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"Taxing Hidden Wealth: The Consequences of U.S. Enforcement Initiatives on Evasive Foreign Accounts"

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April 24, 2017
Vanderbilt Hall – 208
Time: 4:10 – 6:00 p.m.
Week 13

SCHEDULE FOR 2017 NYU TAX POLICY COLLOQUIUM

(All sessions meet from 4:10-6:00 pm in Vanderbilt 208, NYU Law School)

1. Monday, January 23 – Lily Batchelder, NYU Law School. "Accounting for Behavioral Biases in Business Tax Reform: The Case of Expensing."

2. Monday, January 30 – Mark Gergen, Berkeley Law School. "How to Tax Global Capital."

3. Monday, February 6 – Alan Auerbach, Berkeley Economics Department. "U.S. Inequality, Fiscal Progressivity, and Work Disincentives: An Intragenerational Accounting."

4. Monday, February 13 – Allison Christians, McGill Law School. "Human Rights at the Borders of Tax Sovereignty"

5. Tuesday, February 21 – Jason Oh, UCLA Law School. "Are the Rich Responsible for Progressive Marginal Rates?"

6. Monday, February 27 – Stephen Shay, Harvard Law School. "'A Better Way' Tax Reform: Theory and Practice."

7. Monday, March 6 – Scott Dyreng, Duke Business School. "Trade-offs in the Repatriation of Foreign Earnings."

8. Monday, March 20 – Daniel Hemel, University of Chicago Law School. "Federalism Safeguards of Progressive Taxation."

9. Monday, March 27 – Leonard Burman, Urban Institute. "Is U.S. Corporate Income Double-Taxed?"

10. Monday, April 3 – Kathleen Delaney Thomas, University of North Carolina Law School. "Taxing the Gig Economy."

11. Monday, April 10 – Julie Cullen, UC San Diego Department of Economics. "Political Alignment and Tax Evasion."

12. Monday, April 17 – Miranda Perry Fleischer, University of San Diego Law School. "The Libertarian Case for a Universal Basic Income."

13. **Monday, April 24 – Joel Slemrod, University of Michigan Business School. "Taxing Hidden Wealth: The Consequences of U.S. Enforcement Initiatives on Evasive Foreign Accounts."**

14. Monday, May 1 – Richard Vann, University of Sydney Law School. "International tax post-BEPS: Is the corporate tax really all that bad?"

Taxing Hidden Wealth: The Consequences of U.S. Enforcement Initiatives on Evasive Foreign Accounts*

Working draft. Not for quotation. Comments welcome.

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ABSTRACT: Beginning in 2009, the IRS initiated a series of enforcement efforts to curb the use of offshore accounts to facilitate tax evasion, along with a voluntary disclosure program to encourage individuals with foreign accounts to become compliant with tax law. This paper examines the impact of increased enforcement activity on U.S. taxpayers' statements of foreign accounts and reported income on tax returns. We find that enforcement initiatives increased the number of individuals reporting foreign accounts to the IRS by at least 19 percent, and they increased total wealth disclosed by at least $75 billion. This increase was concentrated in countries whose institutions are widely thought to facilitate individual tax evasion. Much of the total effect of enforcement on compliance happened outside official voluntary disclosure programs, from individuals who started declaring income in foreign accounts to the IRS without admitting to any prior evasion or underreporting. Individuals who began to report a foreign bank account but did not participate in the voluntary disclosure programs increased their reported interest income by 63 percent, dividend income by 25 percent, and capital gains by 18 percent.

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1. Introduction

The use of secret offshore accounts to evade tax liabilities is a serious challenge for tax policy. A prominent set of studies estimate that households around the world hold $6 trillion in offshore banking centers, around 8% of their financial wealth, and that the resulting loss of government revenue is around $200 billion annually (Zucman, 2013, 2014). Further, a recent study documents that the offshore wealth is extremely concentrated at the very top of the wealth distribution and almost entirely untaxed (Alstadsæter, Johannesen and Zucman, 2017). While improved tax enforcement in the realm of the offshore potentially offers significant welfare gains, it is not straightforward to achieve in a world of extremely mobile financial assets and foreign tax havens with institutionalized financial secrecy.

In response to this challenge, the U.S. government has recently expanded its enforcement efforts, with many of the key policy developments occurring in the wake of the financial crisis in 2008-2009. First, it compelled a number of tax havens to accept information exchange agreements under which it can request bank information about U.S. taxpayers suspected of tax evasion. Second, it took *ad hoc* legal measures to force major Swiss banks, most famously the world's biggest private bank UBS, to turn over names and account details of their U.S. customers. Third, it laid the foundations of a much more far-reaching regime of cross-border information exchange by passing the Foreign Account Tax Compliance Act (FATCA), which induces foreign banks to systematically report accounts belonging to U.S. taxpayers to the U.S. tax authorities beginning in 2014. Finally, complementing the measures aiming to facilitate detection of undeclared offshore income, the United States also established a voluntary disclosure program under which cooperating tax evaders pay reduced penalties and avoid criminal sanctions. Many countries have pursued very similar policies, combining cross-border exchange of banking information and incentives to self-declare foreign assets.

How successful have these efforts been in reducing offshore tax evasion? While there is no direct evidence on the compliance responses to offshore enforcement efforts, some existing studies give pause. It seems clear that enforcement efforts induce many owners of offshore accounts to adopt new evasion strategies, moving assets to uncooperative tax havens (Johannesen and Zucman, 2014; Johannesen, 2014) or adding layers of secrecy in the form of anonymous shell corporations (Caruana-Galizia and Caruana-Galizia, 2016), rather than becoming compliant. The notion that evasion responses may dominate compliance responses finds support in the available data on

voluntary disclosure programs. For instance, the first U.S. voluntary disclosure program in 2009 drew around 15,000 disclosures of offshore accounts and resulted in the collection of $3.4 billion in back taxes and penalties (IRS, 2011, 2012); this is not a trivial number, but it is small compared to the global estimates of offshore wealth. Moreover, many commentators have expressed concerns that information exchange involves significant administrative costs for banks (Jolly and Knowlton, 2011) and pointed to the compliance costs faced by U.S. citizens when setting up and maintaining foreign accounts for fully legitimate purposes.[1]

This paper uses comprehensive administrative data to estimate whether and by how much the bundle of recent U.S. enforcement efforts has affected tax compliance. Our data on financial assets and bank account disclosures are drawn from Foreign Bank and Financial Accounts (FBAR), which must be filed annually for all foreign accounts with a value exceeding $10,000. We combine data from FBARs with data on the various components of taxable income and expenses from income tax returns. We are able to approximately distinguish capital income accruing to domestic and foreign accounts by exploiting the reports made by U.S. banks to the tax authorities on behalf of their customers. To these data, we also add information about voluntary disclosures of offshore income made in the context of the voluntary disclosure programs, as well as amendments to previously filed tax returns made outside of the voluntary disclosure programs. We refer to the individuals who start disclosing their foreign accounts without participating in the voluntary disclosure program as "quiet disclosures," whereby former tax evaders avoid the penalties in the voluntary disclosure program but do not obtain protection against later criminal charges.

We start the analysis by documenting a spectacular increase in the number of self-reported foreign accounts coinciding with the enhanced enforcement efforts. Specifically, the number of FBARs filed by U.S. residents rose from around 337,000 in 2008 to around 500,000 in 2009, an increase of almost 50% in the year when the enforcement initiatives intensified. The percentage increase was highest for the highest-value accounts, equaling more than 100% for FBARs reporting an account value of over $1 million, about 50% for accounts of value between $100,000 and $1 million, about 20% for accounts worth between $10,000 and $99,999, and approximately zero among accounts of less than $10,000. "First-time" FBAR filers, defined as a filing after four years of not filing, increased by 120% in 2009. Finally, the increase in 2009 is substantial relative to a control group that is less

[1] See, for example, Jacobs (2012).

likely to be using foreign account to evade taxes, those who list as an address the same country as the account location; in fact, the control group filed only slightly more FBARs in 2009 compared to 2008, and filings in the treatment and control group exhibit parallel trend growth before 2009. All in all, our analysis of FBAR filings suggests that enforcement caused reported foreign financial assets, especially of first-time reporters, to increase substantially between 2008 and 2009, leading to an increase of at least 19 percent in the number of accounts disclosed and at least $75 billion in total wealth disclosed.

Because we know the location of the foreign accounts, we can investigate the volume of accounts held by Americans in tax havens, and how the enforcement initiatives affected accounts held in those countries. Using the OECD definition of tax havens as of 2000, we document that FBAR filers in the treatment group reporting an account in a tax haven increased by more than 50% than those not reporting a tax haven account. The increase is especially striking among notorious tax havens: 450% in the Cayman Islands, 385% in Mauritius, and 250% in the British Virgin Islands.

In sum, we have uncovered evidence that is consistent with the expanded enforcement initiatives having caused increased reporting of foreign accounts outside of the voluntary disclosure program, so-called quiet disclosures. It is, however, possible that this at least in part reflects income-tax-compliant individuals who simply began to file the required FBAR form, in which case we should see no jump in reported capital income coincident with the disclosure. To explore this, we turn to the data from income tax returns. After all, if the enforcement initiatives reduced foreign-account-facilitated evasion, we should expect to see more capital income reported on income tax returns. We use an event-study methodology and examine this issue separately for (i) participants in the voluntary disclosure programs, (ii) new FBAR filers not participants in the voluntary disclosure programs, and (iii) for new FBAR filers not participating in the voluntary disclosure programs and disclosing accounts in excess of $1 million. We begin with the voluntary disclosure cases in part because these people are *admitted* tax evaders, so that finding an increase in reported income would not be a big surprise, but it would validate the methodology we will be using to look for quiet (i.e., not admitted) disclosures of first-time FBAR filers. Sure enough, in the year after someone enters one of the voluntary disclosure programs, relative to a control group reported income receipts jump by 99%, reported dividends increase by 41%, and reported capital gains go up by 20%.

Using the same event study design, we also see increases in income reporting for first-time FBAR filers not participating in the voluntary disclosure program that are strongly suggestive of a large tax compliance response. Compared to the control group of continuous FBAR filers (for the previous four years), these first-time FBAR filers reported 64% more interest income, 24% more dividends, and 13% more capital gains the year after their initial FBAR filing. In contrast, the estimated impact on reported wage and salary income is very small. Thus, at least at first, apparently the enforcement initiatives induced additional reporting of taxable capital income. Tellingly, the estimated impact is larger for the large account holders (exceeding $1 million in the year of first-time FBAR filing, where the control group are continuous FBAR filers with an account exceeding $1 million at the time of selecting into the sample). For this group the estimated impact on reported capital income, all quiet disclosures, are 90%, 50%, and 24% for interest, dividends, and capital gains, respectively, and virtually no effect on wage and salary income.

Two additional pieces of evidence strongly support that these increases in reported capital income are due to quiet disclosures. First, the increases in interest and dividend income are concentrated in income outside of domestic information reporting (e.g., on Forms 1099-INT and 1099-DIV), exactly as we should expect if individuals started declaring income from foreign accounts. Increases in domestic capital income in the later years of the event study also suggest that many previously evasive foreign accounts were eventually closed and their assets repatriated, which is broadly consistent with patterns observed in FBAR filing. Second, we use data on amended income tax return filings to show that the probability of filing amended returns increases sharply upon first-time FBAR filing relative to a continuous-FBAR-filer control group. The estimated increase in the probability of filing an amended return is 1.8%, compared to a baseline probability of 1.0% — a near tripling of the likelihood. Although this is very large increase relative to the baseline, the small absolute magnitude leaves open the possibility that there exist many others who do not amend previous noncompliant returns.

2. Background: U.S. Enforcement Policy Initiatives Since 2009

For decades, the use of offshore bank accounts for tax evasion was straightforward and involved a low risk of detection because the banking secrecy of foreign tax havens shielded tax evaders from investigations by the tax authorities. After the 2007-2008 financial crisis, however, the U.S.

government adopted a range of enforcement initiatives targeting owners of offshore accounts. The carrot-and-stick approach combined measures to increase the probability of detecting undeclared offshore accounts and a program providing incentives for tax evaders to voluntarily disclose their foreign assets. This section provides a summary of these enforcement initiatives.

2.1 Ad hoc legal steps against Swiss banks

When Bradley Birkenfeld, a former employee at the Swiss bank UBS, blew the whistle and revealed that the bank's representatives were knowingly assisting U.S. individuals with tax fraud involving anonymous shell corporations and undeclared Swiss bank accounts, the U.S. government took the fight against offshore tax evasion to court. At the request of the Department of Justice, a federal judge in July 2008 authorized the tax authorities to requisition information from UBS about its U.S. customers without specifying the identities of these customers in advance, a so-called "John Doe summons." A few months later, the FBI announced that UBS was under investigation for its role in tax evasion and several UBS executives, including the head of the wealth management division, Raoul Weil, were indicted.

While the criminal case against UBS was settled in February 2009 with the bank agreeing to pay a fine of $780 million, the civil case about disclosure of customer lists had more far-reaching legal and political implications. The demand by the U.S. government that UBS provided details about its 52,000 U.S. customers was a direct assault on the Swiss banking secrecy rules, under which UBS was required to protect the privacy of its customers and its executives would face criminal charges in Switzerland if customer lists were shared with the U.S. government.

The case was settled in March 2009, when the U.S. and Swiss governments agreed that UBS would reveal the identities of 4,450 customers to the U.S. tax authorities by intermediation of the Swiss Financial Services Authority. While the compromise ultimately affected less than 10% of UBS' customers in the United States, it may have induced compliance responses among offshore tax evaders more broadly by demonstrating that the banking secrecy of foreign tax havens was no longer impenetrable, and instead could be effectively challenged in courts. Later, the U.S. government took a similar approach in court cases against a number of other foreign banks with major wealth management divisions in tax havens, including HSBC, Credit Suisse and Wegelin & Co.

2.2 Information exchange

At the same time as the U.S. government took *ad hoc* legal steps against individual banks in tax havens to obtain information about their customers, it also pursued a broader agenda to improve its access to tax-relevant information from foreign banks through bilateral information exchange agreements.

In a first step, tax havens were compelled to accept the conventional mode of cross-border cooperation in tax matters under which tax authorities can request bank information about specific taxpayers from other countries in tax evasion cases. Many important tax havens had long rejected this type of cooperation, often with reference to the banking secrecy rules in their domestic law. However, coordinated political pressure by the United States and other G20 countries, involving an explicit threat to impose economic sanctions on non-cooperative jurisdictions issued at the G20 Summit held in April 2009, induced all tax havens in the world to agree to the standard. The U.S. government signed bilateral agreements about information exchange on request with 6 tax havens, Switzerland, Luxembourg, Liechtenstein, Malta, Monaco and Panama, during the period 2008-2010. The main limitation of these agreements is that tax authorities can only request bank information about specific tax payers; and only in tax evasion cases where they possess sufficient evidence to assert the relevance of the information requested. In practice, the information exchange agreements are therefore rarely used and prominent tax experts have argued that the mode of cooperation is simply too weak to be an effective deterrent of offshore tax evasion (Sheppard, 2009)

In a second step, the U.S. legislators passed a new law inducing foreign banks to provide information about all accounts owned by U.S. taxpayers to the U.S. tax authorities. This move from occasional information exchange with foreign jurisdictions under bilateral treaties to systematic reporting by all foreign banks represents a dramatic change in the tax enforcement efforts with respect to offshore accounts.

The new reporting obligations are detailed in the Foreign Account Tax Compliance Act (FATCA), which was proposed in Congress in October 2009 and signed into law by President Obama in March 2010. The law contains detailed provisions on the steps to be taken by foreign banks to identify accounts owned by U.S. taxpayers, including cases where accounts are held through

corporate entities. To ensure that foreign banks comply with their obligations under FATCA, a 30% withholding tax is applied to U.S.-source income paid to non-compliant banks.

While the first reporting of foreign account information was due in 2015, several years after our period of analysis, the prospect of much more comprehensive third-party reporting of foreign income may have induced compliance responses as early as 2009 when the law was still being reviewed by legislators.

2.3 Voluntary disclosure programs

Complementing the initiatives aiming to facilitate detection of undeclared offshore accounts, the IRS also offered a series of "voluntary disclosure" programs with incentives for offshore tax evaders to voluntarily declare their foreign assets. The first initiative of this kind was the Offshore Voluntary Disclosure Program (OVDP), under which tax evaders benefitted from reduced civil penalties and escaped criminal prosecution. The program was initiated in March 2009, and expired in October 2009.

To apply for participation in the program, taxpayers had to submit a letter to the IRS containing identifying information and details about their foreign accounts or entities. Once cleared to participate, the taxpayer had to i) provide copies of previously filed original and amended returns, ii) submit updated complete and accurate returns for the previous six years, iii) provide information about previously undisclosed income, including information on financial accounts, institutions and facilitators, and iv) remit the necessary back taxes and penalties under OVDP. Taxpayers already under investigation for tax evasion were ineligible for the program.

A key feature of the program was the uniform penalty structure under which participants were liable for unpaid taxes and interest, an "accuracy-related penalty" of 20% of the total unpaid taxes, and an "offshore penalty" of 20% of the value of the disclosed assets. This structure was in lieu of the standing penalty structure that could result in penalties of as much as 100% of the account value. To ensure that OVDP in fact reduced the penalty, the tax authorities would compare the OVDP penalties to the total penalties applying absent the program, and the discloser would be liable for the lower amount.

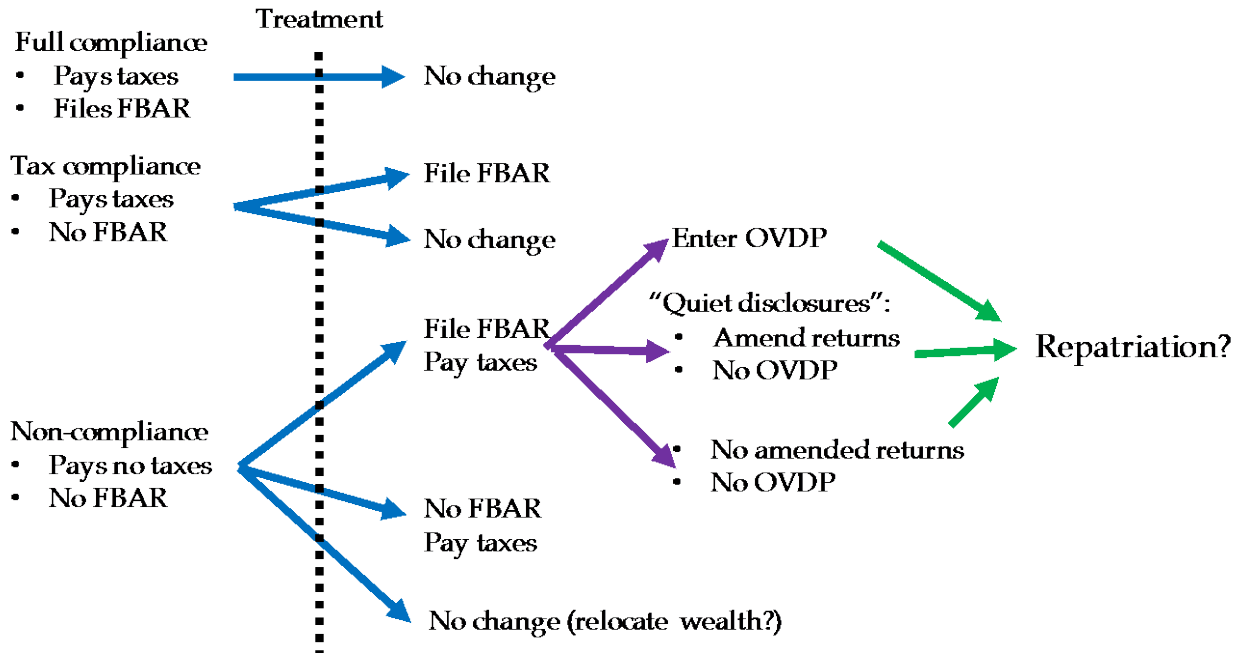
Subsequent to the OVDP program, the U.S. offered several other voluntary disclosure programs with similar terms and conditions: the Offshore Voluntary Disclosure Initiative (OVDI), in place between February and September 2011, and OVDP 2012, in place from January 2012 onward. In June, 2014, the IRS commissioner reported over 45,000 disclosures through the voluntary disclosure programs, resulting in the collection of $6.5 billion in back taxes, interest and penalties.

3. Conceptual Framework

Before discussing our empirical analysis, next we outline a simple description of the decision options faced by a potentially non-compliant taxpayer. We use this reasoning to motivate a number of empirical strategies to examine the full range of effects of the IRS enforcement initiatives in subsequent sections.

Figure 1 provides a general framework outlining the types of taxpayers who may be affected by the policy changes, how their behavior may change as a result of a policy initiative, and how we might be able to use tax data to identify the range of possible behavioral responses. One should think of the reasoning presented here as the reduced form of a more complicated structural model that considers individual characteristics such as risk aversion and personal location, the utility from the personal use of a bank account for individuals residing in the same country as the account, country characteristics such as the tax rate and the extent of bank secrecy laws, and enforcement parameters such as the current and future subjective probability of detection of evasion, penalties for non-compliance, and the compliance costs of complying with any filing rules. When the government adopts a new enforcement policy, the last set of parameters changes, which causes some individuals (generally those previously at the margin of choices) to change their behavior. For example, it might have been optimal before the John Doe summons for a particular individual to keep money in a foreign account and not declare the income for tax purposes, but once the summonses begin the perceived probability of detection increases enough to change what is optimal behavior. The new optimal behavior may be to move the money back to the United States and declare the capital income.

Figure 1. Decision-Making over Tax Compliance with Foreign Assets and the 2009 Enforcement Initiatives



The treatment embodied by recent policy changes has two components: an increase in detection risk for income in hidden accounts, and an increase in penalties for not filing an FBAR. We divide taxpayers with foreign bank accounts into three groups prior to treatment. The first group is fully compliant before the enforcement, and thus unaffected by the treatment. The second group is compliant with their tax obligation, but due to compliance costs or perhaps simply ignorance, they do not file FBARs prior to 2009. The treatment may induce these individuals to file an FBAR, but because they are relatively compliant. We think of the control group described in Section 6, individuals with a foreign address on their FBAR, as belonging to the first two groups.

The third group consists of individuals who are actually non-compliant with their tax obligations and do not file an FBAR.[2] Some might continue to risk detection and not change behavior at all, especially with regard to accounts in countries where U.S. tax authorities are not yet able to obtain information from foreign banks. Others might start remitting taxes but neglect to file an FBAR, which would risk incurring the substantial penalty for FBAR non-compliance. Beginning in 2004, there is a $10,000 maximum civil penalty for non-willful failure to file an FBAR. For willful

[2] One can imagine a fourth group that is compliant with FBAR filing requirements but not with tax obligations. It seems sensible to rule this out *ex ante*, as admitting the existence of an account to the authorities without remitting taxes on the income in that account would be exceedingly risky.

violations of the filing requirement, the penalty is a maximum of $100,000 or 50% of the maximum account value in the period of violation. Therefore, although we will not be able to identify this last type of behavior, it seems very unlikely. A third likely scenario, in our opinion (and consistent with our later findings), is that many of these individuals will file an FBAR and start remitting taxes due on the income in the accounts. These are the effects we look for in Section 7.

Individuals who decide to start complying fully must *also* decide whether to admit non-compliance in previous years, either implicitly in the form of a quiet disclosure or explicitly via the voluntary disclosure programs. Admitting prior non-compliance via the voluntary disclosure shields the individual from criminal prosecution for tax fraud, but it exposes the individual to sizable penalties in addition to the payment of back taxes, most importantly between 20% and 50% of the balance in the foreign account, depending on the timing of participation (see the previous section for more details). Individuals may therefore risk prosecution and instead disclose their account "quietly" (i.e., not come in under the voluntary disclosure program), especially if they believe that criminal prosecution is unlikely given the limited resources of the IRS and the probable existence of larger-scale evaders the IRS might be more likely to prosecute. Some quiet disclosers might not file amended tax returns and FBARs for prior years, thus remitting no back taxes or penalties.

Examining the overall effect of the treatment relative to a control group gives us (a lower bound on) the size of the third group of taxpayers in Figure 1, those becoming fully compliant after treatment. Because we know exactly which individuals used the voluntary disclosure programs from data on voluntary disclosure filings, we can estimate the extent of quiet disclosures, as well. We can distinguish the two types of quiet disclosures because we can observe the filing of amended returns by individuals who do not utilize the voluntary disclosure programs.

Finally, the enforcement initiatives may eliminate the benefits of having a foreign account for many individuals who were not fully compliant on their tax liability prior to the policy change. These individuals may therefore wish to bring their accounts back to the United States. Most individuals would likely be unable to repatriate the account immediately in 2009: there was little warning of the impending enforcement crackdown prior to 2009, and FBAR filing requirements (and bank information-reporting requirements) applied to foreign accounts held *at any point* in the current tax year. As such, individuals wishing to repatriate could be left with no choice but to declare the foreign

account in 2009. In later years, however, repatriation could lead to a decrease in the number of foreign accounts in the treatment group and, at the micro level, an increase in reported capital income by *domestic* financial institutions on the information reports (Forms 1099).

4. Data

We use data from the IRS Compliance Data Warehouse (CDW), which provides access to a wide variety of tax return, enforcement, compliance, and other data. Taxpayer data are extracted from filed tax returns, enforcement information, and narrative data that sequence taxpayer history. The individual returns file includes transcribed tax returns for individuals and includes most taxpayer-filed forms and schedules, plus third–party-filed information documents.

We observe the contents of Forms 1040, the individual income tax return, including nearly all the line items on the main from and supplemental schedules, as originally filed by the taxpayer. We also have an indicator of whether and when amended 1040 returns were filed, but do not have access to line-by-line data for amended returns, only the impact of the amendment on net tax liability.

FBAR

Crucial to the analysis is our access to the micro data of the Report of Foreign Bank and Financial Accounts. The official name of this form is FinCEN 114, where FinCEN is short for Financial Crimes Enforcement Network,[3] but is colloquially known as the FBAR (Foreign Bank Account Report), and we refer to it as such.

United States "persons" are required to file an FBAR if the person had a financial interest in or signature authority over at least one financial account located outside of the United States, and the aggregate value of all foreign financial accounts exceeded $10,000 at any time during the calendar year reported. As defined by the instructions to the FBAR form, a United States person includes "U.S. citizens; U.S. residents; entities, including but not limited to, corporations, partnerships, or limited liability companies, created or organized in the United States or under the laws of the United States; and trusts or estates formed under the laws of the United States." Extensive rules are

[3] We also have access to the earlier version of this form, TD Form 90-22.1, which has been required since the Banking Secrecy Act of 1970, and which was superseded as of September 30, 2013 by FinCEN Form 114 (FBAR).

designed to ensure that individuals cannot avoid an FBAR filing requirement for assets they own by holding them indirectly, for example through a shell corporation in a foreign country. Indirectly held financial assets are subject to FBAR reporting rules, and are within the purview of the enforcement crackdown.[4]

The FBAR is a calendar year report, and must be filed on or before June 30 of the year following the calendar year being reported. Effective July 1, 2013, the FBAR must be filed electronically. The FBAR is not filed with a federal tax return, and is filed with FinCEN and not the IRS. When the IRS grants a filing extension for a taxpayer's income tax return, it does not extend the time to file an FBAR. There is no provision for requesting an extension of time to file an FBAR. Those required to file an FBAR who fail to properly file a complete and correct FBAR may be subject to a civil penalty not to exceed $10,000 per violation for non-willful violations that are not due to reasonable cause. For willful violations, the penalty may be the greater of $100,000 or 50 percent of the balance in the account at the time of the violation, for each violation.

The filer of an FBAR form is required to report account numbers and information on the financial value of the account, identifying information for the U.S. person holding the account, including an address and the maximum value of each account for the year. Prior to 2009, filers were required to report the value within various ranges, but beginning in 2009 they are required to report the exact dollar amount.

The FBAR overlaps to some degree with the Form 8938, which was more recently introduced under FATCA. Who must report differs slightly between FBAR and Form 8938, as does the total value of assets reporting threshold. Furthermore, Form 8938 asks about the taxable income on foreign accounts, while FBAR does not ask about income. As many of the important provisions of FATCA have only quite recently gone into effect, we do not use data from the Form 8938 here.

Voluntary disclosure

[4] In some cases, individuals may hold assets through networks of accounts and corporations in multiple countries. The FBAR filing requirements essentially require a unique FBAR for every account an individual owns, directly or indirectly, in any country.

The final component of our analysis in this paper is data on participation in the voluntary disclosure programs (the Offshore Voluntary Disclosure Programs/Initiatives of 2009, 2011, and 2012). Our data on the voluntary disclosure programs consists of only whether an individual participated in one of the voluntary disclosure programs, the date that the record was first created in the CDW, and the beginning and ending dates for the case. In some cases the record creation date is before the beginning of case date, and sometimes the beginning of case date is before the record date. Ideally, we would like to use the date of first contact, but in the absence of this specific information, we use the first reported date available. This may vary somewhat from the date of first contact, which is important to bear in mind when viewing some of the results regarding the timing of OVD participation.

5. Aggregate Data Analysis

Apart from participation in the voluntary disclosure programs, these data sources provide only indirect evidence about evasion itself, and we suspect based on the reasoning above that not all evasive activity is reported under the voluntary disclosure programs. Having only indirect evidence is par for the course in the study of tax evasion, where researchers often must rely on looking for "traces" of evasion, as discussed in Slemrod and Weber (2012), i.e. behavior that can (ideally, *only*) be explained by tax evasion. In this case we have plenty of data about what *is* reported to the U.S. government and, crucially, how this changes in the wake of enforcement initiatives.

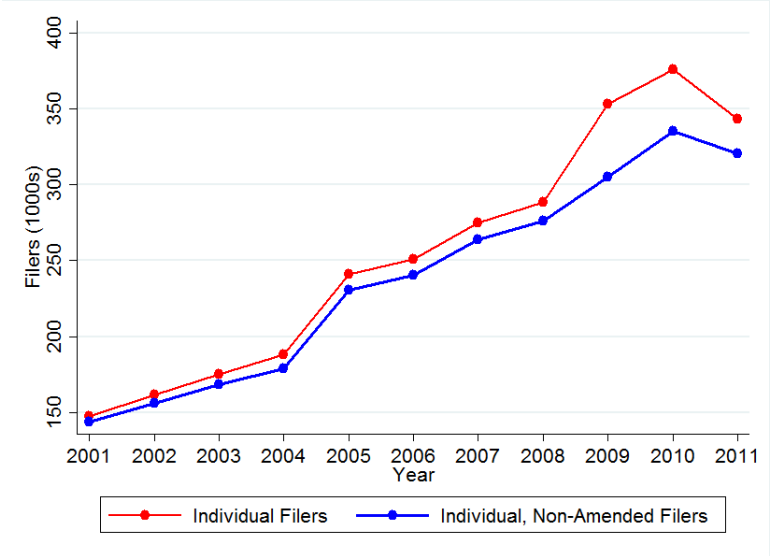
Another critical caveat is that the period we are examining, 2009 and thereafter, is centered on the time of global financial crisis and severe recession. Even absent any changes in U.S. foreign-account enforcement initiatives, it would not be surprising to observe sharp changes in relevant data at around this period. For this reason, we must be particularly careful to consider appropriate counterfactual scenarios (i.e., propose appropriate control groups). We return to this issue at length below.

Measures of Declared Foreign Accounts over Time

We first look at measures of the extent and amount of foreign assets reported by U.S. individuals, as measured by FBAR filings.[5] What we are looking for is a break in the trend coinciding with the massive expansion in enforcement activities, from court cases to John Doe summonses to the voluntary disclosure, beginning in 2009.

Figure 2 shows data for the number of FBAR filings by year filed. The base sample of FBAR filers which we consider in the analyses that follow includes individual filers with complete account information[6] filing an on-time FBAR, which is represented by the blue line in Figure 2. Additionally, we see the number of amended FBARs filed by individual filers each year, represented by the red series in Figure 2. The difference between the two series therefore represents the number of amended or late-filed FBARs in a given year. Table A.4 shows a detailed composition of FBAR filers by type by year.

Figure 2. FBARs Filed by Type



Notes: Figure 2 shows an annual time series of FBARs filed based on filing year, as opposed to tax year for which the report is filed. "Individual Filers" includes all FBARs filed by individual account holders, as indicated on the FBAR form, with complete account information. Complete account information requires that the account-level observation includes a valid account owner TIN, account country, account type and account value or account value category. Only FBARs recording at least

[5] These data look somewhat different than graphs purportedly measuring the same phenomena in GAO (2013). One noteworthy difference is that, while the GAO figure displays the total number of FBARs filed by year, including corporate filers, we impose additional restrictions to obtain a sample of FBAR filers that are individual account holders.
[6] Complete account information means that there is a valid account owner, account country, account type and account value or account value category recorded. An FBAR may include multiple accounts; only FBARs recording at least one valid account are used.

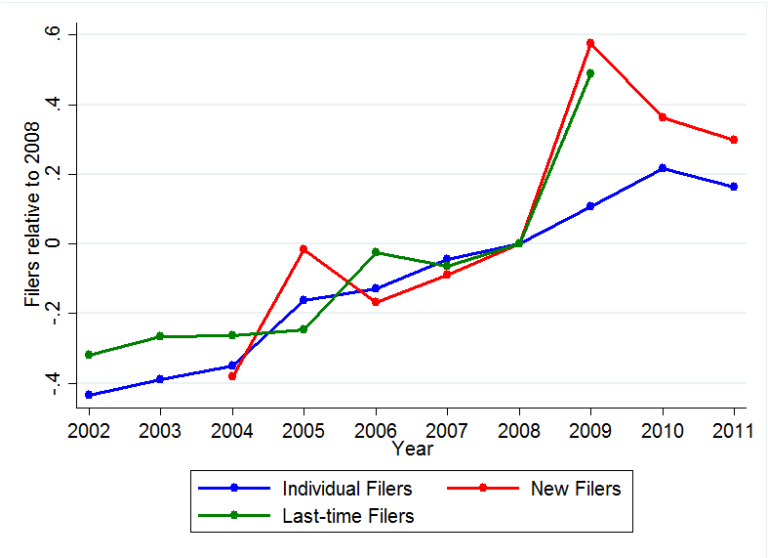
one valid account are used. The Individual Filers series includes all FBARs filed by individual filers in a given year regardless of the tax year for which the report is filed. Individual, Non-Amended Filers are individual filers who file on-time FBARs for a given tax year.

Figure 2 shows that has been a positive trend in reporting foreign accounts since 2001. The first notable jump in FBAR filing happens between 2004 and 2005, which is likely due to the introduction in 2004, as part of the Jobs Creation Act, of a penalty for non-willful failure to file an FBAR. Second, there was a 26% increase in total individual FBAR filings in 2009. We see in Table A.4 that the majority of filers in any year consist of individual filers filing non-amended FBARs. There is an 11% increase in filing among the base sample of on-time filers in 2009, which is less dramatic than the increase in total FBARs filed. Therefore, we see that a significant portion of the increase in FBARs filed in 2009 comes from an increase in individuals filing late or amended FBARs in that year; there is almost a 275% increase in amended FBARs.

Focusing only on the change in total number of individual FBAR filers in 2009 masks changes in the pattern of filing behavior in that year. Using the micro data, we are able to identify people who file for the first time and those who stop filing in a given year, and those who did and did not participate in voluntary disclosure programs. Next, we focus on changing patterns of FBAR filing in 2009 for those who did not participate in voluntary disclosure programs. This analysis helps to understand whether we might expect to observe substantial quiet disclosures to be occurring at this time, in parallel with disclosures through formal channels.

We define a "first-time filer" in year t as someone who files an FBAR in year t, but did not file an FBAR in the previous four years, and we define a "last-time filer" in year t as someone who filed in year t-1 but did not file in the four subsequent years. Figure 3 shows the evolution of individual filers including those who file for the first time and the last time. We see that, although there is only about an 11% increase in total individual non-amended filings, there is a large increase in new filers in 2009, about a 58% increase. This is accompanied by a large (49%) increase in individuals who stop filing in 2009. It is possible that this large increase in first-time filers represents people with foreign accounts who were previously not reporting them. If this is the case, this could represent a substantial increase in people disclosing their foreign accounts as a result of the enforcement initiatives. This is something we will investigate further using income tax returns.

Figure 3. FBARs Filed by First-Time and Last-Time Filers



Notes: The Individual Filers series represents all individual, non-amended FBARs filed by non-OVD participants, relative to the 2008 filing level. New filers are defined as those who filed in a given year and had not filed for at least the previous four years. Last-time filers are defined as those who filed in the previous year, did not file in the given filing year, and did not file again for at least the three following years.

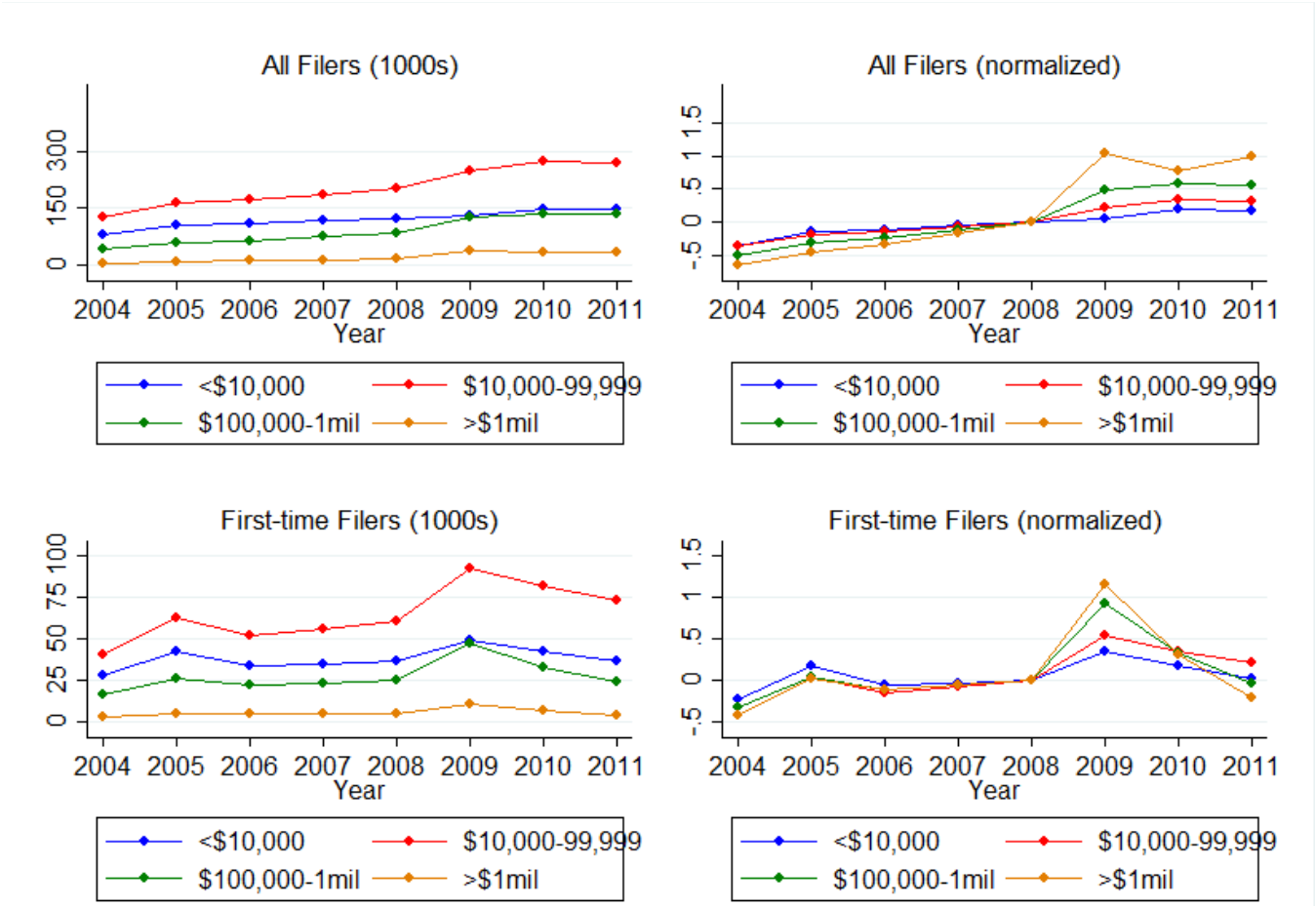
To this point we have been examining the number of taxpayers who, in one way or another, indicate that they held at least $10,000 in at least one foreign account. Next we go further, by looking at data about the dollar value of these accounts. The filer of an FBAR form is required to report the maximum value of each account for the year. Prior to 2009, filers were required to report the value within various ranges, but beginning in 2009 they report the exact dollar amount. Figure 4 displays the number of base filers reporting accounts of different values across years and the change in accounts of each value category relative to the number of filers in 2008.[7] The top two panels use all filers, and the bottom two focus on new filers.

We see that there was an especially big increase in reporting large accounts in 2009. The top panels of Figure 4 show that there was over a 100% increase in FBARs reporting accounts valued over $1 million and over a 50% increase in FBARs reporting accounts between $100,000 and $1 million. Put

[7] The total number of filers across value categories exceeds the number of unique filers because an individual filer can have multiple accounts of different values.

another way, in 2008 about 4% of filers reported an account of over $1 million and in 2009 that number jumped to 7%. Therefore, even as the total number of filers increased in 2009, so did the percent of very large accounts being reported.

Figure 4. Account Values and the 2009 Increase in FBAR Filers



Notes: Figure 4 separates the time series of individual FBAR filings by account value category, as defined on the FBAR report prior to 2009. The top panels display series for all individual, non-amended, non-OVD participant filers and the bottom panels show series for first-time filers. The left panels show the total filings while the right panels show filings relative to the 2008 level.

The bottom panels of Figure 4 document that the spike in FBARs filed with large account values is attributable to first-time FBAR filers in 2009, as opposed to differential attrition from the FBAR filing population. The relative increase in high value accounts is even more dramatic when we examine first-time filers specifically. Those filing accounts for the first time with account values over $1 million increased by about 100%, and by about 85% for accounts of $100,000 to $1 million. Not

only is there a dramatic increase in those filing for the first time in 2009, but those filing for the first time have much larger accounts than in previous or later years.

All in all, these data on FBAR filings suggest that reported foreign financial assets—the number and the value—and especially of first-time filers, rose substantially between 2008 and 2009. This increase coincides with the first John Doe summons of UBS on July 1, 2008 and the start of the 2009 OVDP voluntary disclosure program in March 2009. The striking trends observed above for taxpayers who did not participate in formal voluntary disclosure programs serve to motivate further analysis of taxpayer responses to the increase in enforcement (primarily through John Doe summonses and the threat of FATCA) and the initiation of the voluntary disclosure programs, especially those that credibly establish the causal direction and can untangle any observed response to the enforcement initiatives from the impact of the financial and economic turmoil of that period.

6. The Foreign-Account Reporting Response of More-Likely Evaders

The key to credibly establishing the causal impact of the enforcement initiatives on compliance is to specify a control group whose behavior is unlikely to have been affected by these initiatives. Our initial empirical design relies on our ability to identify a set of accounts which is likely to be held for legitimate purposes, that is accounts that are not being held for the purpose of evading taxes, and another set of accounts which could be held legitimately *or* for the purpose of facilitating tax evasion. By comparing the response of these two sets of accounts to enforcement initiatives, we learn about the compliance response. This reasoning implies a difference-in-differences (DD) approach, where the legitimate accounts serve as a control group for the others.

To distinguish the control and treatment groups, we use the rules for the reporting of a taxpayer's filing address on the FBAR form. Filers with a U.S. address are required to report this address on their FBAR even if they are not residing in the United States. Only those with no U.S. address are instructed to report a foreign address on their FBAR.[8] Consequently, individuals reporting a foreign address on their tax return are quite likely residents of the foreign country in question. Residents of

[8] The instructions on the FBAR explain who must report a U.S. address and who may report a foreign address: "An individual residing in the United States must enter the street address of the individual's U.S. residence, not a post office box. An individual residing outside the United States must enter the individual's U.S. mailing address. If the individual does not have a U.S mailing address, the individual must enter a foreign residence address. An entity must enter its U.S. mailing address. If the entity does not have a U.S. mailing address, the entity must enter its foreign mailing address."

the foreign country have a legitimate reason to hold an account in that country in order to facilitate financial transactions within the country. In contrast, U.S.-resident taxpayers *may* have a legitimate reason to hold an account, may hold the account for evasion, or may be otherwise underreporting income on this account. Thus we define the treatment group as individual U.S. taxpayers residing in the United States filing non-amended FBARs, and the control group as individual U.S. taxpayers residing outside of the United States who file (non-amended) FBARs for accounts in their country of residence.

To conduct the difference-in-differences analysis, we build a panel dataset aggregating individuals in the treatment and control group holding accounts in each country.[9] The unit of observation used in this analysis is an individual-country pair. If an individual has accounts in multiple countries, they will appear as one observation in each country in which they hold an account. An individual who holds multiple accounts in a given country will only appear as one observation in that country. Crucially, an individual will never appear in both the treatment and control groups in a given year because each person reports only one address in a year, but an individual can appear in the treatment group for multiple countries if they have a U.S. address and accounts in multiple countries.

As mentioned, we assume that the treatment group consists of both legitimate accounts and non-compliant accounts while the control group consists of only legitimate accounts, but we do not assume that individuals in the control group were entirely unaffected by the policy. Given the low enforcement of filing requirements prior to 2008, many individuals with legitimate accounts may not have filed an FBAR prior to 2008, and some of these individuals may not have been remitting taxes on the income in their foreign accounts. That is, while these accounts are held for legitimate reasons, there may nevertheless be some tax noncompliance in the control group.

It is straightforward to show that the observed difference in growth rates of filing between the treatment and control groups will be equal to

$$g_t - g_c = \frac{(1-x)c}{xd} \qquad (1)$$

[9] We do not use observations where the individual had a filing address in one foreign country and no account in that country, this excludes only 12% of observations. The treatment group consists of 56% of observations and the control group 32% of observations.

where the fraction *x* of accounts in the treatment group are legitimate and *(1-x)* are non-compliant, *c* is the filing rate for non-compliant accounts post-2008 (and zero before), and *d* is the fraction of full compliers declaring pre-2008. Expression (1) presumes that the effects of IRS policies on legitimate account holders is the same in the treatment and control groups, before and after 2008.

The observed growth rate in FBAR filing in the treatment group consists of changes in reporting of legitimate accounts plus changes in reporting of accounts previously held for evasion, weighted by the relative sizes of these groups. As described in Figure 1, the response from the non-compliant group can be a result of participation in a voluntary disclosure program, whether or not accompanied by amended previous-year tax returns; our later analysis will attempt to disentangle these responses.

By multiplying this effect by the number of disclosures in the country in 2008 (which equals xdN, where N is the total number of accounts held by U.S. taxpayers in the country), we can convert this effect into a number of apparent non-compliant accounts in each country induced to file by the 2009 enforcement crackdown.

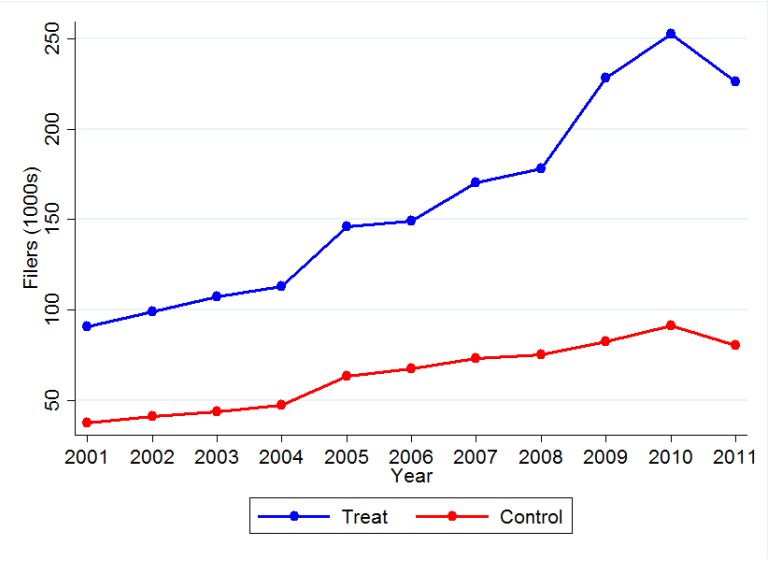
Note that all of this analysis is within-country (country subscripts were suppressed for clarity of exposition). We have a good sense of how x likely varies across countries. In countries thought to contain relatively few accounts being held for the purposes of evasion, such as (high-tax-rate) Germany, we expect that $x \approx 1$ and consequently that the DD estimate represented in Eq. (1) will be small. In countries thought to contain many evasion accounts, such as Switzerland, we expect that $x \ll 1$ and we expect a sizable DD estimate under the hypothesis that the enforcement crackdown affected FBAR filings of previously untaxed accounts (i.e., that $c > 0$). Potentially, the value of c is larger in these countries as well, because the John Doe summonses target financial institutions in havens more extensively, thus increasing the threat of detection disproportionately. Comparing our country-specific estimates to where we *a priori* believe tax evasion accounts are likely located thus serves as an additional check on our research design, in addition to the usual common-trend analysis for DD designs.

The effect we estimate—that on previously untaxed accounts — is only one piece of the total effect of the enforcement crackdown, but it is a vitally important piece. Tax compliance among legitimate accountholders may also increase due to these policies, but their explicit focus was on accounts held for tax evasion, and particularly on high-value unreported accounts. Finally, although we believe such instances will be limited given the filing address requirements attached to FBARs, the assumption that there are no evasion accounts in the control group could fail to hold. In this case, we identify a lower bound on the effect of the 2008 enforcement policies on non-compliant accounts in the treatment group.

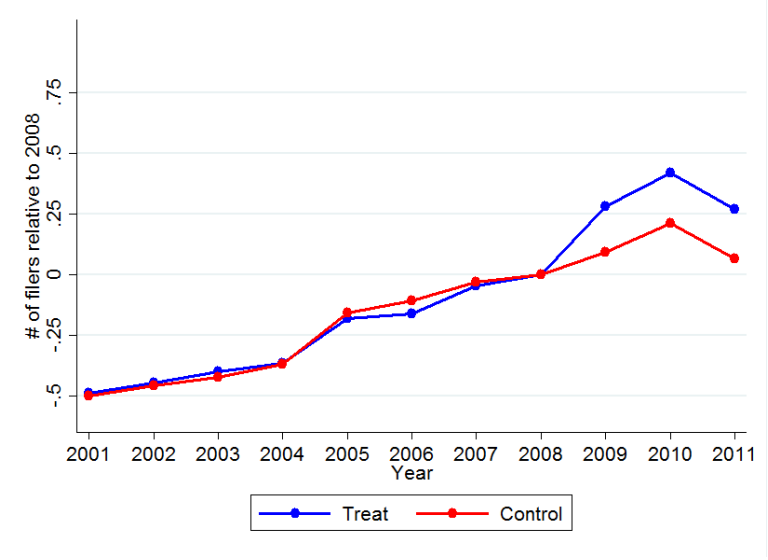
Figure 5 shows the total number of filers for the treatment and control groups, aggregating across all countries in our data. We see the total number of treatment filers increases by nearly 100,000, or over 25%, between 2008 and 2009. To show this change relative to the control group, the second panel shows the number of filers normalized by the 2008 level. We see that the trends for treatment and control are almost identical prior to 2009, but that a significant divergence emerges in 2009 where there is a disproportionate increase in filing for the treatment group. Under the assumptions laid out above, this diversion in 2009 represents the filing effect of the enforcement initiatives that began in 2008 and 2009 on previously non-compliant accounts. This represents a DD estimate of 19% for all countries combined. Of interest is that the effect apparently dissipates over time, which may be partly due to the repatriation of foreign accounts of former evaders. It is also interesting to note that the trends remain parallel between 2004 and 2005, when the FBAR penalty was introduced. Therefore, that increase in enforcement specifically of the filing requirements apparently affected the treatment and control groups equally, while we observe a disproportionate response among the treatment group to enforcement initiatives directed at evasive foreign accounts. This further supports the validity of the interpretation of the DD analysis.

Figure 5. Aggregate Evolution of FBARs in the Treatment and Control Group

Panel 5A. Number of Filers



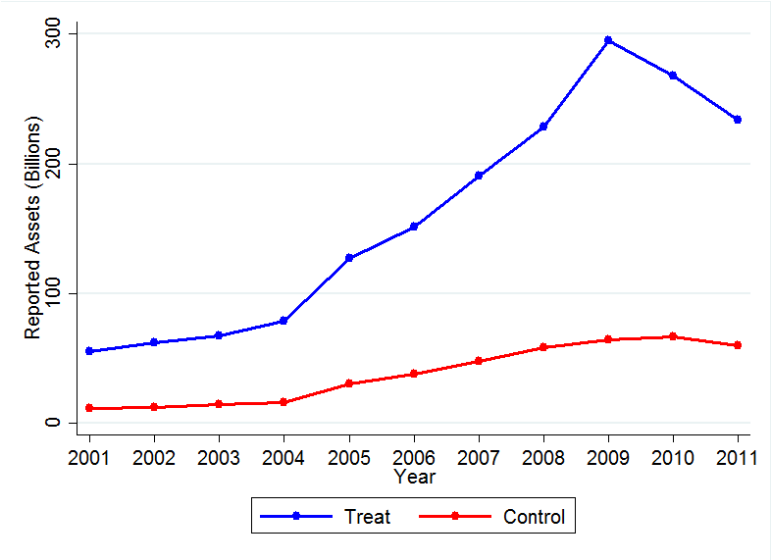
Panel 5B. Number of Filers, Normalized by 2008 Level



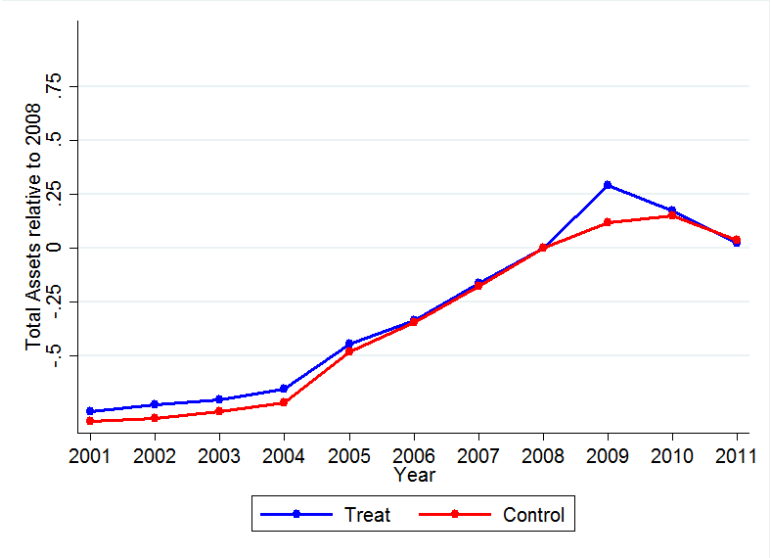
Notes: Figure 5 separates the time series of individual, non-amended, non-OVD participant filers into the treatment and control groups. The treatment group consists of FBARs filed reporting a U.S. residence address and an account in a foreign country. The control group is FBARs reporting a foreign residence address and an account in the same country as the residence address. Though there can be multiple accounts for any FBAR, each FBAR reports only one residence address, so no filer can be in the treatment and control group in the same year.

Figure 6. Evolution of Total Reported Foreign Assets in the Treatment and Control Group

Panel 6A. Total Reported Assets



Panel 6B. Total Reported Assets, Normalized to 2008 Level



Notes: Figure 6 shows the time series of imputed total reported foreign assets by individual, non-amended, non-OVD participant filers within the treatment and control group. Panel A shows the total reported assets within the treatment and control group, and Panel B shows the total relative to the 2008 level. The DD estimate from Panel B represents an 18% relative increase in total reported assets in 2009.

Table 1: DD Estimates of Total Reported Foreign Assets, by Account Value Category

Account Value Categories	Total ($)
<$10,000	66,035,994
$10,000 - 99,999	1,293,268,589
$100,000 - 1 million	5 ,339,098,052
>$1 million	68,662,533,549
Total	**75,360,936,185**

Notes: Asset values for 2008 are calculated based on the average reported account values within account value categories in 2009. The DD estimates are derived from the difference between the treatment and control group in percent changes in the reported account values between 2008 and 2009, calculated within each account value category.

Figure 6 reports DD estimates of total disclosed wealth due to the enforcement crackdown, using data from the maximum account values from FBARs. Exact account values are not present on the form until 2009; before 2009, each account was reported as having a maximum value within the ranges used in Figure 4 – less than $10,000, $10,000-$100,000, $100,000-$1million, and greater than $1million. In Figure 6, we impute account values prior to 2009 using the average reported values in 2009 for each of the four ranges.[10] For example, an account reported in 2008 with maximum value between $100,000 and $1 million will be assigned the value of $269,310, which is the average value within this range as reported in 2009. This procedure should give a conservative estimate of the total wealth effect, as we know from Figure 4 that the effect was concentrated in higher account values, which would imply that the true effect is larger than the effect using our imputations. The dollar value of the DD effect on total wealth disclosure is broken down by account value categories in Table 1. Overall, we estimate that the enforcement crackdowns led individuals to disclose $75.4 billion of offshore wealth outside the voluntary disclosure program in 2009. About 90 percent of this figure, or $68.7 billion, derives from individuals declaring accounts in excess of $1 million.

We next return to the DD estimates of FBAR filers to explore heterogeneity in the DD estimates by the country in which the account is held. As discussed earlier, our model implies that the effect of

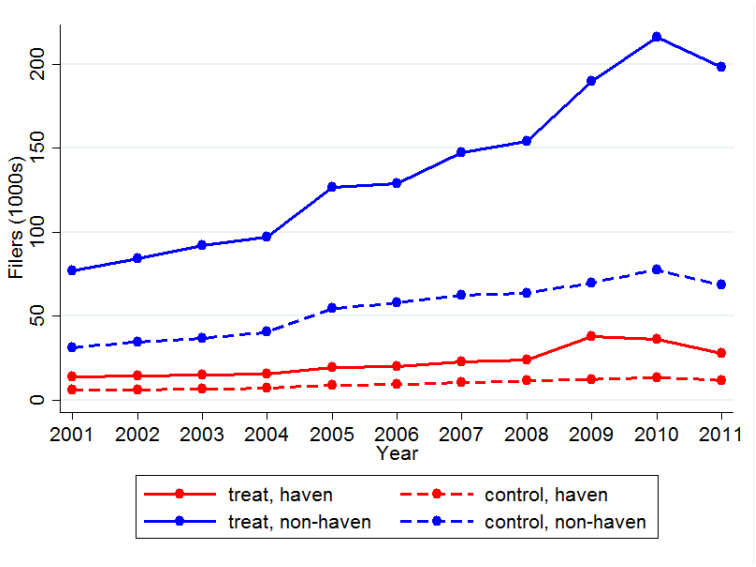
[10] Our calculations and imputations for the top account value category exclude any accounts reporting a total value in excess of $1 billion. This is done because many accounts in excess of $1 billion appear to be spurious values, often the result of obvious transcription errors and, even excluding obvious errors, often being declared by individuals whose relatively low income on their tax returns suggest they are extremely unlikely to own over $1 billion in foreign assets. The incomes of individuals reporting large accounts less than $1 billion are much more reasonable. The average we use for the top category is somewhat sensitive to extremely large account values. As such, excluding these very large accounts makes our approach even more conservative, because some of the accounts that are reported to be over $1 billion may be valid.

increased enforcement should be larger in countries that have strong banking secrecy laws and low tax rates (i.e., tax havens according to some definition.)

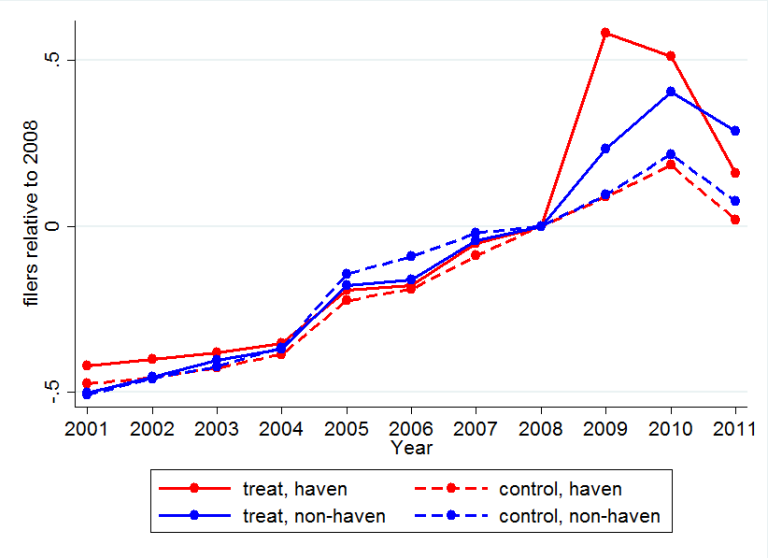
Figure 7 repeats the exercise whose results are shown in Figure 5, but now separately for FBARs reporting accounts in haven and non-haven countries. An FBAR report is categorized in the haven group if at least one account is reported in a tax haven. The non-haven group consists of FBARs reporting no accounts in a tax haven. We define tax havens using the 2000 OECD list of uncooperative tax havens plus Switzerland, Singapore, Hong Kong and Luxembourg. Here we observe jumps in filing for treatment groups with accounts in both haven and non-haven countries, and that the absolute magnitude of the jump is significantly larger for accounts in non-haven countries. As above, the second panel of Figure 7 presents the number of filers normalized to the 2008 level. The DD estimate is much larger for accounts held tax-haven countries than for non-haven countries, 58% relative to 9%.

Figure 7. Evolution of FBAR Filers in the Treatment and Control Group, by Tax Haven Status

Panel 7A. Number of Filers



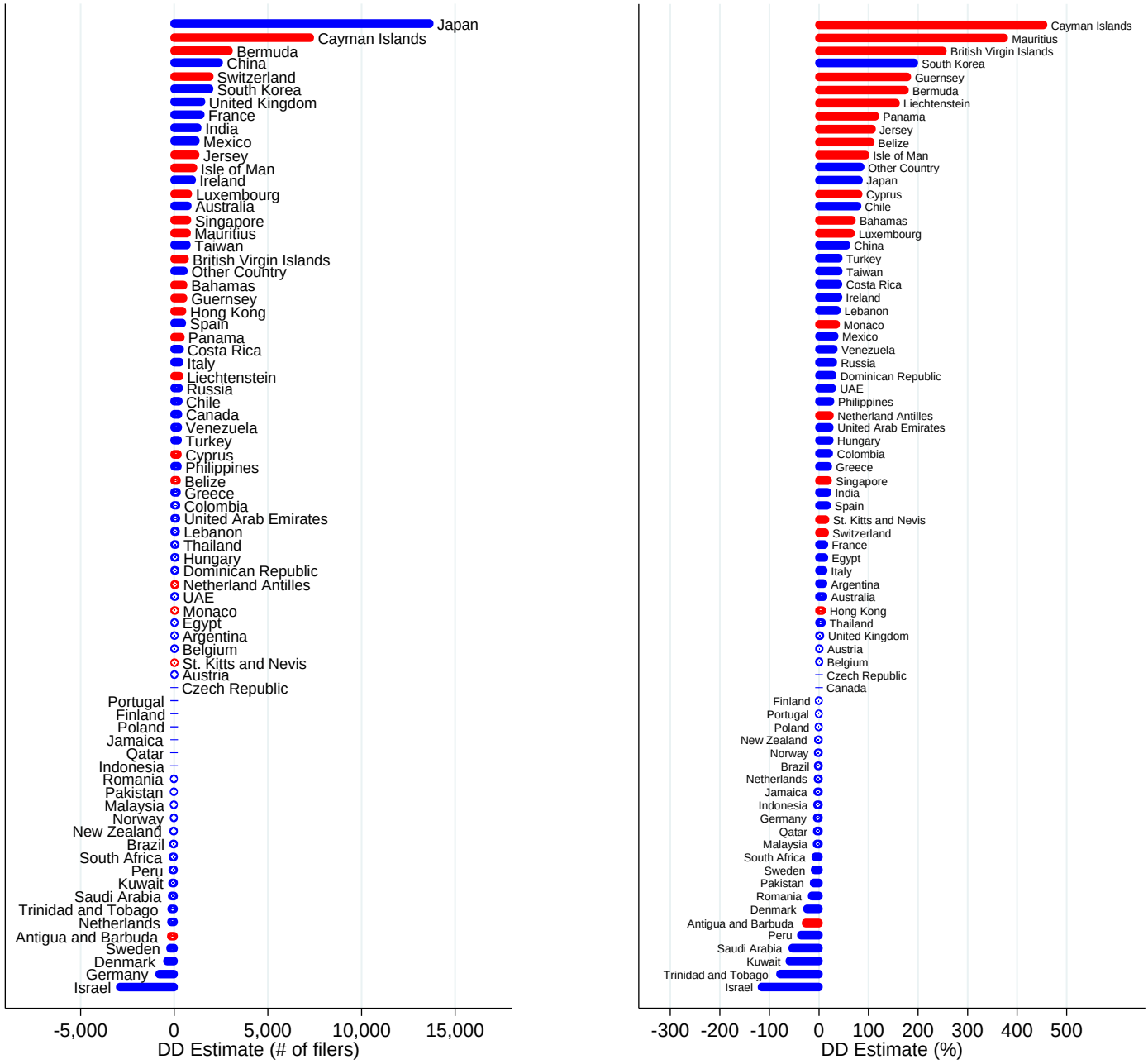
Panel 7B. Number of Filers, Normalized by 2008 Level



Notes: Figure 7 separates the treatment and control group based on the country where the account is held. An FBAR report is categorized as having an account in a haven if at least one account is reported in a tax haven. The non-haven group consists of FBARs reporting no accounts in a tax haven. The definition of tax haven is the uses those identified by OECD in 2000, plus Switzerland, Luxembourg, Singapore and Hong Kong. Panel A shows the total FBARs filed in each category and Panel B shows FBARs filed relative to the 2008 level.

Figure 8. Differences in Differences Estimates by Country

Panel 8A. Level Differences **Panel 8B. Percent Change from 2008-2009**



Notes: Figure 8 depicts within-country differences-in-difference estimates, ranked from highest to lowest along the y-axis. In both panels, tax havens are shown with red bars and all other countries are shown with blue bars. Panel 7A is the estimated effect in levels, i.e. in the number of FBARs filed. For Panel 7B, we calculate the percent change in the number of filers from 2008 to 2009 in the treatment and control group separately using 2008 as the baseline, as in earlier figures. We then subtract the growth rate in the control group from that of the treatment group to obtain a treatment effect measured in percentage growth from 2008 to 2009. We include only countries with more than 200 accounts declared on FBARs for visual clarity.

Figure 8 shows the by-country DD estimates for all countries with at least 200 FBAR filings in 2008 or 2009. The red bars represent countries considered to be tax havens by the OECD definition. Panel 8B shows the estimate in levels, and terms of growth rates, $g_t - g_c$ corresponding to Eq. (1), and Panel 8A shows the estimate in levels, corresponding to multiplying the growth rate estimate by *xdN* as discussed above. Focusing on Panel 8B, we see that there is a wide range of DD estimates across countries, but that the majority are positive and that there are many more large positive DD estimates, with 11 countries seeing changes of over 100%.

We also see a concentration of haven countries with large positive estimates. The DD estimate implied by Figure 7B for the percent increase in the number of accounts in any tax haven is 58% while the estimate for accounts in any non-haven country is 9%. The DD estimate for all countries combined is 19%. When we use the number of accounts in Panel 8A, Japan moves to the top because of the large number of accounts held in Japan. Other countries with large numbers of accounts move up, including Switzerland, China, France and the United Kingdom. It is nevertheless clear that there remains a concentration of countries generally considered to be tax havens near the top range of estimates. The level DD estimate for all countries combined is approximately 53,000 accounts. Accounts held in haven countries make up over 40% of that estimate, even though only 18% of FBAR filers filed accounts in haven countries in 2009, and only 15% in 2008.

The DD estimates above help to understand the potential compliance response among those who did not participate in an OVD program, but we can also examine the countries in which OVD participants hold their accounts once they begin filing FBARs. Table 2 shows the number of FBARs filed by OVD participants reporting an account in a given country for the top 25 countries reported on their FBARs.[11] A few trends are visible. First, by a substantial margin Switzerland is the country with the most accounts filed by OVD participants. There were 2,584 FBARs filed by OVD participants reporting accounts in Switzerland in 2009 and 4,894 in 2010. This is relative to 779 and 1,200 accounts in 2009 and 2010, respectively, for the next most represented country, the United Kingdom. Another trend we see is that this list contains a mix of haven and non-haven countries.

[11] In this table filers are counted in each country in which they hold an account. For example, if an FBAR reports accounts in Switzerland and Germany, the filer will be counted in each of these countries. Therefore, this table is informative about the countries in which OVD participants hold accounts, but summing across countries does not yield the total number of OVD participant filers.

Many of the havens that were on the top of Figure 8 are represented here, the Cayman Islands, Isle of Man, Liechtenstein, Luxembourg, Hong Kong, and Singapore, but many of the countries at the top of Table 2 are not traditionally considered to be tax havens, such as the United Kingdom, Canada, India, Israel, France and Germany. Finally, we see that the number of participant filers in each country is relatively small compared to the number of new filers outside of the OVD programs. This is made clear in Figure 9.

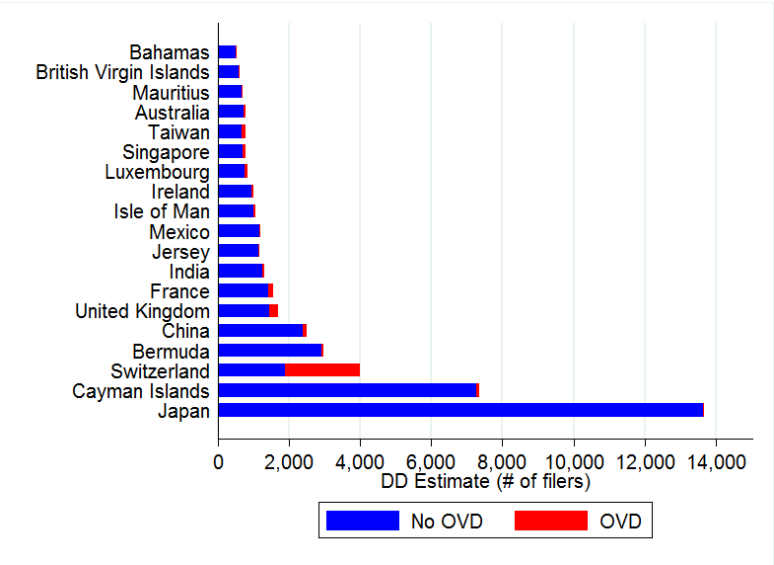
Table 2: Total FBARs Filed by OVD Participants, by Account Country (Top 25 Countries)

Account Country	Filers 2009	Filers 2010	Filers 2011
Switzerland	2584	4894	2644
United Kingdom	779	1200	1143
Canada	399	667	728
India	246	447	1085
Israel	303	717	551
France	361	586	496
Germany	354	534	491
Hong Kong	161	297	274
China	143	289	291
Italy	148	241	197
Australia	121	175	188
Luxembourg	101	199	146
Singapore	*	171	165
Taiwan	*	178	162
Spain	*	157	113
Netherlands	*	134	115
Austria	*	163	122
Liechtenstein	*	153	119
Cayman Islands	*	112	102
Mexico	*	116	104
Ireland	*	*	*
Isle of Man	*	108	101
Belgium	*	*	*
Greece	*	108	102

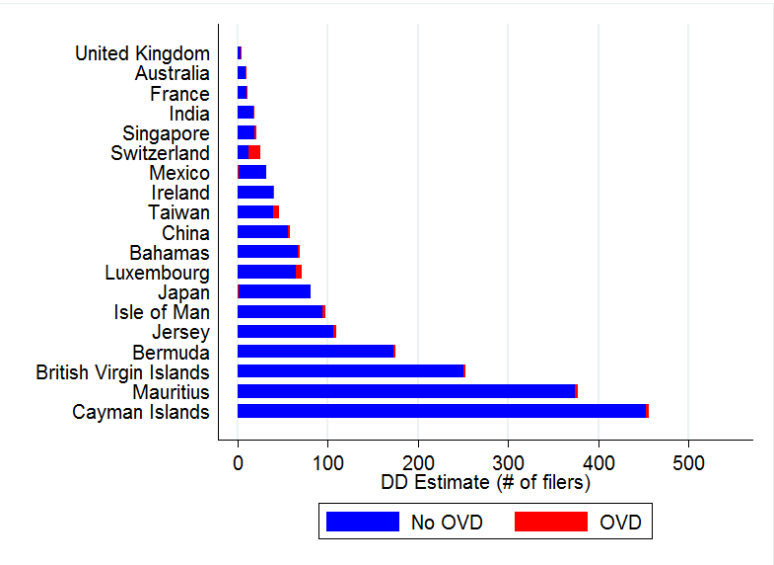
Notes: Table 2 shows the total number of FBARs reporting an account in a given country for the subset of individual who participated in an OVD program at any time. Filers with accounts in multiple countries will be counted for each country in which they hold an account, therefore the total across countries does not add up to the total number of filers. An * represents country-years with fewer than 100 filers.

Figure 9. Within Country DD Including OVD Participants (Top 20 DD estimates)

Panel 9A. Level Differences



Panel 9B. Percent Change from 2008-2009



Notes: Figure 9 shows country-level DD estimates when including OVD participant filers. The total bar length represents the total DD estimate for each country. The blue portion of the bar represents the DD estimate when excluding OVD participants and the red represents the portion of the total estimate attributable to OVD participants. The figure displays only the countries with the 20 largest DD estimates. Panel A shows the DD estimate for the total number of filers and Panel B shows the DD estimate in terms of percent changes.

Figure 9 shows the within-country DD estimates including OVD participants in levels and percentages for the top 20 account countries. The blue bars represent the estimate excluding OVD participants, the estimates presented in Figure 8, while the red represents the portion of the total DD estimate attributable to OVD participants. Panel 9A shows the estimates in levels, or number of filers. We see that including OVD participants adds relatively little to the total estimated compliance response in each of the counties, with the exception of Switzerland. In Switzerland, including OVD participants about doubles the estimated compliance response. Panel 9B shows the total estimates in percent changes. Again, we see that OVD participants represent a small portion of the total estimated compliance response, except in Switzerland, where it again doubles the estimate.

Taken together, Table 2 and Figure 9 provide a couple of key insights. First, we might expect a relatively large compliance response in 2009 among those with Swiss accounts given the UBS case and subsequent information sharing agreement with the Swiss authorities. We saw a significant positive response outside of the OVD program in Figure 8 for accounts held in Switzerland, but the response might not have been as large as expected given the policy focus directed at evasive Swiss accounts at the time. Here we see that a large portion of the compliance response for Swiss account holders likely came from participation in formal OVD programs. As the increased probability of detection might have been especially acute for Swiss account holders, by far the largest portion of the compliance response within the OVD program came from such account holders. Second, for all countries other than Switzerland, the largest portion of the estimated compliance response was among foreign account holders that did not participate in a formal OVD program. This highlights the importance of considering the income reporting behavior of this group of account holders when estimating the total compliance response to the heightened enforcement initiatives.

To summarize, a number of factors suggest that much of the large increase in FBAR filings starting in 2009 was caused by increases in tax enforcement and accompanied by increased tax compliance. First, we observe large increases in a group of FBAR filers who may hold the account to facilitate tax non-compliance – taxpayers residing in the United States – relative to a control group of individuals who are much more likely to hold the account for non-tax purposes – taxpayers residing in the country in which they hold the account. Second, these estimated treatment effects were concentrated in countries widely perceived to be havens for individual tax evaders, such as the

Cayman Islands. In the next section, we link FBAR reporting to individual income tax returns to illuminate tax compliance effects in individual income declarations.

7. The Response of Reported Capital Income

To this point we have largely focused on the impact of the enforcement initiatives on reported foreign accounts. Of more direct policy interest is their effect on income reported, and subjected to tax, on U.S. tax returns. It is possible, although perhaps unlikely, that our results to this point could be obtained without an increase in compliance with income taxes, if individuals filing FBARs for the first time had already been paying tax on the income in those accounts but simply failing to declare the account on an FBAR. In this section we analyze capital income reported on individual income tax returns.

As discussed in the conceptual framework of Section 3, there are multiple possible margins of behavioral response to the enforcement initiatives about foreign accounts. One is that foreign accounts whose income had not previously been reported are now reported and subject to tax. Another is that funds in foreign accounts are repatriated to U.S. accounts, and taxed on income that accrues after repatriation. A third is that the foreign accounts are maintained, and possibly further disguised through the use of, for example, indirect holding through shell corporations in foreign financial institutions that do not plan to participate in FATCA. Our analysis here will shed light on the extent of the first of these responses.

We shed light on this question by looking at voluntary disclosure participants and first-time FBAR filers, analyzing how their reported capital income changes around the time of OVDP participation or first-time FBAR filing. To begin, we separate those who file FBARs for the first time between 2007 and 2012 into cohorts depending on the year in which they file for the first time, so that for example the 2006 cohort represents individuals who file for the first in 2006. For each cohort we observe income m years prior to first-time filing and for S years after. In our baseline analysis we exclude from the treatment group those who report on the FBAR that they live in the country in which they hold the foreign account, as this group is more likely to hold the foreign account for a legitimate reason. Additionally, we exclude from the FBAR analysis anyone who participated in a voluntary disclosure program at any time; we want to investigate traces of quiet disclosures

separately from the formal voluntary disclosure channel. We then select for each cohort a control group. For the baseline analysis the control group consists of "continuing" FBAR filers, i.e. those who have filed FBARs in each year over the previous four years. Therefore, a cohort contains a treatment group of those who file for the first time in that year and a control group of those who have filed continuously for the previous four years, and income sources of both groups are observed *m* years prior to and *S* years following the cohort year. In other specifications we will modify the treatment and control groups to gain a further understanding of observed behavior around the time of first-time FBAR filing.

We use this cohort-based data structure to run a flexible DD model of the form

$$\ln(y_{it}) = \alpha + \omega_i + \delta_t * agegrp_i + X_{it} + \sum_{s>-m}^{S} \beta_s D_{it}^s + \varepsilon_{it}\,, \qquad (2)$$

where the D_{it}^s terms are dummy variables for each year relative to the event (first-time filing), $s \in \{-m, S\}$, and *m* is earliest year prior to the event, *s=0* in the year of the event and *S* is the last year observed following the event. Individual fixed effects, ω_i, and year fixed effects, δ_t, interacted with age groups are included as well. The interaction of year fixed effects with age groups helps to control for life-cycle wealth accumulation and career paths.[12] Under the assumption that aggregate shocks to the various age groups affect the treatment and control group in the same way before and after the event,[13] β_s represents the effect of the event on the individual's reported income s years prior to or post its occurrence. The coefficients of the event-time dummies can be interpreted as the difference between reported log income reported at time s and reported log income had the event not occurred. We use various sources of income as the outcome variable and, because we expect FBAR filing to be more closely related to capital income, we expect to observe the largest impacts for these sources of income. Our research design for the analysis of income reporting for OVD participants is very similar, and is described in the next section. To accommodate zeros and, in some cases, negative values of the dependent variable, we use the inverse hyperbolic sine transformation, which allows us to interpret coefficients in terms of percentages exactly as with the traditional log transform. Using a traditional log transformation and naively dropping zero and negative observations gives similar results.

[12] Age groups are defined as of year 2000 and are: 15-30 years, 31-40 years, 41-50 years, and 51-70 years. These correspond roughly to age quartiles in the data.

[13] This is a flexible version of the standard "parallel trends" assumption of difference-in-differences models.

7.1. Reported Income Response of OVD Participants

To establish the validity of our event study method, as well as to learn about reported income responses of admitted tax evaders upon the time of coming clean, we first use the method outlined above, focusing on cohorts of OVD participants. In this analysis, cohorts are defined based on the time of OVD participation and the control group consists of continuous FBAR filers who never participate in a voluntary disclosure program.

Table A.1 shows the coefficients, β_s, on the event-time dummies from the OVD version of Eq. (2) for various income sources. Figure 10 plots these coefficients, along with the corresponding 95 percent confidence intervals. The first panel shows results for reported interest income. We see that there is essentially no trend differences in reported and expected reported income prior to the time of participation, then a large increase in reported interest income for voluntary disclosure participants at the time of participation. We can interpret the point at t=0 as the difference between log reported interest in the year of participation and expected log reported income in that year had they not participated. We observe a 69% difference at t=0 and a 99% difference at t=1. For dividend income, at t=1 we see a difference between reported and expected income of 41%, and of 20% for capital gains income, increasing to 30% in t=3.

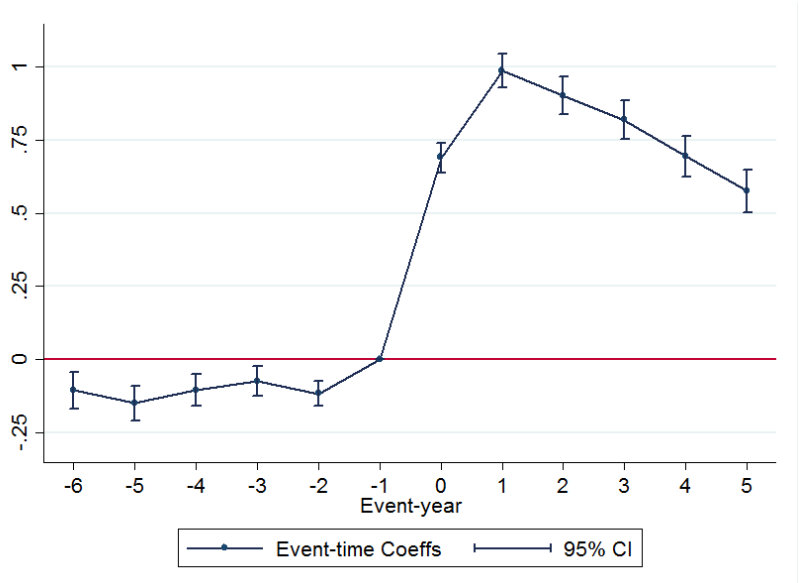
The patterns displayed for these capital income sources are consistent with what we would expect to find using this method, and give some intuition for what we might expect to observe when focusing on first-time filers. Prior to participating in the voluntary disclosure, tax evaders underreport capital income by not reporting capital income from foreign accounts located in countries that do not have any automatic information reporting. Upon participation in the voluntary disclosure, the evader comes clean and begins to report all, or more of, their true capital income, which is substantially higher than what they had been reporting previously (in the case of interest income, for example, almost 100% higher on average). After the voluntary disclosure, the individual continues to report the capital income from the sources previously unreported, and therefore continues to report substantially higher capital income.

We also report results for several other components of taxable income that should be largely unrelated to foreign account holdings, including wage income and income from pass-through entities (Form 1040 Schedule C for sole proprietors and Schedule E for partnerships and S corporations). None of these displays notable increases coincident with OVD participation. Although we do observe that wage income is increasing at a slightly faster pace among OVD participants than in the control group, we do not observe a discontinuous jump at the time of OVD participation. These results reinforce our interpretation of the capital income results as coming from increased tax compliance rather than some confounding factor.

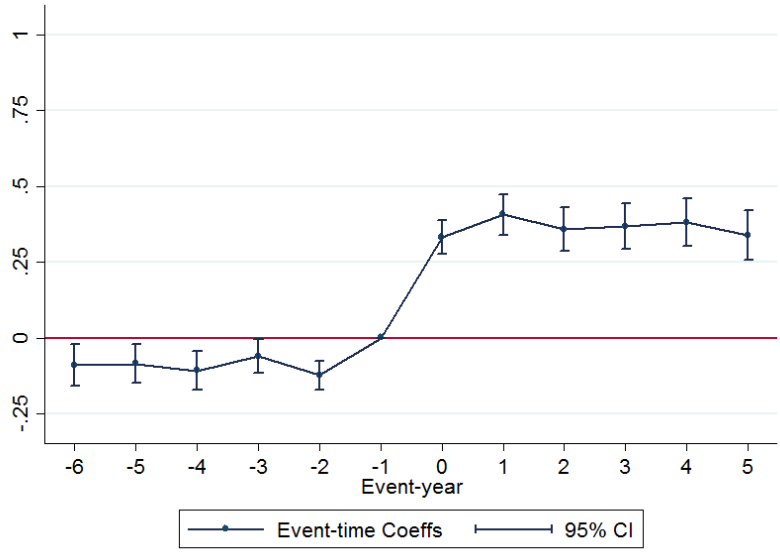
Finally, we report results for two total income definitions: adjusted gross income (AGI) and taxable income. We see a significant increase in both at the time of OVD participation, about 17% in AGI and 21% in taxable income. That these coefficients are smaller in magnitude reflects that capital income is only a fraction of total income, and the other determinants of income do not change around the time of OVD participation. That the increases are not as persistent as those for capital income suggests that the taxpayers could be making other adjustments to their reported income after participation.

Figure 10. Event Study of Reported Income for OVDP Participants

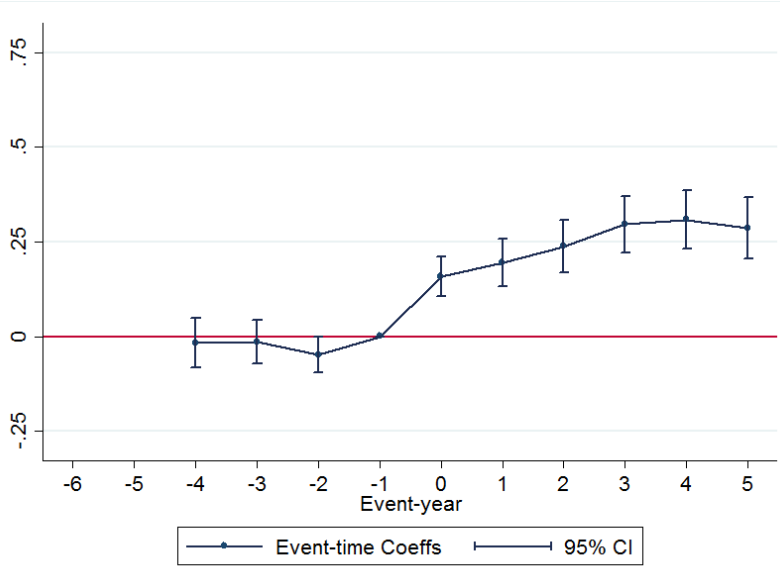
Panel 10.A. Interest Income



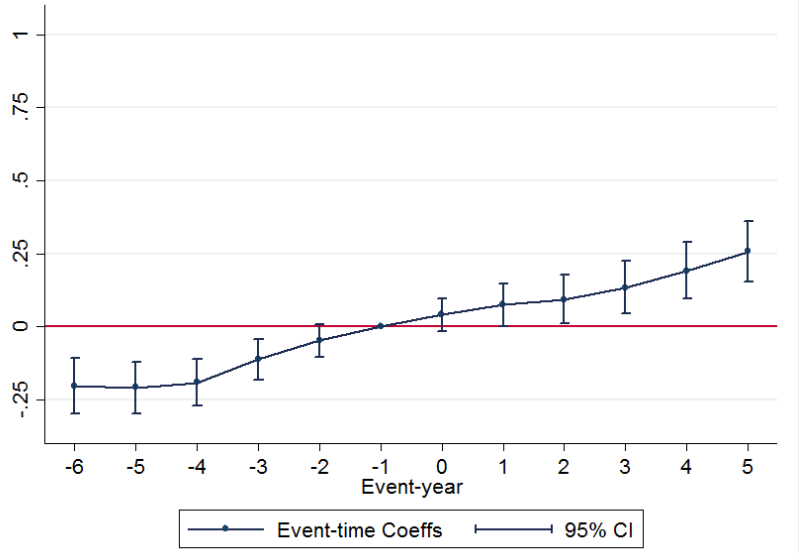
Panel 10.B. Dividend Income



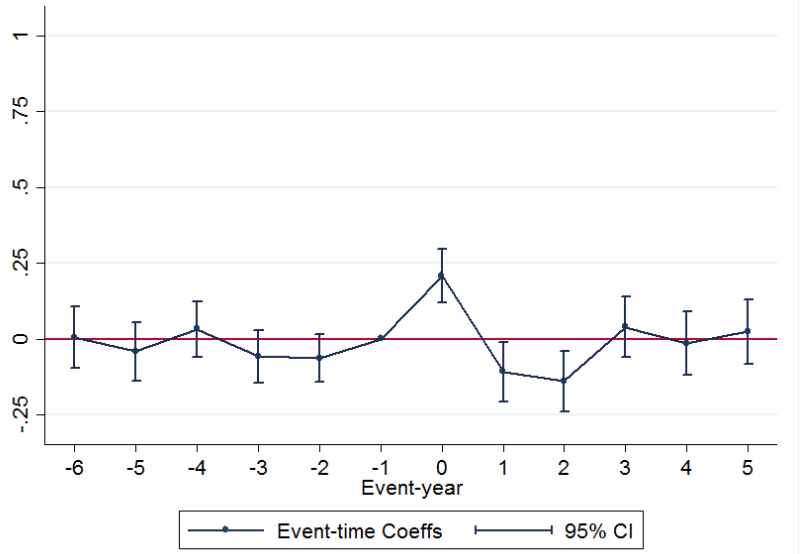
Panel 10.C. Capital Gains



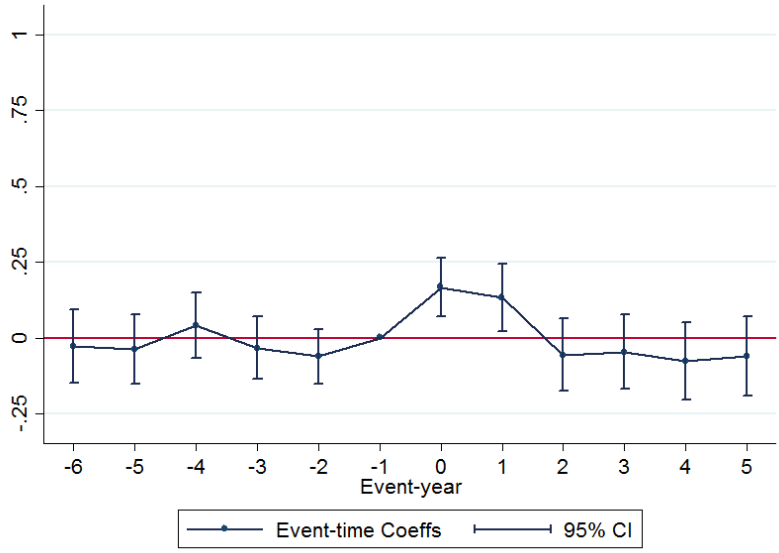
Panel 10.D. Wage and Salary Income



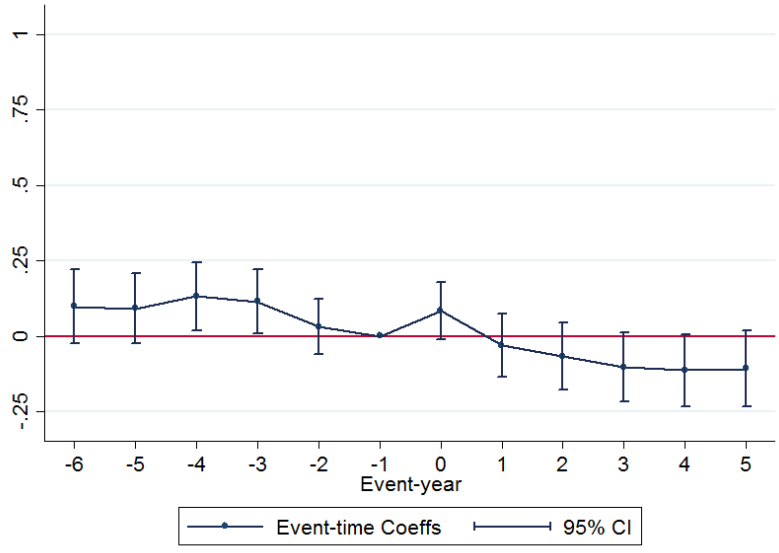
Panel 10.E. Taxable Income



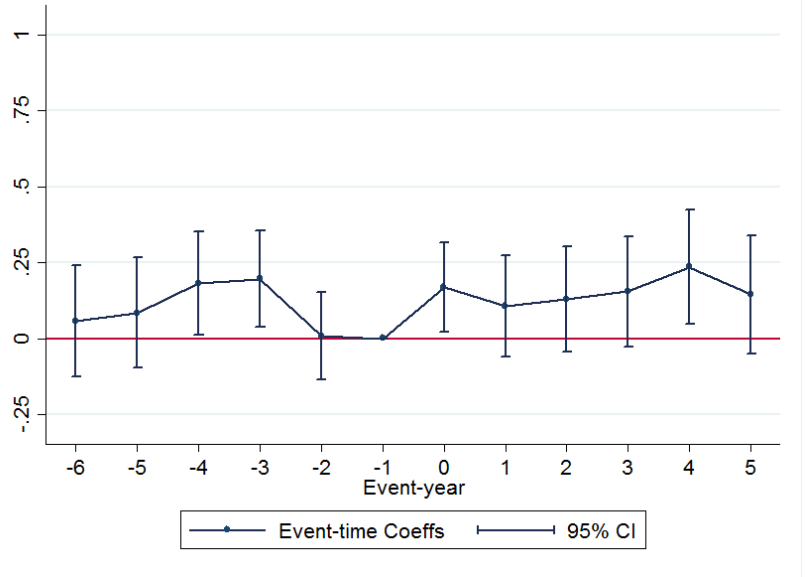
Panel 10.F. Adjusted Gross Income (AGI)



Panel 10.G. Schedule C Income



Panel 10.H. Schedule E Income



Notes: Figure 10 plots the coefficients on event-year dummies in the event-study regression for a given income source. Event-year 0 represents the tax-year associated with the year of OVD participation, the first tax-year we would expect to see a direct income reporting response associated with OVD participation. The 95% confidence interval is calculated from estimated standard errors clustered at the individual level. The outcome variable is an inverse hyperbolic sine transformation of a given income source such that point estimates can be interpreted using a log transformation. Capital gains income in Panel C includes realized gains and losses.

7.2. Reported Income Response of First-Time FBAR Filers

Having established that this research design can provide evidence of increases in reported capital income for OVD participants, whom we know to have evaded in the past, we now turn to the group of individuals we suspect contains a large number of previously non-compliant individuals[14]: first-time FBAR filers with U.S. addresses.[15] We therefore compare the qualitative and quantitative patterns observed in Figure 10 with the patterns around first-time FBAR filing constructed in exactly the same way.

First, Table 3 displays summary income measures for the treatment and control groups in the first-time filer regression sample. The mean and median income is higher for the control group than for the treatment group for each income source. Both the treatment and control groups have very high income on average, with average AGI for each group being over half of a million dollars. The median is substantially lower, but still relatively high at over $125,000. The mean AGI being substantially larger than the median shows that there are some very high income individuals in this sample. The average of capital income sources, interest, dividends and realized capital gains and losses, combined is more than $100,000 for the treatment and control group, but again the medians are substantially lower.

Table 3: Summary Statistics for First-time Filers

	Mean			Median		
Income Type	**All**	**Control**	**First-time**	**All**	**Control**	**First-time**
Interest	51,652	58,620	39,079	1,685	2,597	639
Dividends	62,273	76,685	36,271	960	1,793	197
Capital Gains	46,836	57,645	27,152	302	625	39
Wage and Salary	275,052	291,650	245,103	100,000	100,948	98,588
Sch C Income	12,528	13,012	11,654	0	0	0
Sch E Income	79,096	87,257	64,371	0	0	0
Taxable Income	543,381	576,474	483,669	107,140	115,128	95,716
AGI	599,933	631,526	542,929	139,751	148,342	126,871
Number of Individuals	1,042,564	670,793	371,771	1,042,564	670,793	371,771

Notes: Table 3 shows mean and median incomes by source for the treatment group of first-time filers and control group of continuous filers used in the event-study regression analysis. Capital gains includes realized capital gains and losses. All statistics are taken in event-year t-1.

[14] Noncompliance may come from explicit evasion, not reporting taxable income for lack of knowledge of reporting responsibilities, or from underreporting of taxable income.
[15] This corresponds to the "treatment" group used in Section 6.

Moving to the event study results, Table A.2. shows the coefficients, β_s, for first-time filing cohorts, and Figure 11 plots the coefficients and 95% confidence intervals for the various sources of income. In most respects, the patterns are very similar to those observed for OVD participants, with large increases in reported capital income at the time of first-time FBAR filing and virtually no changes in other types of income.

The magnitudes of the estimated percentage change for capital income components are slightly smaller compared to the OVD group, but perhaps surprisingly similar given that the increases seen for voluntary disclosure program participants consist entirely of admitted tax evaders, and the group of first-time filers almost certainly contains some people who were not previously evading. The estimated increase is 64% on average by year t+1 for interest income, is 28% by t+3 for dividend income and is 18% in year t+2 for capital gains income. These are all at least 60% of the observed increase for voluntary disclosure program participants, although the number of first-time filers is much larger than the number of voluntary disclosure participants. We also observe little to no change in other determinants of taxable income, including wages and salary income, income of pass-through entities, or total deductions.

One might be concerned with the small jump in average reported wage and salary income at event-time t=0. Appendix Figure A1 shows event-study regression results for a subset of first-time filers who never took a foreign earned income exclusion on their tax return during the sample period. An individual is eligible for a foreign income exclusion if they are working in a foreign country, are a tax resident of that country and meet a residence test for that country.[16] If we restrict our sample to only include first-time filers who never took a foreign exclusion restriction, we find that there is no estimated increase in wage income at event-year t=0; the time pattern of reported wage and salary income is flat across the time of first-time filing. Yet, this conditioning has essentially no impact on the capital income results; the patterns and magnitudes of capital income reporting are almost identical whether we condition on taking a foreign income exclusion or not. This provides evidence

[16] An individual meets the residence test if they are either a bona fide resident of the country continuously for an entire tax year or they are physically present in the country for at least 330 days in a 12 month period. Qualifying for the foreign income exclusion allow you to exclude from your gross income an amount up to $92,900 in 2011, and which is adjusted annually for inflation.

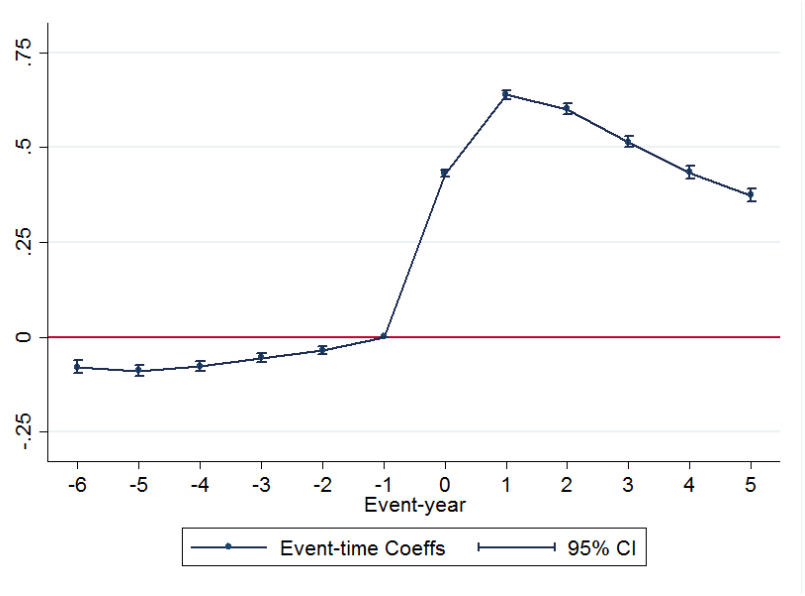
that the slight increase in reported wage income among first-time FBAR filers is driven by a small group of first-time filers who work abroad for significant periods and likely have very legitimate reasons to hold foreign accounts, but the capital income results among first-time filers are not being driven by this group. Therefore we are confident that the capital income reporting behavior among first-time filers is not driven by coinciding changes in wage and salary income.

With respect to the validity of the research design we observe that, unlike with the OVD cohorts, the difference in reported income is not precisely zero in the pre-period, prior to first-time filing. This is perhaps unsurprising, given that some portion of first-time FBAR filers will be legitimately opening new accounts. In this case, we might expect that the time of first-time filing contains information about the income path even prior to filing. Nevertheless, we see a large, sharp jump in capital income at the time of first-time filing, which is a clear break from trend for each of these sources of income. The size of this jump suggests that the magnitude of the bias from slightly divergent pre-trends between the treatment and control groups is likely small. An exception to this reasoning pertains to the results for taxable income and AGI. Given the small size of the year-zero coefficients for these incomes, we remain somewhat uncertain about their magnitudes. Nevertheless, the patterns in Figure 11 do suggest a slight uptick in AGI and taxable income, which is roughly consistent with 1) what we observed for OVD participants and 2) the smaller overall magnitude of the interest and dividend income effects for FBAR filers relative to OVD participants. The different pre-trends for AGI and taxable income are driven especially by individuals with negative AGI; excluding them yields slightly larger and significantly more persistent effects in the post period.

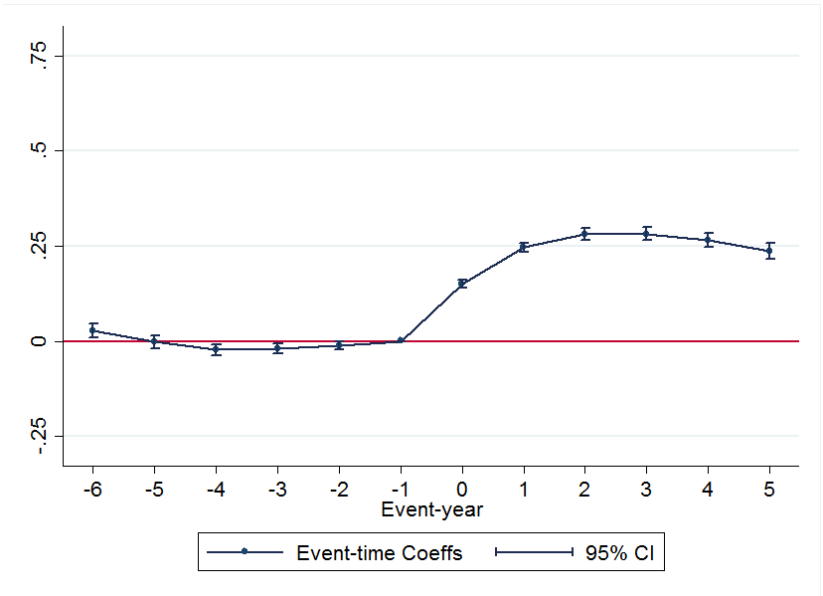
We repeat this analysis for the 2009-2011 cohorts only, as those are the cohorts that correspond to the period following the increased enforcement initiatives. The results are almost identical to those presented in Figure 11, which supports the idea that the dramatic increase in first-time filing starting in 2009 resulted in a substantial increase in reported income and was not purely a result of increased awareness of FBAR filing requirements. If the observed trends in FBAR filing post-2008 were a result of tax-compliant individuals becoming aware of their FBAR filing requirements, we would expect a large portion of first-time FBAR filers in this period to have been already reporting all their capital income, and therefore to observe small increases in reported income at the time of filing. This is not what we observe. The results of this exercise are shown in Appendix Figure A.2.

Figure 11. Event Study of Reported Income for First-Time FBAR Filers

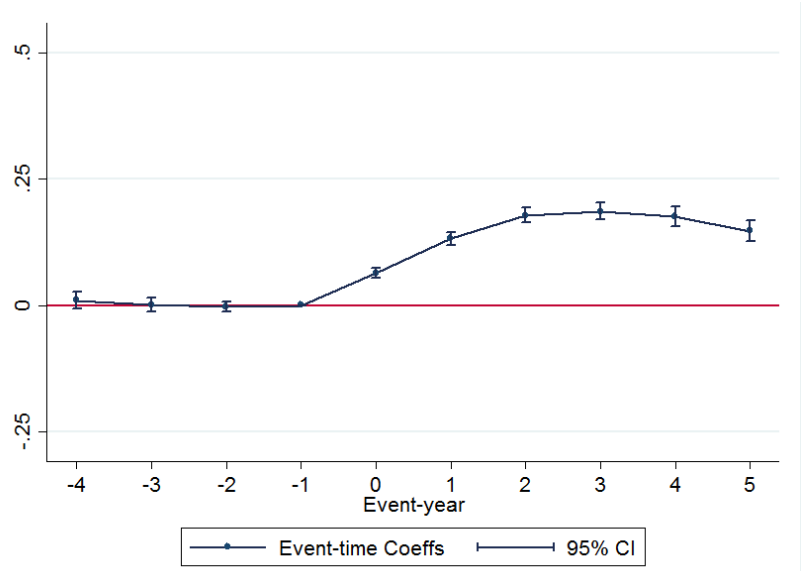
Panel 11A. Interest Income



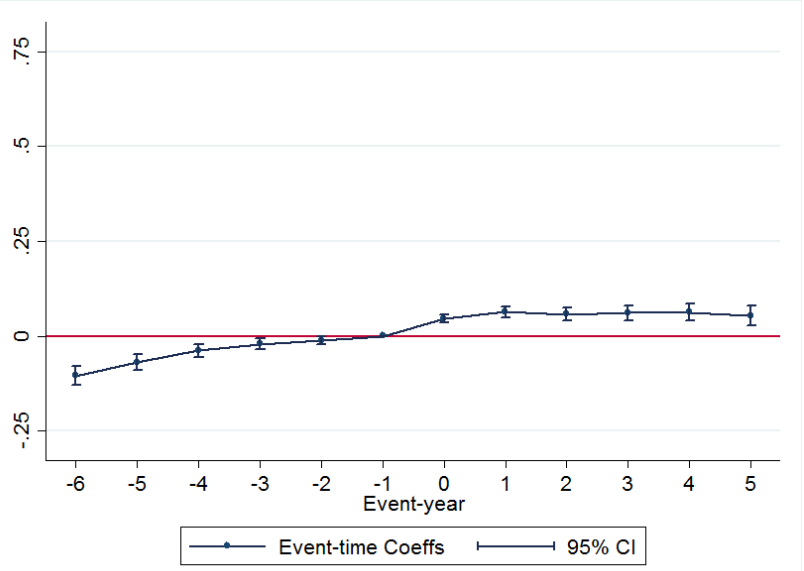
Panel 11.B. Dividend Income



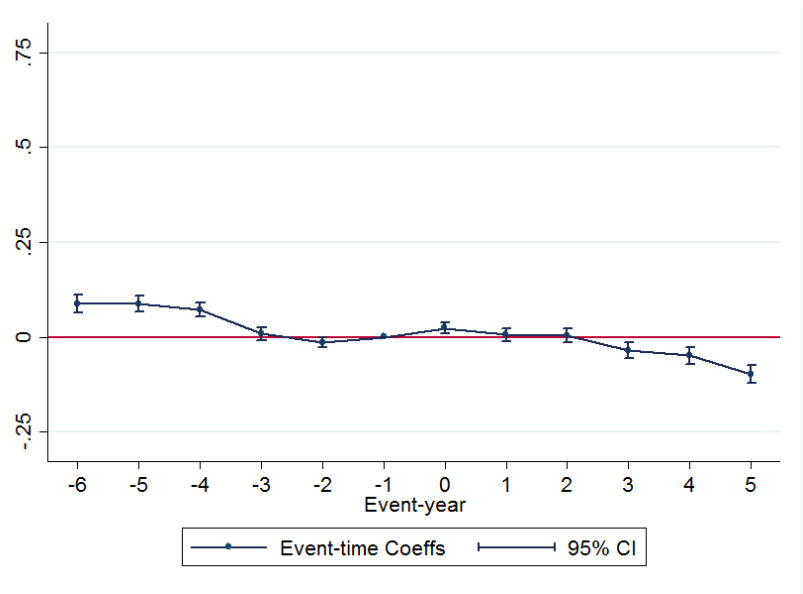
Panel 11.C. Capital Gains



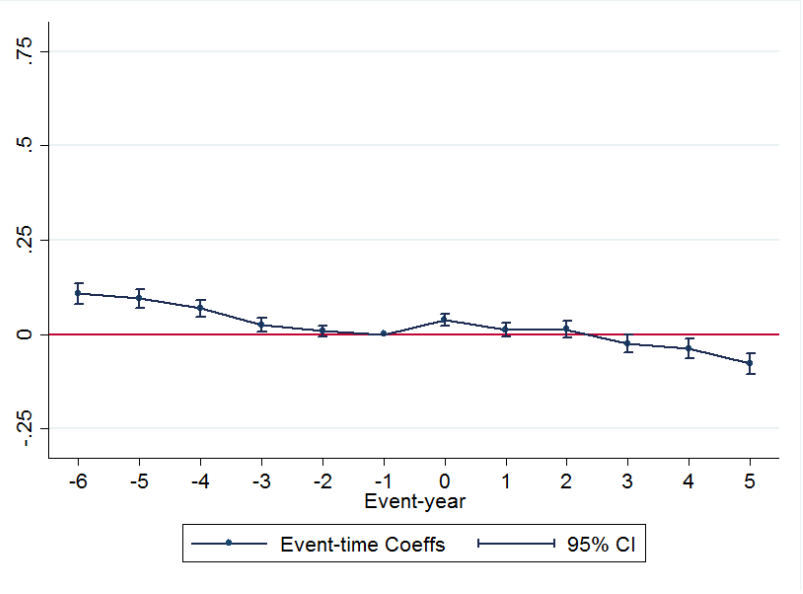
Panel 11.D. Wage and Salary Income



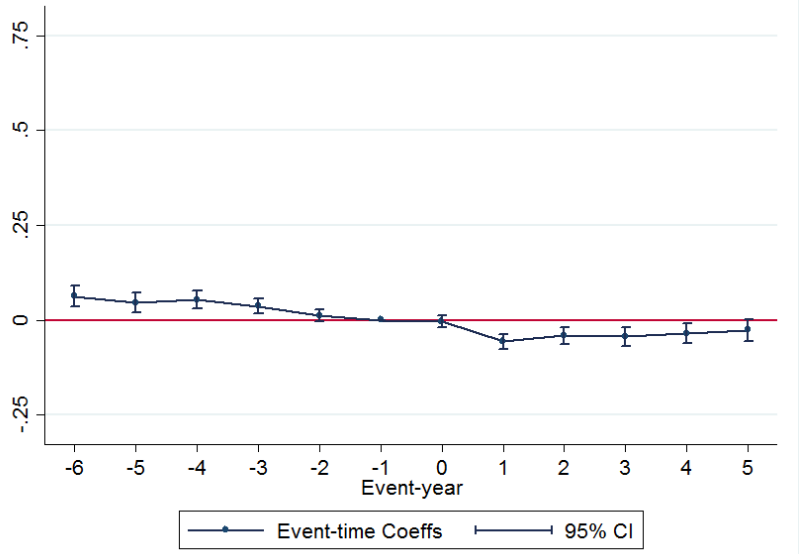
Panel 11.E. Taxable Income



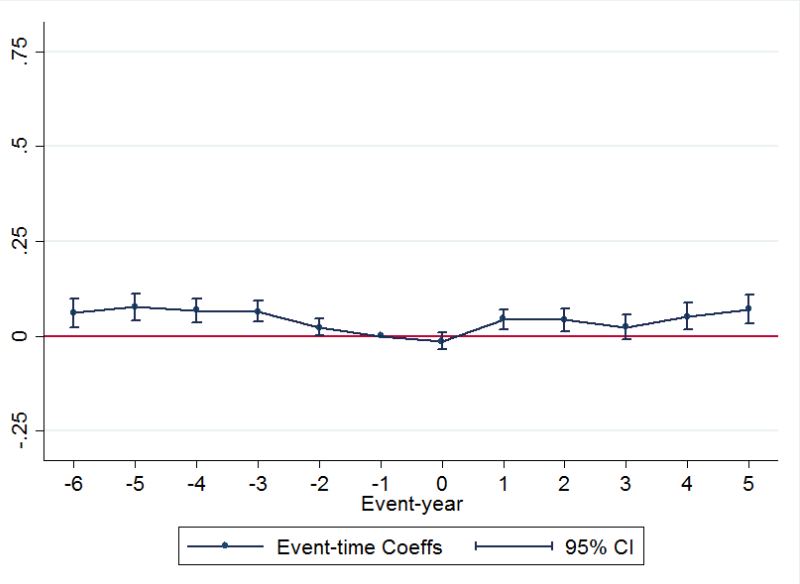
Panel 11.F. Adjusted Gross Income (AGI)



Panel 11.G. Schedule C Income



Panel 11.H. Schedule E Income



Notes: Figure 11 plots the coefficients event-year dummies in the event-study regression for a given income source. Event-year 0 represents the tax-year associated with the year of first-time FBAR filing. The 95% confidence interval is calculated from estimated standard errors clustered at the individual level. The outcome variable is an inverse hyperbolic sine transformation of a given income source such that point estimates can be interpreted using a log transformation. Capital gains in Panel C include realized gains and losses.

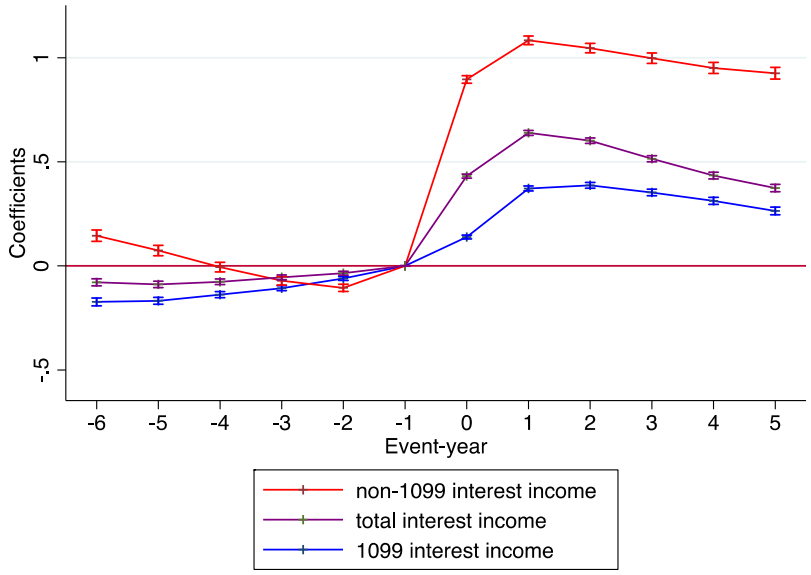
We next provide additional evidence that the increases in reported interest and dividend income described in Figure 11 came from income in foreign accounts. We do this using interest income reported by domestic financial institutions on Forms 1099-INT and 1099-DIV. For both interest and dividends, we calculate the total 1099 income as the sum of the 1099 income received by the taxpayer (or the taxpayer's spouse for married taxpayers filing jointly), and we impute reported income from foreign sources as the difference between reported total income and 1099 income.[17] We then estimate our event study specification on each type of income separately. We do not analyze capital gains here, as directly held capital gains and losses in domestic accounts are not subject to complete information reporting until 2011 (and even then only for assets acquired after January 1, 2011).

Figure 12 depicts the results. In Panel 12A we observe that the estimated effect on overall reported interest is disproportionately driven by income *not* appearing on 1099-INT. We do observe a slight increase in 1099-INT income, especially in the year after first-time FBAR filing. One potential explanation for this increase is repatriation of assets in previously evasive accounts, which would cause an increase in interest income from U.S. accounts. Panel 12B repeats this exercise for dividend income. Here, the differences between 1099 income and non-1099 income are slightly less stark than for interest income, but nevertheless present and significant. The delayed effect on 1099 income, suggestive of repatriation, is even more evident in the analysis of dividend income, which derives partly from the less divergent pre-period trends in dividend income.

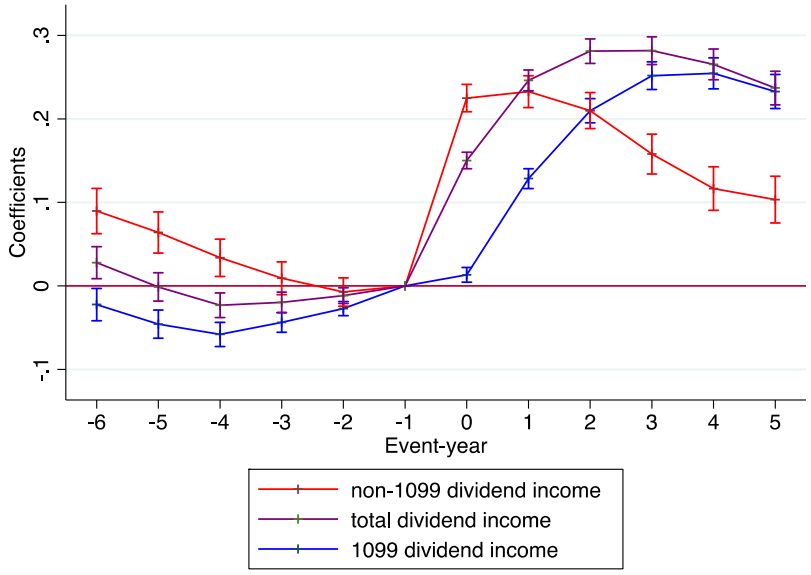
[17] There is third-party reporting for assets held in (domestic or foreign) pass-through entities on various Schedule K1's. As pass-through entities can be closely held and/or located offshore, it is unclear if this type of third-party reporting might be influenced by enforcement. However, adding income on K1's to 1099 income for our concept of third-party reported income has no qualitative effect on the results.

Figure 12. Decomposing Reported Income in Event Study of First-Time Filers

Panel 12A. Interest Income



Panel 12B. Dividend Income



Notes: Figure 12 repeats the exercise of Figure 11 for interest and dividend income, splitting these types of income into income reported by domestic financial institutions (on Forms 1099-INT and 1099-DIV) and income reported by the taxpayer but not reported by domestic financial institutions. Event-year 0 represents the tax-year associated with the year of first-time FBAR filing. The 95% confidence interval is calculated from estimated standard errors clustered at the individual level. The outcome variable is an inverse hyperbolic sine transformation of a given income source such that point estimates can be interpreted using a log transformation.

7.3. Reported Income Response among First-Time FBAR Filers Reporting High Value Accounts.

We saw in Figure 4 that there was a disproportionate increase in FBAR filing among those reporting accounts of greater than $1 million. Next we conduct the event study analysis for the group of first-time FBAR filers reporting a high value account. We define the treatment group within each cohort as the subset of first-time filers who report an account of greater than $1 million in the year of first-time filing. To create a more appropriate comparison, we define the control group as the subset of continuous filers who report an account of greater than $1 million at event-year t-4, the first-year of selecting into the control group for a given cohort.

Table 4 shows summary income measures for the high-value account treatment and control groups. This is a very high income sample. The average AGI for the treatment and control groups is about $3 million. The median AGI is substantially lower, yet still quite high, at $494,460 for the control group and $366,060 for the treatment group. That the mean is so much larger than the median shows that this subset contains some extremely high income households. The average of all capital income sources is about $1.5 million for the control group, and just under $1 million for the treatment group; again the median is substantially smaller. Finally, it is interesting to note that the mean wage and salary income is very large, at over $850,000 for both the treatment and control group, but the median is lower than that for the baseline first-time filers sample, as seen in Table 3. This sample contains some extremely high wage individuals, but also individuals whose income is primarily derived from other sources.

Figure 13 shows the event study results for the group of large account holders. The patterns of capital income reporting are very similar to those for the entire sample, with larger point estimates on years t=0 and subsequent years. The point estimates for years t=0 and t=1 are quite similar to the estimates for the OVD sample. For interest income, the point estimates for large account holder in years t=0 and t=1 are 0.64 and 0.90 respectively, this is compared to estimates of 0.69 and 0.99 for OVD participants. Yet, it is important to note that the pre-trend is not as flat for this group, showing a relatively increasing pattern among the treatment group. Therefore, we must interpret the relative point estimates for interest income with caution, as the steeper pre-trend will imply an upward bias in the estimated compliance response among this group. Yet, the pattern is clear and

the bias will be small relative to the reporting response at t=0 and afterward. For dividend income the pre-trend is flat and the point estimates are 0.32 and 0.50 in years t=0 and t=1 for the large account sample, compared to 0.33 and 0.41 for the OVD sample. The results are similar for realized capital gains and losses. Panel 13D shows the results for wage and salary income. There is no evidence of a confounding increase in reported wage and salary income at the time of first-time filing. In sum, when focusing on the group of first-time filers who report high value accounts, we find the same pattern among reporting pattern consistent with a tax compliance response at the time of first-time filing, with some evidence of a larger reporting response among this group, which is very high income on average.

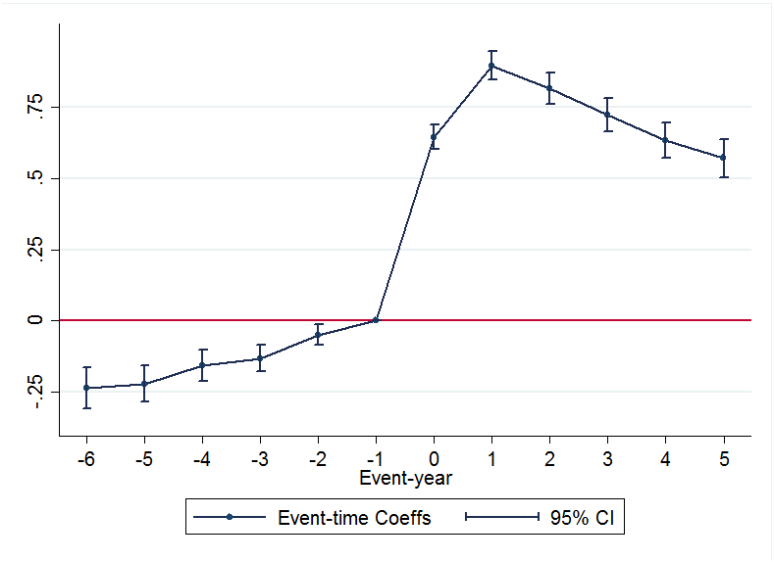
Table 4. Summary Statistics, First-time Filers, Large Account Sample (>$1 million)

	Mean			Median		
Income Type	**All**	**Control**	**First-time**	**All**	**Control**	**First-time**
Interest	399,529	425,548	349,813	32,976	44,815	11,912
Dividends	519,246	608,996	347,748	25,198	35,642	8,395
Capital Gains	380,508	457,484	233,419	9,672	15,304	2,597
Wage and Salary	888,350	874,313	915,172	79,154	62,217	99,123
Sch C Income	50,875	43,525	64,922	0	0	0
Sch E Income	477,195	526,427	383,122	0	0	0
Taxable Income	2,900,695	2,789,745	3,112,702	344,568	377,493	278,167
AGI	3,140,893	2,977,579	3,452,960	448,038	494,460	366,069
Number of Individuals	44,955	29,511	15,444	44,955	29,511	15,444

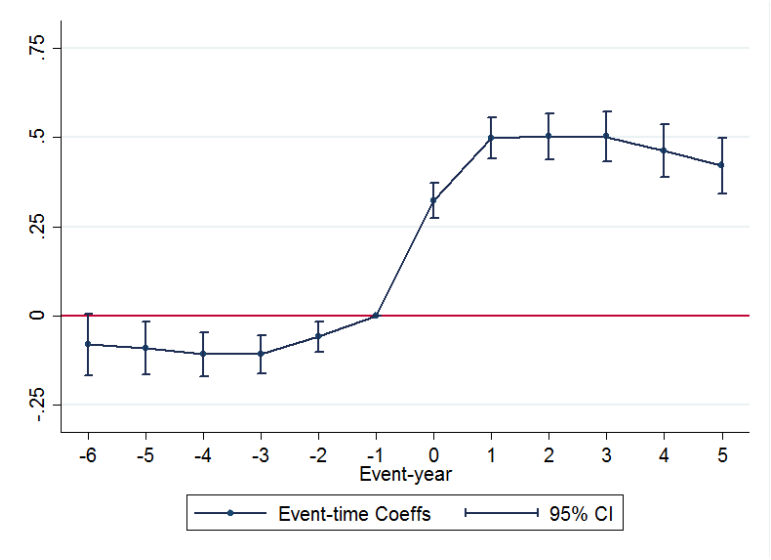
Notes: Table 4 shows mean and median incomes by source for the treatment and control groups used in the analysis of first-time filers reporting large accounts (>$1 million). The treatment group is first-time filers reporting an account of >$1 million on their FBAR in the year of first-time filing and the control group is continuous filers reporting an account of >$1 million in event-year t-4, the first year of selecting into the continuous filer sample for a given cohort. Capital gains includes realized capital gains and losses. All statistics are taken at event-year t-1.

Figure 13. Event Study of Reported Income, First-time Filers Reporting Accounts >$1 million

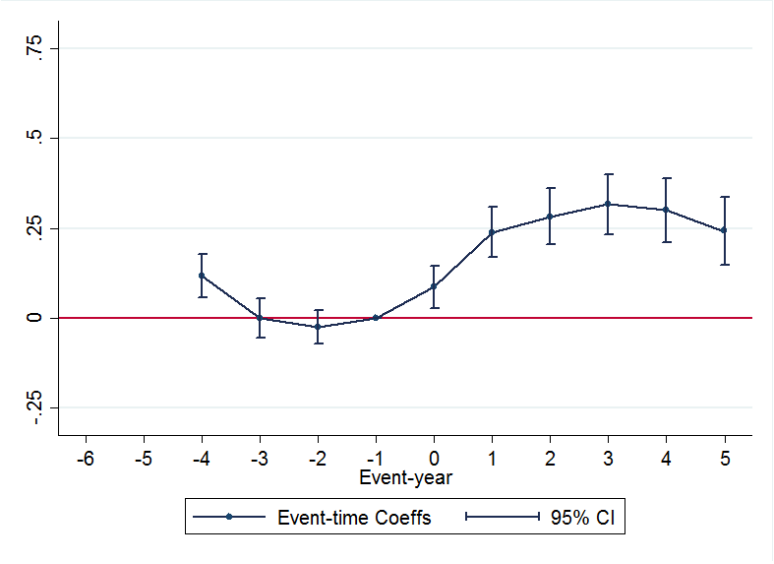
Panel 13A. Interest Income



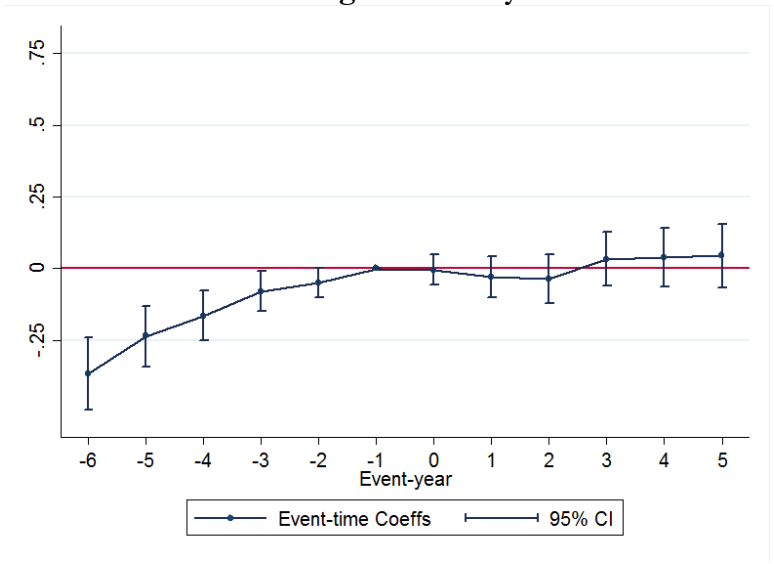
Panel 13B. Dividend Income



Panel 13C. Realized Capital Gains and Losses



Panel 13D. Wage and Salary Income



Notes: Figure 13 plots the regression coefficients on the event-time dummies for the subset of first-time filers who report an account with maximum value >$ 1million on their newly filed FBAR. The control group consists of the subset of continuous filers who report an account with value >$1 million in the year of selecting into the control group, or three years prior to the cohort year. Capital gains in Panel C include realized capital gains and losses.

8. Quiet Disclosures and First-Time Filing

The previous section studied whether those who begin filing FBARs for the first-time have patterns of reported income consistent with quiet disclosure--reporting income that should have been reported previously. This section addresses the extent to which individuals used amended filings of previously filed Form 1040s to report income that should have been reported, without participating in a voluntary disclosure program or paying required penalties. To investigate this channel, we use a model similar to equation (2), but with a different dependent variable.

$$\text{amend}_{it} = \alpha + \omega_i + \delta_t * agegrp_i + X_{it} + \sum_{s>-m}^{S} \beta_s D_{it}^s + \varepsilon_{it} \qquad (3)$$

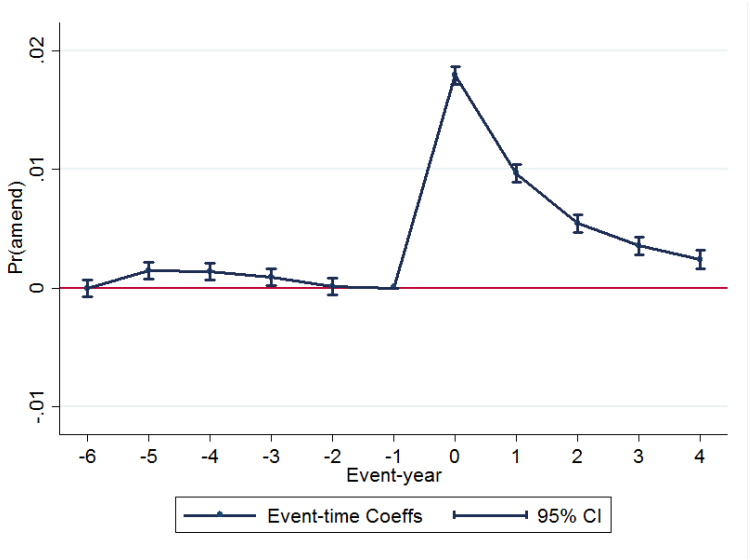
The dependent variable $amend_{it}$ is an indicator for filing an amended Form 1040 for one of the last four years in year *t*. It is equal to one if the individual files an amended Form 1040 in year *t*, and zero otherwise. This a linear probability model, so the coefficients on the event-time dummies can be interpreted as the percentage point increase in the probability of filing an amended Form 1040 relative to the expected probability had the event not happened. If people were underreporting prior to first-time filing, and begin to quietly disclose unreported income at the time of first-time filing, we would expect to see an increase in the probability of filing an amended return at the time of filing the FBAR.

8.1. First-Time FBAR Filing and Amended Form 1040s

In our primary specification we focus on the baseline cohorts around first-time FBAR filing. Figure 14 depicts the results from estimating Equation (3) for first-time filers, plotting the coefficients on the event-time dummies and the corresponding 95 percent confidence intervals. The observed pattern of amended return filing is quite clear. There is essentially no differential probability in filing an amended 1040 prior to the time of FBAR filing, and a substantial increase in the probability of filing an amended return at the time of filing the first FBAR. At the time of filing, first-time filers are two percentage points more likely to submit an amended 1040 than expected had they not begun filing an FBAR. This represents a 200% increase in the probability of filing an amended 1040, as the mean of the outcome variable in the reference period (*t-1*) is 1 percent. This result therefore suggests

that roughly two-thirds of individuals filing amended 1040's at the same time they file an FBAR for the first time are quiet disclosers.

Figure 14. Probability of Amending Returns Relative to First-Time Filing



Notes: Figure 14 plots the regression coefficients on the event time dummies from a linear probability model where the outcome variable is an indicator for amending a 1040 from one of the previous four years in year *t*. Confidence Intervals are derived from estimated standard errors which are clustered at the individual level.

Another implication of this finding is that the majority of previously non-compliant taxpayers appear to not file amended returns when they begin reporting their foreign accounts. The findings from Section 7 imply that a substantial portion of first-time filers were likely underreporting their capital income from foreign accounts. That we only observe (only) a 2 percentage point increase in the probability of amending income reports at the time of filing suggests that large portion of new compliers are not amending prior returns. This finding suggests that when considering the costs and benefits of enforcement policies such as those discussed in this paper, it is important to consider the evidently large "compliance" effect of those who disclose an account quietly but without amending prior returns (and paying back taxes), a channel that was not well understood previously.

9. Conclusion

In recent years many countries have been cracking down on tax evasion achieved via foreign accounts, through enhanced cross-country information exchange and taxpayer reporting requirements as well as increased resources devoted to enforcement and larger penalties for detected evasion, sometimes combined with voluntary disclosure programs. These programs are costly, and for the most part both their effectiveness in reducing evasion and other consequences have been largely unknown. This paper offers the first comprehensive analysis of the consequences of one set of foreign account tax compliance initiatives—U.S. policies beginning in 2008 to acquire information about U.S. account holders in certain foreign financial institutions, increased reporting requirements, and a series of voluntary disclosure programs.

Using administrative data from taxpayer reports of foreign bank accounts, tax returns, and voluntary disclosure participation, we find that these foreign enforcement initiatives increased the number of individuals reporting foreign accounts to the IRS by at least 19%, and the total amount of wealth disclosed by at least $75 billion. The newly disclosed accounts were disproportionately concentrated in tax havens; for example, the number of U.S. taxpayers residing in the United States reporting accounts in the Cayman Islands increased by almost 600% from 2008 to 2009, compared to a 7% increase for accounts in Germany. This pattern of response suggests that the increase in foreign account reporting at least partly reflected an increase in tax compliance.

Analyses of the micro tax-return-based data suggest that the reporting of new foreign accounts coincided with an average 63% increase in reported interest income for these individuals, a 25% increase in reported dividend income, and an 18% increase in reported capital gains income in the years immediately following reporting for those who never participate involuntary disclosure a voluntary disclosure program. In 2009 alone, as many as 41,000 individuals started disclosing foreign bank accounts and remitting taxes without ever admitting to past non-compliance, in order to avoid the substantial, although somewhat reduced, penalties associated with the voluntary disclosure programs. We document a sharp increase in amended Form 1040 (individual income tax) filings for years prior to the first foreign account report filed for individuals not participating in a voluntary disclosure program, further supporting that there was a significant number of "quiet" disclosures made to avoid the significant penalties that would be otherwise be due under the voluntary disclosure program. Critically, while we present compelling evidence of the use of quiet disclosures, we find that the majority of first-time filers do not amend their income

reports. Therefore, the large observed increases in reported capital income among first-time filers imply that quiet disclosures not accompanied by amended tax returns are likely a primary channel for non-compliers to start disclosing off-shore wealth and reporting the associated income.

On the whole, these results imply that the increase in tax compliance induced by this set of policy initiatives was much larger than suggested by official estimates based solely on information about tax and penalty payments made under the voluntary disclosure programs. This evidence of taxpayer response and revenue implications is one crucial piece of a comprehensive evaluation of enhanced enforcement that would also take into account the compliance costs and the availability of effective alternative policies to address the issue of noncompliance.

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Appendix Tables

Table A.1. Event Study of Reported Income for OVD Participants

VARIABLES	(1) ln(interest)	(2) ln(divividends)	(3) ln(capital gains)	(4) ln(taxable income)	(5) ln(agi)	(6) ln(wage)	(7) ln(C income)	(8) ln(E income)	(9) ln(deductions)
t-6	-0.105272***	-0.090121**	.	0.006055	-0.027494	-0.203089***	0.057929	0.098053	-0.113309***
	(0.031492)	(0.035433)	.	(0.051538)	(0.061738)	(0.048641)	(0.093853)	(0.062606)	(0.043585)
t-5	-0.148719***	-0.084430**	.	-0.041602	-0.037430	-0.208487***	0.084862	0.091933	-0.078822*
	(0.030120)	(0.033200)	.	(0.049712)	(0.058608)	(0.045130)	(0.092100)	(0.059632)	(0.044109)
t-4	-0.104795***	-0.107724***	-0.017156	0.032980	0.042087	-0.190936***	0.181676**	0.132262**	-0.150380***
	(0.027949)	(0.032137)	(0.033243)	(0.046783)	(0.055373)	(0.041398)	(0.087260)	(0.057332)	(0.040595)
t-3	-0.073513***	-0.060674**	-0.014147	-0.057824	-0.033293	-0.112105***	0.196535**	0.114651**	-0.048744**
	(0.025577)	(0.028073)	(0.029124)	(0.044314)	(0.052418)	(0.035714)	(0.081532)	(0.053631)	(0.023965)
t-2	-0.116279***	-0.123262***	-0.047767*	-0.063423	-0.060932	-0.047049	0.008361	0.031727	-0.018136***
	(0.021487)	(0.024162)	(0.024452)	(0.039349)	(0.045794)	(0.028651)	(0.073235)	(0.046326)	(0.006142)
t=0	0.689880***	0.331623***	0.158969***	0.207917***	0.166769***	0.040345	0.168127**	0.084705*	-0.016215***
	(0.025836)	(0.028023)	(0.026786)	(0.044898)	(0.049045)	(0.028348)	(0.075229)	(0.047913)	(0.005814)
t+1	0.986027***	0.406342***	0.195359***	-0.107901**	0.132826**	0.074061**	0.106832	-0.031351	-0.013891**
	(0.029967)	(0.033817)	(0.032348)	(0.050266)	(0.056681)	(0.037273)	(0.085143)	(0.053577)	(0.006618)
t+2	0.901766***	0.359318***	0.237898***	-0.139301***	-0.056085	0.093578**	0.128876	-0.065851	-0.005473
	(0.032226)	(0.036433)	(0.035838)	(0.051135)	(0.060908)	(0.042450)	(0.088115)	(0.056468)	(0.007238)
t+3	0.818503***	0.369195***	0.295760***	0.039845	-0.046313	0.134084***	0.154828*	-0.101523*	-0.001866
	(0.033856)	(0.038502)	(0.038063)	(0.051205)	(0.062439)	(0.046091)	(0.092226)	(0.058740)	(0.021141)
t+4	0.693553***	0.381768***	0.308732***	-0.014052	-0.075570	0.191459***	0.235802**	-0.113707*	-0.164981***
	(0.034763)	(0.039381)	(0.039408)	(0.053036)	(0.064993)	(0.049234)	(0.096215)	(0.061330)	(0.039380)
t+5	0.576226***	0.339678***	0.286326***	0.024036	-0.060169	0.256579***	0.145081	-0.107575*	-0.249752***
	(0.036910)	(0.041626)	(0.041515)	(0.053948)	(0.066421)	(0.052552)	(0.099291)	(0.064386)	(0.047075)
Observations	3,961,890	3,961,890	3,318,912	3,961,890	3,961,466	3,961,890	3,961,278	3,961,854	3,961,890
R-squared	0.716913	0.793354	0.808225	0.628444	0.527120	0.781479	0.488188	0.514799	0.420816
Individual FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard Errors Clustered at the Individual Level

*** p<0.01, ** p<0.05, * p<0.1

Table A.2. Event Study of Reported Income for First-Time FBAR Filers

VARIABLES	(1) ln(interest)	(2) ln(divividends)	(3) ln(capital gains)	(4) ln(taxable income)	(5) ln(agi)	(6) ln(wage)	(7) ln(C income)	(8) ln(E income)	(9) ln(deductions)
t-6	-0.079009***	0.027768***	.	0.087453***	0.107405***	-0.104506***	0.062838***	0.060958***	0.196567***
	(0.008607)	(0.009787)	.	(0.012303)	(0.013400)	(0.012195)	(0.014569)	(0.019562)	(0.011012)
t-5	-0.088923***	-0.001326	.	0.087784***	0.094423***	-0.069141***	0.045263***	0.076450***	0.220305***
	(0.007765)	(0.008649)	.	(0.011075)	(0.012200)	(0.010655)	(0.013314)	(0.017879)	(0.010330)
t-4	-0.076371***	-0.023228***	0.010187	0.071648***	0.068333***	-0.038703***	0.052764***	0.067635***	0.075544***
	(0.006900)	(0.007508)	(0.008986)	(0.009740)	(0.010869)	(0.009091)	(0.011956)	(0.016086)	(0.008596)
t-3	-0.054828***	-0.019720***	0.001860	0.008523	0.024777***	-0.020948***	0.036379***	0.064682***	-0.029812***
	(0.005941)	(0.006255)	(0.006939)	(0.008393)	(0.009376)	(0.007390)	(0.010419)	(0.014174)	(0.006650)
t-2	-0.035279***	-0.011760**	-0.003114	-0.015033**	0.009011	-0.011872**	0.012024	0.023135**	0.080544***
	(0.004756)	(0.004781)	(0.004946)	(0.006817)	(0.007485)	(0.005405)	(0.008488)	(0.011719)	(0.003774)
t=0	0.431389***	0.150153***	0.064104***	0.023218***	0.038051***	0.045825***	-0.003277	-0.013583	-0.055087***
	(0.004992)	(0.005010)	(0.005012)	(0.006942)	(0.007659)	(0.005413)	(0.008025)	(0.011303)	(0.002967)
t+1	0.639120***	0.246094***	0.132211***	0.005612	0.011592	0.063802***	-0.056486***	0.044239***	-0.049255***
	(0.005964)	(0.006351)	(0.006385)	(0.008353)	(0.009613)	(0.007286)	(0.009819)	(0.013384)	(0.003373)
t+2	0.601479***	0.281137***	0.178058***	0.003917	0.013073	0.057506***	-0.041005***	0.042138***	-0.038036***
	(0.006814)	(0.007485)	(0.007561)	(0.009447)	(0.010934)	(0.008907)	(0.011196)	(0.015113)	(0.003837)
t+3	0.514632***	0.281722***	0.186073***	-0.035608***	-0.025413**	0.060771***	-0.043549***	0.023409	0.098468***
	(0.007579)	(0.008485)	(0.008609)	(0.010506)	(0.012247)	(0.010355)	(0.012456)	(0.016758)	(0.005563)
t+4	0.434206***	0.265222***	0.175915***	-0.048602***	-0.037438***	0.062922***	-0.035478***	0.051710***	0.196745***
	(0.008259)	(0.009386)	(0.009546)	(0.011302)	(0.013194)	(0.011662)	(0.013597)	(0.018278)	(0.007262)
t+5	0.373818***	0.237018***	0.147426***	-0.098510***	-0.077947***	0.053705***	-0.026552*	0.070405***	0.048832***
	(0.008965)	(0.010275)	(0.010473)	(0.012162)	(0.014114)	(0.012882)	(0.014645)	(0.019532)	(0.009249)
Observations	9,443,505	9,443,505	7,632,705	9,443,505	9,442,650	9,443,505	9,443,442	9,442,385	9,443,505
R-squared	0.722747	0.797386	0.814911	0.607612	0.511080	0.769542	0.499710	0.480981	0.439406
Individual FE	YES	YES	YES	YES	YES	YES	YES	YES	YES

Standard Errors Clustered at the Individual Level

*** p<0.01, ** p<0.05, * p<0.1

Table A.3. Probability of Amending Returns Relative to First-Time Filing

VARIABLES	(1) amend
t-6	-0.001730***
	(0.000358)
t-5	-0.000052
	(0.000362)
t-4	0.001456***
	(0.000362)
t-3	0.001368***
	(0.000363)
t-2	0.000922**
	(0.000367)
t=0	0.000130
	(0.000356)
t+1	0.017912***
	(0.000389)
t+2	0.009647***
	(0.000384)
t+3	0.005437***
	(0.000383)
t+4	0.003558***
	(0.000394)
t+5	0.002420***
	(0.000410)
Observations	11,767,748
R-squared	0.138858
Individual FE	YES
Model	LPM

Standard errors clustered at the individual level

*** p<0.01, ** p<0.05, * p<0.1

Table A.4. Composition of FBAR filers by Year

Table: Composition of FBARs Filed by Year

	OVDI/P Participants		Non-Amended FBARs		Amended FBARs		All Individual Filed FBARs		Other FBARs		
Year	FBARs	% of all FBARs	FBARs	% of all FBARs	FBARs	% of all FBARs	FBARs	% of all FBARs	FBARs	% of all FBARs	All Filed FBARS
2000		0.0%	135968	84.4%	9	0.0%	135977	84.4%	25127	15.6%	161104
2001	1224	0.7%	143686	84.5%	3940	2.3%	148850	87.5%	21203	12.5%	170053
2002	1379	0.7%	155771	84.7%	5928	3.2%	163078	88.6%	20923	11.4%	184001
2003	1473	0.7%	168067	85.1%	7301	3.7%	176841	89.5%	20687	10.5%	197528
2004	1618	0.8%	178802	84.4%	9380	4.4%	189800	89.6%	22073	10.4%	211873
2005	1975	0.7%	230841	85.0%	10215	3.8%	243031	89.5%	28475	10.5%	271506
2006	2034	0.7%	240487	84.6%	10265	3.6%	252786	88.9%	31446	11.1%	284232
2007	2202	0.7%	263753	84.7%	11204	3.6%	277159	89.0%	34204	11.0%	311363
2008	2367	0.7%	275848	81.7%	12910	3.8%	291125	86.2%	46419	13.8%	337544
2009	13779	2.8%	305251	61.6%	48407	9.8%	367437	74.2%	127738	25.8%	495175
2010	33020	6.7%	335452	68.3%	40616	8.3%	409088	83.2%	82351	16.8%	491439
2011	21276	4.7%	320664	71.4%	22872	5.1%	364812	81.3%	84019	18.7%	448831

Table A5. First-time Filers Taking a Foreign Income Exclusion

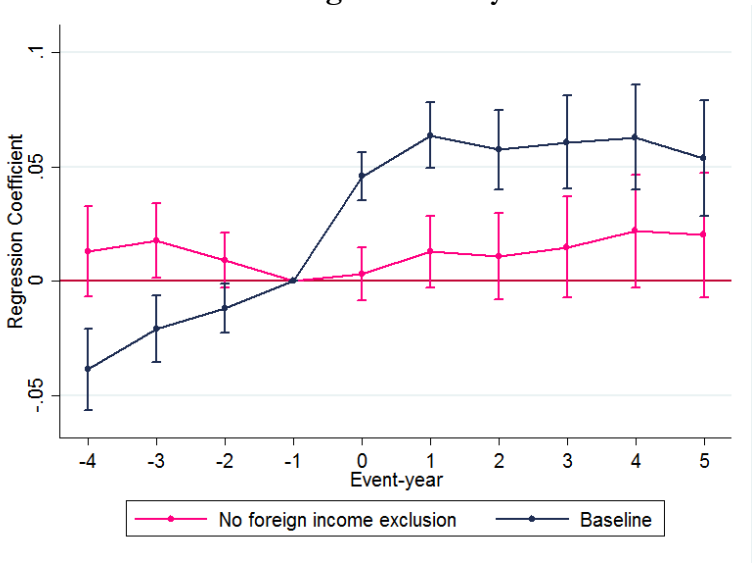
	For. Excl Restriction			
Cohort	**Never**	**Yes**	**Total**	**Percent**
2007	35,852	14,226	50,078	28%
2008	41,391	14,266	55,657	26%
2009	73,640	16,283	89,923	18%
2010	62,773	14,368	77,141	19%
2011	60,018	12,206	72,224	17%

Notes: Table A5 shows the composition of first-time filers by taking a foreign earned income exclusion by cohort. Never represents first-time filers who never take a foreign income exclusion on their tax return during the sample period. "Yes" are first-time filers who took a foreign income exclusion at some point during the sample period, and percent is the percent of first-time filers in a given cohort who ever took a foreign earned income exclusion.

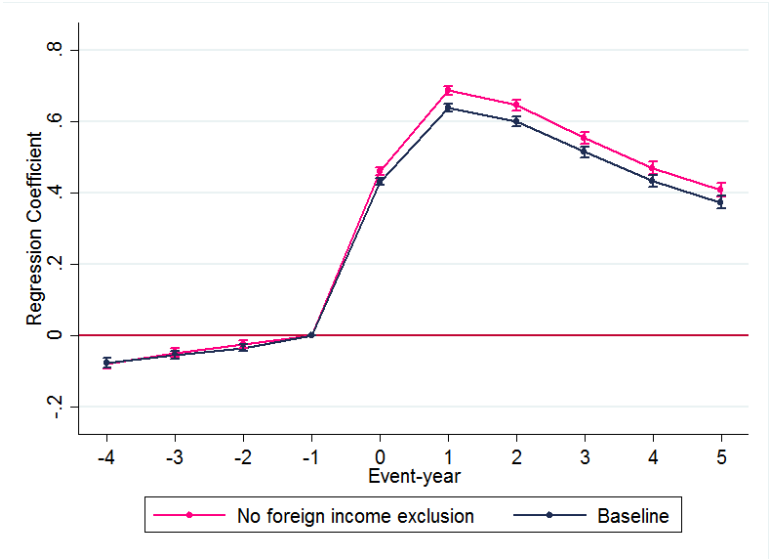
Appendix Figures

Figure A1. Event Study of Reported Income, No Foreign Income Exclusion

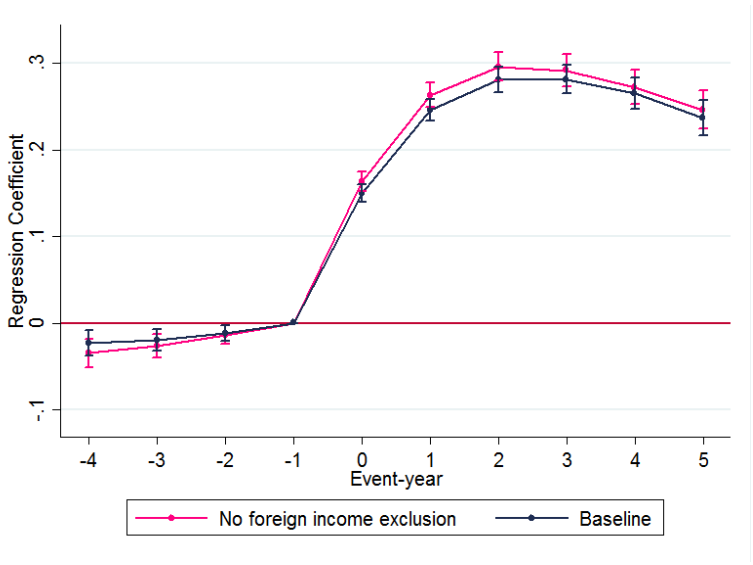
Panel A1.A. Wage and Salary Income



Panel A1.B. Interest Income



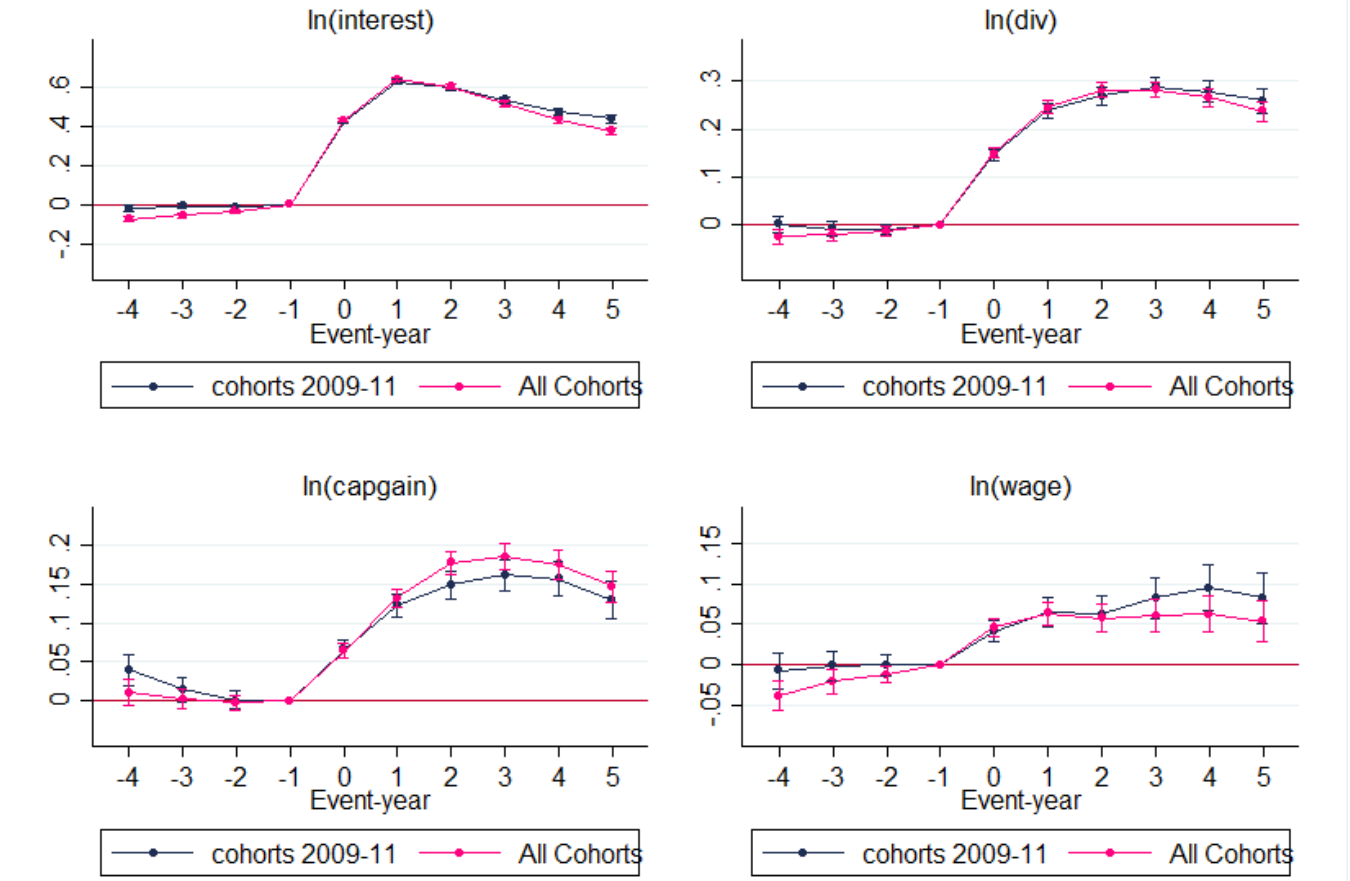
Panel A1.C. Dividend Income



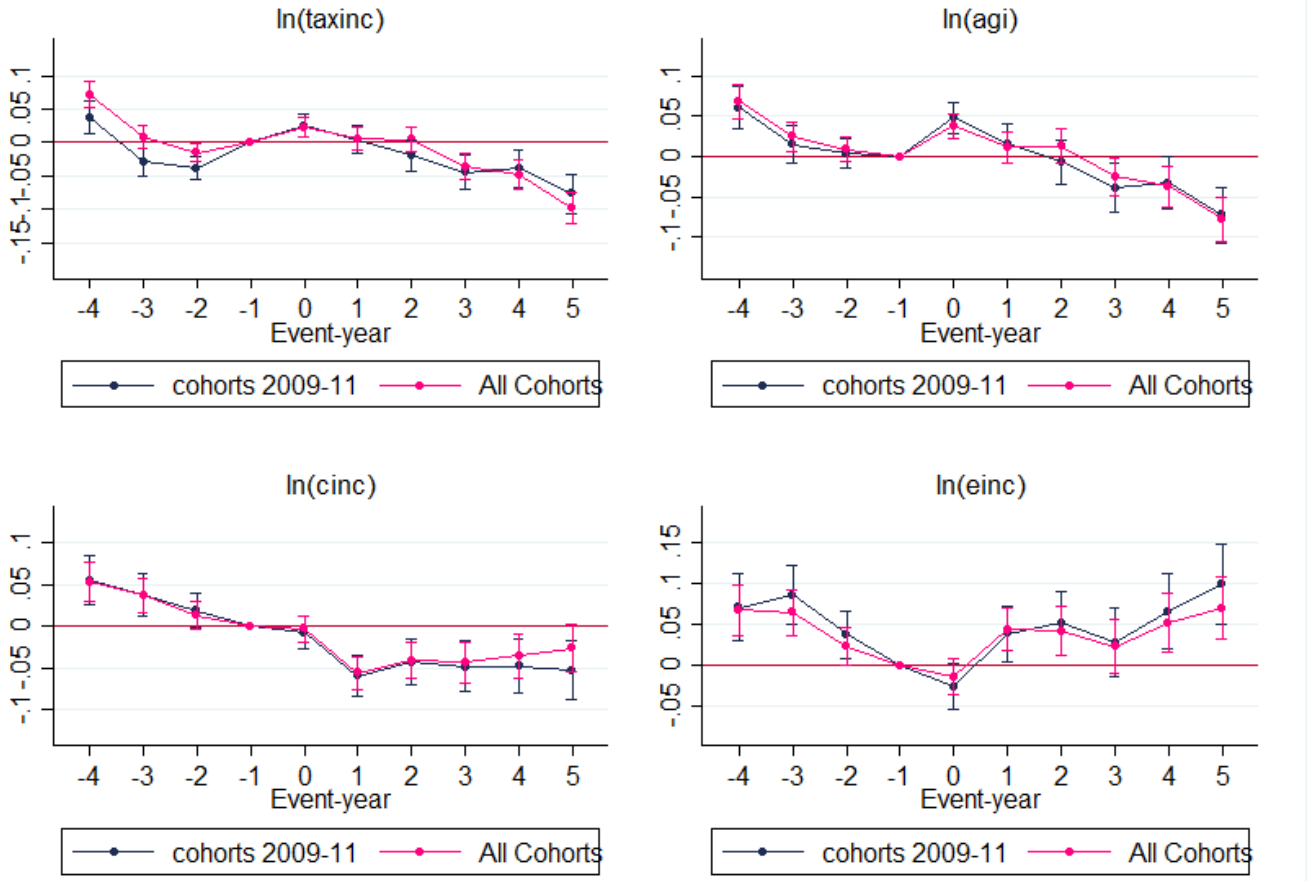
Notes: Figure A1 plots the regression coefficients on the even-time dummies separately for the baseline sample of first-time filers (replicating the results presented in Figure YYY) and for the subset of first-time filers that never took a foreign income exclusion on their tax returns during the sample period.

Figure A.2. Event Study of Reported Income for First-time Filers in 2009-2011 Cohorts

Part 1. Interest, Dividend, Wage, and Adjusted Gross Income



Part 2. Taxable Income, Schedule C Income, Schedule E Income, Total Deductions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-.15 -.1 -.05 0 .05 .1
-4 -3 -2 -1 0 1 2 3 4 5
Event-year
cohorts 2009-11
All Cohorts
ln(agi)
-.1 -.05 0 .05 .1
-4 -3 -2 -1 0 1 2 3 4 5
Event-year
cohorts 2009-11
All Cohorts
ln(cinc)
-.1 -.05 0 .05 .1
-4 -3 -2 -1 0 1 2 3 4 5
Event-year
cohorts 2009-11
All Cohorts
ln(einc)
-.05 0 .05 .1 .15
-4 -3 -2 -1 0 1 2 3 4 5
Event-year
cohorts 2009-11
All Cohorts