Tax haven use Across International Tax Regimes

Kevin Markle[ψ]
University of Waterloo

Leslie Robinson
Tuck School of Business at Dartmouth

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Abstract: In the context of policy debates on international tax reform, we examine the use of tax haven subsidiaries across multinational firms resident in 28 countries. Our objective is to understand whether firms' incentives and abilities to deflect income to tax haven jurisdictions vary across countries consistent with differences in home country tax policy surrounding the taxation of foreign-source income. In particular, current debates motivate our interest in the general (taxation or exemption of foreign profits and controlled foreign company (CFC) legislation) and targeted (e.g., treaties, withholding tax rates) mechanisms that countries use to try to limit the erosion of their tax bases. We find that both a credit system and CFC rules reduce the use of tax havens. In country-pair tests, we find that bilateral agreements between the parent country and the haven increase the use of a specific haven, while a higher withholding tax rate on royalties paid from the parent to the haven decrease the use of the haven.

1.   Introduction

Trade and investment flows across international borders have increased substantially in recent decades, both in volume and in complexity. The increases in the ability of companies to transfer capital internationally, and in the discretion as to where to locate geographically-mobile activities, have also increased the ability to defer or avoid tax. In particular, the use of non-resident (i.e., foreign) subsidiaries to defer or avoid domestic tax on foreign-source income, or to reduce domestic income, generates considerable interest from tax policymakers concerned about erosion of their domestic tax base.

Countries choose from a menu of laws and mechanisms designed to limit the erosion of their tax bases. Some of these mechanisms are general in nature, like the choice of whether to tax the foreign income of its multinationals, and some are targeted at specific countries, like the imposing of withholding taxes. Our study examines the association between home countries' tax policies surrounding foreign-source income, and the use of tax haven subsidiaries by parent companies resident in those countries.[1] Using cross-sectional variation in the mechanisms that countries choose, we run tests to determine which general mechanisms affect the choice to use havens at all. We then drill down further to determine which targeted mechanisms affect the choice of one haven over another.

We use Orbis data to observe the foreign subsidiary locations for MNCs resident in 28 countries. We restrict our list of tax haven countries to 15 small (population less than 1.5 million) countries that are consistently identified as tax havens for which we can obtain the necessary data. We end up with a sample of 8,004 multinational corporations, 2,041 of which have at least one subsidiary in at least one of the 15 havens. Using the full sample, we first run a series of

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[1] Tax havens are low-tax jurisdictions that facilitate corporate income tax avoidance (Hines and Rice [1994]). We view the use of tax havens as an appropriate broad measure of base erosion because there are few, if any, legitimate reasons for being in these countries other than as a means for moving income out of the reach of taxing authorities.

logistic regressions to test whether taxing the foreign income of multinationals or imposing Controlled Foreign Company (CFC) rules (i.e., general mechanisms) affect the choice of MNCs to become haven users in the first place. To address the fact that the terms and scope of CFC rules vary across countries, we also develop a new measure of the inclusiveness of rules enacted by each country. We then replace the CFC indicator variable with a country's score on our 9-point scale and run the same series of regressions on the subsample of firms in countries with CFC rules.

Next, we run another series of logistic regressions on the subsample of MNCs that use havens to determine if the targeted mechanisms that countries use (e.g., treaties, withholding taxes) affect the choice of one haven over another. By including firm characteristics in these regressions, we are also able to describe the differences in the types of firms that choose specific havens.

We find that both the taxation of foreign profits (i.e., a credit or worldwide system) and the existence of CFC rules reduce the likelihood that a multinational will use tax havens. Further, we find that the more inclusive CFC rules are (i.e., the wider the scope of the income that is caught and taxed by them), the less likely is a multinational to use tax havens. These results support the conclusion that the general mechanisms that countries employ to prevent erosion of their tax bases have the desired effect.

In our tests of the targeted mechanisms that countries use to reduce or prevent the use of specific havens, we find that tax information exchange agreements and bilateral tax treaties encourage the use of specific havens, while higher withholding tax rates on royalties reduce the use of specific havens. Contrary to expectations, we find that higher withholding tax rates on interest and the taxation of dividends do not reduce the use of specific havens. The results of

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these tests also allow us to describe differences in the characteristics of firms that choose specific havens.

To our knowledge, we provide the most extensive examination to date of the cross-country differences in tax avoidance and the regime-level factors that affect it. We believe these results provide needed empirical evidence for the ongoing debates over international tax reform and should be of interest to researchers and policymakers.

The paper is structured as follows: Section 2 provides background on the taxation of foreign source income, Section 3 reviews the relevant literature, Section 4 outlines our empirical approach, Section 5 describes our data, Section 6 discusses our main results, and Section 7 concludes.

2. International tax regimes

Tax reform is high on government agendas around the world. The World Bank reports that in 2011, 40 countries carried out tax reform that either reduced income tax rates or eased the compliance burden (WB [2011]). The international aspects of income taxation have become increasingly important as countries become more economically integrated. The U.S. is perceived as the 'hold out' country – it is the only major country with a credit system and a corporate tax rate higher than 25 percent, and its last significant corporate tax reform was in 1986.[2] However, the "form, scope, and aim of any change remain the subject of vigorous debate" that prevents the U.S. from moving forward (Angus et al. [2010]).

The business press often criticizes the U.S. tax system, remarking that its multinational companies (MNCs) deflect income to low-tax countries, and create and keep profits and jobs abroad to permanently defer domestic tax on foreign income (Drucker [2010]). Others claim that

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[2] A credit system is a residence-based tax system whereby resident companies face the same tax burden on domestic and foreign income. Any domestic tax due on foreign income is deferred until distributed to the country of residence. Tax systems surrounding foreign income are described in Section 2.1.

U.S. MNCs are at a competitive disadvantage because non-U.S. MNCs have at their disposal a greater number of tax minimization strategies (Wells [2010]). These claims would seem to suggest that U.S. MNCs are both encouraged to deflect (due the high U.S. tax rate), and restricted from deflecting (due to the credit system), income to low-tax jurisdictions, relative to non-U.S. MNCs. Isolating tax haven use as the key tactic for deflecting income to low-tax countries, we show that the U.S. ranks 8th among 28 major countries in terms of the proportion of resident MNCs using tax haven subsidiaries. This raises two important questions that we seek to shed light on: Are the incentives and ability of U.S. firms to use tax havens roughly on par with those of its foreign competitors? What is the role of countries' tax systems in influencing firms' decisions to operate in tax havens?

Evidence presented in Desai et al. [2006] illustrates that demand for tax haven operations by U.S. MNCs arises from the desire to deflect income to low-tax jurisdictions and to defer residual taxation in the U.S. under the credit system. Yet MNCs resident in other countries that follow a variety of tax policies on foreign-source income use tax haven subsidiaries both more and less than U.S. MNCs. In thinking about international tax reform, it would be useful to understand how demand for tax haven operations varies across countries, and whether that variation can be explained by aspects of countries tax systems. Motivated by recent legislation and legislative proposals in Japan, the UK and the U.S., the tax system characteristics of interest in our study are (1) credit versus exemption systems, and (2) controlled foreign company (CFC) legislation. To examine the latter characteristic more deeply, we introduce a new measure of the inclusiveness of each country's CFC legislation. Our 9-point index is intended as a way to capture the effects of differences across international tax regimes more fully than is possible when simply comparing countries with CFC legislation to those without.

The UK and Japan passed legislation in 2009, replacing their credit (i.e., worldwide) systems with exemption (i.e., territorial) systems and putting some pressure on the U.S. to follow suit.[3] The following passage appeared in a press release issued by the U.S. Committee on Ways and Means on October 26, 2011:

> **"**Today, Ways and Means Committee Chairman Dave Camp (R-MI) unveiled an international tax reform discussion draft as part of the Committee's broader effort on comprehensive tax reform that would lower top tax rates for both individuals and employers to 25 percent. In addition to rate cuts, the plan would transition the United States from a worldwide system of taxation to a territorial system – a move virtually every one of America's global competitors has already made."[4]

A credit system taxes resident companies on all of their income regardless of where it is earned, while an exemption system taxes resident companies only on resident country income. However, regardless of the approach, many countries enact CFC legislation to prevent abuse, which is generally defined as earning low-taxed passive foreign-source income. Both the UK and Japan are examining options for CFC reform as a result of adopting exemption systems, noting that the proper scope of CFC rules under an exemption system is not necessarily the same as under a credit system.[5] Under a credit system CFC rules restrict *deferral of* domestic taxation, while under an exemption system CFC rules restrict *exemption from* domestic taxation.

If restraining artificial diversion of profits to low-tax jurisdictions preserves a country's tax base, then the role of a country's approach to taxing foreign-source income combined with the scope of any CFC legislation in discouraging such diversion are important to understand in the debate over tax reform.[6] Existing literature supports the notion that MNCs facing credit systems,

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[3] An exemption system is a source-based tax system in which all resident companies in a particular jurisdiction face the same tax burden within that jurisdiction, regardless of whether a these resident companies are subsidiaries that are ultimately controlled by companies resident in different countries (i.e., parents).

[4] http://corporate.cqrollcall.com/files/documents/CongressionalPressRelease_Sample.pdf

[5] Japanese CFC reform: http://americantaxpolicyinstitute.org/15papers/Japanese%20CFC%20Rules.pdf
UK CFC reform: http://www.hm-treasury.gov.uk/d/corporate_tax_reform_part2a_cfc_reform.pdf

[6] In the context of U.S. tax reform, Wells [2010] outlines guiding tax policy principles such as neutrality and horizontal equity. However, he notes that an overarching objective of a rational tax system is to collect taxes in a

and/or CFC rules, should exhibit lower tax haven use because they likely obtain smaller benefits (i.e., lower tax savings from deferral relative to exemption) at higher costs (i.e., planning to circumvent CFC rules) (e.g., Maffini [2012]; Voget [2011]; Clausing and Shaviro [2011]). Yet, to our knowledge, there is no direct empirical evidence on the influence of home country taxation on the likelihood of tax haven use.

Voget [2011] examines whether changes in parent company incorporation exhibit a tax avoidance motive and finds that ownership of low-taxed foreign subsidiaries increases the likelihood of relocation for MNCs resident in credit countries and countries with CFC legislation. Maffini [2012] finds that MNCs resident in exemption countries experience a greater reduction in worldwide tax liabilities from tax haven use, relative to MNCs in credit countries. Finally, Clausing and Shaviro [2011] examine bilateral FDI flows and find that investment from exemption countries is more sensitive to the host country tax rate, while investment from countries with CFC rules is less sensitive to the host country tax rate. Building on these studies, we offer the first cross-country evidence on the association between tax systems and haven use.[7]

2.1   *General measures of international tax regimes*

Countries' tax systems are commonly separated into two categories depending on the fundamental principle they follow regarding the taxation of foreign income earned by resident companies – credit systems versus exemption systems.[8] The first category, source-based taxation, follows the doctrine of capital import neutrality, whereby a country taxes only income

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sustainable way; i.e., in a manner that causes the least erosion to the tax base. Tax havens are likely to be one of the more significant threats to preservation of a country's tax base.

[7] We examine a single cross-section of data and thus do not purport to identify causal effects of tax systems on tax haven use. We acknowledge that countries may enact, and/or change CFC rules, instead in response to tax haven use. Nevertheless, we offer useful cross-country evidence on the association between country's use of CFC rules and/or credit systems and tax haven use by their resident MNCs.

[8] It is the tax system in the home country of the parent company that matters for how (and whether) the income of its foreign subsidiaries will be taxed in the home country. The resident country of a parent company is termed a home country, while the resident country of a subsidiary company is termed a host country.

generated within its sovereign territory. Strict adherence to this doctrine results in a foreign subsidiary company resident in host country A, but controlled by a parent company resident in home country B, paying the same rate of tax as the domestic operation of a parent company resident in home country A. This reflects the belief by home country B that all taxpayers competing in a particular jurisdiction should be subject to the same tax burden. We refer to a source-based tax system as an *exemption* system (also known as a "territorial system"), because foreign source income is "exempt" from domestic taxation.[9]

The second category, residence-based taxation, follows the doctrine of capital export neutrality, whereby a country taxes income generated by its resident companies worldwide. Strict adherence to this doctrine results in a foreign subsidiary company resident in host country A, but controlled by a parent company resident in home country B, paying the same rate of tax as the domestic operation of the parent company resident in home country B. This reflects the belief by home country B that resident taxpayers should be subject to the same tax burden on their domestic and foreign income. Income taxes paid by the subsidiary company to country A are allowed as a "credit" in determining any residual domestic tax liability owed by the parent company in home country B, so we refer to a residence-based tax system as a *credit system* (also known as a "worldwide system").[10]

Incentives exist under both systems to deflect income to low-tax jurisdictions, namely tax havens. Under an exemption system, aggregate tax payments can be reduced by having income

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[9] Several countries (e.g., Belgium, France, Germany, and Italy) exempt only 95 percent of foreign dividends. Consistent with other studies in the area, we do not treat these countries as different from those that exempt 100 percent of foreign dividends.

[10] Clausing and Shaviro [2011] classify countries as either credit or exemption countries, but note that at times this coding may be ambiguous, in part due to the existence of CFC legislation (discussed in Section 2.1.2). Thus, the authors create a third category of countries, which they refer to as "hybrids" and that generally exempt some but not all types of foreign income. As we are interested in the separate effects of credit/exemption systems and CFC legislation on tax haven use, we distinguish credit from exemption countries based on binary coding consistent with Voget [2011] and Markle [2012].

taxed in a tax haven rather than in a high-tax country. The incentives under a credit system, in contrast, derive from an exception that allows the home-country tax on foreign income to be deferred until the underlying income is distributed to the parent in the form of a dividend. This exception, commonly referred to as "deferral", creates an incentive to deflect income to a tax haven if the distribution, or repatriation of income to the home country, can be delayed.

In order to protect domestic tax revenue, both credit and exemption systems use a variety of anti-abuse mechanisms, the most common of which is CFC legislation. If the tax burden in a host country is lower than the tax burden in the home country, the incentive for resident companies to "artificially" shift taxable income to a jurisdiction with a lower tax rate exists. This is particularly salient for mobile sources of income such as intellectual property. When domestic tax revenue is reduced while national infrastructures continue to support resident companies' profits, neither deferral under the credit system or exemption of foreign source income can be sustained.

The basic idea of CFC legislation is that a share in the income of a foreign company classified as a CFC can be considered taxable income in the hands of a resident taxpayer. This income is said to be "tainted" and attributed to resident shareholders, subjecting the foreign source income to immediate domestic taxation. Under a credit system, this means the elimination of deferral, irrespective of whether the income is distributed to the resident shareholder. Under an exemption system, this means that foreign source income is subject to domestic taxation (i.e., the foreign income is treated as it would be in a credit system with no deferral). In both cases, CFC legislation reduces or eliminates incentives to invest in low-tax jurisdictions for the purpose of tax avoidance by eliminating the savings otherwise realized by shifting income.

2.2   *Targeted measures of international tax regimes*

Policy debates often include discussions about legislation or regulations that prescribe negative treatment for transactions that involve specific foreign jurisdictions. In fact, there are a number of targeted actions that home countries take to deter resident MNCs from earning income in specific tax haven countries: (1) limiting participation exemptions, (2) signing tax treaties, (3) signing tax information exchange agreements, (4) imposing withholding taxes, and (5) constructing national tax haven black lists. To be clear, these measures represent aspects of international tax regimes that vary by parent-haven country-pair, rather than by parent country. We are interested in understanding the relation between targeted measures and specific tax haven use by resident MNCs. We briefly discuss each of these measures in turn.

A participation exemption provides that certain types of dividends received from qualifying overseas companies are not taxed in the hands of parent company in its country of residence. Participation exemptions are only relevant in countries which tax companies on their income from sources outside the country. In fact, most countries that we think of as territorial are really worldwide, but simply extend their participation exemption to a significant number of countries. Interestingly, a parent country may broadly extend the participation exemption to dividends received from foreign subsidiaries, *except* those located in countries it deems tax havens – e.g., Italy. What this means is that the distinction between worldwide and territorial that we earlier described earlier as a general measure can instead characterize each parent-haven country-pair.

A major objective of bilateral tax treaties, apart from avoidance of double taxation, is to prevent tax avoidance and to ensure that treaty benefits flow only to the intended recipients. Tax treaties achieve this objective by providing for exchange of information between the tax authorities of the contracting states and by outlining provisions designed to ensure that treaty benefits are limited to bona fide residents of the other treaty country and not to treaty shoppers.

Tax information exchange agreements (TIEAs), in contrast, focus solely on information sharing. Treaties and TIEAs are not mutually exclusive. Treaties may fail to provide for information exchange or the provisions, if they exist, may fail to comply with some standards that the contracting states subsequently attempt to adhere to. If the costs of taxing authorities sharing information outweigh the potential benefits of avoiding double taxation, then the existence of a treaty or a TIEA should deter MNCs from investing in a specific tax haven.

One way that MNCs can shift income to tax havens is by making outbound royalty or interest payments to a controlled foreign company located in the tax haven. Home country legislation can attempt to deter this sort of activity by imposing a withholding tax on payments to certain countries, and tax havens in particular. For example, Denmark does not as a general rule impose a withholding tax on outbound payment of interest, but if those payments are made to affiliated companies located in a tax haven, then Denmark imposes a 25 percent withholding tax rates. These withholding tax obligations should increase the marginal cost of shifting income to the tax haven country by the MNC. Finally, some home countries construct official (as part of the country's CFC legislation for instance) or unofficial tax haven black lists (see Sharman and Rawlings [2005]). In general, these lists introduce obstacles to tax haven operations by limiting or barring transactions carried out by resident MNCs in specified foreign jurisdictions.[11]

3.   Relevant literature

MNCs are widely believed to use tax havens to avoid taxation, and there is ample anecdotal evidence to suggest that they do (Drucker [2010]). As a result, there is considerable policy interest around the world in understanding how resident firms use tax havens in their international tax planning. Empirical analyses of the incentives to use tax havens are largely

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[11] We are currently compiling official and unofficial national tax black lists for the parent countries in our sample to incorporate into a future version of our paper.

limited to the U.S. (Desai et al. [2006]) and Germany (Gumpert et al. [2011]), and offer evidence

of various firm characteristics associated with tax haven use, including size and income

mobility.[12] Gumpert et al. [2011] notes taxation in the home country (described in Section 2.1

above) should also influence the probability of tax haven investment. However, a single country

analysis cannot examine these factors explicitly (absent changes in home country taxation).

Some studies examine the impact of home country taxation on the type of assets held outside

the home country. Ruf and Weichenrieder [2009] examines tax policy reform in Germany

surrounding foreign income and its effect on passive foreign investment of German MNCs.[13]

They find that MNCs increased passive investment when Germany expanded the scope of its

exemption of foreign income in 2001 (i.e., exemption no longer required a bilateral tax treaty

with the host country). They also find that MNCs reduced passive investment in response to a

2003 revision to German CFC legislation that effectively broadened its applicability. Based on

the prediction in Weichenrieder [1996] that a reduction in passive investment will cause real

investment to fall, due to higher costs of capital, Egger and Wamser [2010] use a regression

discontinuity design that takes advantage of legislative thresholds to show that CFC rules cause

fixed asset investment to fall.

There is some cross-country evidence that tax systems create disparate incentives to invest in

low-tax jurisdictions. Voget [2011] examines whether changes in parent company incorporation

via M&A exhibit a tax avoidance motive and finds that ownership of low-taxed foreign

subsidiaries increase the likelihood of relocation for MNCs resident in credit countries and

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[12] The Bureau of Economic Analysis in the U.S. and the Bundesbank in Germany enable fairly nuanced studies of
U.S. and German MNCs using their detailed micro-data. Instead, we focus on a broad cross-section of home
countries to obtain variation in home country taxation, but at the cost of less detailed data on the domestic and
foreign operations of firms.
[13] Interest in passive investment in particular stems from the observation that CFC rules in theory typically try to
prevent the deflection of passive, rather than active income, to low-tax jurisdictions.

countries with CFC legislation.[14] Maffini [2012] finds that MNCs resident in exemption countries experience a greater reduction in worldwide tax liabilities from tax haven use, relative to MNCs in credit countries. Finally, Clausing and Shaviro [2011] examine bilateral FDI flows and find that investment from exemption countries is more sensitive to the host country tax rate, while investment from countries with CFC rules is less sensitive to the host country tax rate.

Taken together, existing literature supports the notion that MNCs resident in credit countries, and countries with CFC rules, should exhibit lower tax haven use as they likely obtain smaller benefits (i.e., lower tax savings from deferral relative to exemption) at higher costs (i.e., planning to circumvent CFC rules). Exploring this notion is our study's primary objective.

4.   Empirical approach

4.1   Sample selection

We model the firm-level choice made by a parent company to own a subsidiary in a tax haven – i.e., some firms chose to be *tax haven users* – as a function of characteristics of both the firm and of the parent company's home country. Thus, our sample selection process requires that we first identify a set of parent (i.e., home) countries as well as a set of tax haven (i.e., host) countries for our analysis. Using the sample selection process described in the following paragraphs, our final sample consists of 8,004 MNCs resident in 28 home countries, 2,041 of which invest in any one or more of 15 tax haven countries (see Table 1 for parent country and tax haven country names). To our knowledge, our study is the most comprehensive analysis of

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[14] More narrowly, Desai and Hines [2002] and Seida and Wempe [2004] examine U.S. parent re-incorporations to tax haven countries – called "inversions" – and find evidence consistent with the desire to avoid U.S. tax on foreign income. Sheppard [2002] and Thompson [2002] argue that these inversions were motivated by the desire to avoid U.S. CFC legislation. Inversions represent 'artificial' M&A as a new parent company is formed without any change in the ultimate shareholders. Hence, the U.S. enacted legislation to prevent further inversions. As new companies are not impacted by this legislation, there is both anecdotal and empirical evidence that some newly formed companies incorporate outside the U.S., but that this is relatively rare (Shaviro [2011]; Desai and Dharmapala [2010]; Allen and Morse [2011]). See Appendix A for more details.

tax haven use to date across countries. It is precisely this breadth that allows us to examine variation in tax haven use across international tax regimes, the primary objective of our study.

Using Bureau van Dijk's Orbis database that contains information on corporate structures for firms resident in countries around the globe, we identify a MNC as a parent company that controls at least one subsidiary outside of its country of residence, and that is itself not controlled by another company. As we draw our firm characteristics from Compustat, we focus on the intersection of Orbis and Computstat, limiting our sample to public MNCs. Finally, we exclude MNCs for which we observe a different country of incorporation and country of headquarters.[15] With this sample of MNCs in hand, we keep all OECD and BRICS parent countries that are resident to at least 10 of these MNCs. We exclude Luxembourg as a parent country because we consider this country a tax haven for our analysis.

Selecting a set of tax haven countries is no easy task, as the definition of a haven is not well-defined (Fuest [2011]). Further complicating the issue in a cross-country setting is the fact that not all parent countries hold the same negative view towards various host countries. In other words, the definition of a tax haven is likely to vary from the perspective of each parent country in our sample, and partly motivates our analysis of specific tax haven use (described in Section 4.3).[16] The tax havens we select include all countries that have appeared on either the OECD [2009] list or the Hines and Rice [1994] list. As the latter was developed in the context of U.S. MNCs, we do not rely on it exclusively but instead draw from the OECD list as well.[17]

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[15] We limit our analysis to parent companies incorporated and headquartered in the same home country so we can be more certain which home country's tax rules govern the MNC. We recognize that not all countries follow the place of incorporation as the determining factor in determining tax residency.

[16] For evidence of this, one can observe differences in National Tax Blacklists (see Sharman and Rawlings [2005]).

[17] We are not able to capture tax haven subsidiaries in the Channel Islands (Jersey, Guernsey, and Alderney) and Isle of Man because Orbis codes these territories as the United Kingdom.

From this initial list of tax haven countries, we impose two further restrictions. First, we focus our attention on small tax haven countries – i.e., those countries with a population less than 1.5 million. We do this for two reasons: (1) disagreements over whether a country is or it not a tax haven typically center on larger countries – e.g., Ireland; and (2) income earned in small tax haven countries is more likely to result from tax avoidance as opposed to real economic activity. As international tax regimes try to deter tax avoidance through the use of tax havens, we expect this approach to yield the strongest connection, if any, between tax regimes and haven use.[18] Second, to be consistent throughout the analyses, we focus on tax haven countries for which we could obtain bilateral data with the parent countries in our sample through Comtax.

4.2   Firm and country characteristics of tax haven users – general measures

We estimate cross-sectional logistic regressions of tax haven use by MNC parent company i, resident in country j, on a vector of firm and country characteristics, as follows:

$$Haven\ User_{ij} = \beta_0 + \sum_k \beta_k * Firm\ characteristic_i^k$$
$$+ \sum_k Country\ characteristic_j^k + \varepsilon_{ij}$$

(1)

We measure the model's variables as of the end of 2010, which are defined as follows:

HavenUser   = 1 if a parent company has a subsidiary incorporated in any one or more of 15 tax haven countries, and 0 otherwise;

Firm characteristics (data sources in parentheses)

Log Non-Haven Subs   = the natural log of the number of non-haven foreign subs owned by the parent company (Orbis);
Log Firm Assets   = the natural log of total firm assets (Compustat);
Non-Haven Tax Rate   = the average statutory rate faced by the parent company's non-haven foreign subsidiaries (Orbis and Comtax);

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[18] We argue that the home country tax authority may be more likely to perceive taxable profits in small tax havens, where relatively little employment and capital are located, as abusive. This makes small havens particularly salient in examining our research question.

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R&D/Firm Assets	= firm R&D to total firm assets (Compustat);
Service	= 1 if the firm operates in a service industry (one-digit NAICS code of 4 or higher), 0 otherwise (Compustat);
OtherHaven	= 1 if the parent company has a subsidiary incorporated in any one or more of the Big 7 tax havens per Hines and Rice [1994], 0 otherwise (i.e., Switzerland, Ireland, Hong Kong, Singapore, Panama, Lebanon, Liberia)[19] (Orbis)

Country characteristics

Credit	= 1 if the home country uses a credit system at the start of 2009, 0 otherwise (Comtax);[20]
CFC	= 1 if the home country has CFC legislation in place, 0 otherwise (Comtax);
Or, *CFC Index*	= author-constructed index of the inclusiveness of the home country's CFC legislation (described in detail in Section 5.1);
Statutory tax rate	= the maximum corporate statutory tax rate in the home country (Comtax);
Log GDP	= the natural log of gross domestic product in the home country (World Bank);
Log GDPPC	= the natural log of GDP per capita in the home country (World Bank);

Our vector of firm characteristics draws largely from Desai et al. [2006] that explores tax haven use by U.S. MNCs in the time period 1982 through 1999.[21] Our vector of country characteristics includes the two general measures of international tax regimes described in Section 2.1 – *Credit* and *CFC* or *CFC Index* – as well as several country-level control variables

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[19] For parent companies resident in Switzerland and Ireland, we set *OtherHaven* equal to 1 if the parent company has a subsidiary incorporated in any one or more of the Big 7 tax havens other than Switzerland or Ireland, respectively.

[20] As the UK and Japan switched from credit systems to exemption systems during 2009, it is unclear how to characterize these two countries in our study. We characterize them as *Credit* =1 in our main analysis, and in Section 7.2, we discuss the robustness of our results coding them as *Credit* = 0. The appropriate characterization depends on how quickly tax haven investment behavior responds to changes in tax policy. We measure tax haven use in 2010.

[21] There are three notable differences between our model variables and the measures that Desai et al. [2006] include in their analysis. First, we cannot reliably distinguish financial and operating data of a parent separate from its foreign subsidiaries, so we capture firm assets (*Log Firm Assets*) and firm R&D (*R&D/Firm Assets*) rather than measures of parent size and parent R&D as in Desai et al. [2006]. Second, as we cannot consistently observe the size of a parent company's subsidiaries, *Log Non-Haven Subs* is a count variable, while *Non-Haven Tax Rate* is a simple, rather than weighted, average. Third, we do not include a measure of intercompany sales because we do not observe this information. Our data enables us to examine tax haven use by MNCs resident in various countries, while still broadly capturing important firm characteristics. The Bureau of Economic Analysis data used in Desai et al. [2006] provides detailed operating and financial data, as well as data on intercompany transactions, related to the parent company and each of its foreign affiliates. However, these data are only available for MNCs resident in the U.S. In contrast, Orbis data include MNCs based in other countries, but subsidiary-level operating and financial data is sparse. We describe our data sources in Section 4.

potentially correlated with these variables of interest and that may also be associated with tax haven use. We winsorize all continuous variables (with the exception of *CFC Index*) at the 1st and 99th percentile by home country to mitigate the effect of outliers.

With regard to firm characteristics, we anticipate that large MNCs (*Log Firm Assets*) and those with more significant operations abroad (*Log Non-Haven Subs*) will exhibit a higher propensity to use tax haven subsidiaries, due to economies of scale in using havens to avoid taxes. Thus, we expect positive coefficients on these variables. Furthermore, we expect technology-intensive MNCs to have greater opportunities to benefit from haven use because their sources of income are more mobile. Thus, we expect a positive coefficient on *R&D/Firm Assets*.

Parent companies with non-haven subsidiaries that face relatively high tax burdens (*Non-Haven Tax Rate*) might be more likely to use tax havens if haven subsidiaries facilitate the deflection of income from high-tax to low-tax jurisdictions. However, Desai et al. [2006] notes that havens may also facilitate the deferral of any low-taxed income generated in non-havens, implying that *Non-Haven Tax Rate* could be negatively rather than positively associated with tax haven use. In fact, they find that the net effect is negative in their study of U.S. MNCs.[22] As our sample exhibits both credit and exemption countries, we do not predict a sign on this variable.

We augment the vector of firm characteristics from Desai et al. [2006] with *Service* and *OtherHaven*. Gumpert et al. [2011] find that tax haven investment is relatively more common among service firms than among manufacturing firms resident in Germany. Finally, anecdotal evidence in the U.S. suggests that many tax avoidance strategies involving tax havens appear to pair a large tax haven country with a small tax haven country (see for example U.S. Senate

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[22] Desai et al. (2006) report that results using firm-specific non-haven tax rates, measured using statutory tax rates, closely resemble those using industry averages and effective tax rates. As we do not have enough observations in many countries to compute industry averages, we use firm-specific measures. The use of industry, rather than firm, measures takes into account that endogeneity created if haven and non-haven operations are jointly determined.

[2012], Darby [2007]). By including *OtherHaven* in our model, we can examine whether firms with a subsidiary in a large tax haven, all else equal, are more likely to use one of the small 15 tax havens which are the focus of our study. This would provide some initial evidence on how (not simply whether) tax havens are used in tax planning.

With regard to country characteristics, we are interested in *Credit* and *CFC* or *CFC Index* as measures that characterize a home country's approach to taxing foreign source income, and their association with tax haven use by resident MNCs. *Credit* is a binary measure that denotes when a home country does not exempt foreign source income as a matter of principle. *CFC* and *CFC Index* are alternative measures of a home country's CFC legislation; the former captures the existence of such legislation, while the latter captures variation in the inclusiveness of CFC legislation within countries that have such legislation. We describe our measurement of *CFC Index* below (Section 4.2.1) – we consider *CFC* and *CFC Index* in turn in our analysis.

If MNCs resident in home countries with credit systems respond to the reduced incentive to use tax havens to avoid tax that is imposed by the domestic tax on foreign income, then the coefficient on *Credit* will be negative. Similarly, if CFC legislation makes tax haven use more costly, then the coefficient on *CFC* will be negative. Finally, if CFC legislation that is more inclusive makes tax haven use more cumbersome, then the coefficient on *CFC Index* will be negative. We also explore whether any interaction exists between *CFC* or *CFC Index* and *Credit* to examine the conjecture by Clausing and Shaviro [2011, p. 21]] that "on average, credit countries with CFC laws will exhibit the lowest tax sensitivity to destination country tax rates". In other words, credit countries with CFC laws are anticipated to have the lowest incentive to invest in tax havens to avoid tax.

Finally, we include four additional country-level variables as controls. All else equal, MNCs resident in home countries with higher tax rates (*Stat Tax Rate*) should be more likely to use a tax haven subsidiary. *Log GDP* and *Log GDPPC* control for any correlation between the size and level of development, respectively, of the home country. Tax administrators per thousand working-age people (*Enforce*) - controls for the level of enforcement in the home country (Robinson and Slemrod [2012]).

4.2.1 Measurement of CFC Index

CFC legislation is a tax policy instrument to guard against the unjustifiable erosion of the domestic tax base by the export of investments to non-resident companies (OECD [1996]). However, even amongst countries that have enacted CFC legislation, there is a range of different philosophical and policy objectives for such legislation. Furthermore, as noted in Section 5.2, nearly all countries that are home to a significant number of MNCs have CFC legislation, making the 'has or has not' distinction less germane. Therefore, we capture variation in the inclusiveness of CFC rules with an index and incorporate this self-constructed variable into our study. We expect the likelihood that CFC rules deter investments in tax haven subsidiaries varies across countries according to this fundamental attribute.[23]

Appendix A presents the details of our index construction by country for each of the 22 countries in our sample with CFC legislation. Recall that CFC rules operate by eliminating tax deferral or exemption arising from foreign investment, and instead subjecting both foreign and domestic investment to the same level of taxation. When, all else equal, it is more likely that a resident shareholder will not avail itself of deferral or exemption on investments in tax haven

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[23] Voget [2011] separately examines (four) specific features of CFC legislation across countries in the context of headquarter relocations. We argue that multiple aspects of CFC rules matter in combination with one another, and view it as appropriate to create an index. For instance, the use of strict thresholds for "tainted" income (i.e., *demin*) are less relevant if control is defined very narrowly (i.e., *allsh*) because those thresholds are inconsequential in the absence of control. In Section 7.3, we discuss results using individual components of our index.

subsidiaries, we characterize the CFC legislation as "inclusive"; i.e., it is more likely to *include* the foreign income in the domestic tax base. Each component is coded as 1 if that feature of the CFC legislation makes it more inclusive.

In bold at the bottom of Appendix A, we show that the index has nine components – *allsh*, *value*, *influence*, *min_control_dum*, *min_att_dum*, *lists*, *rate*, *allincome*, and *demin*.[24] While CFC legislation contains numerous detailed provisions, some of which change over time, we chose nine features that we believe capture fundamental differences in such legislation across countries. We measure the inclusiveness of CFC legislation as of the end of 2011 using two summary sources of information – Deloitte [2012] and Comtax.[25]

The first five components - *allsh*, *value*, *influence*, *min_control_dum*, *min_att_dum* - capture the likelihood that a resident shareholder will be deemed to control a foreign company and be subject to income attribution. CFC legislation only applies to foreign companies which are *controlled* (hence CFC) by resident shareholders. The component *allsh* captures how broadly the CFC legislation defines the controlling group of shareholders. Some countries include all resident shareholders (regardless of whether any relation exists among them), while other countries require control to reside in a single shareholder, or small group of shareholders that are likely to be acting in concert with one another. The components *value* and *influence* capture the mechanisms through which a shareholder may be deemed to control a foreign company. While

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[24] Figure 1 reports some aspects of CFC legislation that we do not capture in our index because there are alternate ways of incorporating the information. For instance, one could consider *rate_dum* instead of *rate* if the *rate_threshold* is so low as to be inconsequential. Similarly, one could use *demin_dum* instead of *demin*. Our CFC index measure is the one that requires the least amount of judgment (i.e., we use *rate* and *demin*).

[25] As a matter of convenience, we determine the inclusiveness of CFC legislation as of the end of 2011 due to the availability of current legislative summaries generally use by practitioners. We are not aware of any significant change in CFC legislation for the countries in our sample from 2010 (the year we measure tax have use) to 2011 (the year we measure CFC legislation). Regardless, if there were a change, it is possible that it was anticipated and thus current CFC legislation is most relevant.

all countries consider ownership of voting rights, some countries also consider simple ownership of equity value, and/or the ability to influence the company (even absent share ownership).

We capture how broadly the CFC legislation defines control using *min_control_dum*, which we set equal to 1 if control includes less than a majority ownership stake in the foreign company. Finally, we capture how extensively the income attribution rules are applied to resident shareholders using *min_att_dum*. Once a shareholder group is determined to control a foreign company, some countries restrict income attribution only to shareholders that themselves maintain a minimum ownership percent. We set *min_att_dum* equal to 1 when the CFC legislation does not feature such a restriction, or when that restriction is set relatively low (i.e., less than 5 percent ownership).

In some cases, a controlling group of shareholders that meet the minimum attribution requirements will not have income attributed. Accordingly, the remaining four components - *lists*, *rate*, *allincome*, and *demin* - capture the likelihood that, all else equal, income attribution will occur (or will occur in a greater amount), conditional on a foreign company being included as a CFC (under the rules discussed above). The component *lists* considers whether a home country maintains a list restricting the applicability or severity of its CFC legislation. These lists may be positive (by declaring host countries from which income will less likely (or not) be attributed) or negative (by declaring host countries from which income will more likely (or will) be attributed). Failure to maintain a list creates uncertainty for resident shareholders and increases the chance that income may be attributed from any particular jurisdiction.

The component *rate* considers whether a home country designates a tax rate, again restricting the applicability or severity of its CFC legislation. In some countries, income attribution will (or will be more likely to) occur when the foreign company pays tax at a rate below the threshold

stated in the CFC legislation. Failure to denote a rate again creates uncertainty and increases the likelihood of attribution from any particular jurisdiction.

The component *allincome* captures the fundamental approach taken in the CFC legislation regarding income attributed to resident shareholders from the CFC. Some countries specifically target certain types of income for attribution, while other countries instead attribute all income and then provide for various exemptions for which the CFC must demonstrate qualification. We characterize the latter approach as more inclusive. Finally, some CFC legislation permits a minimum level of 'tainted' income before income attribution occurs – we set *demin* equal to 1 when such permission is generally not granted.

4.3   Firm and country characteristics of users of specific tax havens – targeted measures

Here, we limit our sample only to tax haven users and try to learn how firms chose specific tax haven locations from amongst the 15 tax havens in our sample. We estimate cross-sectional logistic regressions of specific tax haven use by MNC parent company i, resident in country j, on a vector of firm and parent-haven country-pair characteristics, as follows:

$$
Haven\ User_{ij} = \beta_0 + \sum_k \beta_k * Firm\ characteristic_i^k
$$
$$
+ \sum_k Country - pair\ characteristic_j^k + \varepsilon_{ij}
$$

(2)

We measure the model's variables as of the end of 2010, which are defined as follows:

HavenUser = 1 if a parent company has at least one subsidiary incorporated in the specific haven country being examined, and 0 otherwise;

all other firm characteristics are as previously defined, and

<u>Country-pair characteristics</u>
TIEA = 1 if a Tax Information Exchange Agreement between the parent country and haven country has been signed, 0 otherwise;

DTC	= 1 if a bilateral tax treaty between the parent country and the haven country is in effect, 0 otherwise;
wh_roy	= the withholding tax rate imposed by the parent country when royalties related to patents are paid from the parent country to the haven country;
wh_int	= the withholding tax rate imposed by the parent country when inter-company interest is paid from the parent country to the haven country;
div_taxable	= 1 if the parent country taxes more than 5% of dividends received from controlled entities in the haven country, 0 otherwise;
ln_distw	= the natural logarithm of the population-density-weighted distance between the parent's country and the haven country;
colony	= 1 if the parent's country and the haven country have colonial links. , 0 otherwise;
log_trade	= *log_trade* is the natural logarithm of the average of the imports and exports between the parent's country and the haven country;

We estimate Equation (2) on the sample of haven users (i.e., allowing every MNC that has chosen to use havens to make a choice to use each of the 15 havens) and then on subsamples specific to each of the 15 havens (i.e., having each haven user make a choice about that specific haven).

The motivation for these tests is to better understand how tax havens are chosen by MNCs and what factors encourage or constrain the choice of a specific haven. For instance, the R&D variable in these regressions will tell us whether firms that conduct more extensive R&D tend to favor one tax haven over another. While we do not have predictions on the firm characteristics in each individual regression, by looking at how a particular firm characteristic behaves across these regressions, we can learn about what kinds of firms favor various tax haven countries. Regarding the country-pair characteristics (which capture the targeted measures), we predict that TIEAs and treaties will increase the likelihood of a haven being chosen while withholding tax rates and the taxation of dividends will decrease the likelihood.

5. Descriptive data

5.1   Haven use

Table 1 provides descriptive data on our dependent variable in Equations (1) and (2) by reporting patterns of tax haven use both by parent country, and by tax haven country. Of the 8,004 firms in our sample, a large proportion of them (62 percent) are resident in the G-7 countries – Canada, France, Germany, Italy, Japan, United Kingdom, and the United States. The BRICS countries represent another 10 percent of our sample, Australia contributes 9 percent, and the remaining 19 percent are distributed across the remaining 15 countries. The number of MNCs with a subsidiary in at least one of the 15 small countries that we identify as a tax haven is 2,041, or 25 percent of the sample. The top 3 parent countries in terms of the proportion of resident MNCs with at least one tax have subsidiary are Russia, Belgium and Portugal at 52, 51, and 50 percent, respectively. The bottom 3 parent countries are Japan, China and Poland at 3, 11, and 15 percent, respectively.

Table 1 also reveals some clustering in certain haven countries by MNCs in some countries. For instance, MNCs resident in India tend to favor tax havens like Mauritius, Cyprus and the British Virgin Islands, while Canadian MNCs tend to favor Barbados and U.S. firms tends to favor the Caymans, Bermuda and Luxembourg. We examine whether, controlling for logistical, cultural and economic ties between the parent countries and tax haven countries in our sample, targeted international tax regime measures explain the choice of specific tax havens.

5.2   International tax regimes

Table 2 presents descriptive data on international tax regime measures by country – both general and targeted measures. These measures are the focus of our study. Of the 28 home countries in our sample, 18 countries have CFC rules while 10 do not, namely Austria, Belgium, Chile, Greece, India, Ireland, Netherlands, Poland, Russia, and Switzerland. In addition, we

report that 13 countries run credit systems while 15 run exemption systems. Of the 13 countries with credit systems, 7 have CFC rules while 6 do not. Of the 15 countries with exemption systems, 11 have CFC rules while 4 do not. Our *CFC Index*, which measures the inclusiveness of CFC legislation, ranges from 3 to 7 (with possible values ranging from 0 to 9). The country with the most inclusive CFC rules is the United Kingdom (with a value of 7), while the least inclusive rules are found in Australia, China, Italy, New Zealand, and the U.S. (with values of 3).

Our targeted measures, which are at the country-pair level, are summarized in the last 5 columns of Table 2. The United States (6), France (5), and the United Kingdom (5) have entered into the greatest number of tax information exchange agreements with the 15 tax haven countries in our sample. The same is true for tax treaties with tax havens, however, Austria, Belgium, China, and Sweden also join the list of parent countries with an agreement in place with at least 7 of the 15 tax haven countries. The next column (DIVIDEND TAXED) shows that 7 countries with exemption systems – Belgium, Canada, Finland, Italy, Netherlands, Norway, and Spain – tax dividends from at least some of the 15 haven countries. This means that, although these countries generally follow and exemption system with respect to taxing foreign source income, the participation exemption on foreign dividends does not extend to all of the tax haven countries in our sample.

The final two columns of Table 2 report the means of the 15 withholding tax rates that the parent countries impose on interest payments and royalty payments made to the haven countries, respectively. Brazil and Chile both appear to have high withholding tax rates on outbound royalty and interest payments to tax havens, yet Brazil appears to have quite extensive CFC legislation while Chile does not have CFC legislation (both countries run credit systems). This type of variation highlights the central question we are asking: which policies, or which

combination of policies, are most effective at curbing tax avoidance by resident MNCs investing in tax haven countries?

5.3　Firm and other country characteristics

Table 3 presents summary statistics for the firm- and parent country-level variables used in the empirical tests. The proxy for firm size, Total Assets, varies significantly across countries at the mean and all countries have means much larger than their medians. We use the natural logarithm of Total Assets as our regression variable to mitigate the effects of this skewness. Our proxy for the proportion of a firm's assets that are intangible, R&D/Total Assets, ranges from a high of 8% in Denmark to several countries with means less than 1% (Chile, China, Greece, Portugal, Russia). The next two variables, Number of non-haven subs, and Average non-haven tax rate, summarize the scope of a firm's operations in foreign countries other than the 15 havens. The distribution of the number of non-haven subs, which is intended to capture a firm's relative multinationality, is skewed similar to that of Total Assets, so we use the natural logarithm of the number in the regressions. The average non-haven tax rate, which is the arithmetic average of the statutory tax rate faced by the firm's foreign non-haven subs, does not vary widely across countries, which is likely a result of most MNCs investing most heavily in the same non-haven countries with the biggest markets. The final firm-level variable, In a Big 7 haven, captures the percentage of MNCs that are in Big 7 havens. This ranges from a high of 67% for China to a low of 9% for Poland, with a sample mean of 39%.

The country-level variables are presented in the final 4 columns of Table 3. The statutory tax rate is the corporate tax rate faced by a representative firm in the country in 2010 and ranges from 12.5% in Ireland to 43% in Japan. Enforcement is the number of tax administrators per thousand working-age people in the country and ranges from 0.11 in Brazil to 3.12 in France

with a sample mean of 1.25. The final two columns report the Gross Domestic Product and Per capita Gross Domestic Product for each country. We take the natural logarithm of both of these variables before they enter the regressions.

6.   **Empirical results**

6.1   Firm and country characteristics of tax haven users and the effect of general measures

Table 4 Panel A reports the results of estimating Equation (1). In column (1), we restrict our attention to U.S. MNCs in order to compare our results with those presented in Desai et al. [2006, Table 3], that examines tax haven use from 1982 through 1999 in a sample of U.S. private and public MNCs. We find consistent evidence that larger MNCs (*Log Firm Assets*) and those with a greater foreign presence (*Log Non-Haven Subs*) are more likely to use haven subsidiaries. We find no significant effect on either *R&D/Firm Assets* or *Non-Haven Tax Rate*, suggesting either that the tax avoidance strategies of U.S. firms has changed since 1999 or that these variables are not significantly associated with the use of small havens in particular. Consistent with anecdotal evidence, we find U.S. firms with at least one tax haven subsidiary in a Big 7 tax haven (*inbig7*) are more likely to have a subsidiary in at least one of our 15 small tax havens.[26]

In column (2), we estimate Equation (1) in the full sample of MNCs and include parent country fixed effects to ascertain the association between firm characteristics and tax haven use, controlling for unobservable characteristics of the parent country. With respect to *Log Firm Assets*, *Log Non-Haven Subs*, and *inbig7,* we find results consistent with those found in U.S. firms. However, in the full sample, we estimate significant negative coefficients on both

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[26] Based on discussions with Joseph Darby (co-author of "Double Irish More than Doubles the Tax Saving: Hybrid Structure Reduces Irish, U.S. and Worldwide Taxation" International Tax Planning, May 15, 2007, Volume 11, Number 9) Ireland (a Big 7 haven) is chosen by technology companies because a successful tax planning strategy will often require that 'substantial' modifications or activities take place in the haven which is difficult to accomplish without an able workforce. The income earned in Ireland is then funneled to a small tax haven such as Bermuda or the Cayman Islands that faces an even lower rate than Ireland.

R&D/Firm Assets and *Non-Haven Tax Rate*. Anecdotal evidence for U.S. firms suggests that firms engaging in extensive R&D enter into cost sharing arrangements with foreign affiliated companies as a tax efficient means of shifting income, because it avoids the need for the subsidiary company to pay ongoing royalties to the parent company. These cost sharing arrangements are typically entered into with subsidiaries located in countries such as Ireland and Singapore where the development of the technology can legitimately be shared due to the availability of labor (see for example U.S. Senate [2012], Darby [2007]). As small tax havens may not be able to legitimately enter into these cost sharing arrangements, it may be that firms engaging in extensive R&D are less likely to choose a small haven. The negative coefficient on *Non-Haven Tax Rate* is consistent with firms using tax havens to deflect (or defer) low-taxed income earned in non-haven subsidiaries, also consistent with anecdotal evidence for U.S. firms.

In the remaining columns of Panel A, we add the general measures in countries' international tax regimes that may affect have use, *Credit* and *CFC*. Column (3) presents results of estimating Equation (1) with *Credit* added to the model. The coefficient on *Credit* is negative and significant, suggesting that MNCs in credit countries are, on average, less likely to use a tax haven. Column (4) replaces *Credit* with the indicator for the country having CFC rules, *CFC*. *CFC* is negative and significant, indicating that MNCs subject to CFC rules are less likely to use havens.

Column (5) includes *Credit* and *CFC* in the model together. Both coefficient estimates remain negative and significant, indicating that the effect of each on tax haven use is incremental to that of the other. The final column of Panel A, includes the interaction of *Credit* and *CFC* in the model. In this case, the estimate of the coefficient on *Credit* flips to positive and significant, the estimate on *CFC* becomes insignificant, and the interaction term is strongly negative. These

results indicate that the interaction of the two aspects of the international regime has a significant effect on the location decisions of MNCs.

Panel B of Table 4 mirrors Panel A, but with the *CFC* indicator replaced by our measure of the inclusiveness of CFC legislation (*CFC Index*). Here, we estimate Equation (1) using only MNCs resident in countries with CFC legislation as we are interested in variation in CFC legislation in explaining tax haven use, rather than the existence of CFC legislation. We find qualitatively similar results on our tax system variables of interest – *Credit* and *CFC Index* – as those reported in Panel A. That is, both a credit system (Column (2)) and the inclusiveness of the CFC rules (Column (3)) reduce haven use, and the effects are incremental to one another (Column (4)). Column (5) reports the results when the interaction term is included. In this case, results are different from those in Panel A: the interaction term is statistically insignificant and the two main effects remain negative and significant. This indicates that the effect of the inclusiveness of the CFC rules is not different for firms subject to credit and exemption systems.

6.2 Firm characteristics of users of a specific tax haven and the effect of targeted measures

Table 5 presents the results of estimating Equation (2) on subsamples of each haven individually. Each column presents the results of a separate regression. For example, the "Bahamas" column reports the results when each of the 2,041 haven-using MNCs in our sample is allowed to choose whether to be in The Bahamas or not. The firm characteristics can be compared across columns to reveal if there are cross-haven differences in the types of firms that choose the specific havens. The country-pair characteristics capture the targeted measures the parent countries have taken to try to limit use of specific havens.

As there is a great deal of information contained in this table, we focus on a few highlights and leave the rest to the reader.[27] Looking first at the firm characteristics, larger firms (*logassets*) are more likely to be in most havens, but Bahrain, British Virgin Islands, and Macao appear to attract smaller MNCs, on average. Malta and Cayman Islands appear to attract the firms with a lot of R&D (*r_and_d*), while Mauritius and Monaco attract firms that face higher rates in their other foreign operations (*avnhrate*). Most havens are more attractive to firms that are more foreign in scope (*log_nhsubs*), but only for Bahrain, Cayman Islands, and Mauritius does it appear to matter that the MNC is also in one of the Big 7.

The variables of interest are the five that capture the targeted measures that countries include in their tax regimes. In the full sample (first column), having signed a Tax Information Sharing Agreement (*tiea*) and having a bilateral tax treaty in effect (*dtc*) have the predicted positive effect on the choice of a specific haven. Also consistent with expectations, the likelihood of the choice of a specific haven is decreasing in the withholding tax rate that is imposed on royalty payments to that haven (*wh_roy*). Contrary to expectations, a higher withholding tax rate on interest payments (*wh_int*) and the taxation of dividends from the haven (*div_taxable*) make the choice of a specific haven more likely.

Looking at the remaining columns in Table 5, we see that TIEAs increase the likelihood of being chosen for British Virgin Islands, Cayman Islands and Gibraltar, while treaties increase the likelihood for Barbados, Cayman Islands, Cyprus, Macao, and Monaco. Withholding tax on royalties has the predicted negative effect for British Virgin Islands, Liechtenstein, Luxembourg, and Malta, and withholding tax on interest has a negative effect for Cyprus and Monaco.

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[27] These results are fairly new to us, so we are still in the process of sifting through the piles in search of ponies.

7. Conclusion

The importance of international tax for countries and their multinational corporations continues to grow. Recent fiscal crises and the revelation of several high-profile cases of sophisticated tax planning have brought the issue of tax avoidance by multinational corporations to the forefront of policy debates around the world. Largely missing from those debates are empirical studies comparing firms across countries. In the absence of such studies, little is known about how the laws and practices of different countries affect the behavior of the MNCs that they host, leaving conjecture and speculation to dominate the debates. Our paper begins to fill the void by examining how the general and targeted mechanisms that countries use to prevent the erosion of their tax bases affect a prominent part of international tax planning, the use of tax havens. The general mechanisms we examine are the taxation of foreign profits and CFC rules. The targeted mechanisms we examine are tax information exchange agreements, bilateral tax treaties, taxation of dividends and withholding tax rates on royalties and interest.

Ours is certainly not the first study to compare tax planning practices across countries. However, most of the extant literature which does so divides countries into two categories based on the overall system for taxing the foreign income of their MNCs. CFC rules blur the lines between credit and exemption systems by overriding the fundamental elements of each system (deferral of domestic tax on foreign earnings and exemption of foreign income, respectively). As such, to begin to gain a deeper understanding of what affects the choices of MNCs, we propose a new way to categorize countries using the CFC rules that they have in place.

We also introduce a new measure of the inclusiveness of the CFC rules of each country. Our goal in constructing this measure is to provide a way to compare countries' approaches to limiting the tax avoidance of their multinationals in a finer way than a blunt binary classification.

When we substitute this measure for the CFC dummy variable, we find that the use of tax havens is decreasing in the inclusiveness of the CFC rules of the parent's country. These results suggest that the variation within the CFC rules enacted in different countries matters, at least insofar as it affects the tax haven use of multinational corporations.

Our examination of the targeted measures is, to our knowledge, a novel contribution to the literature. By analyzing the choices of specific havens by MNCs subject to different specific constraints, we document the effect of the target measures overall, and with respect to specific haven countries.

Taken as a whole, our results suggest that tax haven use is determined by multiple interdependent factors. We believe these results provide needed empirical evidence for the ongoing debates over international tax reform.

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Table 1

Tax haven use across countries

	Number of MNCs	Number of haven users	Total number of havens in	BAHAMAS	BAHRAIN	BARBADOS	BERMUDA	BRITISH_VIRGIN_ISLANDS	BRUNEI_DARUSSALAM	CAYMAN_ISLANDS	CYPRUS	GIBRALTAR	LIECHTENSTEIN	LUXEMBOURG	MACAO	MALTA	MAURITIUS	MONACO
Full sample	**8004**	**2041**	**3676**	**99**	**70**	**187**	**416**	**447**	**22**	**475**	**354**	**86**	**49**	**876**	**81**	**117**	**346**	**51**
AUSTRALIA	687	107	153	5	4	2	19	48	2	14	9	2	0	12	5	6	25	0
AUSTRIA	69	24	40	0	0	0	1	2	1	1	12	2	6	9	0	5	1	0
BELGIUM	85	43	68	1	0	0	2	5	0	6	8	1	2	38	1	0	2	2
BRAZIL	36	9	11	2	0	0	2	1	0	5	0	0	0	1	0	0	0	0
CANADA	464	102	159	8	0	51	18	29	0	19	10	0	0	18	0	2	4	0
CHILE	34	8	10	1	1	0	0	2	0	5	0	0	0	0	0	1	0	0
CHINA	347	39	68	0	0	0	6	29	0	13	1	0	0	4	15	0	0	0
DENMARK	95	14	21	1	1	0	2	2	0	0	2	2	0	8	2	0	1	0
FINLAND	105	18	28	1	1	0	2	2	1	2	7	0	0	9	0	2	0	1
FRANCE	376	133	222	5	10	5	7	8	2	7	19	3	2	105	5	8	24	12
GERMANY	363	69	138	3	5	1	13	13	1	7	13	4	1	44	0	18	12	3
GREECE	50	24	44	0	1	0	1	3	0	2	24	0	0	9	0	3	1	0
INDIA	353	95	128	1	4	1	5	21	0	6	22	1	0	4	0	3	60	0
IRELAND	36	15	18	1	0	0	1	1	0	0	3	1	0	9	0	1	1	0
ISRAEL	75	16	27	0	0	1	2	0	0	3	9	1	1	9	0	0	1	0
ITALY	173	70	103	3	1	0	3	2	0	3	6	1	3	64	4	4	1	8
JAPAN	909	32	46	1	2	0	7	5	0	8	4	0	0	16	0	0	3	0
NETHERLANDS	95	27	37	0	0	0	2	6	0	2	9	0	0	15	0	1	2	0
NORWAY	118	29	46	0	1	0	5	6	0	4	19	2	0	3	0	4	2	0
POLAND	82	12	17	0	0	1	0	1	0	1	9	0	0	5	0	0	0	0
PORTUGAL	26	13	21	0	0	0	0	1	0	4	0	0	0	11	4	0	1	0
RUSSIAN FEDERATION	36	19	36	0	0	0	1	12	0	2	16	0	1	4	0	0	0	0
SOUTH AFRICA	102	34	44	0	0	0	1	14	0	1	4	0	0	7	0	1	16	0
SPAIN	96	30	47	2	1	0	3	1	0	7	2	1	0	25	1	1	0	3
SWEDEN	217	45	65	1	2	2	4	5	0	0	13	6	1	24	0	6	0	1
SWITZERLAND	164	63	171	5	5	5	20	14	1	16	12	4	19	43	4	5	11	7
UNITED KINGDOM	727	193	360	17	8	12	32	64	2	41	36	22	3	72	5	17	23	6
UNITED STATES	2084	758	1548	41	23	106	257	150	12	296	85	33	10	308	35	29	155	8

Table 1 presents the distribution of the dependent variables used in the empirical tests. Each cell reports a raw count of the number of multinationals in the cell. The first column (*Number of MNCs*) reports the total number of multinational parent companies incorporated in each country. *Number of haven users* reports the number of MNCs from the first column that have at least one subsidiary in at least one of the 15 haven countries. *Total number of havens in* reports the number of unique havens the haven users from the previous column are in. The remaining columns report the number of multinationals that have at least one subsidiary in the country listed in the column heading. For example, there are 99 MNCs with at least one subsidiary in Bahamas. 5 of those MNCs are domiciled in Australia, 0 are domiciled in Austria, and 1 is domiciled in Belgium. The columns sum to the number reported in the first row (*Full sample*) and the rows sum to the number reported in *Total number of havens in*.

Table 2

International tax regimes across countries

	CFC	CFC Index	Credit	TIEA	TREATY	DIVIDEND TAXED	INTEREST WH	ROYALTY WH
AUSTRALIA	1	4	0	4	3	0	0.29	0.10
AUSTRIA	0	0	0	1	7	0	0.13	0.00
BELGIUM	0	0	0	2	8	4	0.12	0.18
BRAZIL	1	6	1	0	2	15	0.34	0.24
CANADA	1	4	0	0	6	11	0.20	0.22
CHILE	0	0	1	0	1	15	0.29	0.35
CHINA	1	5	1	3	9	15	0.15	0.15
DENMARK	1	4	0	4	3	0	0.20	0.00
FINLAND	1	5	0	4	5	10	0.20	0.00
FRANCE	1	5	0	5	7	0	0.24	0.00
GERMANY	1	5	0	3	4	0	0.13	0.00
GREECE	0	0	1	0	5	15	0.21	0.34
INDIA	0	0	1	0	6	15	0.10	0.19
IRELAND	0	0	1	4	6	15	0.15	0.15
ISRAEL	1	4	1	0	3	15	0.24	0.24
ITALY	1	3	0	0	6	9	0.19	0.18
JAPAN	1	5	1	0	4	0	0.19	0.19
NETHERLANDS	0	0	0	4	6	5	0.00	0.00
NORWAY	1	5	0	4	6	9	0.00	0.00
POLAND	0	0	1	0	5	10	0.17	0.18
PORTUGAL	1	4	1	1	5	10	0.14	0.25
RUSSIAN FEDERATION	0	0	1	0	6	13	0.17	0.17
SOUTH AFRICA	1	4	0	0	6	0	0.09	0.00
SPAIN	1	5	0	0	4	9	0.20	0.17
SWEDEN	1	6	0	4	7	0	0.19	0.00
SWITZERLAND	0	0	0	0	6	0	0.00	0.00
UNITED KINGDOM	1	7	1	5	9	0	0.14	0.17
UNITED STATES	1	4	1	6	7	15	0.23	0.24

Table 2 presents some key characteristics of the parent countries in the sample. *CFC* is an indicator variable = 1 if the parent country has CFC rules, and 0 otherwise. *CFC Index* is the value the parent country receives on our 9-point index described in Appendix A. *Credit* is an indicator variable = 1 if the parent country generally taxes the foreign income of its multinationals, and 0 otherwise. *TIEA* reports the number of the 15 haven countries in our study with which the parent has signed a Tax Information Exchange Agreement. *Treaty* reports the number of the 15 haven countries in our study with which the parent country has a bilateral tax treaty in effect. *Dividend Taxed* reports the number of the 15 haven countries in our study dividends from which are taxable in the parent country. *Interest WH* reports the mean of the 15 withholding tax rates that the parent country imposes when inter-company interest payments are made from the parent country to the haven country. *Royalty WH* reports the mean of the 15 withholding tax rates that the parent country imposes when royalties related to patents are paid from the parent country to the haven country.

Table 3
Descriptive data for firm and other country characteristics

	N	Havenuser Mean	Total Assets ($Million) Mean	Total Assets ($Million) Median	R&D/Total Assets Mean	R&D/Total Assets Median	Number of non-haven subs Mean	Number of non-haven subs Median	Average non-haven tax rate Mean	Average non-haven tax rate Median	In a Big 7 haven Mean	Statutory tax rate	Enforcement	GDP ($Billion)	Per capita GDP ($)
Full sample	**8004**	**0.26**	**13751**	**459**	**0.03**	**0.00**	**26**	**5**	**0.31**	**0.31**	**0.39**	**0.35**	**1.25**	**5561**	**40204**
AUSTRALIA	687	0.16	4915	38	0.02	0.00	13	3	0.31	0.32	0.34	0.30	1.55	1132	50748
AUSTRIA	69	0.35	11758	750	0.02	0.00	48	23	0.30	0.31	0.49	0.25	1.44	379	45181
BELGIUM	85	0.51	16872	365	0.03	0.00	38	15	0.31	0.31	0.48	0.34	2.54	469	43078
BRAZIL	36	0.25	18664	1996	0.01	0.00	18	5	0.32	0.32	0.17	0.32	0.11	2088	10710
CANADA	464	0.22	8297	133	0.03	0.00	10	3	0.35	0.35	0.14	0.32	1.69	1577	46212
CHILE	34	0.24	4285	1130	0.00	0.00	14	3	0.31	0.32	0.12	0.17	0.36	213	12431
CHINA	347	0.11	28933	839	0.00	0.00	5	2	0.26	0.24	0.67	0.33	0.80	5927	4428
DENMARK	95	0.15	8921	294	0.08	0.00	30	9	0.30	0.30	0.40	0.28	2.47	312	56245
FINLAND	105	0.17	3282	334	0.04	0.01	36	14	0.29	0.29	0.37	0.26	1.70	238	44378
FRANCE	376	0.35	7197	271	0.02	0.00	57	11	0.32	0.32	0.53	0.34	3.12	2560	39448
GERMANY	363	0.19	18941	201	0.03	0.00	43	7	0.29	0.30	0.51	0.40	2.04	3281	40116
GREECE	50	0.48	11226	727	0.00	0.00	14	5	0.22	0.21	0.18	0.29	1.94	301	26607
INDIA	353	0.27	4011	394	0.01	0.00	9	3	0.33	0.32	0.35	0.43	0.76	1727	1410
IRELAND	36	0.42	16580	889	0.02	0.00	55	13	0.31	0.30	0.14	0.13	2.43	207	46170
ISRAEL	75	0.21	4481	273	0.04	0.00	23	7	0.32	0.32	0.29	0.29	1.77	217	28506
ITALY	173	0.40	28451	749	0.01	0.00	51	16	0.30	0.31	0.50	0.37	0.85	2061	34075
JAPAN	909	0.04	15131	1207	0.02	0.01	12	3	0.35	0.35	0.17	0.43	0.67	5459	42831
NETHERLANDS	95	0.28	31082	1605	0.02	0.00	70	24	0.32	0.33	0.53	0.26	2.81	779	46904
NORWAY	118	0.25	5975	463	0.01	0.00	29	10	0.29	0.29	0.40	0.28	2.01	417	85389
POLAND	82	0.15	2401	211	0.06	0.00	7	3	0.27	0.25	0.09	0.19	1.86	469	12294
PORTUGAL	26	0.50	17155	2226	0.00	0.00	44	17	0.31	0.31	0.42	0.25	1.64	229	21486
RUSSIAN FEDERATION	36	0.53	30424	4655	0.00	0.00	17	5	0.26	0.25	0.44	0.24	1.63	1480	10440
SOUTH AFRICA	102	0.33	6464	758	0.00	0.00	13	5	0.31	0.30	0.18	0.37	0.51	364	7280
SPAIN	96	0.31	39376	1761	0.01	0.00	58	17	0.30	0.31	0.41	0.33	0.99	1407	30549
SWEDEN	217	0.21	9568	145	0.03	0.00	31	7	0.29	0.29	0.35	0.28	1.68	459	48897
SWITZERLAND	164	0.38	25500	857	0.03	0.00	54	21	0.33	0.32	0.54	0.16	0.18	528	67457
UNITED KINGDOM	727	0.27	20260	154	0.03	0.00	26	5	0.31	0.32	0.45	0.30	2.21	2262	36343
UNITED STATES	2084	0.36	12743	754	0.06	0.01	29	7	0.30	0.30	0.48	0.40	0.46	14587	47153

Table 3 presents descriptive data on firm- and country-level variables for our sample of 8,004 multinational firms by home country. *Havenuser* is an indicator variable = 1 if the MNC has at least one subsidiary located in one of the 15 tax haven countries, and 0 otherwise. *Total Assets* is the amount (in millions of US dollars) reported on the consolidated financial statements of the parent. *R&D/Total Assets* is the research and development expense of the MNC scaled by its

total assets. *Number of non-haven subs* is the number of foreign subsidiaries of the MNC that are domiciled in countries other than the 15 haven countries. *Average non-haven tax rate* is the average statutory corporate tax rate of the non-haven subsidiaries of the MNC. *In a Big 7 haven* is an indicator variable = 1 if the MNC controls at least one subsidiary in any of Hong Kong, Ireland, Lebanon, Liberia, Panama, Singapore, or Switzerland. *Statutory tax rate* is the top corporate tax rate faced by a representative firm in the parent country. *Enforcement* is the number of tax administrators per capita. *GDP* is the gross domestic product of the parent country (in $billions). *Per capita GDP* is the per capita gross domestic product of the parent country (in $).

Table 4 Panel A
Logistic regressions of tax haven use on firm and country characteristics:
Multinational firms resident in all countries

	US only	Full sample				
	(1)	(2)	(3)	(4)	(5)	(6)
Intercept	-3.42***	-3.71***	-8.67***	-9.65***	-11.01***	-14.96***
	(0.72)	(0.28)	(1.19)	(1.21)	(1.31)	(1.57)
logassets	0.30***	0.28***	0.19***	0.18***	0.19***	0.20***
	(0.04)	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
r_and_d	-0.12	-2.27***	-2.15***	-2.41***	-2.34***	-2.31***
	(0.81)	(0.69)	(0.70)	(0.72)	(0.71)	(0.71)
avnhrate	-3.48	-2.52***	-2.97***	-3.19***	-3.19***	-2.91***
	(2.16)	(0.79)	(0.70)	(0.70)	(0.70)	(0.70)
log_nhsubs	0.72***	0.60***	0.67***	0.66***	0.65***	0.64***
	(0.06)	(0.03)	(0.03)	(0.03)	(0.03)	(0.03)
inbig7	0.30*	0.23***	0.14*	0.17**	0.15**	0.20***
	(0.16)	(0.08)	(0.08)	(0.08)	(0.08)	(0.08)
service	0.13	0.10	0.25***	0.24***	0.24***	0.23***
	(0.12)	(0.07)	(0.06)	(0.06)	(0.06)	(0.06)
credit	.	.	-0.20**	.	-0.25**	0.84***
	.	.	(0.10)	.	(0.10)	(0.22)
CFC	.	.	.	-0.55***	-0.58***	-0.02
	.	.	.	(0.12)	(0.12)	(0.16)
*credit*CFC*	.	.	.	.	.	-1.34***
	.	.	.	.	.	(0.24)
statrate	.	.	-4.14***	-2.87***	-3.30***	-4.49***
	.	.	(0.71)	(0.71)	(0.72)	(0.80)
enforce	.	.	0.02	0.09*	0.07	0.02
	.	.	(0.05)	(0.05)	(0.05)	(0.05)
log_gdp	.	.	0.32***	0.31***	0.38***	0.47***
	.	.	(0.05)	(0.05)	(0.05)	(0.06)
log_gdp_percap	.	.	-0.20***	-0.07	-0.11**	0.02
	.	.	(0.04)	(0.04)	(0.04)	(0.05)
Parent country fixed effects		Y	N	N	N	N
N	2084	8004	8004	8004	8004	8004
pseudo-Rsq	46%	44%	38%	38%	38%	39%

Panel A presents results of logistic regressions. The dependent variable in all models is *Havenuser*, an indicator variable = 1 if the firm controls a subsidiary in at least one of the 15 haven countries. *logassets* is the natural logarithm of the Total Assets (in millions of US dollars) reported on the consolidated financial statements of the parent. *r_and_d* is the research and development expense of the MNC scaled by its total assets. *avnhrate* is the average statutory corporate tax rate of the non-haven subsidiaries of the MNC. *log_nhsubs* is the natural logarithm of the number of foreign subsidiaries of the MNC that are domiciled in countries other than the 15 haven countries. *inbig7* is an indicator variable = 1 if the MNC controls at least one subsidiary in any of Hong Kong, Ireland, Lebanon, Liberia, Panama, Singapore, or Switzerland. *service* is an indicator variable = 1 if the one-digit NAICS code of the MNC's primary industry is 4 or higher. *CFC* is an indicator variable = 1 if the parent country has CFC rules, and 0 otherwise. *credit* is an indicator variable = 1 if the parent country generally taxes the foreign income of its multinationals, and 0 otherwise. *Statutory tax rate* is the top corporate tax rate faced by a representative firm in the parent country. *Enforcement* is the number of tax administrators per capita. *log_gdp* is the natural logarithm of the gross domestic product of the parent country. *log_gdp_percap* is the natural logarithm of the per capita gross domestic product of the parent country.

Standard errors are reported below the coefficient estimate. ***,**,* indicate significance at 1%, 5%, and 10%.

Table 4 Panel B

Logistic regressions of tax haven use on firm and country characteristics:
Multinational firms resident in countries with CFC legislation

	(1)	(2)	(3)	(4)	(5)
Intercept	-3.69***	-24.04***	-17.53***	-20.89***	-20.79***
	(0.31)	(2.38)	(2.12)	(2.64)	(2.65)
logassets	0.26***	0.22***	0.22***	0.22***	0.22***
	(0.02)	(0.02)	(0.02)	(0.02)	(0.02)
r_and_d	-2.09***	-1.94***	-2.15***	-2.02***	-1.97***
	(0.72)	(0.71)	(0.72)	(0.71)	(0.71)
avnhrate	-2.92***	-2.63***	-2.52***	-2.52***	-2.63***
	(0.90)	(0.81)	(0.82)	(0.82)	(0.83)
log_nhsubs	0.61***	0.65***	0.65***	0.65***	0.65***
	(0.04)	(0.03)	(0.03)	(0.03)	(0.03)
inbig7	0.20**	0.13	0.12	0.12	0.12
	(0.09)	(0.09)	(0.09)	(0.09)	(0.09)
service	0.09	0.21***	0.21***	0.21***	0.21***
	(0.07)	(0.07)	(0.07)	(0.07)	(0.07)
credit	.	-0.75***	.	-0.41**	-0.69*
	.	(0.12)	.	(0.18)	(0.42)
index_all1	.	.	-0.21***	-0.13**	-0.18**
	.	.	(0.03)	(0.05)	(0.08)
*credit*index_all1*	.	.	.	.	0.07
	.	.	.	.	(0.09)
statrate	.	-16.40***	-13.29***	-14.96***	-14.79***
	.	(1.55)	(1.54)	(1.68)	(1.68)
enforce	.	-0.16**	0.13*	-0.00	-0.00
	.	(0.06)	(0.07)	(0.09)	(0.09)
log_gdp	.	0.85***	0.57***	0.72***	0.72***
	.	(0.08)	(0.07)	(0.10)	(0.10)
log_gdp_percap	.	0.25***	0.30***	0.27***	0.27***
	.	(0.08)	(0.08)	(0.08)	(0.08)
Parent country fixed effects	Y	N	N	N	N
N	7000	7000	7000	7000	7000
pseudo-Rsq	45%	40%	40%	40%	40%

Panel B presents results of logistic regressions. The dependent variable in all models is *Havenuser*, an indicator variable = 1 if the firm controls a subsidiary in at least one of the 15 haven countries. *logassets* is the natural logarithm of the Total Assets (in millions of US dollars) reported on the consolidated financial statements of the parent. *r_and_d* is the research and development expense of the MNC scaled by its total assets. *avnhrate* is the average statutory corporate tax rate of the non-haven subsidiaries of the MNC. *log_nhsubs* is the natural logarithm of the number of foreign subsidiaries of the MNC that are domiciled in countries other than the 15 haven countries. *inbig7* is an indicator variable = 1 if the MNC controls at least one subsidiary in any of Hong Kong, Ireland, Lebanon, Liberia, Panama, Singapore, or Switzerland. *service* is an indicator variable = 1 if the one-digit NAICS code of the MNC's primary industry is 4 or higher. *index_all1* is the value the parent country receives on our 9-point index described in Appendix A. *credit* is an indicator variable = 1 if the parent country generally taxes the foreign income of its multinationals, and 0 otherwise. *Statutory tax rate* is the top corporate tax rate faced by a representative firm in the parent country. *Enforcement* is the number of tax administrators per capita. *log_gdp* is the natural logarithm of the gross domestic product of the parent country. *log_gdp_percap* is the natural logarithm of the per capita gross domestic product of the parent country.

Standard errors are reported below the coefficient estimate. ***,**,* indicate significance at 1%, 5%, and 10%.

Table 5

Logistic regressions of specific tax haven use on firm and country characteristics:
Multinational firms that use at least one tax haven

	full sample	Bahamas	Bahrain	Barbados	Bermuda	British Virgin Islands	Brunei	Cayman Islands	Cyprus	Gibraltar	Liechtenstein	Luxembourg	Macao	Malta	Mauritius	Monaco
Intercept	2.05***	2.70	-7.40	3.09	-8.65***	-2.99	-13.66	-2.74	14.11***	-4.95**	-13.48**	-6.00***	-7.47	-0.78	9.67***	-10.04*
	(0.31)	(4.10)	(4.77)	(5.99)	(2.96)	(2.20)	(10.55)	(2.77)	(2.06)	(2.16)	(6.47)	(1.30)	(4.81)	(2.56)	(2.75)	(5.39)
logassets	0.08***	0.20***	-0.27***	0.07	0.32***	-0.10***	-0.16	0.28***	-0.01	0.13**	0.16*	0.17***	-0.17**	-0.02	0.03	0.23**
	(0.01)	(0.07)	(0.08)	(0.05)	(0.04)	(0.03)	(0.17)	(0.03)	(0.04)	(0.06)	(0.08)	(0.03)	(0.08)	(0.06)	(0.04)	(0.09)
r_and_d	-0.79	-28.68***	-7.03	1.92	2.00	-6.68***	-22.90*	3.32**	-3.35	-9.62*	-7.49	-0.21	-2.77	4.18**	-4.08*	-5.01
	(0.53)	(10.39)	(5.12)	(1.75)	(1.60)	(2.19)	(13.89)	(1.33)	(2.12)	(5.23)	(8.45)	(1.39)	(3.24)	(1.96)	(2.16)	(6.24)
avnhrate	-0.30	-1.70	3.80	3.04	0.84	-4.00***	-2.50	1.54	-8.60***	-1.81	-3.16	2.20	-12.22***	-5.30**	6.44***	12.81***
	(0.49)	(2.56)	(5.70)	(2.67)	(1.97)	(1.25)	(8.93)	(1.67)	(1.75)	(3.06)	(4.11)	(1.39)	(3.54)	(2.51)	(1.98)	(4.73)
log_nhsubs	0.21***	0.26**	1.11***	0.37***	0.20***	0.10*	0.84***	-0.01	0.40***	0.30**	0.55***	0.52***	0.58***	0.60***	0.30***	0.29*
	(0.02)	(0.11)	(0.19)	(0.09)	(0.06)	(0.05)	(0.29)	(0.06)	(0.07)	(0.13)	(0.18)	(0.05)	(0.15)	(0.11)	(0.07)	(0.17)
inbig7	0.08*	0.07	1.44**	-0.00	-0.15	0.14	1.18	0.35**	-0.44***	-0.13	-0.35	-0.13	0.58	-0.58**	0.48***	0.54
	(0.05)	(0.27)	(0.72)	(0.26)	(0.18)	(0.14)	(1.07)	(0.17)	(0.16)	(0.34)	(0.43)	(0.14)	(0.47)	(0.27)	(0.19)	(0.54)
service	0.02	-0.18	0.67**	-0.24	0.11	-0.38***	-0.60	0.05	-0.05	-0.01	0.21	0.20*	0.52**	0.52**	-0.14	1.34***
	(0.04)	(0.23)	(0.27)	(0.18)	(0.13)	(0.12)	(0.47)	(0.12)	(0.14)	(0.24)	(0.32)	(0.11)	(0.25)	(0.21)	(0.13)	(0.40)
tiea	0.81***	-1.05**	0.00	1.50	0.40	0.80***	0.00	0.75***	0.00	1.55***	0.00	0.00	0.00	0.00	0.00	0.00
	(0.04)	(0.43)	.	(1.37)	(0.34)	(0.17)	.	(0.21)	.	(0.41)	.	.	.	.	.	.
dtc	0.62***	0.00	-0.95*	4.09***	0.54	0.40	-10.17***	1.94***	0.55**	0.00	1.06	-0.34	1.60***	0.61	-1.45***	13.54***
	(0.05)	.	(0.49)	(1.13)	(0.55)	(0.44)	(1.04)	(0.54)	(0.22)	.	(0.66)	(0.50)	(0.49)	(0.45)	(0.31)	(0.80)
wh_roy	-3.04***	3.84	-1.56	10.75**	-1.91	-3.85***	4.26	-0.27	3.69***	-2.06	-7.62***	-3.02*	0.25	-6.06*	1.11	8.84***
	(0.23)	(2.86)	(3.10)	(5.06)	(1.21)	(1.05)	(4.73)	(1.64)	(1.23)	(1.81)	(1.67)	(1.47)	(3.11)	(3.49)	(1.39)	(2.67)
wh_int	1.72***	0.01	2.33	10.64***	3.11*	4.59***	-4.08	6.72***	-7.93***	-0.97	1.36	3.21**	0.06	-1.64	0.81	-5.71**
	(0.25)	(1.88)	(3.71)	(2.37)	(1.76)	(1.01)	(2.99)	(1.12)	(1.70)	(2.10)	(1.64)	(1.32)	(1.65)	(3.82)	(1.20)	(2.89)
div_taxable	0.13**	-0.50	-0.59	-2.54***	-0.81**	-0.43	0.88	-0.09	1.20***	0.50	-0.30	-0.08	-0.47	0.09	0.78***	1.30**
	(0.05)	(0.47)	(0.72)	(0.89)	(0.32)	(0.27)	(1.22)	(0.30)	(0.21)	(0.57)	(0.44)	(0.19)	(0.43)	(0.36)	(0.26)	(0.55)
ln_distw	-0.51***	-1.01***	-0.34	-1.66***	0.12	0.51**	0.43	-0.31	-1.27***	0.00	-0.23	-0.28***	0.04	-0.14	-2.56***	-2.39***
	(0.03)	(0.38)	(0.58)	(0.63)	(0.30)	(0.20)	(1.21)	(0.25)	(0.16)	(0.18)	(0.22)	(0.08)	(0.42)	(0.22)	(0.33)	(0.47)
colony	-0.30***	1.66**	-0.37	-1.42***	-0.46	-0.65	11.63***	-2.08***	1.35***	1.32***	-12.98***	-1.18**	2.52**	0.96**	-0.23	3.09***
	(0.07)	(0.67)	(0.73)	(0.54)	(0.48)	(0.43)	(2.47)	(0.51)	(0.25)	(0.51)	(0.62)	(0.54)	(1.02)	(0.39)	(0.31)	(1.07)
log_trade	-0.11***	0.07	0.21	0.18	0.24***	-0.10**	0.25	-0.07	-0.34***	-0.06	0.56*	0.37***	0.55***	-0.11	0.78***	-0.02
	(0.01)	(0.09)	(0.18)	(0.15)	(0.07)	(0.04)	(0.18)	(0.05)	(0.08)	(0.09)	(0.31)	(0.05)	(0.16)	(0.12)	(0.10)	(0.20)
N	30397	2041	2041	2041	2041	2041	2033	2041	2041	2033	1972	2041	2041	2041	2041	1908
pseudo-Rsq	13%	14%	23%	28%	26%	9%	16%	23%	20%	12%	27%	36%	21%	13%	21%	29%

Table 5 presents results of logistic regressions on the full sample and subsamples of each haven country. The dependent variable in all models is *Havenuser*, an indicator variable = 1 if the firm controls a subsidiary in at least one of the 15 haven countries. *logassets* is the natural logarithm of the Total Assets (in millions of US dollars) reported on the consolidated financial statements of the parent. *r_and_d* is the research and development expense of the MNC scaled by its total assets. *avnhrate* is the average statutory corporate tax rate of the non-haven subsidiaries of the MNC. *log_nhsubs* is the natural logarithm of the number of foreign subsidiaries of the MNC that are domiciled in countries other than the 15 haven countries. *inbig7* is an indicator variable = 1 if the MNC controls at least one subsidiary in any of Hong Kong, Ireland, Lebanon, Liberia, Panama, Singapore, or Switzerland. *service* is an indicator variable = 1 if the one-digit NAICS code of the MNC's primary industry is 4 or higher. *tiea* is an indicator variable = 1 if the parent's country has signed a Tax Information Exchange Agreement with the haven country. *dtc* is an indicator variable = 1 if the parent's country has a bilateral tax treaty with the haven country in effect. *wh_roy* is the withholding tax rate that the parent country imposes when royalties related to patents are paid from the parent country to the haven country. *wh_int* is the withholding tax rate that the parent country imposes when inter-company interest payments are made from the parent country to the haven country. *div_taxable* is an indicator variable = 1 if the parent country taxes more than 5% of dividends paid from the haven country. *ln_distw* is the natural log of the population-density-weighted distance between the parent's country and the haven country. *colony* is an indicator variable = 1 if the parent's country and the haven country have colonial links. *log_trade* is the natural logarithm of the average of the imports and exports between the parent's country and the haven country.

Standard errors are reported below the coefficient estimate. ***,**,* indicate significance at 1%, 5%, and 10%.

Appendix A
CFC index components by country

Country	effyear	allsh (a)	value (b)	influence (c)	min_attribute (d)	min_att_dum (e)	min_control (f)	min_control_dum (g)
AUSTRALIA	1990	0	1	0	10	0	40	1
BRAZIL	2002	0	0	1	10	0	21	1
CANADA	1972	0	1	0	10	0	51	0
CHINA	2008	1	0	1	10	0	51	0
DENMARK	1995	0	0	0	1	1	51	0
FINLAND	1995	1	1	0	25	0	50	1
FRANCE	1980	0	1	0	5	1	51	0
GERMANY	1972	1	1	0	1	1	51	0
ISRAEL	2000	1	0	1	10	0	40	1
ITALY	2000	0	0	1	1	1	51	0
JAPAN	1978	1	1	0	10	0	51	0
MEXICO	1997	1	0	1	1	1	1	1
NEW ZEALAND	2007	0	0	1	10	0	40	1
NORWAY	1992	1	1	0	1	1	50	1
PORTUGAL	1995	1	1	0	10	0	10	1
SOUTH AFRICA	1997	1	0	0	10	0	51	0
SOUTH KOREA	1997	0	0	0	10	0	10	1
SPAIN	1995	0	1	0	1	1	50	1
SWEDEN	1990	0	1	0	1	1	25	1
TURKEY	2006	0	1	0	1	1	50	1
UNITED KINGDOM	1984	1	1	1	1	1	40	1
UNITED STATES	1962	0	1	0	10	0	51	0
Sample mean	1992	0.45	0.59	0.32	6.77	0.45	40.27	0.59

Country = Countries with controlled foreign company (CFC) legislation and in which parent companies in our sample are resident shareholders of foreign corporations.

effyear = The year CFC legislation first became effective.

(a) *allsh* = 1 if control of a foreign corporation need not reside in a single resident shareholder or small group of shareholders, 0 otherwise

(b) *value* = 1 if the definition of control considers ownership of share value of the foreign corporation, 0 otherwise

(c) *influence* = 1 if the definition of control considers the ability to influence the foreign corporation, 0 otherwise

(d) *min_attribute* = the minimum ownership percent in a CFC that subjects a resident shareholder to income attribution (i.e., income subject to home country taxation)

(e) *min_att_dum* = 1 if *min_attribute* < 10, 0 otherwise

(f) *min_control* = the minimum ownership percent required to meet the definition of control of foreign corporation

(g) *min_control_dum* = 1 if *min_control* < 51, 0 otherwise

CFC Index Components by Country

Country	lists (h)	rate (i)	rate_threshold (j)	rate_dum (k)	allincome (l)	demin (m)	demin_threshold (n)	demin_dum (o)
AUSTRALIA	0	1	0.0	1	0	0	5	1
BRAZIL	1	1	0.0	1	1	1	0	1
CANADA	1	1	0.0	1	0	1	0	1
CHINA	0	0	12.5	1	1	0	5	1
DENMARK	1	1	0.0	1	1	0	50	0
FINLAND	0	0	14.7	1	1	0	50	0
FRANCE	1	0	17.2	0	1	0	20	1
GERMANY	1	0	25.0	0	0	0	10	1
ISRAEL	1	0	20.0	0	0	0	50	0
ITALY	0	0	15.7	0	1	0	50	0
JAPAN	1	0	20.0	0	1	1	0	1
MEXICO	0	0	22.5	0	1	0	20	1
NEW ZEALAND	0	1	0.0	1	0	0	5	1
NORWAY	0	0	18.7	0	1	0	50	0
PORTUGAL	0	0	15.0	0	1	0	25	0
SOUTH AFRICA	1	0	21.0	0	1	1	0	1
SOUTH KOREA	1	0	15.0	0	1	1	0	1
SPAIN	1	0	22.5	0	0	0	15	1
SWEDEN	0	0	14.5	1	1	1	0	1
TURKEY	1	0	10.0	1	0	0	25	0
UNITED KINGDOM	0	0	21.0	0	1	1	0	1
UNITED STATES	1	1	0.0	1	0	0	5	1
Sample mean	0.55	0.27	12.97	0.45	0.64	0.32	17.50	0.68

(h) *lists* = 1 if the home country does not restrict applicability of its CFC legislation to certain host countries by maintaining a list, 0 otherwise

(i) *rate* = 1 if the home country does not restrict applicability of its CFC legislation based on the rate of tax paid in the host country, 0 otherwise

(j) *rate_threshold* = the minimum tax rate paid in the host country that could result in income attribution, or 0 if *rate* = 1

(k) *rate_dum* = 1 if *rate_threshold* lt 15, 0 otherwise

(l) *allincome* = 1 if all income of a CFC is attributed to resident shareholder(s) as a general rule, 0 otherwise

(m) *demin* = 1 if any amount of 'tainted' income earned in a CFC could subject resident shareholders to attribution, 0 otherwise

(n) *demin_threshold* = the maximum proportion of 'tainted' income allowed before income attribution, or 0 if *demin* = 1

(o) *demin_dum* = 1 if *demin_threshold* $\leq$ 20, 0 otherwise

***CFC Index* in Table 2 is equal to sum of each country's values showing in columns (a), (b), (c), (e), (g), (h), (i), (l), (m) of Appendix A.**