# Taking the Long Way Home: Offshore Investments in U.S. Equity and Debt Markets and U.S. Tax Evasion

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September 1, 2011

**Abstract:** We empirically examine a form of offshore tax evasion in which U.S. individuals hide funds in entities located in offshore tax havens and then invest those funds in U.S. equity and debt securities. While their true nature is hidden from the authorities, such investments are reflected in foreign portfolio investment data routinely gathered by the Federal Reserve. We identify the tax evasion component in these data by examining how foreign portfolio investment varies with changes in the incentives to evade and the risks of detection. We find that foreign portfolio investment from tax haven countries is increasing in the U.S. tax rate, which reflects the incentive to evade, and decreasing in detection and enforcement efforts, our proxy for the expected risk of being caught. Both of these results are consistent with a portion of portfolio investment from haven countries being made by U.S. tax evaders and not from "true" foreign investors. To our knowledge, this is the first empirical evidence of investor-level tax evasion affecting cross-border investment in equity and debt markets. In addition, our results suggest that estimates of home bias may themselves be biased.

## I.       Introduction

This paper employs foreign portfolio investment flows to examine the evasion of U.S.

taxes via offshore structures. Tax evasion via offshore tax havens has long vexed the taxing

authorities of nations, such as the U.S., that raise significant amounts of their revenue from

income taxes.[1] The enforcement of tax laws depends critically on the tax authority obtaining the

necessary information about the activity to be taxed. With the rise of taxes across the developed

world also came the rise of certain countries, typically small ones, specializing in secrecy and

assessing low or no taxes. A would-be tax evader could choose among any number of tax havens

that all offered some degree of secrecy from the U.S. tax authorities. In recent decades, the

globalization of the financial system and improvements in communication, such as the internet,

have made tax havens increasingly easy to access and just a mouse click away.[2]

All of this suggests that the potential for tax evasion via tax havens is high. Indeed, the

U.S. Senate Permanent Subcommittee on Investigations stressed the importance of understanding

the nature and extent of offshore tax evasion, writing "Offshore tax havens today hold trillions of

dollars in assets provided by citizens of other countries, including the United States. The extent

to which those assets represent funds hidden from tax authorities by taxpayers from the United

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[1] We use the term "tax evasion" to refer to illegal tax reduction and "tax avoidance" to refer to legal means of reducing taxes. Thus, this study focuses on illegal tax reduction.

[2] For example, an online search for the phrase "open offshore investment account" will yield dozens pages of advertisements for such services. In addition, Guttentag and Avi-Yonah (2005) describe the ease with which one can open a Cayman account and support their claim by stating "as evident from any perusal of the back pages of The Economist magazine, where law firms advertising such services abound."

States and other countries outside of the tax havens is of critical importance" (U.S. Senate

Permanent Subcommittee on Investigations, 2008).[3]

Despite its importance, rigorous empirical evidence of the nature and extent of offshore

tax evasion is almost non-existent. This is due, no doubt, to the nature of tax evasion as an illegal

activity shrouded in secrecy. The very factors that protect the tax evader, i.e., bank secrecy laws

and lack of information sharing with the tax authorities of other nations, also make it difficult for

researchers to study offshore tax evasion. Consequently, despite decades of concern by

lawmakers, as well as unilateral and multilateral efforts by nations to curtail such evasion, there

is little empirical evidence about offshore tax evasion, the factors that determine its prevalence,

or the effectiveness of policy attempts to stop such evasion. While there are some estimates, they

are ballpark figures. For example, in testimony at an April 1, 2002, Senate Finance Committee

Hearing, Jack Blum, attorney and former Senate investigator, estimated tax losses due to

offshore tax evasion at $70 billion, but he admitted the number was imprecise stating, "You just

have to take a guess at it" (Sullivan, 2004). Even less certain are estimates of the behavioral

response to changes in tax rates and enforcement. The purpose of this study is to provide initial

evidence on the issue.

We focus on a method of offshore tax evasion we call "round-tripping" whereby a U.S.

individual sends money to an offshore account in the name of a foreign entity controlled by the

individual and then uses the entity to invest in U.S. securities. As a result, the investment appears

as if it is coming from a foreign investor rather than a U.S. investor. U.S. tax policy exempts

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[3] http://levin.senate.gov/newsroom/supporting/2008/071708PSIReport.pdf

certain types of investment income earned by foreigners from most U.S. tax, presumably to attract foreign investment to the U.S. capital markets.[4] Such a policy, however, gives U.S. taxpayers a significant incentive to appear as if they are foreigners for U.S. purposes.[5] Our empirical analysis takes advantage of the fact that such investments are not fully hidden, but merely disguised. Inbound and outbound portfolio investment flows are routinely collected by the Federal Reserve and the U.S. Treasury. Many of the flows have nothing to do with tax evasion and are simply the result of investment decisions and portfolio allocations, largely to and from our major trading partners, such as Canada, the U.K., and Japan. The data also reveal, however, that a significant amount of foreign portfolio investment (FPI) into the U.S. comes from countries often identified as tax havens, in an amount highly disproportionate to those countries' populations and share of world GDP. For example, by 2009 Bermuda, a country with approximately 68,000 residents (many sports stadiums hold more people) accounted for $115 billion of debt and equity portfolio investment holdings in the U.S., equivalent to $1.7 million per resident. While there are undoubtedly some wealthy Bermudians who have a deep desire to invest in U.S. securities markets, it seems highly unlikely that true Bermuda residents could by themselves account for such a large capital flow. The Cayman Islands is even more extreme, with fewer residents than Bermuda and over twice as much U.S. equity and debt FPI. At the same time, large capital flows emanating from tax havens are not necessarily evidence of U.S. tax evasion either; the funds could have been routed through the tax haven as part of a legal tax avoidance strategy or even to evade taxes of other countries (e.g., a Greek resident might hide

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[4] We describe the rules of taxation for the various types of income in Section II below.
[5] There are several ways this can be done, which we describe in Section II.

money in a tax haven and invest it in U.S. securities). Our identification strategy is aimed at estimating the portion of these data attributable to U.S. tax evasion from round-tripping by testing how FPI varies with changes in 1) the U.S. tax benefits of evading and 2) the risks of being caught.

Would-be tax evaders face a tension between the benefits of evading tax and the risks of being caught.[6] Our measures of the benefits of evading U.S. tax are the U.S. ordinary and capital gains tax rates over time. In periods when taxes on capital gains and interest income are high, there are more benefits from evading U.S. tax on portfolio investment. Using changes in U.S. ordinary and capital gains tax rates helps us in the identification of U.S. tax evasion because while U.S. investors are subject to those taxes, foreign investors in U.S. securities generally are not.[7] Thus, U.S. investors have incentives to evade U.S. income taxes by disguising their investments as if they were from foreign investors. True foreign investors are not subject to U.S. income tax in the first place and should not be affected by changes in U.S. income tax rates. If U.S. investors are disguising themselves as foreign investors, then we expect to see more FPI into the U.S. when U.S. capital gains and ordinary tax rates increase, and the FPI should be coming from tax havens.

We measure the risk of getting caught using changes in enforcement that vary over time and across countries. We examine two major sets of changes in enforcement: the enactment of bilateral Tax Information Exchange Agreements (TIEAs) between the U.S. and certain tax

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[6] See Becker (1968), Allingham and Sandmo (1972), and Slemrod (2007).
[7] The U.S. does not generally tax foreign investors on capital gains in U.S. securities, nor does it tax portfolio interest income. It taxes dividends at special withholding tax rates, which tend to be quite stable over time and independent of ordinary tax rates.

havens, and Organisation for Economic Co-operation and Development (OECD) actions that increased the focus on tax haven nations. Bilateral information sharing agreements between the U.S. and a tax haven increase the risk of detection for U.S. tax evaders, but should not affect "true" foreign investors that are not subject to U.S. income tax. We also test the OECD dates, which are not U.S.-specific but more general indications of greater enforcement on tax avoidance transactions, to provide supporting evidence.

Another feature of our research design is the use of the difference between haven and non-haven inbound (to the U.S.) foreign portfolio investment. Thus, general macro trends in portfolio investment are 'controlled for' via the inclusion of non-haven countries. The incremental portion in the haven location is attributed to tax evasion. We are cognizant that money launderers are suspected of utilizing tax havens because of their secrecy laws. However, our identification strategy of using changes in U.S. tax rates should identify transactions motivated by tax purposes; specifically, U.S. tax purposes.

We report two main findings. First, FPI from countries identified as tax havens varies such that increases in U.S. tax rates, our proxy for incentives to evade U.S. taxes, are associated with increases in inbound FPI from the haven countries. These results are consistent with a portion of the inbound portfolio investment from haven countries actually being from U.S. tax evaders, rather than "true" foreign investors. We estimate that a one percent increase in U.S ordinary tax rates results in an approximately 0.7 percent (1.2 percent) greater increase in inbound equity (debt) FPI from tax havens relative to non-havens. Second, we find that efforts to increase the likelihood of detection of tax evaders, such as TIEAs between the U.S. and the

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haven country, are associated with lower inbound portfolio investment from havens. We estimate that engaging in a TIEA with a tax haven results in an approximately 20.6 percent decrease in equity FPI and 14.4 percent decrease in debt FPI inbound from the tax havens compared to non-havens over the same time period, with some variation in estimates depending on the specification. To our knowledge these are the first rigorous empirical estimates of investor-level tax evasion affecting cross-border investment in debt and equity securities.

Our paper contributes to the literature on the effects of cross-border taxation on equity markets, the broad literature on tax aggressiveness, and the home bias literature. The literature on cross-border taxation and equity markets has examined topics such as dividend tax arbitrage (McDonald, 2001), tax effects on ex-day behavior of ADR securities (Callaghan and Barry, 2003), the effects of dividend taxation on foreign portfolio investment (Amiram and Frank, 2010), and effects of changes in the corporate taxation of foreign earnings on dividend payout and share repurchases (Dharmapala, Foley, and Forbes, 2011). The literature is silent, however, when it comes to evidence on cross-border tax evasion in equity (or debt) markets.

In terms of the broader literature on tax aggressiveness, Graham and Tucker (2006), Hanlon and Slemrod (2009), Lisowsky (2010), and others examine corporations engaging in tax shelters and the related effects. Our paper also examines tax-aggressive behavior but is different from these papers in at least two respects. First, our paper provides evidence on tax evasion, an illegal activity that is beyond typical tax aggressive strategies. Second, our paper provides evidence on investor-level behavior rather than corporate-level behavior. Related to our paper in this sense is Dhaliwal, Erickson, and Heitzman (2009), who examines executives who

fraudulently backdated stock option exercise dates to reduce their personal taxes.[8] Our paper, like theirs, examines individual-level tax aggressiveness with respect to securities transactions. However, our paper examines offshore tax evasion, while Dhaliwal et al. (2009) study tax avoidance by insiders exercising stock options received as part of their compensation.

Moreover, our study has implications for the home bias literature. Home bias is an observed regularity in which investors tend to overweight domestic stocks and underweight foreign stocks in their portfolios (French and Poterba, 1991; Cao and Brennan, 1997, Lewis, 1999; Graham, Harvey, and Huang, 2009). Our results imply that investor home bias is potentially understated in the literature. Indeed, our results suggest that some equity holdings that appear to be from foreigners are actually from domestic investors, who have merely routed their investment through a tax haven to evade tax.

The paper proceeds as follows. In the next section we describe how offshore tax evasion takes place and the laws and efforts to prevent it. In Section III, we review prior literature. In Section IV we develop our hypotheses and in Section V we describe our research design. Section VI discusses our sample, variable measurement, and descriptive statistics and Section VII presents the results from our empirical tests. Section VIII concludes.

## II.       Background and Institutional Details

### A. *How Offshore Tax Evasion Works*

This section describes how individuals actually go about offshore tax evasion. Specifically, we discuss the tax incentives, the steps involved, and case study examples of

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[8] Erickson, Hanlon, and Maydew (2004) also examine fraudulent behavior and taxes, but the setting in that paper involves overpayment of taxes to cover-up accounting fraud.

offshore tax evasion. It is important to note that our paper attempts to identify only one type of offshore tax evasion – round-tripping. However, this is an important form of tax evasion. Indeed, the U.S. General Accounting Office (2007, p. 8) states that "The difference in taxation, withholding, and reporting for nonresident aliens and U.S. persons can motivate some U.S. individuals or businesses to seek to appear to be nonresident aliens." The GAO reports that, as of 2003, there was at least $200 billion of U.S. source dividend, interest, and other income received by foreign corporations, of which only $2.8 billion in tax was withheld, for an average withholding rate of 1.4 percent.

A simple hypothetical can illustrate the key aspects of offshore tax evasion via round-tripping. A U.S. individual sets up a foreign corporation, in the Cayman Islands for example, and opens a bank account, also in the Caymans, in the name of the corporation.[9] All this can be done over the Internet for a small fee. The individual transfers funds to the bank account of the Cayman corporation and has the Cayman corporation make investments in the U.S. and other countries if he wishes.[10]

What is the advantage of evading taxes through a foreign corporation? If the U.S. individual directly owned a portfolio of U.S. publicly-traded stocks and U.S. Treasury bonds, he would owe U.S. income tax on the income from those investments. A tax on this type of income is hard to avoid due to information reporting. The U.S. government requires the paying entity or brokerage firm to report to the IRS (e.g., on Form 1099) the amount of dividends, interest, and

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[9] Foreign trusts have been used for similar purpose.

[10] In our tests we cannot identify whether the investment principal is made with taxed or untaxed dollars. We only test for tax evasion on the income earned on the investment.

sales proceeds (above certain thresholds) that are paid to U.S. taxpayers. This makes tax avoidance on these types of incomes difficult because the IRS receives matching information from the third party (the payer or broker).

With the offshore tax evasion structure, however, the investments are at least superficially owned by the foreign (Cayman in our example) corporation. Foreign corporations and nonresident alien individuals are generally not subject to U.S. income tax on the interest and capital gains income from the U.S. stock and bond investments, provided they are not controlled by U.S. persons.[11] However, the U.S. is unlikely to know that the beneficial owner of the Cayman corporation is a U.S. individual. As a result, given any tax evasion intent in establishing this structure in the first place, the U.S. is unlikely to collect any income tax.[12]

The U.S. will, however, collect a withholding tax on any *dividend income* paid to such a foreign corporation. A withholding tax is a tax withheld at the source of the income. The U.S. imposes a withholding tax on dividend income. The default withholding tax rate is 30 percent, but can be reduced when the U.S. has a tax treaty with the country where the foreign investor (corporation in our example) is located. In most cases where there is a treaty, the reduced withholding tax rate is 15 percent. Since the U.S. has no tax treaty with the Cayman Islands the

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[11] The U.S. has a number of tax provisions to deal with foreign entities that are owned by U.S. persons, including the Subpart F and Controlled Foreign Corporation (CFC) rules and the Passive Foreign Investment Company (PFIC) rules. These rules act to tax certain types of income, most generally passive income, currently to the U.S. taxpayer even though the income is earned overseas. The enforcement of these provisions depends, of course, on obtaining the information necessary to determine that the owners of the foreign entities are indeed U.S. citizens or residents (taxpayers).

[12] We recognize that the U.S. individual could voluntarily report the income but this is unlikely if the individual is establishing an offshore account with the intent to evade U.S. tax.

withholding rate is 30 percent of a dividend to a Cayman Island's entity. Note that capital gains and portfolio interest are generally exempt from withholding tax.[13]

One key aspect of incorporating in a country such as the Cayman Islands is that there is no local taxation in the jurisdiction. While there is not an official definition of a tax haven, the OECD lists the following attributes of tax havens:  1) imposing no or only nominal taxes, 2) a lack of transparency, 3) laws or administrative practices that prevent the effective exchange of information for tax purposes with other governments on taxpayers benefiting from the no or nominal taxation, and 4) an absence of a requirement that the activity be substantial.[14] Many jurisdictions compete for offshore business. The Cayman Islands, for example, has approximately 60,000 residents but is by some measures the fifth largest financial center in the world. As of 2006, over 500 bank and trust companies, over 7,000 mutual and hedge funds, and over 700 captive insurance companies were registered in the Cayman Islands (U.S. Senate, Permanent Subcommittee on Investigations, 2008). However, there are many other jurisdictions that offer similar features such as the British Virgin Islands, Bermuda, Switzerland, Liechtenstein, and a number of other mostly small jurisdictions.

In practice, a number of parties are often involved in the process of offshore tax evasion. A 2008 report by the U.S. Senate's Permanent Subcommittee on Investigations highlighted the steps involved and the different roles played by those who enable the hiding of assets and income

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[13] Congress repealed the withholding tax on portfolio interest in the Deficit Reduction Act of 1984. The tax policy rational for exempting portfolio interest from withholding tax is to attract foreign capital to the U.S. debt market.
[14] See http://www.oecd.org/document/23/0,3343,en_2649_33745_30575447_1_1_1_1,00.html for further details.

in offshore tax havens.[15] Often the process begins with promoters, who advertise via the Internet, seminars, books, and even in-flight magazines. Some promoters find prospective clients by holding seminars or by attending events frequented by the wealthy, such as yachting regattas and golf and tennis tournaments. Promoters are usually paid fees based on the value of assets moving offshore or a flat rate for specific services. They can also receive referral fees from offshore service providers and financial institutions.

The second step involves individuals or firms that assist in forming the offshore corporations or trusts and who often work in conjunction with the promoters. These agents file the appropriate documents with the tax haven government, pay the necessary fees, and often provide trustees, nominee directors and officers. Rather than acting independently, the U.S. Senate noted that these people usually follow the instructions of the clients.

The entire process can be done remotely; generally the clients do not need to travel to the tax haven and his or her name might not even appear on the corporate formation documents. Sometimes the client and the offshore service provider will enter into a side agreement that reflects that the client is the beneficial owner of the offshore entity so that there is documentation of the client's ownership. The offshore corporation or trust typically has no employees or separate office and consists of an address and agent with authority to sign documents. Once it has been formed, the offshore corporation or trust can then open an account at a financial institution in its own name and make investments. Finally, individuals have devised a number of ways to eventually access the offshore funds, including access through credit cards and ATMs in

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[15] The description here is a high level summary. The reader is referred to publications in the references for details.

the U.S. or abroad, gift cards, prepaid cards, and shopping in the tax haven (e.g., purchase a

Prada purse in Switzerland rather than New York City, ski in the Alps rather than Colorado). In

one case, evaders smuggled toothpaste canisters filled with diamonds.[16]

An example of offshore tax evasion is the case of Walter C. Anderson, a Washington

telecom mogul who was sentenced to nine years in prison in 2007 for the largest personal tax

evasion case ever brought by the Department of Justice at that time.[17] Anderson pled guilty to

failing to report approximately $365 million of income on his 1998 and 1999 tax returns. The

government contended that Anderson created an intricate web of offshore entities in the British

Virgin Islands and Panama, through which he held large amounts of stock in U.S.

telecommunications companies. Offshore tax evasion is not just for the ultra-wealthy, however.

A diverse set of citizens appears to engage in similar activities. For example, hearings on tax

evasion and tax evasion promoters held for the Committee on Finance for the U.S. Senate by

Senator Baucus and Senator Grassley featured an orthopedic surgeon, Daniel Bullock, who pled

guilty to tax evasion through the use of offshore entities. Indeed, at the same hearings Mr.

Bullock's attorney testified that often the promoters target middle class, small business owners.[18]

B.  *Lack of Information and Efforts to Detect and Prevent Offshore Tax Evasion*

Offshore tax havens have historically thrived on secrecy. Detection of offshore tax

evasion is difficult because the U.S. relies largely on self-reporting and does not require

withholding taxes on most interest income and capital gains. There is nothing illegal about

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[16] Senate Permanent Subcommittee on Investigations, July 17, 2008.
[17] Walter C. Anderson was also famous for being a space aficionado who once traveled by private jet to meet Russian officials in an attempt to lease the Russian Mir space station.
[18] U.S. Senate Committee on Finance, April 11, 2002.

having money in a foreign bank account, either directly or through a foreign corporation, as long as one properly reports the account and pays the appropriate taxes. Schedule B of Form 1040 contains specific questions about foreign bank accounts, but compliance rates are thought to be low. In addition, citizens, residents, and persons doing business in the U.S. with authority over a foreign country financial account or accounts with over $10,000 are required to report the account to the U.S. Treasury via a Report of Foreign Bank and Financial Accounts (FBAR) form. However, the compliance rate in filing the FBAR form is also suspected to be very low; some estimate the compliance rate at less than 20%.[19] There are also reporting requirements for transfers of assets to foreign trusts.

In addition to the "take a guess at it" estimation described above, perhaps the most revealing evidence about our general lack of data on the extent of evasion is the following exchange between the Chairman of the Senate Committee on Finance and then-IRS Commissioner Charles Rossotti in 2002. The Chairman asked for estimates of the extent of tax evasion by U.S. individuals:

> CHAIRMAN (SEN. MAX BAUCUS): But if you could just give us a sense, honestly, of the magnitude of the problem here so we can know what we are dealing with, so that together we can work to try to solve it.
>
> Mr. ROSSOTTI. I will try to do the best I can, recognizing, as Mr. Blum said, that one of the key things that makes this difficult is that inherently you have people who are violating the law.
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> The CHAIRMAN. Right. But you are the Commissioner.
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> Mr. ROSSOTTI. Yes.
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> The CHAIRMAN. You have some sense of this. What is it?

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[19] This estimate is based on 2001 data in the first report on compliance rates from the Treasury Department. See Sullivan (2004) and the report at http://www.us.treas.gov/press/releasesreports/fbar.pdf.

Mr. ROSSOTTI. Yes. I think that my sense is that if you want to just take the tax loss that has been associated with the kinds of promoted schemes that are defined there on that chart, that while we certainly do not have a precise number at all, having looked at all the data, it is my belief that we are into the several tens of billions of dollars of loss per year, whether that be $20, $30, $40 billion per year, we really do not have a precise number. But it is a big enough number in those tens of billions that it is certainly worthy of a very serious focus.

Further evidence is found in the transcripts of a 2007 Senate Committee on Finance hearing. Then Chairman Max Baucus remarked "Frankly, one job for the Federal Government is just to nail down the amount being transferred offshore. We need to learn what that total amount is, and after that, we need to learn much more about how much tax is being avoided…"

Indeed, part of the problem is that it is difficult for U.S. tax authorities even to become aware that a particular corporation, trust, or bank account exists in a tax haven. Furthermore, even if the authorities learn of the existence of an offshore entity, the process to obtain information about the owners of entity is difficult and time consuming (some countries have levied the same criticism at the U.S. when trying to obtain information about their citizens' activities in the U.S.). In addition, offshore tax evaders sometimes set up multiple layers of entities in multiple jurisdictions, making it even more difficult to determine the identity of the beneficial owners. Yet another problem with enforcement is that audits involving offshore tax evasion are more difficult, require highly trained IRS agents, and take longer to conduct.[20] In the

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[20] Former U.S. Senate investigator Jack Blum, in the hearings before the Committee on Finance, stated that "For years there has been very little offshore enforcement. There was a period in the 1970's when IRS made some efforts in that direction. The cases were dismissed. The agents who were involved had their careers ruined and there was a 10-year hiatus in the 1980's when offshore cases were simply not touched within IRS….it was a career killer…because the cases were complicated and the cases always involved people who had access to the political system in a way that made the case not have a good future. So what happened was, not very much was done. IRS got

U.S., the statute of limitations for tax assessment is generally three years after the taxpayer files

their return.[21] Because of the difficulty in completing an investigation of an offshore account in

such a short time frame, the IRS sometimes prematurely ends examinations involving offshore

accounts, or even chooses not to open an examination, even when there is evidence of

noncompliance (GAO, 2009, p. 8). Indeed, the numbers of IRS examinations involving offshore

accounts appear to be limited. The GAO reports that from 2002 to 2005 the IRS undertook 1,942

offshore examinations (GAO, 2007). The IRS assessed additional taxes in 63 percent of the

examinations at a median amount of $17,500.[22]

Arguably the most visible initiative against tax havens was undertaken by the OECD. The

OECD mounted an anti-tax haven effort starting in 1998, when it established a working group to

focus on "harmful tax practices" (OECD, 1998). In 2000, the OECD issued a report that listed 35

jurisdictions as tax havens. It excluded from the tax haven list countries that had already

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back into the game in the 1990's and began to realize the complexity of the cases." (U.S. Senate Committee on Finance, April 11, 2002.)

[21] There are exceptions to the three-year statute of limitations in cases such as substantial understatement of income, fraud, etc. A detailed description is beyond the scope of this paper.

[22] The U.S. also started an initiative called the Qualified Intermediary (QI) program in the year 2000. QIs report customer income and withholding information to the IRS. However, the QIs are allowed to report in aggregate for similar groups of customers (known as "pooled reporting"). Thus, foreign institutions can find the QI program advantageous because it allows them to maintain the anonymity of their customer list. In contrast, withholding agents must report customer information for all customers claiming treaty benefits but may generally accept owners' self-certification (GAO, 2007). The QI program only covers a small percentage of the U.S.-source income sent to offshore accounts. The GAO (2007) reports that for the 2003 tax year, only 12.5 percent of the $293 billion flowing from the U.S. to offshore accounts flowed through QIs. The rest flowed through U.S. withholding agents. The QI program may not identify U.S. shareholders as the beneficial owners of the corporation, since the corporation is the owner of the investment and the identity of the corporate owners is not reported to the IRS (GAO, 2007, p. 3). Critics of the QI program have noted that the Swiss bank UBS was in the QI program but was nevertheless involved in a tax scandal where U.S. citizens hid income from the IRS in offshore accounts. In addition to the QI program, recently, Congress has enacted a new information reporting regime called FATCA (Foreign Account Tax Compliance Act), which is scheduled to be effective in 2013. Finally, we note that very recently the IRS has increased its detection and enforcement efforts, including the creation of a new 'Global High Wealth Industry Group' dedicated to auditing the entire financial picture of wealthy people, including offshore accounts.

committed to information sharing agreements. The OECD pressured the tax havens to adopt

certain practices of cooperation and transparency, and warned that countries that did not

cooperate would be placed on a list of uncooperative tax havens. In 2001, the pressure on havens

increased further, as the OECD established a group to develop new standards for effective

information exchange, met with officials from each of the countries it had identified as tax

havens to discuss conditions for removal from the list, and established when coordinated

defensive measures could be taken against uncooperative tax havens.

Over time countries were removed from the blacklist as they agreed to OECD reforms,

including entering into a sufficient number of TIEAs (described below) with other countries. By

2002, 31 of the countries had agreed to cooperate with the OECD, though implementation in

some cases took much longer. By April 2009, there were no countries on the OECD blacklist and

only four countries on the grey list (Costa Rica, Malaysia, the Philippines, and Uruguay) and

those were labeled as "other financial centers" rather than tax havens.

In large part due to the OECD efforts, there has been a significant increase in the number

of TIEAs between the U.S. and countries that were identified as tax havens. In general, TIEAs

provide for sharing of tax information between the countries to assist each other in the collection

of tax. While a step forward, TIEAs have a major limitation in that the information exchange

usually only takes place upon request. This means that the U.S. must first identify the potential

tax evaders, which is difficult without information about who is avoiding tax in the first place.[23]

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[23] A John Doe summons may be served without knowing the taxpayer's name. A John Doe Summons is a summons
where the name of the taxpayer under investigation is unknown and therefore not specifically identified, and can
only be served after approval by a Federal court. Therefore, the Service must never serve a "friendly" John Doe

A second major limitation is that bank secrecy laws in the foreign country are unaffected by the

TIEA. A third limitation is that the tax haven country might not have useful information to share.

For example, Sullivan (2009) notes that the British Virgin Islands has hundreds of thousands of

registered corporations but the country requires no identification of shareholders or directors

upon incorporation, nor does it require any financial records. Thus, an information request from

the British Virgin Islands may not yield much usable information because the information is not

even collected by the tax haven. On the other hand, even a small chance of detection may be

enough to drive away would-be tax evaders or cause them to look elsewhere. Indeed, a 2007

guide to tax havens advises people interested in confidentiality to avoid tax havens that have

signed TIEAs stating "…you should not do business with a TIEA tax haven…this device has

undermined once good tax havens" (Barber, 2007; p. 127). Thus, while some are skeptical of the

effectiveness of TIEAs (e.g., Kudrle, 2008), TIEAs may have a large effect in practice.

Sometimes the best information that tax authorities receive about offshore evasion comes

from tax whistleblowers and/or disgruntled employees. For example, in 2008, a former employee

of a Liechtenstein trust company provided tax authorities with the names of 1,400 people with

accounts at LGT Bank of Liechtenstein. In short order the governments of Germany, the U.S.,

the U.K., Italy, France, Spain and Australia initiated investigations. That same year, in a recent

well-publicized case, a former employee of the Swiss bank UBS, Bradley Birkenfeld, was

arrested by the U.S. on charges of helping a U.S. billionaire to defraud the IRS out of $200

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summons even though a prospective summoned party may request one as a condition to providing information to the
Service. Serving a John Doe summons without court approval violates the statute and can jeopardize the
investigation.

million in taxes using accounts in Switzerland and Liechtenstein. Birkenfeld had a dual role as a

perpetrator and as an informant to the Department of Justice. He pled guilty to conspiracy later in

2008. The U.S. then petitioned the U.S. District Court for the Southern District of Florida for

approval to issue a "John Doe" IRS summons asking UBS for the names of all U.S. clients who

have opened accounts in Switzerland but for which the bank had not filed forms with the IRS

disclosing the accounts. The court approved the request. A controversy ensued over whether

UBS would be breaking Swiss bank secrecy laws if it complied with the summons. In February

2009, the U.S. and UBS entered into a deferred prosecution agreement for conspiring to defraud

the U.S. by helping U.S. citizens conceal assets in the names of nominees.[24] UBS turned over the

names of 250 individuals with accounts at UBS and agreed to pay $780 million in fines,

penalties, interest and restitution. After much back and forth with the Swiss government and

courts, UBS turned over the names of several thousand customers.[25]

In the interim period, the IRS also initiated an amnesty program whereby U.S. taxpayers

could come forward and pay their taxes due while avoiding criminal sanctions. The IRS reported

that approximately 15,000 individuals with offshore accounts came forward under the program,

netting the IRS some $400 million in revenue. In 2011, the IRS initiated a second amnesty

program where again the taxpayer must pay back taxes, penalties and interest on any money he

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[24] On October 22, 2010, the Department of Justice filed to dismiss the criminal charges as the bank fulfilled the provisions of the deferred prosecution agreement.
[25] An interesting side point is that Birkenfeld, the former UBS employee who provided the information, began serving a 40 month sentence in Federal prison in 2010 but may be eligible for a reward from the U.S. of 15 to 30 percent of the tax collected, under a law enacted in 2006.

or she did not report (as well as a compromise FBAR penalty); however, the taxpayer avoids criminal prosecution.[26]

### III.        Prior literature on Taxes and Foreign Portfolio Investment

FPI is investment of less than 10 percent ownership of a corporate entity, and is often, but not always, made by individuals. FPI has grown rapidly over the past four decades. In 1960, inbound portfolio investment into the U.S. totaled $13.8 billion and, by 2010, the amount totaled $10.7 trillion.[27] Even with the rising importance of FPI, the taxation of foreign portfolio income has largely been ignored until recently (Graetz and Grinberg, 2003). Prior studies that examine the effects of taxation on investor decision-making generally focus on taxation of domestic investors (e.g., Ayers, Lefanowicz, and Robinson, 2003; Dhaliwal and Li, 2006; Graham and Kumar, 2006). Another large stream of literature has focused extensively on FDI (foreign direct investment) which is investment of greater than 10 percent ownership in corporate entities, generally made by corporations (e.g., Desai, Foley, and Hines, 2004; Foley, Hartzell, Titman, and Twite,2007, among others).

While generally understudied, several papers have recently taken up the task of testing the effect of taxes on international portfolio choice. For example, Desai and Dharmapala (2011) examine the effect on worldwide portfolio allocation surrounding the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA). The authors show that when the U.S. reduced the dividend tax rate on domestic dividends and dividends from certain foreign countries in 2003, U.S.

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[26] http://online.wsj.com/article/SB10001424052748704364004576132431503110852.html. The deadline for filing is August 31, 2011 and thus, no data on collections are available at this time.
[27] See Graetz and Grinberg (2003) and the 2010 treasury report found at  http://www.treasury.gov/resource-center/data-chart-center/tic/Documents/shla2010r.pdf

investors allocated their portfolios to those foreign countries where the dividend tax was reduced. They estimate an elasticity of asset holdings with respect to dividend taxes of -1.6. Importantly, the authors point out that the effect of taxes on individual portfolio choice has received little attention. Separately, Ferreira, Massa, and Matos (2010) examine the relation between international institutional ownership and payout policy. They find that foreign institutions prefer to avoid stocks with large dividend payouts, particularly when the withholding tax on dividends is high.[28] McDonald (2001) studies the effects of dividend tax arbitrage in Germany and Callaghan and Barry (2003) study tax effects on the ex-day behavior of ADR securities. In addition, Amiram and Frank (2010) use archival data to examine the empirical association between foreign equity portfolio investments and dividend tax policies around the world. The authors find evidence consistent with a favorable tax policy on dividend income increasing foreign portfolio investment into a country and with the effect of such tax policies being stronger for countries with higher dividend payouts. Thus, the prior papers document a general association between international portfolio allocation and taxes but do not examine the extent of, or factors affecting, tax evasion. We recognize that there is an emerging literature on aggressive (not necessarily evasive) tax behavior that sometimes involves cross-border taxation, but this literature is focused on avoidance of corporate taxes (e.g., Dyreng and Lindsey, 2009; Graham and Tucker, 2006). To our knowledge, the literature on investor-level offshore tax evasion is very limited.

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[28] The withholding tax on dividends often applies to foreign institutions even when such institutions are tax exempt in their home country. In a few cases, this condition of being subject to withholding taxation is excepted by treaty.

There are some articles that discuss anecdotal evidence of investor-level tax evasion cases and provide estimates of evasion based on either aggregate investment and compliance data or country-specific data. For example, Sullivan (2004) (entitled "U.S. Citizens Hide Hundreds of Billions in Cayman Accounts") estimates that U.S. individual investors hold $290 billion in Cayman banks and estimates rough percentages from a variety of sources that $232 billion is unreported in the U.S. Other evidence of the potential extent of the tax evasion problem is found in Guttentag and Avi-Yonah (2005). The authors describe a recent case of John Mathewson from Texas, who was the chairman and controlling shareholder of Guardian, a Cayman Islands bank. In exchange for a reduced sentence for money laundering, he aided the U.S. government by providing information on tax evasion cases. The authors state that the result was an "eye-opener" – the majority of the accounts were beneficially owned by U.S. citizens and not for the purpose of money laundering, but rather with the primary purpose of evading U.S. income taxes on income earned legally. Eventually, the IRS settled 1,165 cases with individual U.S. taxpayers for a total collection of $3.2 billion.

There have been two review papers that discuss the relevant issues. Dharmapala (2009) reviews the literature surrounding tax havens and of tax haven activities in terms of both corporate and individual investor tax planning via tax havens. Gravelle (2009) also provides a review of international tax avoidance and evasion via tax havens. Her discussion is weighted toward corporate tax avoidance (as is much of the literature and data), but she also provides a discussion of individual tax evasion and the legislative attempts to curtail such evasion. Overall, these papers provide valuable summaries of the literature and discussion of the issues, but neither

is intended to provide an empirical examination of the extent of, or factors affecting, tax evasion by individual investors in response to U.S. tax policies for domestic and foreign income tax on portfolio investment income. This is what we do in our paper.

## IV. Hypotheses

Would-be tax evaders face a tension between the expected benefits of evasion and the expected costs.[29] As a result, we make two predictions. Our first prediction focuses on the expected benefits – the incentives – to engage in offshore tax evasion: U.S. tax rates. As U.S. tax rates increase, the incentives to avoid taxation increase for U.S. citizens and residents. However, increases in U.S. tax rates should have no effect on actual foreign investors, as those investors generally are not subject to U.S. taxes (other than withholding taxes). Thus, our first hypothesis is that foreign portfolio investment into the U.S. from tax havens is increasing in U.S. tax rates. Results consistent with this hypothesis are consistent with tax evasion by U.S. taxpayers via tax havens and do not seem plausibly explained by other factors.

Our second hypothesis focuses on the expected costs of detection. Our hypothesis is that the greater the likelihood of being caught, the less tax evasion will occur. We employ several proxies for the likelihood of detection, all of which are events that signal increased efforts at

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[29] The costs can include prison sentences, fines and penalties, and the payment of back taxes. As an example, earlier in 2011 the IRS prosecuted a father-son team, Maurico Cohen Assor, 77, and his son, Leon Cohen-Levy, 46, who concealed more than $150 million in assets and failed to report more than $49 million in income to the Internal Revenue Service. The pair sold the New York Flatotel in 2000 (others are located in France, Spain and Brussels) and directed the $33 million in proceeds to a bank account at HBSC in Switzerland opened in name of Panamanian bearer share company, without reporting the income on U.S. tax returns, according to court documents. The two men also titled homes and cars and a $45 million investment portfolio in the names of shell companies formed in the Bahamas, the British Virgin Islands, Panama, Liechtenstein and Switzerland. Each man received a 10 year prison sentence. The father was ordered to pay $9.4 million in restitution and the son to pay $7.7 million in restitution. (see http://blogs.forbes.com/ashleaebeling/2011/02/04/flatotel-father-son-team-get-10-years-for-tax-fraud/ )

stopping tax evasion through tax havens. The first event that we examine is the signing of TIEAs between the U.S. and other countries. As mentioned above, while there are many skeptics of whether these agreements are effective (e.g., Klautke and Weichenrieder,2008; Kudrle,2008), others advise people interested in financial confidentiality to avoid tax havens that have signed TIEAs (Barber, 2007). Thus, ultimately it is an empirical question whether TIEAs have had an effect on tax evasion. The second event covers dates of increased scrutiny on tax havens by the OECD—1998 and 2001. As discussed above, in 1998 and 2001, the OECD increased efforts with respect to tax haven secrecy practices. As part of the OECD effort, the U.S. and OECD put pressure on tax havens to share tax information with other developed countries. We use these event dates as a proxy for an increase in the expected likelihood of detection (i.e., the expected costs). We predict that the reduction in the secrecy afforded to would-be evaders of U.S. tax has a negative effect on the amount of foreign portfolio investment into the U.S. from a tax haven. We recognize that this is a joint test of both the effect of the rules and the extent of tax evasion; a null result could indicate that either the rules are ineffective or that there is no evasion occurring.

In sum, our goal with this research is to begin to estimate empirically a measure of the extent to which individual level tax evasion occurs through tax haven entities with respect to portfolio investments and to examine the effect of changes in the costs and benefits on such evasion. It is to this task we now turn.

## V.    Research Design

### A.  *Test of the effect of U.S. tax rates on FPI (Hypothesis 1)*

Our main empirical specification tests the effect of greater incentives to evade U.S. taxation, where the incentives to evade are measured by the U.S. tax rate. The intuition behind the empirical identification strategy is that U.S. tax rates only affect U.S. taxpayers—investors from other countries should be indifferent to changes in tax rates to which they are not subject. Thus, if changes in haven-sourced FPI into the U.S. vary with changes in the U.S. tax rate, this variation can be attributed to evasion by U.S. tax payers. As a result, we estimate the following equation:

$$Log(FPI_{im}) = \alpha_{country} + \alpha_{year\text{-}month} + \beta_1 HAVEN_i * TAX\ RATE_m^k + \gamma_1 Log(GDP_{it})$$

$$+ \gamma_2 Log(Population_{it}) + \varepsilon. \tag{1}$$

*Log(FPI$_{im}$)* is the log of foreign portfolio investment from country *i* into the U.S. in year-month *m*. The foreign portfolio investment in equity (debt) securities is the natural log of the market value of monthly foreign holdings of U.S. stocks (U.S. corporate bonds). These data are gathered from the Federal Reserve Board and are described in detail below. *HAVEN$_i$* is an indicator variable set equal to one if country *i* is identified as a tax haven and set to zero otherwise. We follow Dharmapala (2009) and define a country as a tax haven if it was listed on the 1998 OECD report on tax havens or if it was included in the list provided by Hines and Rice (1994) (see Table I for our classification).

We focus on the interaction variable, $HAVEN_i*TAX\ RATE_m^k$, to examine the extent to which haven investment partially originates from U.S. investors (i.e., evasion), while at the same time controlling for year-month and country fixed effects ($\alpha_{year-month}$ and $\alpha_{country}$). Main effects for *HAVEN* or *TAXRATE* are captured by the country and year-month fixed effects. We predict a positive coefficient on the $HAVEN_i*TAXRATE_m^k$ interaction variable because as the U.S. tax rates on U.S. investment increase, the incentives to evade the taxes via a tax haven increase.

We examine two measures of $TAXRATE_m^k$: *LTCGRATE* is the U.S. tax rate applicable to long-term capital gains and *ORDRATE* is the top statutory U.S. ordinary income tax rate applicable to ordinary income (e.g., interest income and short-term capital gains). We test the effect of the ordinary tax rate and the long-term capital gains rates on both debt and equity FPI. It is important to note that the tax rates represent the tax avoided by the tax evader. For example, the ordinary tax rate applies to interest income from debt securities owned by U.S. investors (with no evasion). The ordinary tax rate also applies to any short-term capital gains that a U.S. investor earns; thus, any rapid trading of securities is subject to such a rate. The long-term capital gains tax rate applies to gains from the sale of stocks or bonds held in excess of 12 months for most of our sample period. These are the taxes avoided by going offshore. Thus, if tax evasion is occurring in a manner described above (i.e., round-tripping), then as U.S. tax rates increase, the benefits of avoidance increase, and FPI from haven locations should increase. We expect the

increase to be in haven locations and not non-haven locations because the tax evader will not

owe tax in the foreign country if it is a haven.[30]

We include two important control variables: the log of country $i$'s gross domestic product

in year $t$, $Log(GDP_{it})$, and the log of the country $i$'s population in year $t$, $Log(Population_{it})$. These

variables control for the size of the country from which the investment is sourced, following

Desai and Dharmapala (2011). We obtain GDP data from the World Bank database and

population data from the United Nations database.[31] When the data are not available at these

sources, we obtain the data from the International Monetary Fund and the CIA World Factbook

database.[32]

When estimating equation (1) we include country and year-month fixed effects to account

for country and time factors, following Desai and Dharmapala (2011) and Christensen, Hail and

Leuz (2011).[33] Country fixed effects capture unobserved, time-invariant heterogeneity across

countries that can influence the level of portfolio investment into the U.S. The estimation also

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[30] We do not test the effect of the U.S. dividend tax rate in our main tests for several reasons. First, the U.S. dividend withholding rate that applies to dividend income discourages tax avoidance of dividend income. Desai and Dharmapala (2011) state that withholding taxes act as a detriment to tax avoidance activities (i.e., tax avoidance of home country tax by investing in FPI rather than domestic securities). Indeed, with a dividend withholding tax rate of 30% for dividends paid to the Cayman Islands, the foreign investor is worse off relative to the U.S. investor in the time period since 2003 when qualified dividends are taxed at a maximum of 15%. Second, the dividend tax rate and the ordinary income tax rate were the same rate until 2003, at which time dividend tax rates were reduced and not linked to the ordinary rate. We do not expect tests of the dividend rate to be useful in our analysis because 1) the withholding rate is often greater than the dividend rate, which would deter, rather than promote, evasion and 2) the econometric issue of a high correlation (1 in many years) with the ordinary income tax rate.

[31] http://data.un.org/Default.aspx

[32] http://www.theodora.com/wfb/abc_world_fact_book.html. When control variables are unavailable for some years, we use the average of the available observations before and after the observation.

[33] Petersen (2009) suggests that fixed effects models yield unbiased standard errors so long as there is no decay in residual correlation, which we do not expect in our variables. As a result of our fixed effects estimation, we do not cluster the standard errors. We note, however, that our main results are robust when using standard errors generated through a non-parametric bootstrapping procedure to generate unbiased standard errors.

includes time fixed effects for haven and non-haven countries, which accounts for potential time trends in investment as well as common economic shocks that influence all countries simultaneously. For example, the time fixed effects account for changes in the level of the U.S. capital markets across time (at the monthly level), which is equivalent to including a control for the monthly level of the S&P 500 Index. As noted in Christensen et al. (2011), the extensive structure of the country and time fixed effects is very demanding and could capture some of the treatment effect of changes in regulatory enforcement, in our case, signing of TIEAs or increased OECD scrutiny. This could potentially diminish the magnitude of the point estimate, which would likely occur if the treatment effect occurs at similar dates across haven countries, if the treatment dates are noisy, or if the regulatory change has a gradual rather than a sharp effect (Christensen et al., p. 16).

B. *Test of the effect of increases in expected probability of detection on FPI (Hypothesis 2)*

Our second hypothesis predicts that as the likelihood of detection increases, the level of FPI into the U.S. through offshore havens should decrease if any of the FPI is due to U.S. tax evasion. As our proxy of increased probability of detection, we use two sets of event dates associated with increased scrutiny of tax havens and employ a series of interrupted time-series and difference-in-differences tests to examine the variation in FPI through havens following these events. The empirical specification directly follows the event study methodology in Desai and Dharmapala (2011), which tests whether outbound FPI changes for tax advantaged countries following a change in tax rates. The model is as follows:

$$Log(FPI_{im}) = \alpha_{country} + \alpha_{year\text{-}month} + \beta_l HAVEN_i * POST_m^k + \gamma_l Log(GDP_{it})$$

$$+ \gamma_2 Log(Population_{it}) + \varepsilon. \qquad (2)$$

Depending on the specification, $POST_m^k$ takes on a value of one in separate regressions for the time period after each of the two events: the signing of TIEAs with the U.S and the initiation of OECD enforcement actions. The event year-month is the month and year in which the U.S. signed a tax information sharing agreement with a particular country (*POSTCONTRACT*) and the year-month in which the agreement went into effect (*POSTEFFECTIVE*). In this test, the year-month of $POST_m^k$ is specific to, and varies by, the country where the inbound investment is from. The variable $POST_m^k$ takes on a value of one for countries that signed a TIEA with the U.S. during the sample period, depending on the date the agreement was signed (*POSTCONTRACT*) and became effective (*POSTEFFECTIVE*). Most of the countries in the sample, including several *HAVEN* countries, have never signed TIEAs with the U.S., which results in a $POST_m^k$ variable that is always zero for those countries.[34]

For the second event, we create indicator variables for the two years during which the OECD announced it would increase enforcement of tax avoidance via tax havens (*POST1998* and *POST2001*), where $POST_t^k$ is set to one after 1998 (and separately after 2001) and zero before those years. Similar to equation (1), we include time and country fixed effects to control for country and time factors, as well as controls for country population and GDP.

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[34] In our sample, five havens in our sample signed TIEAs with the U.S.: Bermuda, Bahamas, Cayman Islands, Netherlands Antilles and Switzerland (Switzerland's is part of a larger tax treaty). The agreements were signed in various years, ranging from 1988 - 2007.

Overall, if the increase in enforcement from these events increases the expected likelihood of detection (i.e., the agreements are effective) and tax evasion is occurring in our data, then inbound FPI should decrease after the signing of the agreement or after its effective date (as long as the increased costs become greater than the benefits for some of the investors). In the regression, a negative coefficient on the $POST_t^k$ variables for the haven locations, relative to non-haven locations, is consistent with investment from the haven countries declining after tax evasion becomes more costly.

Several caveats with respect to these tests are in order. First, to the extent that the OECD announcements of greater scrutiny and the tax information sharing agreements are ineffective, we do not expect any decrease in evasion activities. In other words, unless these events credibly increase expected costs of evasion, there will not be an effect on the extent of tax haven use to evade taxes. Second, these tests are interrupted time series tests that are susceptible to confounding events problems. If other factors that affect the level of FPI occur at roughly the same time and cause FPI from tax havens to decline (i.e., change in the same direction as an increase in tax authority scrutiny) more than non-havens, then we could attribute the observed behavior in the pattern of FPI from tax havens to tax evasion by U.S. individuals when it is really attributable to something else. Similarly, if there is a time trend that operates in the same direction as our tests predict and it is specific to the tax havens affected by the enforcement activities, then it is possible that we pick up that trend. Of some comfort is that all of our events increase enforcement, which would yield decreasing investment. The time trend in FPI, in contrast, is generally increasing. Thus, the general time trend is at least from this aspect, not a

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concern. In addition, our research design compares tax haven locations to non-haven locations, which is important because it isolates the effect attributable to the tax haven nature of the country and the resulting ability to accomplish tax avoidance. In our robustness section below, we discuss tests we employ in attempts to rule out as many of the above problems as we can think of, but to the extent we cannot, our results should be interpreted with care.

## VI. Data, Sample, and Descriptive Statistics

### A. Data and Sample

Our primary source of data is monthly estimates of U.S. securities positions held by foreign investors, as reported by the Federal Reserve Board (FRB), following Curcuru, Thomas, Warnock and Wongswan (2011). These data are based on periodic surveys of foreign holdings of U.S. securities that occurred, until recently, only once every five years. They are now reported annually. However, foreign portfolio flows (as opposed to levels) are reported on a monthly basis. Thus, to arrive at a more frequent measure of levels of FPI, the FRB combines annual survey data of securities positions released by the U.S. Treasury International Capital System (TIC) with monthly transaction data released by the Treasury. That is, the *annual level* of FPI is combined with the *monthly flow* of FPI to arrive at a *monthly level* of FPI. The annual data from TIC are based on surveys of U.S.-based banks, broker-dealers and financial institutions that have custody of U.S. equities and debt held by foreigners. Fulfilling the survey requirements by U.S. custodians is mandatory under the International Investment and Trade in Services Survey Act,

with severe penalties attached for failure to comply.[35] As a result, the annual levels data are considered reliable and have been used extensively in recent research examining international portfolio flows (e.g., Desai and Dharmapala, 2011; Thomas, Warnock, and Wongswan, 2006). The monthly transaction data from the Treasury are based on a mandatory, monthly TIC survey filed by U.S. banks, securities dealers, and other entities.[36] Respondents to the surveys report the amount of transactions of four types of U.S. securities held by foreigners: equity, debt issued by U.S. corporations, U.S. Treasury debt, and U.S. government agency debt.[37] We focus our analysis on foreign holdings of U.S. equity and corporate debt because these are more likely to be held by individual investors, whereas U.S. Treasury and U.S. agency debt are often held by foreign governments.

In sum, the FRB combines low frequency data detailing the positions of foreigners in U.S. securities with high frequency transactions data. The data provide a monthly time series of estimated levels of foreign holdings of U.S. corporate bonds, U.S. equity securities, U.S. agency bonds, and U.S. Treasury bonds for about 80 countries over the time period 1984 - 2008. The data are available to the public on a website hosted by the FRB.[38] Because of the corrections to the well-known biases in international portfolio flow data (e.g., financial center bias), the long

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[35] The treasury reports that there are "two types of respondents to the surveys: U.S. resident issues of securities and U.S. resident custodians (including securities depositories) that manage the safekeeping of U.S securities for foreign resident entities. … Reporting was mandatory, and penalties could have been imposed for non-compliance." http://www.treasury.gov/resource-center/data-chart-center/tic/Documents/shl2009r.pdf

[36] http://www.ustreas.gov/tic/ticsecd.shtml

[37] http://www.treasury.gov/resource-center/data-chart-center/tic/Documents/frbul2006.pdf

[38] The data can be accessed at the following website: http://www.federalreserve.gov/pubs/ifdp/2007/910/default.htm. The estimated monthly FPI levels are subject to several adjustments to reduce the noise and biases in the data. We refer the reader to Bertaut and Tryon (2007) for extensive details.

time series and the broad cross section of countries covered, the FRB estimates of monthly

positions of foreign investors in U.S. equity and debt securities represent the best available data

on portfolio holdings.[39]

Bertaut and Tryon (2007) describe a potential bias in the data called the "custodial bias,"

in which the origin of the FPI is in question. This bias arises because investors often employ

foreign banks to maintain custody of their shares in countries other than their own. Thus, the

investments in U.S securities by a U.S. investor with equities in custody at a Bermudan bank

would be attributed to Bermuda rather than U.S. In this study, we *exploit* custodial bias by

examining how investors sourced to havens react to changes in U.S. tax law; the portion that is

sensitive to U.S. tax law changes we interpret as being sourced to U.S. investors avoiding the

U.S. income tax.

We make two adjustments to the data. First, we remove observations that are not clearly

associated with a particular country. For example, we exclude observations from country groups

reported in the FRB dataset, such as "African Oil Exporters" and "Other Europe," as well as

countries that are grouped together where one is a haven and the other is not, such as Belgium

and Luxembourg. We make an exception for the Cayman Islands, which is one of the largest

financial centers and is the source of the majority of the FPI from the group of countries in which

it is included.[40] Second, we exclude observations with insufficient information for our control

variables, GDP and population.

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[39] Curcuru et al. (2011, p.4) state that the Bertraut and Tryon (2007, FRB) dataset "is the best currently available."
[40] The data for the Cayman Islands are included in the country group labeled "British West Indies" prior to March
31, 2000 but data for the Cayman Islands are broken out separately after that date. The other countries included in

*B. Descriptive Statistics*

Table I provides descriptive statistics of our variables for each country from which the inbound (to the U.S.) FPI is sourced. Specifically, for each country in our dataset, the table shows whether the country is a *HAVEN* in our study (1 = yes), the mean monthly equity FPI from the country over our sample period (1984-2008), the mean monthly debt FPI over our sample period, the mean population of the country over the sample period, and the mean GDP of the country during our sample period. Of the 59 countries for which we have data, 12 are tax haven countries. The United Kingdom has the highest level of equity FPI inbound into the U.S. in the sample, with Ghana exhibiting the lowest. China is the most populous country in the sample, while the Cayman Islands is the least populous country in the sample. Japan has the highest average GDP, while Liberia has the lowest average GDP. Hence, the sample exhibits considerable cross-sectional variation in all of our variables of interest. Panel B of Table I presents the U.S. individual tax rates in effect over our sample years.

In Figure 1, we present a graph of the log of the average ratio of equity FPI to the population of the country; haven countries have darkly shaded bars. From the graph, the concentration of scaled equity investment from tax haven countries is noticeable as the countries with the largest ratios of FPI/population are haven countries. The Cayman Islands, an oft-cited haven for wealthy U.S. investors (as described in Guttentag and Avi-Yonah (2005)), has the

the group prior to March 31, 2000 are Anguilla, British Virgin Islands, Montserrat, and Turks and Caicos. In the most recent period, the FPI from the Cayman Islands accounts for roughly 93 percent (79 percent) of the total debt FPI (equity FPI) for the "British West Indies" country group. Thus, prior to March 31, 2000 we treat data labeled as from the "British West Indies" country group as being from the Cayman Islands in the proportion of the recent data (i.e., 79 percent of the "British West Indies" group for equity and 93 percent of the total for debt). As noted below, our results are robust when the Cayman Islands is excluded entirely.

greatest amount of FPI into the U.S. relative to its population.[41] Figure 2 reports the unscaled

dollar amount of equity FPI from each of the countries in our sample as of 2008. Predictably,

countries with large economies and trade with the United States occupy many of the top

positions in terms of equity FPI into the United States, such as the United Kingdom, Canada, and

Japan. However, tax havens also appear among the largest FPI holders, with four of the top ten

holders of U.S. equity FPI being tax havens: Switzerland, Cayman Islands, Singapore, and

Bermuda.

In Table II, we present univariate tests of differences between havens and non-havens.

Along all dimensions that we test, we see that haven countries are systematically different.

Haven countries are much smaller in terms of population and GDP than non-haven countries.

Despite the large differences in average size between haven countries and other countries,

investment (unscaled) in U.S stocks and bonds is much higher for haven countries than for other

countries in the sample. As we see in panel A, the average equity FPI is approximately $13.7

billion for non-haven countries, compared to approximately $22.8 billion for haven countries and

the difference is strongly statistically significant. The same pattern holds for debt FPI. For haven

countries, the average debt FPI is approximately $13.8 billion, compared to approximately $5.7

billion for non-haven countries, and the difference is also statistically significant. The same

pattern of differences also holds in median equity and debt FPI between haven and non-haven

countries, as reported in panel B. These data are quite remarkable given the size and GDP of the

countries. We next turn to the empirical tests of our hypotheses.

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[41] We discuss other Cayman tax avoidance strategies that may affect our results below.

## VII.    Results

### A.  *Test of Hypothesis 1: The effect of U.S. tax rates on inbound FPI*

Table III presents the results from estimating equation (1). Panel A presents the results for equity FPI, with columns (1) through (4) showing the results with and without controls for GDP and population. All specifications include controls for country and year-month fixed effects. Across all columns, the data reveal that the amount of equity FPI into the U.S. from haven locations varies positively with the U.S. ordinary income tax rates. Specifically, the coefficient on *HAVEN*ORDRATE* is positive and significant across each of the specifications, ranging from 0.007 to 0.013. This finding is consistent with the prediction in Hypothesis 1 that a higher tax rate provides more incentives for U.S. persons to evade tax by disguising their investments as if they were from foreign investors. The coefficient on the interaction *HAVEN*LTCGRATE* is positive across each of the specifications, but the significance is mixed, with coefficients ranging from an insignificant 0.002 in column (3) to a significant 0.009 in column (2).

With regard to inbound FPI in *debt* securities from *HAVEN* locations, the results in Panel B of Table III show that both the long-term capital gains rates and ordinary income rates affect FPI coming from tax havens in the manner predicted by our first hypothesis. Specifically, the coefficients on *HAVEN*LTCGRATE* and *HAVEN*ORDRATE* are both positive and significant across all specifications, which implies that the higher the U.S. tax rates, the greater the investment in U.S. debt securities from *HAVEN* locations. The coefficients on *HAVEN*LTCGRATE* range from 0.014 to 0.017 across the specifications, while the coefficients

on *HAVEN\*ORDRATE* range from 0.012 to 0.017. We also note that in all specifications in Table III, the control variables indicate that FPI into the U.S. is increasing in the GDP of the country and decreasing in the population of the country.

Overall, the weight of the evidence in Table III is supportive of our first hypothesis. We find that inbound equity and debt FPI from haven locations generally vary more with U.S. tax rates than does the FPI from non-haven locations. These results are consistent with tax evasion by U.S. individuals via haven locations and with the evasion increasing as the benefits increase (i.e., as the tax evaded increases). The economic magnitudes are meaningful, in that a one percent increase in ordinary tax rates in the U.S. is associated with an approximate 0.07 to 1.3 percent greater increase in equity FPI and a 1.2 to 1.6 percent greater increase in debt FPI, depending on the specification, from tax havens relative to non-havens. We note that these results suggest that debt FPI is more sensitive to U.S. tax rates than the equity FPI. Recall that dividend income is taxable in the U.S. to foreign investors via the dividend withholding tax as discussed above. Interest income is not taxable to foreign investors because the U.S. does not impose a withholding tax on interest income. This disparity can create greater benefits from tax evasion using debt securities relative to equity securities.

B.  *Test of Hypothesis 2: The effect an increase in detection risk on FPI*

Table IV presents regression results from our estimation of equation (2) where *POST* is an indicator variable set to one for all years after a particular country signed a TIEA with the U.S. (*POSTCONTRACT*) and then separately set to one for the years after the agreement went into effect (*POSTEFFECTIVE*). Again, the objective here is to test whether greater enforcement

efforts decrease the amount of evasion. We note that the TIEA dates occurred at different times during the sample period, ranging from 1988 for Bermuda to 2007 for Netherlands Antilles. As before, we test both equity FPI and debt FPI.

Panel A presents the results for equity FPI with increased enforcement measured as the signing of a TIEA (*POSTCONTRACT*). Columns (1) through (4) present specifications with different combinations of control variables for GDP and population. Across each of the specifications, the coefficient on the interaction term, *HAVEN*POSTCONTRACT*, is negative and significant, indicating that FPI from haven relative to non-haven countries is lower after the information agreement was signed and in effect compared to the years before the information sharing agreement was signed and in effect. Specifically, across the four specifications in Panel A, the coefficient on the interaction *HAVEN*POSTCONTRACT* takes on values from -0.070 to -0.161. Panel B shows similar results for debt FPI. The coefficients on the interaction *HAVEN*POSTCONTRACT* are negative and significant across each of the specifications, with values ranging from -0.269 to -0.366. The effects are economically significant and support the conclusion that TIEAs are successful, at least to some extent, at curbing round-tripping tax evasion in the tax havens that agree to them. For example, results from the specification with the most controls (column 4) indicate that following the effective date of the TIEA between the haven and the U.S., the inbound equity (debt) FPI from the tax haven decreases by approximately 20.6 (14.4) percent relative to countries without TIEAs over the same time

period.[42] The coefficients on log of GDP and the log of population are significant in the direction consistent with those reported in Table III.

Panels C and D of Table IV present the analogous tests using the effective date of the TIEAs in place of the signing date. Here again, the results indicate that entering into an information sharing agreement between the U.S. and a tax haven decreases the equity and debt FPI into the U.S. from the haven, consistent with a decrease in round-tripping through the haven. Panel C presents the results for equity FPI. The coefficient on *HAVEN\*POSTEFFECTIVE* is negative and significant across each specification, with values ranging from -0.230 to -0.329. Panel D presents the results for debt FPI. As with equity FPI, the coefficient on *HAVEN\*POSTEFFECTIVE* with debt FPI as the dependent variable is negative and significant across each specification, with values ranging from -0.155 to -0.276.

Table V presents the results of the estimation of equation (2) where the events of interest are the dates on which the OECD announced their watch lists for tax havens. This is a more general approach and the event date is not country specific to the U.S. In Table V, *POST* is first set equal to one for the years after 1998 (*POST1998*) and then in separate regressions *POST* is set equal to one for years after 2001 (*POST2001*). The year 1998 is the year the OECD first announced that it was focusing on the tax havens and began demanding more information sharing. The year 2001 marked a year of intense activity by the OECD against tax havens, and by 2002 there were only a handful of countries listed as uncooperative. For both of these events,

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[42] Recall that the regression is in semi-log form, so the estimated effect on equity FPI of a TIEA after the effective date is given by $e^{-0.23} - 1 = -20.6$ percent.

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we expect a negative coefficient on *HAVEN\*POST* to the extent that the greater scrutiny by the OECD led to a reduction in the amount of tax evasion.

Panels A and B present the results using *POST1998*, with equity FPI in Panel A and debt FPI in Panel B. Panels C and D present the results for equity FPI and debt FPI, respectively, using *POST2001*. The results are consistent with Hypothesis 2. In Panels A and B, the coefficients on the interaction term *HAVEN\*POST1998* are negative and significant across each specification for both equity and debt FPI. In Panel A, the coefficients on *HAVEN\*POST1998* take on values from -0.069 to -0.170, depending on the specification, while in Panel B the analogous coefficients for debt FPI range from -0.127 to -0.180 across the specifications. These findings indicate reduced inbound FPI from tax haven countries after the increase in scrutiny from the OECD. Similar results obtain in Panels C and D, where the 2001 OECD crackdown is used in place of 1998. The coefficients on *HAVEN\*POST2001* are negative and significant across each of the four specifications for equity FPI (Panel C) as well as for debt FPI (Panel D). As in previous tables, the coefficients on the log of GDP are significant and positive and the coefficients on the log of population are significant and negative. Across Panels A through D, the evidence of tax evasion is for the most part stronger in debt FPI than equity FPI, consistent with more tax evasion occurring in debt securities because the U.S. imposes no withholding tax on interest income, which is also generally consistent with prior tables.

*C. Robustness Tests*

*1) Randomized Treatment Group*

To ensure that the effect we are observing is unique to tax havens and thus likely due to tax evasion, we replicate our tests in Tables III and IV with only the non-haven countries. We randomly select 12 countries from the non-haven group (the same number as we have actual havens in the sample) and we label these 12 randomly selected countries as havens. We then re-estimate equations (1) and (2) as specified in Section V above, except that the *HAVEN* indicator is now set equal to one for 12 random "artificial haven" locations that are not havens. We then repeat the process 100 times and test whether the mean of the coefficients on the interactions with *HAVEN* are significantly different from zero, for each of the specifications in Tables III and IV. By randomly assigning countries to the treatment group, we can help rule out the explanation that the results reported above are somehow spurious.

We expect that we will not find results similar to those presented in Tables III and IV if the inbound FPI from the actual havens is affected by the U.S. tax rate changes but the inbound FPI from other countries is not. The results of this robustness test are consistent with this prediction. We find that the "artificial havens" do not have FPI that is associated with changes in U.S. tax rates. We interpret this test as supporting our inference that the results we find are from U.S. taxpayer evasion via tax haven countries.

*2) Offshore Pension Investment as an Alternate Explanation*

Tax havens may attract and generate FPI for reasons unrelated to the round-tripping tax avoidance strategy that we examine in this paper. It is possible that one of these other reasons

could be affecting our results and if so, we could be attributing the observed results to U.S. individual investors evading U.S. income tax when that may not be the case. One alternative reason that may affect our results is a legal tax avoidance strategy in which U.S.-based pension funds invest in U.S. securities via hedge funds (or private equity funds or real estate funds) domiciled in tax haven locations. U.S. pension funds are tax-exempt entities, meaning that normally they do not pay U.S. income tax. There is an exception, however, when tax-exempt entities earn "unrelated business income," which is income unrelated to their tax-exempt purpose. There is an exemption from unrelated business income tax (UBIT) on passive income; except, however, when the passive income is debt-financed. Thus, if the pension fund has debt-financed passive income, then the income can be subject to UBI taxation for the pension fund. However, a final exception (to all the exceptions) is that if such debt-financed passive income is paid out of a corporation, then the passive income remains tax-exempt and not subject to the UBIT. Thus, in sum, U.S. pension funds have an incentive to earn passive income (dividends, interest, etc.) from corporations, if any of the assets are financed with debt, in order to avoid the U.S. unrelated business income tax.

However, it is not optimal in terms of taxation for the hedge funds through which the pension funds invest to be structured as U.S.-based corporations because then they are subject to a U.S. level corporate tax. What is the solution to this impasse? Have the hedge fund incorporate in an offshore tax exempt location, such as the Cayman Islands. As a result, there are many hedge funds located offshore and investment from these hedge funds back into the U.S. markets could be affecting our results, unrelated to the round-tripping tax evasion we are testing. For

example, if individuals put more money into pension funds as U.S. tax rates increase then this would likely lead to inflows into hedge funds located in tax havens and thus more inbound FPI from these haven locations. While this alternative explanation applies to our tax rate tests above, it is important to note that it does not apply to our results with respect to the increased detection efforts.

To control for pension plan investments via hedge funds, we note that the location of choice for hedge funds is the Cayman Islands. For example, International Financial Services London (2010) reports that around 60 percent of the hedge funds in 2009 are registered in offshore locations. The article also states that the Caymans are the most popular registration location and account for 39 percent of global hedge funds. The next largest offshore location is the British Virgin Islands at around 7 percent.[43] In addition, Bandopadhyaya and Grant (2007) document similar results showing that 38 percent off all offshore funds are in the Cayman Islands , while 8 percent are in the British Virgin Islands, 6 percent in Bermuda, 3 percent are in Ireland, and 2 percent are in the Bahamas. Other sources document that the Caymans have strong regulatory structures in place to assure investors that the managers of the offshore funds are legitimate.[44] Because the Caymans are the location of choice for hedge funds, if we eliminate the Cayman Islands from our data and our results still obtain they are unlikely to be driven by this alternative strategy. The empirical cost, however, is that we potentially eliminate a great deal of the very activity we are interested in by removing the Cayman Islands from the sample.

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[43] http://www.thecityuk.com/media/2358/Hedge_Funds_2010.pdf
[44] http://www.goldensmog.com/offshore-hedge-fund.html

In Table VI, we find that after removing the Cayman Islands, the results for tests of both our hypotheses still hold. In fact, many of the coefficients show a stronger effect. For tests of Hypothesis 1 (analogous to Table III), after removing the influence of the Caymans, Panel A shows that FPI into the U.S. continues to be more responsive to U.S. tax rates than the investment from non-haven countries. For tests of Hypothesis 2 (analogous to Tables IV and V), after removing the influence of the Caymans, Panels B and C continue to show a negative change in FPI following the signing of TIEAs and the initiation of enforcement by the OECD. These findings are consistent with investors reducing their level of evasion following increased potential costs of evasion. The results are significant after removing data from the Cayman Islands for both debt and equity FPI. Overall, the results in Table VI lead us to conclude that the influence of legal pension investment into the U.S. via the Cayman Islands is not driving our main results.[45]

## VIII.    Conclusion

This paper examines tax evasion in U.S. equity and debt markets, whereby U.S. individuals route their U.S. investments through entities in tax havens to appear as if they are foreign investors. Investors face a tension between the incentives to evade and the likelihood of being caught; we estimate the extent to which variation in each affects the amount of such evasion. We find evidence consistent with both the incentives to evade U.S. taxation (i.e., U.S.

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[45] In a separate attempt to examine the effect of investments through pension funds we also estimate our regressions including a control variable, *Log(Pension$_t$),* computed as the log of the quarterly amount of total financial assets held by private pension funds in year-quarter *t*, obtained from the Federal Reserve at http://www.federalreserve.gov/datadownload/default.htm.  Our results on our test (and control) variables are nearly identical quantitatively and are identical qualitatively to our main analyses above.

tax rates) and expected costs of evasion detection (i.e., increased enforcement efforts by world authorities) affecting the amount of foreign portfolio investment, especially the FPI from tax haven locations. To our knowledge, this is the first rigorous evidence of investor-level tax evasion affecting cross-border investment in equity and debt markets. In addition, our results have implications for estimates of home bias. The results indicate that at least some of the data labeled as foreign portfolio investment are really investments by U.S. individuals and, as a result, the home bias effect is likely stronger than previously thought.

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**Figure 1**

**Average Equity Foreign Portfolio Investment into the United States, scaled by Population**

In this figure, we present the average monthly U.S. inbound equity foreign portfolio investment for each country in the sample with non-zero values of FPI. Specifically, we take the log of the average ratio of equity FPI to population for each country. The dark gray bars represent countries identified as tax havens and the light gray bars represent countries that are not considered tax havens. See Table I for the definition of *HAVEN*.
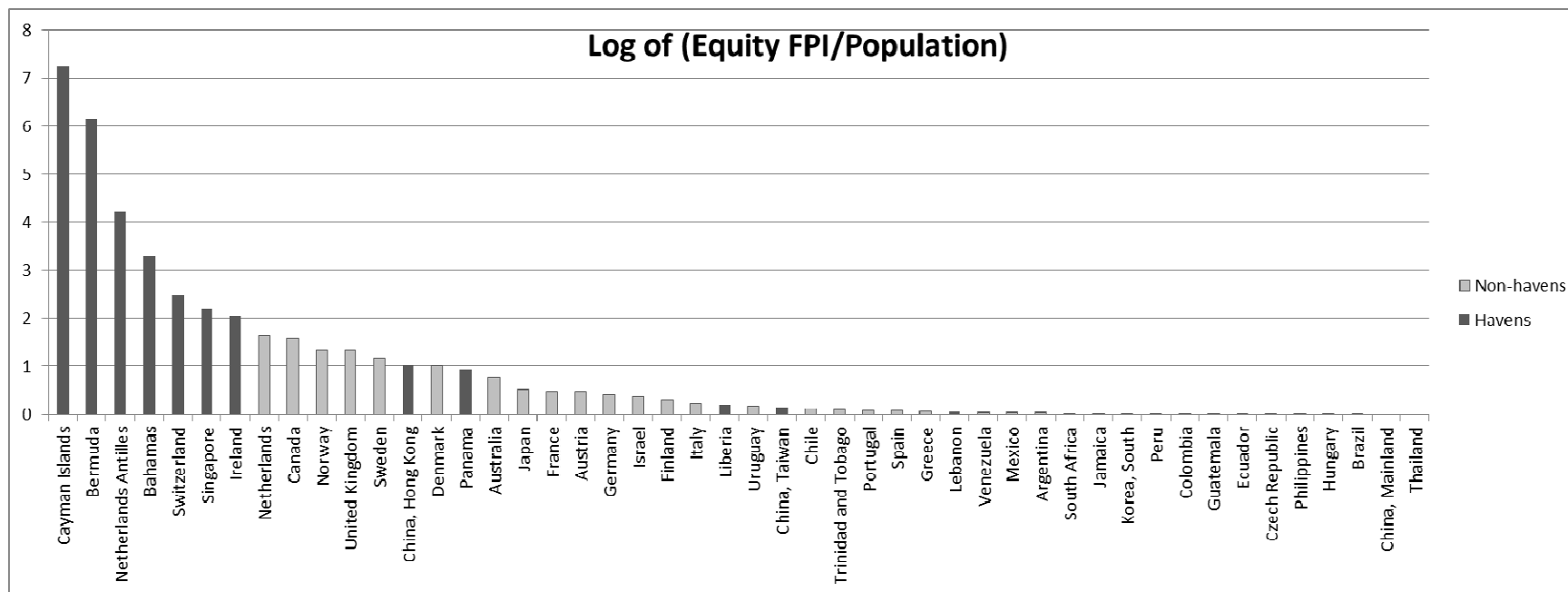
**Figure 2**
**Total Equity Foreign Portfolio Investment in 2008 into the United States - Unscaled**

In this figure, we present the U.S. inbound equity foreign portfolio investment at the end of 2008 for each country in the sample with non-zero values of FPI. Equity FPI is measured in millions of U.S. dollars. The dark gray bars represent countries identified as tax havens and the light gray bars represent countries that are not considered tax havens. See Table I for the definition of *HAVEN*.
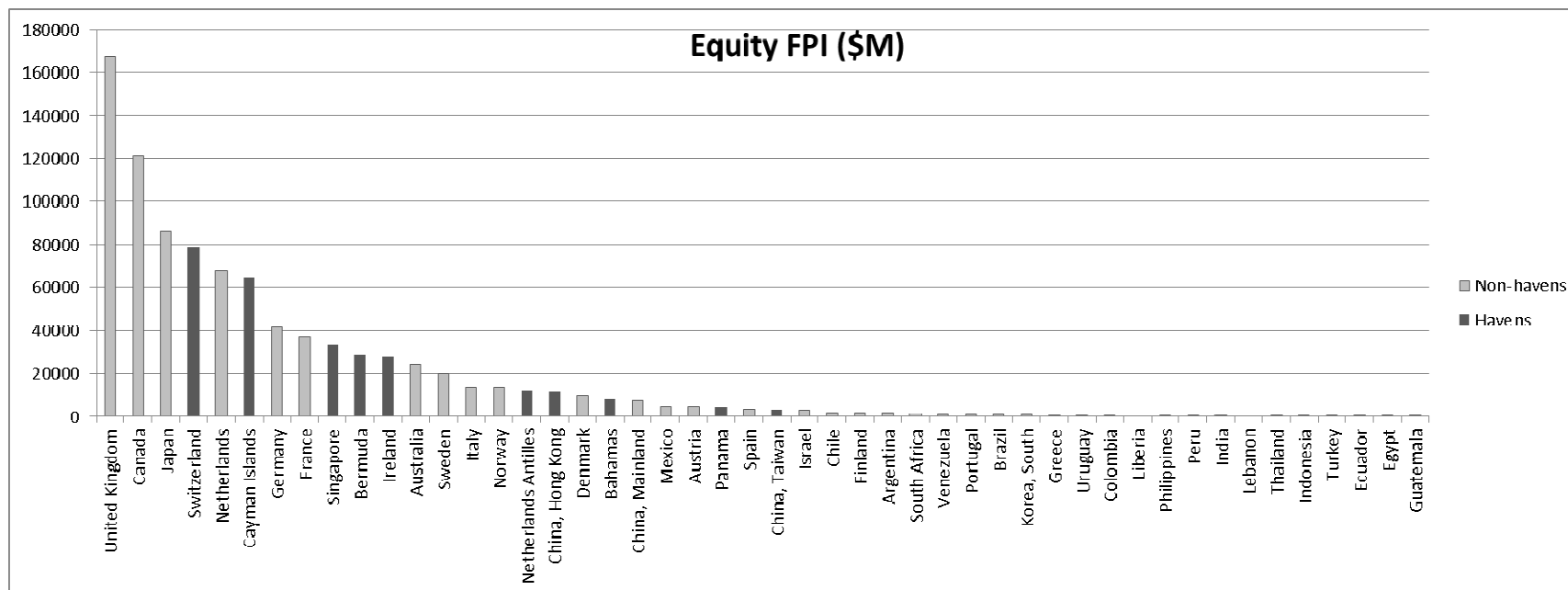
**Table I**
**Descriptive Statistics and Tax Rates**

In this table, we present country-level variables for the 59 countries in the sample (Panel A) as well as tax rates over the sample period, 1984-2008 (Panel B). In Panel A, the first column presents an indicator for whether the country is considered a tax haven, *HAVEN*. This variable is equal to one if the country is identified in the 1999 OECD report or Hines and Rice (1994) as a tax haven and equal to zero otherwise. The next two columns present the average monthly equity and debt U.S. inbound foreign portfolio investment (*FPI*), as reported by the Federal Reserve Board. The final two columns present the average population and GDP of the country. FPI and GDP are presented in millions of U.S. dollars. In Panel B, we present the ordinary income and long-term capital gains tax rates for individuals over time.

Panel A: Country Descriptive Statistics

| Country | HAVEN | Mean Equity FPI | Mean Debt FPI | Mean Population | Mean GDP |
|---|---|---|---|---|---|
| Argentina | 0 | 1,743 | 641 | 35,288,234 | 203,684 |
| Australia | 0 | 23,493 | 4,803 | 18,448,743 | 417,651 |
| Austria | 0 | 4,867 | 1,476 | 7,938,208 | 214,123 |
| Brazil | 0 | 965 | 347 | 165,117,986 | 645,645 |
| Bulgaria | 0 | 8 | 3 | 8,303,086 | 19,466 |
| Canada | 0 | 120,711 | 22,260 | 29,706,545 | 722,903 |
| Chile | 0 | 1,950 | 530 | 14,572,628 | 70,023 |
| China, Mainland | 0 | 6,249 | 7,800 | 1,209,801,353 | 1,183,393 |
| Colombia | 0 | 611 | 585 | 37,408,073 | 90,516 |
| Czech Republic | 0 | 123 | 55 | 10,293,554 | 79,702 |
| Denmark | 0 | 9,348 | 2,332 | 5,272,135 | 175,418 |
| Ecuador | 0 | 167 | 122 | 11,513,778 | 21,755 |
| Egypt | 0 | 169 | 198 | 65,883,036 | 71,754 |
| Finland | 0 | 1,825 | 671 | 5,110,627 | 137,520 |
| France | 0 | 37,022 | 12,718 | 58,323,345 | 1,500,516 |
| Germany | 0 | 42,230 | 26,045 | 80,990,187 | 2,101,145 |
| Ghana | 0 | 5 | 1 | 17,978,919 | 7,448 |
| Greece | 0 | 729 | 91 | 10,634,863 | 146,676 |
| Guatemala | 0 | 152 | 77 | 10,508,519 | 17,197 |
| Hungary | 0 | 67 | 92 | 10,281,951 | 58,755 |
| India | 0 | 328 | 66 | 955,352,745 | 484,703 |
| Indonesia | 0 | 219 | 142 | 196,286,323 | 192,983 |
| Israel | 0 | 2,960 | 1,150 | 5,731,652 | 94,141 |
| Italy | 0 | 14,212 | 2,056 | 57,294,370 | 1,244,823 |
| Jamaica | 0 | 72 | 31 | 2,509,946 | 7,251 |
| Japan | 0 | 85,521 | 44,484 | 125,379,208 | 3,868,751 |
| Korea, South | 0 | 896 | 2,002 | 45,278,415 | 481,559 |
| Mexico | 0 | 4,988 | 3,214 | 92,152,122 | 489,180 |
| Morocco | 0 | 46 | 11 | 26,816,891 | 38,421 |

**Table I (continued)**

| Country | HAVEN | Mean Equity FPI | Mean Debt FPI | Mean Population | Mean GDP |
|---|---|---|---|---|---|
| Netherlands | 0 | 67,870 | 18,481 | 15,554,533 | 414,857 |
| Norway | 0 | 13,144 | 5,241 | 4,410,791 | 179,290 |
| Pakistan | 0 | 85 | 67 | 128,165,631 | 69,528 |
| Peru | 0 | 439 | 194 | 24,415,978 | 51,925 |
| Philippines | 0 | 531 | 200 | 72,345,695 | 72,103 |
| Poland | 0 | 93 | 74 | 38,200,844 | 173,991 |
| Portugal | 0 | 976 | 496 | 10,180,917 | 115,942 |
| Romania | 0 | 12 | 5 | 22,427,833 | 58,208 |
| South Africa | 0 | 1,444 | 171 | 40,384,849 | 151,276 |
| Spain | 0 | 3,787 | 2,163 | 40,466,238 | 682,870 |
| Sweden | 0 | 19,966 | 3,576 | 8,779,005 | 265,312 |
| Syria | 0 | 14 | 5 | 15,400,673 | 19,196 |
| Thailand | 0 | 220 | 70 | 60,503,663 | 128,804 |
| Trinidad And Tobago | 0 | 131 | 84 | 1,270,364 | 8,764 |
| Turkey | 0 | 198 | 22 | 62,676,938 | 254,102 |
| United Kingdom | 0 | 167,698 | 99,942 | 58,474,452 | 1,398,482 |
| Uruguay | 0 | 653 | 266 | 3,209,825 | 16,233 |
| Venezuela | 0 | 1,256 | 575 | 22,693,731 | 97,927 |
| Bahamas | 1 | 7,869 | 2,684 | 285,554 | 4,218 |
| Bermuda | 1 | 29,175 | 25,715 | 61,331 | 2,943 |
| Cayman Islands | 1 | 63,117 | 72,713 | 35,325 | 1,412 |
| China, Hong Kong | 1 | 11,689 | 4,569 | 6,268,693 | 133,165 |
| China, Taiwan | 1 | 3,516 | 2,659 | 21,394,942 | 315,109 |
| Ireland | 1 | 27,895 | 28,378 | 3,841,523 | 120,169 |
| Lebanon | 1 | 234 | 60 | 3,502,755 | 12,835 |
| Liberia | 1 | 568 | 287 | 2,583,089 | 526 |
| Netherlands Antilles | 1 | 12,553 | 2,084 | 186,959 | 2,560 |
| Panama | 1 | 4,507 | 1,015 | 2,763,603 | 10,269 |
| Singapore | 1 | 33,731 | 6,550 | 3,653,550 | 78,407 |
| Switzerland | 1 | 79,279 | 21,878 | 7,041,086 | 275,271 |

**Table I (continued)**

Panel B: Tax Rates Over Sample Period

| Year/Date | Ordinary Rate | Long-Term Capital Gains Rate |
|---|---|---|
| 2008 | 35 | 15 |
| 2007 | 35 | 15 |
| 2006 | 35 | 15 |
| 2005 | 35 | 15 |
| 2004 | 35 | 15 |
| 5/6/2003-12/31/2003 | 35 | 15 |
| 1/1/2003-5/5/2003 | 35 | 20 |
| 2002 | 38.6 | 20 |
| 2001 | 39.1 | 20 |
| 2000 | 39.6 | 20 |
| 1999 | 39.6 | 20 |
| 1998 | 39.6 | 20 |
| 5/7/1997-12/31/1997 | 39.6 | 20 |
| 1/1/97 – 5/6/97 | 39.6 | 28 |
| 1996 | 39.6 | 28 |
| 1995 | 39.6 | 28 |
| 1994 | 39.6 | 28 |
| 1993 | 39.6 | 28 |
| 1992 | 31 | 28 |
| 1991 | 31 | 28 |
| 1990 | 33 | 33 |
| 1989 | 33 | 33 |
| 1988 | 33 | 33 |
| 1987 | 38.5 | 28 |
| 1986 | 50 | 20 |
| 1985 | 50 | 20 |
| 1984 | 50 | 20 |

## Table II
## Univariate Tests

In this table, we present the means and medians of four country-level variables for the 59 countries in the sample, as well as tests of differences between haven and non-haven countries. The variables presented are defined in Table I.

Panel A: Mean Differences in Variables by *HAVEN*

| *HAVEN* | *EQUITY FPI* | *DEBT FPI* | *POPULATION* | *GDP* |
|---|---|---|---|---|
| 0 | 13,682 | 5,677 | 84,369,678 | 404,563 |
| 1 | 22,756 | 13,797 | 4,309,633 | 79,028 |
| Difference | 9,074 | 8,120 | -80,060,045 | -325,535 |
| t-stat | 11.49 | 11.41 | -48.15 | -42.68 |

Panel B: Median Differences in Variables by *HAVEN*

| *HAVEN* | *EQUITY FPI* | *DEBT FPI* | *POPULATION* | *GDP* |
|---|---|---|---|---|
| 0 | 402 | 145 | 25,202,027 | 128,299 |
| 1 | 6,231 | 1,805 | 3,047,000 | 9,599 |
| Difference | 5,829 | 1,660 | -22,155,027 | -118,700 |
| Z-stat | 35.16 | 38.77 | -71.27 | -85.43 |

## Table III
## Regressions of U.S.-Inbound Equity and Debt FPI on Tax Haven Countries and U.S. Tax Rates

In this table, we present the results of regressions of U.S. inbound FPI on the interaction of *HAVEN* and the U.S. long-term capital gains rate (*LTCGRATE*) and ordinary tax rate (*ORDRATE*). In Panel A (Panel B), the dependent variable is equity FPI (debt FPI). The specifications all include country and year-month fixed effects, with robust standard errors reported below in parentheses. * indicates statistical significance at 10%; ** indicates statistical significance at 5%, and *** indicates statistical significance at 1%.

Panel A: Equity FPI

| | Predicted Sign | (1) *EQUITY* | (2) *EQUITY* | (3) *EQUITY* | (4) *EQUITY* |
|---|---|---|---|---|---|
| *HAVEN*LTCG RATE* | + | 0.008*** | 0.009*** | 0.002 | 0.003 |
| | | (0.002) | (0.002) | (0.002) | (0.002) |
| *HAVEN*ORD RATE* | + | 0.013*** | 0.012*** | 0.010*** | 0.007** |
| | | (0.003) | (0.003) | (0.003) | (0.003) |
| *LOGGDP* | + | | 0.292*** | | 0.351*** |
| | | | (0.027) | | (0.027) |
| *LOGPOP* | +/- | | | -1.023*** | -1.243*** |
| | | | | (0.102) | (0.101) |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared | | 0.949 | 0.950 | 0.950 | 0.951 |

Panel B: Debt FPI

| | Predicted Sign | (1) DEBT | (2) DEBT | (3) DEBT | (4) DEBT |
|---|---|---|---|---|---|
| HAVEN*LTCG RATE | + | 0.015*** | 0.017*** | 0.014*** | 0.015*** |
| | | (0.003) | (0.003) | (0.003) | (0.003) |
| HAVEN*ORD RATE | + | 0.016*** | 0.014*** | 0.016*** | 0.012*** |
| | | (0.004) | (0.004) | (0.004) | (0.004) |
| LOGGDP | + | | 0.502*** | | 0.523*** |
| | | | (0.036) | | (0.036) |
| LOGPOP | +/- | | | -0.124 | -0.452*** |
| | | | | (0.142) | (0.140) |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared | | 0.881 | 0.882 | 0.881 | 0.882 |

## Table IV
## Regressions of U.S.-Inbound Equity and Debt FPI on Tax Information Exchange Dates and a Haven Indicator

In this table, we present the results of regressions of U.S. inbound equity and debt FPI on the interaction of *HAVEN* and date indicator variables for when (if ever) the country entered into an tax information exchange agreement (TIEA) with the United States. The variables are set equal to one after the information sharing agreement was signed (*POSTCONTRACT*) and after it went to force (*POSTEFFECTIVE*). Panels A and C examine equity FPI and Panels B and D examine debt FPI. Panels A and B (C and D) test the effect of the TEIA signing (effective) date. The specifications all include country and year-month fixed effects, with robust standard errors reported below in parentheses. * indicates statistical significance at 10%; ** indicates statistical significance at 5%, and *** indicates statistical significance at 1%.

### Panel A: Equity FPI and TIEA Signing Date

| VARIABLES | Predicted Sign | (1) EQUITY | (2) EQUITY | (3) EQUITY | (4) EQUITY |
|---|---|---|---|---|---|
| HAVEN*POSTCONTRACT | – | -0.161*** | -0.115*** | -0.132*** | -0.070* |
|  |  | (0.036) | (0.034) | (0.040) | (0.040) |
| LOGGDP | + |  | 0.286*** |  | 0.350*** |
|  |  |  | (0.027) |  | (0.027) |
| LOGPOP | +/- |  |  | -1.039*** | -1.264*** |
|  |  |  |  | (0.102) | (0.101) |
| Country Fixed Effects |  | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects |  | Yes | Yes | Yes | Yes |
| Observations |  | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared |  | 0.949 | 0.950 | 0.950 | 0.951 |

### Panel B: Debt FPI and TIEA Signing Date

| VARIABLES | Predicted Sign | (1) DEBT | (2) DEBT | (3) DEBT | (4) DEBT |
|---|---|---|---|---|---|
| HAVEN*POSTCONTRACT | – | -0.366*** | -0.288*** | -0.361*** | -0.269*** |
|  |  | (0.067) | (0.063) | (0.067) | (0.064) |
| LOGGDP | + |  | 0.484*** |  | 0.511*** |
|  |  |  | (0.036) |  | (0.036) |
| LOGPOP | +/- |  |  | -0.207 | -0.536*** |
|  |  |  |  | (0.141) | (0.139) |
| Country Fixed Effects |  | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects |  | Yes | Yes | Yes | Yes |
| Observations |  | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared |  | 0.881 | 0.882 | 0.881 | 0.882 |

Panel C: Equity FPI and TIEA Effective Date

| VARIABLES | Predicted Sign | (1) EQUITY | (2) EQUITY | (3) EQUITY | (4) EQUITY |
|---|---|---|---|---|---|
| HAVEN*POSTEFFECTIVE | − | -0.329*** | -0.271*** | -0.306*** | -0.230*** |
| | | (0.049) | (0.047) | (0.056) | (0.055) |
| LOGGDP | + | | 0.280*** | | 0.342*** |
| | | | (0.027) | | (0.027) |
| LOGPOP | +/- | | | -1.034*** | -1.253*** |
| | | | | (0.104) | (0.102) |
| | | | | | |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared | | 0.950 | 0.950 | 0.950 | 0.951 |

Panel D: Debt FPI and TIEA Effective Date

| VARIABLES | Predicted Sign | (1) DEBT | (2) DEBT | (3) DEBT | (4) DEBT |
|---|---|---|---|---|---|
| HAVEN*POSTEFFECTIVE | − | -0.276*** | -0.174** | -0.270*** | -0.155** |
| | | (0.081) | (0.077) | (0.082) | (0.078) |
| LOGGDP | + | | 0.489*** | | 0.517*** |
| | | | (0.036) | | (0.036) |
| LOGPOP | +/- | | | -0.227 | -0.558*** |
| | | | | (0.140) | (0.138) |
| | | | | | |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared | | 0.881 | 0.882 | 0.881 | 0.882 |

## Table V
## Regressions of U.S.-Inbound Equity and Debt FPI on Indicator for OECD Pressure on Haven Countries

In this table, we present the results of regressions of U.S. inbound equity and debt FPI on the interaction of *HAVEN* and two date indicator variables, *POST1998* and *POST2001*. *POST1998* and *POST2001* are set equal to one for all observations dated after 1998 and 2001, respectively, which were the years during with the OECD increased pressure on tax havens. Panels A and C examine equity FPI and Panels B and D examine debt FPI. Panels A and B (C and D) test the effect of the OECD pressure in 1998 (2001). The specifications all include country and year-month fixed effects, with robust standard errors reported below in parentheses. * indicates statistical significance at 10%; ** indicates statistical significance at 5%, and *** indicates statistical significance at 1%.

### Panel A: Equity FPI and 1998 Indicator

| VARIABLES | Predicted Sign | (1) *EQUITY* | (2) *EQUITY* | (3) *EQUITY* | (4) *EQUITY* |
|---|---|---|---|---|---|
| *HAVEN*POST1998* | − | -0.138*** | -0.170*** | -0.069*** | -0.092*** |
| | | (0.022) | (0.021) | (0.021) | (0.021) |
| *LOGGDP* | + | | 0.304*** | | 0.357*** |
| | | | (0.026) | | (0.027) |
| *LOGPOP* | +/- | | | -1.010*** | -1.220*** |
| | | | | (0.102) | (0.101) |
| | | | | | |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared | | 0.949 | 0.950 | 0.950 | 0.951 |

### Panel B: Debt FPI and 1998 Indicator

| VARIABLES | Predicted Sign | (1) *DEBT* | (2) *DEBT* | (3) *DEBT* | (4) *DEBT* |
|---|---|---|---|---|---|
| *HAVEN*POST1998* | − | -0.127*** | -0.180*** | -0.115*** | -0.149*** |
| | | (0.043) | (0.043) | (0.044) | (0.043) |
| *LOGGDP* | + | | 0.510*** | | 0.531*** |
| | | | (0.036) | | (0.036) |
| *LOGPOP* | +/- | | | -0.173 | -0.485*** |
| | | | | (0.141) | (0.140) |
| | | | | | |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared | | 0.881 | 0.882 | 0.881 | 0.882 |

Panel C: Equity FPI and 2001 Indicator

| VARIABLES | Predicted Sign | (1) EQUITY | (2) EQUITY | (3) EQUITY | (4) EQUITY |
|---|---|---|---|---|---|
| HAVEN*POST2001 | − | -0.111*** | -0.123*** | -0.041* | -0.041* |
| | | (0.024) | (0.024) | (0.024) | (0.023) |
| LOGGDP | + | | 0.295*** | | 0.353*** |
| | | | (0.027) | | (0.027) |
| LOGPOP | +/- | | | -1.030*** | -1.251*** |
| | | | | (0.102) | (0.100) |
| | | | | | |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared | | 0.949 | 0.950 | 0.950 | 0.951 |

Panel D: Debt FPI and 2001 Indicator

| VARIABLES | Predicted Sign | (1) DEBT | (2) DEBT | (3) DEBT | (4) DEBT |
|---|---|---|---|---|---|
| HAVEN*POST2001 | − | -0.205*** | -0.226*** | -0.195*** | -0.196*** |
| | | (0.042) | (0.041) | (0.043) | (0.042) |
| LOGGDP | + | | 0.503*** | | 0.525*** |
| | | | (0.036) | | (0.036) |
| LOGPOP | +/- | | | -0.137 | -0.465*** |
| | | | | (0.142) | (0.140) |
| | | | | | |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,930 | 16,930 | 16,930 | 16,930 |
| Adjusted R-squared | | 0.881 | 0.882 | 0.881 | 0.882 |

## Table VI
## Robustness test: Exclude Cayman Islands to Account for Pension Investment from Havens

The variables are defined as above in Tables III-V. The coefficient estimates are presented with robust standard errors reported below in parentheses. . * indicates statistical significance at 10%; ** indicates statistical significance at 5%, and *** indicates statistical significance at 1%.

### Panel A: Test of H1 – Replication of Table III after dropping the Cayman Islands

|  | Predicted Sign | (1) *EQUITY* | (2) *DEBT* |
|---|---|---|---|
| *HAVEN*LTCG RATE* | + | 0.012*** | 0.023*** |
|  |  | (0.002) | (0.003) |
| *HAVEN*ORD RATE* | + | 0.015*** | 0.018*** |
|  |  | (0.003) | (0.004) |
| Controls |  | Yes | Yes |
| Country Fixed Effects |  | Yes | Yes |
| Year-Month Fixed Effects |  | Yes | Yes |
| Observations |  | 16,641 | 16,641 |
| Adjusted R-squared |  | 0.952 | 0.881 |

### Panel B: Test of H2 – Replication of Table IV after dropping the Cayman Islands

| VARIABLES | Predicted Sign | (1) *EQUITY* | (2) *EQUITY* | (3) *DEBT* | (4) *DEBT* |
|---|---|---|---|---|---|
| *HAVEN*POSTCONTRACT* | – | -0.567*** |  | -0.671*** |  |
|  |  | (0.029) |  | (0.073) |  |
| *HAVEN*POSTEFFECTIVE* | – |  | -0.572*** |  | -0.318*** |
|  |  |  | (0.038) |  | (0.087) |
| Controls |  | Yes | Yes | Yes | Yes |
| Country Fixed Effects |  | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects |  | Yes | Yes | Yes | Yes |
| Observations |  | 16,641 | 16,641 | 16,641 | 16,641 |
| Adjusted R-squared |  | 0.952 | 0.952 | 0.882 | 0.881 |

Panel C: Test of H2 – Replication of Table V after dropping the Cayman Islands

| VARIABLES | Predicted Sign | (1) EQUITY | (2) EQUITY | (3) DEBT | (4) DEBT |
|---|---|---|---|---|---|
| HAVEN*POST1998 | – | -0.203*** | | -0.285*** | |
| | | (0.020) | | (0.044) | |
| HAVEN*POST2001 | – | | -0.158*** | | -0.273*** |
| | | | (0.022) | | (0.042) |
| Controls | | Yes | Yes | Yes | Yes |
| Country Fixed Effects | | Yes | Yes | Yes | Yes |
| Year-Month Fixed Effects | | Yes | Yes | Yes | Yes |
| Observations | | 16,641 | 16,641 | 16,641 | 16,641 |
| Adjusted R-squared | | 0.952 | 0.952 | 0.881 | 0.881 |