated its tax residence from the UK to Ireland in 2008, at which point it was incorporated in Jersey and headquartered in Ireland. It was subsequently acquired by Takeda Pharmaceutical Company in 2019.

Target Name	Headquarters	Incorporation	Residence	Year	Value
Movetis NV	Belgium	Belgium	Belgium	2010	$524
A biotech company specializing in the treatment of gastrointestinal conditions.					
Advanced BioHealing	United States	United States	United States	2011	$750
A maker of a bio-engineered skin substitute, which is used to treat slow-healing ulcers.					
ViroPharma Inc	United States	United States	United States	2014	$4,211
A biotech company with a portfolio of products and product candidates for the treatment of rare diseases, including hereditary angioedema.					
NPS Pharmaceuticals Inc	United States	United States	United States	2015	$5,139
A biotech company focused on the development of treatments for rare diseases.					

Wilmar International Ltd: An agribusiness engaged in the production and processing of oils, specialty fats, grains, and sugar. It is headquartered and incorporated in Singapore.

Target Name	Headquarters	Incorporation	Residence	Year	Value
PGEO Group	Malaysia	Unknown	Malaysia	2007	$319
Refined and marketed edible oils, and had an annual production capacity of 4.7 million metric tonnes.					
Sucrogen Ltd	Australia	Asset Deal	Australia	2010	$1,839
The fifth largest sugar refiner in the world and a subsidiary of CSR, a building materials company based in Australia.					