The Long Arm of the U.S. Tax Law: Compliance Rates and Costs related to FATCA

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Abstract. We examine the extent and reach of the U.S. tax law for extraterritorial countries and financial entities. Specifically, using both hand-collected and public data, we focus on the compliance rates and financial costs of FATCA, the recently enacted cross-border tax information sharing law that has been dubbed an overreach by political pundits and legal scholars because of the new requirements it imposes on foreign governments and entities. We find that tax havens were more likely to come to an agreement with the IRS than non-tax havens countries. Havens were also relatively quicker to comply than their counterparts. Thus, despite these countries' general preference for privacy, they exhibit higher and faster willingness to share information under FATCA. Countries with U.S. treaties and strong legal protections also exhibit higher and faster willingness to comply with FATCA. We also examine entity-level compliance rates, which we find were exceptionally high. Finally, we document evidence of significant reductions in financial performance for FATCA firms relative to control firms. Overall, the evidence is consistent with high compliance to, and additional performance costs for, financial firms subject to FATCA, suggesting that U.S. tax law has substantial force in the international political economy.

1. Introduction

In this study, we examine the reach of U.S. tax regulation across the globe. To do so, we employ the recently adopted tax reporting requirements under the Foreign Account Tax Compliance Act (FATCA), which required thousands of international financial entities to adopt heightened information sharing provisions for U.S. account holders. FATCA represents a substantial change in cross-border information sharing, as it requires foreign banks to directly report the holdings of their U.S. clients to the IRS or requires foreign governments to pressure foreign banks in their countries to do so via bilateral agreements. Because the U.S. taxes individual income on a worldwide basis, FATCA is a potential tax remedy that helps the U.S. recover taxable funds held offshore.

The media rhetoric towards FATCA has been somewhat negative for its broad requirements and deep penalties, as pundits have called it "...an indiscriminate NSA-style information dragnet…" (Jatras 2014) and an "…extraterritorial intrusion of US tax law" (Kelly 2017) that "…turns foreign banks into tax informants" (Ugeux 2013). Two general critiques exist for FATCA. The first is of its legal overreach, i.e., that it is a "heavy-handed, inequitable and hypocritical" piece of "extraterritoriality stunning even by Washington's standards" (*The Economist*, 2014). The empirical question tied to this critique is: do foreign countries and financial entities comply with FATCA, given this overreach? The second critique is the way that FATCA privatizes and outsources the burden of enforcing U.S. tax regulation to foreign countries and entities. This critique leads to a second empirical question: what were the financial costs of FATCA? The central purpose of this study is to examine the compliance with extraterritorial U.S. tax law by foreign governments and foreign financial institutions, and to understand the costs of compliance for foreign financial institutions.

Dharmapala (2016) develops a theoretical framework under which the increased information reporting requirements under FATCA can lead to high participation rates and can increase the cost

of providing financial services for financial institutions. However, large-scale empirical evidence for these assertions is scant; compliance and/or cost estimates, if available at all, are based on anecdotal, single-country or back-of-the-envelope evidence. Current academic research does examine the effects of FATCA, but the focus is on offshore tax evasion by U.S. persons, finding that offshore accounts (Omartian 2017) and offshore funds (De Simone, Lester and Markle 2018) shifted substantially following the enactment of FATCA. Our focus is on a different stakeholder, as we examine both the *countries* and *corporate entities* who were mostly likely to bear the potential costs of FATCA, because they are the ones called upon to enforce the dictates of FATCA. The empirical execution of this paper is two-fold, as we seek to quantify compliance and then seek to quantify the performance costs of compliance.

First, we study the determinants of country-level FATCA compliance. For this paper, we use the term "compliance" by a country to refer to its choice to become a FATCA partner jurisdiction by agreeing to the terms of an Inter-Governmental Agreement (IGA) with the U.S. Treasury. As of 2018, 113 countries have complied with FATCA, with certain country-level variables significantly explaining the likelihood to comply. Importantly, we find clear evidence that tax havens are more likely to comply with increased information sharing under FATCA than are non-havens. Tax havens hold nearly 10% of the world GDP (Alstadaeter et al 2018), in part due to the inherent financial privacy in those countries. The finding that havens are relatively more likely to commit to information sharing under FATCA suggests that tax havens have more to lose by *not* signing an IGA and are willing to modify or ignore local secrecy laws in order to comply with the imposed requirements of FATCA. We also find univariate (but weaker multivariate) evidence that other country-level attributes matter for FATCA compliance, including: treaties with the U.S., high commitment to the rule of law, and large amounts of portfolio investment into the U.S. are more likely to comply with FATCA.

While many countries have become IGA partner jurisdictions, compliance has been not immediate, with signing dates staggered across the years 2013 to 2017. We utilize countries' delayed implementation and staggered signing to examine whether certain types of countries adopted IGAs at a faster or slower rate. Here again, the data suggest tax havens sign IGA agreements faster than non-havens. This finding suggests that even countries with reputations for privacy and non-cooperation, such as tax havens, responded to the underlying incentives of FATCA. We also find that countries with a tax treaty comply with FATCA more quickly than those countries that have no treaty. This suggests the marginal cost of compliance for these countries' governments could be lower because of a preexisting relationship with the U.S. tax authority. Finally, we find that countries with higher rule of law and more portfolio investments into the U.S. were quicker to comply.

We also examine FATCA compliance at the entity level (e.g., an individual bank, insurance company, etc.). We use the IRS's "FFI List" as the basis of these analyses. The FFI List contains the names of *participating* foreign financial institutions (FFIs) that have registered with the IRS and report information on U.S. clients.[1] While FATCA resulted in the IRS receiving information about U.S. persons from many more foreign financial institutions, information about the foreign institutions themselves is still very scarce from publicly available data sources. We report several descriptive findings related to these FFIs.

First, a majority of our sample FFIs derive from tax haven countries. In fact, there are more haven-based FFIs registered with the IRS than there are haven-based entities in Orbis (debatably the best public international database) – this finding speaks to the "reach" of FATCA, as it suggests that the IRS is able to reach more financial institutions via FATCA than are data aggregators (who are in

[1] Throughout the paper, we use the term foreign financial institution or FFI to refer to the population of all foreign entities that should comply with FATCA. We will use the term *participating* foreign financial institution or participating FFI to refer to those firms within the population that actually register with the IRS to comply with FATCA.

sole business of collecting this data). Looking at the FFI data country-by-country, we find that among the top 15 countries with participating FFIs, nine of them are tax havens.

Second, while FATCA was primarily aimed at foreign financial institutions, we also document that a wide range of industries were affected by FATCA. Among entities registered as FFIs with the IRS, almost 10% are not financial in nature, as classified by the Fama-French 48 industry schema. Foreign companies operating in wholesale, construction, retail and transportation registered by the thousands as participating FFIs with the IRS. The implication of this finding is that the scope of FATCA is far-reaching, across a variety of countries, industries, and companies.

Finally, we further examine entity-level compliance by *linking* the FFI List and data from Orbis, which has arguably the best available data on non-U.S. financial entities. For these analyses, we start with the population of FFIs from Orbis and manually match them with the IRS FFI List to estimate a FATCA participation rate. By so doing, we can provide descriptive, *entity-level* evidence on FATCA compliance rates. We find that of 5,488 firms in our current sample, only 18 firms are not participating FFIs. In other words, 99.67% of our current sample firms from Orbis comply with FATCA.[2] This estimate represents an astonishingly high level of compliance by FFIs that register with the IRS.

In the final analyses of the paper, we examine whether FATCA imposed a real economic burden on foreign institutions. For these analyses, we use another source of data, Compustat Global, which has reliable, public data that captures financial measures of performance, namely return on assets (ROA) and return on equity (ROE). It also has enough historical coverage to allow us to compare firm costs before and after FATCA (which Orbis does not). In terms of empirical identification, we use the implementation of an IGA as a treatment date and depository institutions

[2] To be clear, we are still in the process of hand-matching. We are a little more than halfway done. Thus, this estimate is subject to ongoing sample creation, and we urge caution to the reader.

as a treatment group. We focus on depository institutions as this industry (1) likely has the highest concentration of firms that are required to comply with FATCA, and (2) faces a substantial compliance burden, particularly in the due diligence of identifying all account holders. We employ two different control groups that were less affected by FATCA: real estate firms and all other financial institutions. The model includes a control for macroeconomic attributes, as well as country and year fixed effects. The model, therefore, is a difference-in-difference approach, designed to compare financial institutions' performance subsequent to FATCA relative to that of less-affected companies.

We find that following IGA implementation, depository institutions' financial performance went down relative to the financial performance of the control groups. The decline in performance for treated companies is economically significant: the decline in profits was 1.2% of assets (3.6% of equity). This analysis demonstrates the costs of the economic burden imposed on these foreign firms by the U.S. tax code. Relative to a sample average ROA of 2.2% (and 6.3% of ROE), the compliance costs from FATCA appear to erode a substantial amount of foreign financial institutions profits. A shortcoming of these analyses is that the costs borne by these institutions can take on many implicit forms (compliance, reputational, privacy, and legal costs), none of which we can isolate empirically. Therefore, these represent a rough approximation of the total costs of FATCA to publicly-held FFIs using available data.

This study makes several contributions. First, it provides evidence that regulatory burdens can be both offshored and outsourced. Mandated disclosure requirements and information sharing among tax authorities are by no means new phenomena. Third-party reporting (i.e., individual information reported by banks, employers to the IRS) is a feature of numerous tax systems and has been for years (Slemrod 2007). However, FATCA is unique because the third-party reporting is mandated by a foreign government with no sovereign authority over the reporting entity. That is,

FATCA lies between two extremes -- full mandatory reporting (where compliance rates are near perfect) and self-reporting (where compliance rates are much lower) -- therefore, the effect of FATCA on compliance is unclear ex ante. Using several different approaches and benchmarks, we provide novel evidence on the level and speed of compliance with FATCA by foreign governments and entities that are not directly under the purview of the IRS. We find that compliance is quite high.

Second, this study provides policymakers in other countries empirical evidence on the nature of the costs of information sharing. The effectiveness and effects of information sharing policies are still in question. While FATCA increased the tax reporting of many countries to a single country (the U.S.), many other countries are contemplating similar information sharing laws, which given perfect coordination, could lead to global tax reporting. Such an initiative is currently under consideration, as the OECD seeks to organize a global network of automatic information exchange. As of July 2018, the total list of participating governments has grown to 124 countries, amounting to an N-by-N network of over 3200 bilateral relationships. This level of commitment to cross-border tax reporting, generally based on the Common Reporting Standard (CRS), by this many governments is unprecedented. It is difficult to establish whether the rate of compliance for CRS will be as high as we document for FATCA, or whether the costs will be as high, given the infrastructures already in place. Nevertheless, this study provides a large-scale quantification of the compliance rates and costs using the most comprehensive international data sources available, which should add insights to the discussions around CRS.

2. Background on FATCA and U.S. Tax Overreach

2.1. FATCA: Enactment, Policies and Penalties

FATCA was passed as part of the HIRE Act in 2010 in response to revelations of widespread offshore tax evasion by U.S. persons. Its aim is to combat tax evasion by compelling

FFIs to provide the IRS with detailed information about U.S. investors or account holders. This information then enables the IRS to identify account holders with foreign cash. It also acts as a deterrence mechanism, as the greater threat of detection can discourage U.S. persons from underreporting income in foreign accounts.

Roughly speaking, FFIs that choose to comply with FATCA agree to do two things: (1) perform due diligence to identify all U.S. account holders or investors, and (2) annually report detailed account information to the IRS for the individuals identified. If FFIs choose not to comply with FATCA, they face a 30 percent withholding tax on any "withholdable payments" (generally interest, dividends, royalties, and other types of passive income) on U.S.-source income. A withholding tax of this magnitude provides strong incentives for FFIs to comply with FATCA.

Because of this withholding tax, FATCA is often thought of as a tax. However, if FATCA operates as intended, no withholding tax will be collected because all foreign financial institutions will comply and provide the IRS with account information for all U.S. persons with foreign accounts and investments. That is, the goal of FATCA is to raise revenue through increased tax compliance by individuals with offshore accounts, not to raise revenue by imposing a withholding tax on FFIs.

FATCA is not without some controversy. When it was passed, many considered it to be a gross overreach of sovereign rights and expensive (or possibly infeasible) to implement (Harvey 2012). For one, FATCA applies to all "foreign financial institutions", which is an extremely broad definition that includes (1) depository institutions, (2) custodial institutions, (3) investment entities, (4) certain insurance companies, and (5) certain holding companies and treasury centers. While there are exceptions to help alleviate the burden on small, local financial institutions with low risk of facilitating offshore tax evasion, in practice FATCA pulls in the vast majority of the world's financial institutions and even a large number of non-financial firms. Moreover, FATCA affects all U.S. firms

that make withholdable payments to non-U.S. entities, by requiring these firms to perform due diligence to determine whether payees are compliant and withhold the 30 percent tax if applicable.

Second, many countries' banking and privacy laws prohibit the kind of information sharing mandated by FATCA. Motivated in part by this concern, the U.S. introduced bilateral Intergovernmental Agreements (IGAs) with "partner jurisdictions", which establish the terms for FATCA compliance in a given jurisdiction and, depending on the type of agreement, set up an alternative channel for information sharing. There are two major types of IGAs – Model 1 and Model 2. In Model 1 IGA countries, FFIs fulfill their annual reporting obligation by providing information on U.S. account holders to the partner jurisdiction (i.e. their local government). The partner jurisdiction then provides this information to the IRS on an automatic basis. In Model 2 IGA countries, partner jurisdictions agree to direct and enable all relevant FFIs located in the jurisdiction to report specified information about their U.S. accounts directly to the IRS. In other words, countries that become Model 2 partner jurisdictions agree to amend local laws to allow FFIs to comply with FATCA. When the concept of IGAs was announced with the final regulations in January 2013, only five countries had signed agreements, and it was unclear whether the U.S. would succeed in strong-arming foreign governments to enforce FATCA. However, at the time of this writing, 113 countries have IGA agreements in effect, including all major financial centers and tax havens.

The IGAs are perhaps one of the most intriguing aspects of FATCA. While they originated mainly as a way to overcome local legal impediments, the ultimate result is a set of agreements that outsources enforcement and forces jurisdictions to change their local laws.

2.2. Prior Literature of Tax Evasion and Tax Information Sharing

An extensive literature dating back at least four decades has examined tax evasion from a theoretical and empirical standpoint. The classic Allingham and Sandmo (1972) theory of rational

tax evasion suggests that, from an economic cost-benefit perspective, tax evasion is not costly and should be fairly pervasive. This theory is based upon the inherent information asymmetries that exist between the tax authorities and the taxpayer. In the absence of these information asymmetries, compliance would likely be nearly perfect and regulation would be unnecessary. However, in the presence of these asymmetries, there is potential for tax evasion and a need for regulation to improve information sharing between tax authorities and taxpayers.

As in other contexts, the presence of informational asymmetries is often related to arbitrage. In this case, the form of arbitrage is one in which taxpayers exploit the information asymmetries between themselves and the tax authorities to under-report the amount of income they have earned. This is especially prevalent across multiple jurisdictions, where differences in regulation across the jurisdictions tend to foster greater information asymmetries, particularly for taxpayers who can move taxable funds across those jurisdictions. As a result, there is significant potential for cross-border tax arbitrage, whereby taxpayers from countries with strict tax regulations engage in cross-border activities in countries with weak tax regulations. A major consequence of this form of arbitrage is the loss of tax revenues to the country with the stricter tax regulations.

In response, in recent years, these types of countries have sought to overcome cross-border tax arbitrage by requiring increased information sharing between and across countries. There are a number of methods used by governments to combat cross-border tax arbitrage, including bilateral treaties (Johannesen and Zucman 2014), information exchange agreements (Hanlon, Maydew and Thornock 2015; Braun and Weichenrieder 2014), amnesties and voluntary disclosures for offshore account-holders, legal measures against banks and bankers (e.g., the now infamous UBS case), and savings directives (Johannesen 2014).

Despite the above, a stream of empirical research provides data to surprisingly suggest that compliance rates are typically quite high (Andreoni, Erard, and Feinstein 1998). However,

compliance rates are highly dependent on the nature of tax reporting between the tax authorities and the taxpayer. In other words, *how* tax information is reported to the tax authority matters a great deal for tax evasion. On the one hand, under third-party reporting, typically an employer or investment manager will report an individual's earned income to the tax authority, which it can in turn compare with the individual's independent tax return. Under self-reporting, a taxpayer self-declares their income -- no third party makes a statement as to how much income that taxpayer owes. As Kleven et al (2011) show, when third-party reporting is required, compliance rates are very high, but when taxpayers have the choice to self-report, compliance rates substantially decline.

FATCA falls on a spectrum somewhere between self-reporting and third-party reporting. Under FATCA, foreign entities as a third party are required to report an individual's income to the IRS. However, those entities are foreign, and therefore are not under the same legal obligation as would be a U.S.-domestic entity. In that sense, these entities choose to *self-report* as a *third party*. This is part of what makes FATCA so interesting and important to study. In addition, the form and shape of FATCA is akin to other recent initiatives by the OECD and individual countries to dramatically increase cross-border tax reporting. To the extent that lessons from FATCA can be applied to other initiatives, then understanding the costs and implications of FATCA is an important endeavor.

3. Data Sources and Variables

We use several primary data sources for this study. First, we identify which countries have complied with FATCA using the U.S. Treasury's FATCA Resource Center.[3] We also use this government data to identify the date a foreign jurisdiction entered into an IGA and the enforcement

[3] https://www.treasury.gov/resource-center/tax-policy/treaties/Pages/FATCA.aspx

model used in that country. These data are required to get the detail necessary to examine country-level compliance with FATCA and are summarized in Appendix 1.

Second, we use the IRS's *FATCA Foreign Financial Institution (FFI) List Search and Download Tool* to identify institutions that are complying with FATCA by registering with the IRS and getting on the FFI List.[4] The FFI List is published monthly by the IRS and contains the name of each registered FFI, a unique identifier assigned to each FFI by the IRS (GIIN), and the FFI's home country. We also collect the official monthly FFI Lists from July 2014 to October 2016 to identify the date each FFI first registered with the IRS. The initial FFI List published in July 2014 indicated that 87,993 FFIs had registered. By October 2016, that number had grown to 222,878 FFIs. Across all monthly lists from July 2014 through October 2016, we identify 242,635 unique FFIs, which become the starting point of our empirical analysis.

Next, we use data from Bureau Van Dijk's Orbis database. Orbis gathers information on about 300 million companies around the world from various sources including public financial statements, local statutory filings, and other sources. The OECD states that Orbis is thought to be the most comprehensive commercial data source for cross country studies, based on a summary of many international data sources (see, Action 11, Measuring and Monitoring BEPS 2015; p.143). Importantly, it goes on to emphasize that it is a not complete, global registry of firms and coverage varies from jurisdiction to jurisdiction. Fortunately, Orbis coverage has greatly expanded since the 2006 data used in the OECD review, but we still acknowledge the incompleteness of global datasets and encourage readers to remember this limitation in interpreting the results.

We use the Orbis sample to create an approximation of the population of financial institutions that we would expect to register on the FFI List. Hence, we include all firms in the financial industry (i.e., SIC between 6000 and 6999) except real estate firms (SIC between 6500 and

[4] https://www.irs.gov/businesses/corporations/fatca-foreign-financial-institution-list-search-and-download-tool

6599) in all countries outside the United States. Due to the time-intensive (and ongoing) nature of manually reviewing and supplementing name matching scripts that match the FFI List and Orbis, we focus on approximately the largest 5,500 financial firms in Orbis.[5]

We match this set of Orbis firms to the FFI List to determine what proportion of the world's financial institutions have agreed to comply with FATCA. Because we can only match on firm names, we employ fuzzy text matching techniques and manual checks to identify compliant and non-compliant FFIs. We fuzzy match both with Bureau Van Dijk's name matching features in Orbis and with procedures written in SAS. We then manually check uncertain matches. Lastly, we examine by hand the firms in Orbis that did not match to a firm in the FFI List. We view this last step as vital to our study because we are attempting to identify firms that should have registered on the FFI List but did not. We begin by performing an internet search for each company to identify its primary business activities and determine whether it is a financial institution, as defined in the FATCA final regulations. If it is not, then we exclude it from the sample. If the firm does appear to meet the definition of FFI, we then manually search for the firm in the FFI List. A significant advantage of using the Orbis database is that it contains unconsolidated accounting data for a large number of firms, and it contains detailed parent-subsidiary links. Hence, if a firm's parent (subsidiary) is a non-financial entity but it has a financial institution subsidiary (parent), we are able to identify the subsidiary (parent) firm within our sample and link it. We take a conservative approach and assume that if an FFI's parent or subsidiary has registered on the FFI List, we consider the entire FFI group to be compliant.[6]

[5] Coverage will continue to grow as we collect additional data and we will be able to stratify our sample based on firm size.

[6] We believe this approach is sound because a firm's FATCA strategy and implementation (e.g. whether to comply and how) are high-level decisions likely made at the top. We thus view it unlikely that one entity within a firm's global structure would make its own decision and perhaps depart from the entire firm's strategy.

Finally, we use data from Compustat Global. While the strength of the Orbis data is its broad coverage and ownership data, there is often very little financial detail available, especially historical financial data from before FATCA's implementation. Compustat Global, on the other hand, only covers publicly-traded firms, but it contains much more detail and a longer time-series for these firms. Because of the detailed coverage, these data allow us to better understand how firms responded to FATCA. We use Compustat Global to conduct difference-in-differences and interrupted time series tests of the effects of FATCA on some FFIs' financial performance.

We also impose several restrictions to generate our Compustat Global sample. We focus only on firms that have SIC codes between 6000 and 6999. We also exclude firms in the industrial file (i.e., indfmt="INDL") and focus on financial firms (i.e., indfmt="FI"). Our tests require firms to have non-missing values for total assets (AT), book equity (CEQ), income before extraordinary items (IB), and industry codes (SICH). Our sample begins in 2010 in order to avoid the potentially confounding effects of the financial crisis and goes through 2016. Because of the detailed coverage, this Compustat Global sample is used in our empirical tests to examine the consequences of FATCA for financial firms.

In summary, we draw data from several different sources. We acknowledge each source has different strengths and limitations. Together, they allow us to triangulate the effects of FATCA on foreign financial institutions.

4. Compliance with FATCA: Empirical Tests and Results

4.1 Descriptive statistics and univariate tests of country-level FATCA compliance

We first examine the characteristics of countries that comply with FATCA by entering into an IGA and becoming IGA partner jurisdictions. We also examine the length of time it takes for

countries to agree to comply with this regulation. We then turn our attention to firm-level analysis of compliance and generate estimates of compliance rates.

113 foreign jurisdictions have reached an agreement with the United States about FATCA either formally or in substance.[7] The countries and the agreement dates are listed in Appendix 1. Table 1, Panel A contains summary statistics about our sample of 189 countries for which we could get all necessary control variables. Approximately 54% of sample countries have an IGA in place with the U.S. We also summarize how long it took for countries to enter into an IGA with the U.S. *DELAY* is defined as the number of days between the time FATCA withholding became effective (July 1, 2014) and the date a country agreed to an IGA (either in substance or actually signed). If countries became IGA partner jurisdictions before that date, we set *DELAY* to zero. The average country took 921 days (or about 2.5 years) to have an IGA in effect, but the variation in that time across sample countries was substantial (i.e., 387 days at the 25th percentile to 1,499 days for the 75th percentile). Other country-level variables are measured in 2014 at the time FATCA withholding became effective. Several other statistics are worth nothing. Approximately 30% of sample countries have tax treaties with the U.S. and about 19% of countries were considered a tax haven during the sample period. Table 1, Panel B summarizes univariate correlations among key country characteristics.

To examine whether compliance – as captured by a country's entering into an IGA with the U.S. – varies haven status, treaty status, or other country characteristics, we first perform simple univariate tests. Table 2, Panel A presents the results of t-tests that compare the proportion of sample countries that have an IGA across several groups: treaty and non-treaty countries, havens and non-haven countries, countries with relatively high and low rule of law, and foreign countries

[7] An agreement in substance means that although there is no formal treaty, countries are complying with the tenets of FATCA without a signed agreement.

with high and low levels of foreign portfolio investment into the U.S. We discuss these findings in turn.

First, we find that more treaty countries sign IGAs than non-treaty countries: 88% of treaty countries have an IGA, whereas only 39% of non-treaty countries have an IGA.[8] The difference is highly statistically significant. This finding is consistent with treaty countries facing a lower marginal cost of FATCA compliance because of their prior dealings and existing tax enforcement relationships.

Second, we find that tax havens are significantly more likely to have an IGA than non-havens: 72% of tax havens have an IGA, whereas 50% of non-tax havens have an IGA.[9] The difference, 22%, is statistically significant at the one percent level. This finding is consistent with the notion that havens have developed into financial centers that have the most to lose by non-compliance.

Third, we find that countries with higher rule of law are more likely to comply with FATCA than those with lower rule of law scores. To capture high (low) rule of law, we simply group countries above the median (below the median) based the score from the World Bank's Worldwide Governance Indicators[10] and employed in several other studies (Armstrong et al. 2010, Hoberg and Moon 2017). The measure captures a breadth of legal protections across countries, such as more predictable enforcement of contracts, better protection of property rights, stable police force, etc. The finding that countries with higher rule of law are more compliant with FATCA is consistent with these countries' general adherence to higher legal protections.

[8] We identify treaty countries using IRS Tax Treaty Table 3 https://www.irs.gov/pub/irs-utl/Tax_Treaty_Table_3.pdf
[9] We broadly follow the classification of tax haven as in Dyreng and Lindsey (2009) but make several adjustments based on other widely accepted lists (see Bennedsen and Zeume 2018). The most significant departure from Dyreng and Linsey (2009) is that we classify Hong Kong as a tax haven.
[10] http://info.worldbank.org/governance/wgi/#home

Finally, countries with high amount of foreign portfolio investment into the U.S. are also more likely to comply sign an IGA. To capture high (low) foreign portfolio investment, we simply group countries above the median (below the median), which is again consistent with these countries having the most to lose relative to other jurisdictions.

4.2 Multivariate tests of country-level FATCA compliance

We next turn to multivariate analysis to jointly consider the factors associated with the probability of entering into an IGA. We estimate a country-level probit regression where the dependent variable is equal to one for countries that have entered into an IGA with the U.S. and equal to zero otherwise. As potential determinants of country-level compliance, we include proxies for a country's preexisting tax enforcement relationship with the U.S (*TREATY*), status as a tax haven (*TAXHAVEN*), economy size (*LOG GDP*), quality of property rights and contract enforcement (*RULE OF LAW*), and the amount of foreign portfolio investment into the U.S. from a local jurisdiction (*LOG FPI*). For each country observation, we include the value of each independent variable in 2014 (or next closest non-missing year). Hence, this first analysis is cross sectional in nature. Specifically, we estimate the following probit regression:

$$IGA = \beta_0 + \beta_1 TREATY + \beta_2 TAXHAVEN + \beta_3 LOG\ GDP + \beta_4 RULE\ OF\ LAW + \beta_5 LOG\ FPI + \varepsilon \quad (1)$$

The results of estimating Equation (1) are tabulated in Table 2, Panel B. The analysis presented in Column 1 excludes the control for *RULE OF LAW* that is not available for 11 small countries—many of which are tax havens. The analysis presented in Column 2 uses the full sample and contains the control for *RULE OF LAW*. In Column 1, the coefficient on *TREATY* is positive and significant at the 1% level, as is the coefficient for *TAXHAVEN*. These results largely corroborate the inferences from univariate tests. In Column 2, the coefficient for *TREATY* is positive, but not significant at traditional levels. The coefficient on *TAXHAVEN* is positive and

significant at the 10% level, even after controlling for a country's commitment to the *RULE OF LAW*. Taken together, we interpret these tests as evidence that treaty countries and tax havens are no less likely than their counterparts to comply with FATCA. We even find some evidence that tax havens are more likely to comply with FATCA that others, but the evidence is sensitive to empirical specification.

To gain additional insights about compliance, we also examine the time it took for countries to become IGA partner jurisdictions. Because the passage of FATCA was clearly not popular among foreign banks and governments, we assume that the time until reaching an agreement with the U.S. is a proxy for how willing foreign countries were to comply with FATCA. We use a negative binomial regression to estimate the following country-level regression where *DELAY* is a count of the number of days from July 1, 2014 to the date a country became an IGA partner jurisdiction:

$$DELAY = \beta_0 + \beta_1 TREATY + \beta_2 TAXHAVEN + \beta_3 LOG\ GDP + \beta_4 RULE\ OF\ LAW + \beta_5 LOG\ FPI + \varepsilon \quad (2)$$

The results of estimating Equation (2) are tabulated in Table 2, Panel C. Column 1 again omits the *RULE OF LAW* and includes countries with missing values. Column 2 again includes the control for *RULE OF LAW* and excludes the small countries that are missing values. Across both columns, the coefficient on *TREATY* is negative and significant. This suggests that countries with preexisting tax enforcement relationships with the U.S. were able to agree to the terms of a FATCA-related agreement more quickly. This suggests the compliance costs were lower for these countries in terms of using government and policymaking resources, time, and effort. The coefficient on *TAXHAVEN* is also negative and significant across both specifications and implies that FATCA agreements were reached more quickly with tax havens than with other countries. To the extent that the compliance lag time is an inverse proxy for the perceived importance of the policy, then these

estimates suggest that FATCA was important to and a high priority for lawmakers and policymakers in tax haven jurisdictions. In sum, these tests imply that the costs of FATCA and the "threat" of FATCA (i.e., withholding penalties) did not affect all countries equally. Treaty countries and havens complied relatively quickly within the cross section of countries.

4.3. Insights from the FFI Lists

We next turn our attention to examining microdata about foreign financial institutions themselves. Figure 1, Panels A and B both present in descending order the number of firms that have registered as FFIs with the IRS by country. The Cayman Islands was the largest contributor to the FFI List and represents nearly 20% of the FFI List itself (i.e., 43,726/242,635 = 18.0%). The Cayman Islands is followed by the United Kingdom, Luxembourg, the Virgin Islands, and Brazil. Figure 1A shows a strong clustering of tax havens near the top of the list (Cayman Islands #1; Luxembourg #3; Virgin Islands #4; Jersey #8, Guernsey #9; Switzerland #11; Ireland #12; Netherlands #14; Hong Kong #15; Mauritius #17; Bermuda #19; and Singapore #20).

Table 3, Panel A contains a frequency table and details that more than half of the FFI List comes from tax havens. Specifically, of the 242,635 firms on the FFI List from those countries, 127,206 come from tax havens. Figure 1B shows a similar split based on whether or not the country has a treaty with the U.S. Based on a visual comparison of Figure 1A and Figure 1B, many tax havens appear to be non-treaty countries (e.g., Cayman Islands, Virgin Islands, Jersey, Guernsey, etc.) However, the univariate correlation between the two is -0.1430, suggesting they represent separate constructs. Table 3, Panel A also reports that more than half of the FFIs come from countries with which the U.S. has a treaty (128,841 out of 242,635).

Table 3, Panel A also highlights the opacity of the financial sector in public data and statutory reports. Of the 242,635 participating FFIs, only 197,412 (81%) are identified in Orbis by name at all; 153,998 (63%) have industry codes; and 48,804 (20%) even report total assets. While it

is impossible to know the total number of non-U.S. financial institutions that *should* comply with FATCA, these benchmarks demonstrate the scarceness of public detail on foreign financial institutions. They also suggest that FATCA provided the IRS with a broader tax roll than they could have identified by merely using other public records.

FATCA was targeted at foreign financial institutions; however, we find evidence of a much broader scope. Table 3, Panel B reports that of the 242,635 FFI's, we were able to match 153,998 firms with observations in Orbis having an industry code. Of those firms, 139,657 were categorized as financial services firms based on SIC Codes. For further detail, we broke these financial firms out by their Fama-French 48 industry codes and components. The lion's share of FFI's are in industry 47, which includes bank holding companies, brokers, dealers, investment funds, and investment advisors. Interestingly, 14,341 firms from the FFI List were in categorized as being in other industries. Among these other industries, business services, personal services, wholesaling, construction, and retail were the most frequent. The fact that firms whose major focus is not financial services have to comply with FATCA suggests that its scope is broad and reaches beyond its initial, intended taxpayer pool.

4.4. Compliance by FFIs

We next turn to generating an estimate of firm-level compliance. We do this descriptively by starting with the largest, most comprehensive pool of financial firms we can find outside of the FFI List, and examining how many of those firms are on the FFI List. We use all Orbis firms with SIC codes between 6000 and 6999 for our starting point. Again, we caveat that Orbis is not the complete universe of foreign financial firms, but rather the best available approximately of those firms. To the extent that certain firms are systematically excluded from Orbis or able to avoid statutory filings, they will be excluded from the denominator of our compliance estimate.

Table 4 presents the descriptive results of our findings thus far. Of the largest approximately 5,500 financial firms in BVD, we are able to identify only 18 firms that are not on the FFI List. Within this sample, that number represents an enrollment or compliance rate of 99.67%. Table 4, Panel A presents summary statistics for the sample of firms that are on the FFI List. Panel B presents summary statistics for firms not on the FFI List. Because the sample of noncompliance in Panel B is so small, we do not yet identify the firm-level determinants of compliance because any two-sample comparison using our small noncompliance sample would generate large standard errors. Nonetheless, we do provide descriptive information about the home country of the 18 firms we identify as noncompliant with FATCA in Table 4, Panel B. Of the eighteen firms, six are from China, three are from Iran, and the following countries have either one or two financial institutions that do not comply with FATCA and potentially face withholding penalties on all inbound payments from the U.S.: Bermuda, Canada, Denmark, UK, Japan, and Taiwan.

In future work, we will continue to expand our sample into smaller and smaller financial institutions. We expect compliance will decrease in these lower size strata, but suffice now with the takeaway that compliance with FATCA is exceptionally high among a sample of large banks and financial institutions.

5. Financial Consequences of FATCA: Empirical Tests and Results

Having established that virtually all foreign financial institutions in our sample comply with FATCA, we next examine the consequences of FATCA on the performance of foreign financial institutions. Specifically, we examine how financial institutions' financial performance – such as ROA and ROE – changes following the adoption of IGAs between the U.S. and individual foreign countries. This analysis should help provide insights the regulatory burden of FATCA on FFIs.

Our identification strategy relies on the staggered implementation of FATCA across countries, as captured by the various adoption dates of IGAs across countries (as noted above). We use depository institutions as a pseudo-treatment group because they were clearly the target of FATCA and there is little ambiguity as to whether they should register with the IRS. We use two sets of controls firms who were less likely the direct targets of FATCA. First, we use real estate firms (SIC 6500-6599) as control firms because they fall within the SIC's general category of financial services, are a major vehicle for individual and business investment and savings, but, most importantly, do not generally fall under the umbrella of firms required to register with the IRS. Second, we also treat all non-depository institutions as control firms (6100-6999). To the extent that real estate firms are inherently different firms than banks and depository institutions, using the more comprehensive control sample means the empirical tests have a closer counterfactual (i.e., insurance companies may behave more like banks than real estate firms do). However, the broader control sample also introduces measurement error into the identification of treatment firms (i.e., some insurance firms meet the FATCA requirements to register with the IRS and others don't, which means the control group will be diluted by some treatment firms). We use multiple control groups in the attempt to triangulate results, given the strengths and weaknesses of each group.

To examine the consequences of FATCA for FFIs, we use OLS to estimate the following equation:

$$PERFORMANCE = \beta_{FE} + \beta_1 DEPOSITORY\ INSTITUTION + \beta_2 POST + \beta_3 DEPOSITORY\ INSTITUTION*POST + CONTROLS + \varepsilon \quad (3)$$

We proxy for firm performance using both *ROA* and *ROE* for a given FFI, *i,* in a given year, *t*. *ROA* is measured as after-tax income scaled by lagged total assets and *ROE* is measured as after-tax income scaled by lagged total equity. *DEPOSITORY INSTITUTION* is an indicator equal to one for firms with SIC codes between 6000 and 6099 and zero for control firms. *POST* is an indicator

variable that is equal to one for firms with headquarters in countries that sign IGAs with the U.S. in the years following the IGA. Specifically, *POST* equals one if the fiscal year end date from Compustat Global ("DATADATE") falls more than 365 days after the date on which the firm's headquarter country's IGA went into effect.

In equation (3), our variable of interest is the interaction of *DEPOSITORY INSTITUTION*POST*. The magnitude of the coefficient would estimate the amount by which the profitability of institutions subject to FATCA changed relative to that for financial institutions that were not/less subject to FATCA. We include country and year fixed effects to control for time invariant country characteristics and global time trends, and we control for GDP to account for the effects of country-year macroeconomic conditions. We cluster standard errors at the country level because one of our main effects (*POST*) varies at the country level.

Table 5, Panel A summarizes our initial sample from Compustat Global, which retains only real estate firms in the control group. Approximately 40% of the sample is depository institutions and the remaining observations are in the control group. The average firm is profitable (*ROA* = 2.2% and *ROE* = 6.3%). *POST* is equal to one for about 17% of observations. Table 5, Panel B presents the correlation among sample variables. In univariate terms, *DEPOSITORY INSTITUTIONS* have lower *ROA* (Pearson correlation = -0.114), but higher *ROE* (Pearson correlation = 0.053). Both measures of profitability are also positively correlated with the *POST* indicator. We next turn to multivariate analysis.

Table 6a presents the results of estimating Equation (3). Column (1) presents the results when *ROA* is used as the dependent variable. The coefficient on our variable of interest, *DEPOSITORY INSTITUTION*POST*, is negative and significant (-0.012; p-value<0.10), which suggests that financial firm performance decreased following FATCA within those financial firms most affected by FATCA. In terms of economic magnitude, the estimate suggests that the total cost of

compliance with FATCA (i.e., technology infrastructure and compliance, reputation, legal, etc.) was approximately 1.2% of assets. The coefficient on *DEPOSITORY INSTITUTIONS* is negative and significant (-0.018; p-value<0.01), which is consistent with treatment firms had relatively lower unlevered profitability than the real estate firms in the control group. The coefficient on *POST* is positive and significant (0.014; p-value<0.05) suggesting that all firms were more profitable following FATCA implementation. Because of the opposition and resistance to FATCA it is difficult to conceive of a reason that FATCA improved the performance of financial institutions. Hence, despite the country fixed effects, year fixed effects, and staggered implementation dates, the main effect *POST* is likely capturing the effects of other macroeconomic factors and not just FATCA.

Table 6, Panel A, Column 2 presents the results of estimating Equation (3), but uses *ROE* as the dependent variable. The estimate of the interaction *DEPOSITORY INSTITUTION*POST* is again negative and significant (-0.036; p-value<0.05) and is also consistent with the notion that FATCA imposed significant costs entities outside of the U.S. jurisdiction. When using this profitability measure that considers the effects of leverage, the coefficient on *DEPOSITORY INSTITUTIONS* changes to positive and significant (0.041; p-value<0.01) which shows that treatment firms had relatively higher unlevered profitability than the real estate firms in the control group. The estimate of the main effect *POST* is not statistically significant.

Table 6, Panel B presents the results of re-estimating Equation (3), but using all non-depository financial service firms as a control group (6100-6999) and produces results with similar inferences. Specifically, Column 1 presents the results using *ROA* as the dependent variable and the estimated coefficient on *DEPOSITORY INSTITUTION*POST* is negative and significant (-0.009; p-value<0.05). Column 2 presents the results using ROE as the dependent variable. The coefficient of interest is negative, but not significant at traditional levels (-0.020; p-value=0.11).

Taken together, the results in both Tables A and B present evidence that the foreign financial firms most affected by FATCA bear a non-trivial portion of the cost of the U.S. imposing tax reporting regulation on its own citizens. For FFIs, that cost represents between 0.9 and 1.2% of assets. Due to the highly levered nature of financial institutions, the regulatory costs represent an even larger percentage of equity (i.e., between 2.0 and 3.6% of assets).

Finally, we relax the requirement to have a control sample and perform an interrupted time-series test to examine the consequences of FATCA. Ex-ante, the potential benefit of this test is that it does not require a control group and avoids the measurement error inherent in assigning firms as treatment or controls. Also, because *POST* is staggered in time across countries, it is not correlated with macroeconomic events. However, this test also suffers from not having a control group and *POST* by be correlated with other country-specific macroeconomic trends. We estimate the following equation:

$$PERFORMANCE = \beta_{FE} + \beta_1 POST + CONTROLS + FIXED\ EFFECTS + \varepsilon \qquad (4)$$

Table 7 presents the results of estimating Equation (4). Columns 1 and 2 use *ROA* and *ROE* as dependent variables, respectively, in the sample of all firms with SIC codes between 6000 and 6999. Columns 3 and 4 present the results of repeated analysis that focusses only on depository institutions (SIC codes 6000 to 6999). Across all models, the estimated coefficient on *POST* is not statistically different than zero.

Overall, we interpret the evidence in Tables 6 and 7 and providing some evidence that FATCA imposed costs on FFIs, but that evidence is sensitive to specification models. In future work, we plan to finish matching all FFI's with Orbis and Compustat Global and repeat this analysis using firm-level compliance dates and not just country-level IGA dates.

6. Conclusion and Caveats

This study presents preliminary evidence on the compliance rates of FATCA. We examine compliance at both the country level and the entity level. We find that more than 100 countries have chosen to comply with FATCA. Moreover, the complying countries come from a variety of backgrounds. Tax havens, in particular, are much more likely to comply and were relatively faster at signing an agreement with the IRS. Treaty countries were too, as were countries with high legal protections and large amounts of portfolio investments into the U.S.

We also find that firm-level compliance was very high, based on a preliminary hand-matched sample of firms from Orbis. We find that of the financial entities in Orbis that we identify, 99% can be matched to firms on the IRS's FFI list.

Finally, we examine wither foreign depository institutions exhibit different performance metrics (ROA and ROE) subsequent to FATCA and relative to a control group. We find that these institutions demonstrate lower levels of performance following FATCA relative to two different control groups. These results are consistent with substantial compliance costs related to FATCA for foreign depository institutions.

We emphasize that several of our tests are preliminary and that we are still in the process of hand-matching FFIs from the IRS's list to Orbis. With that caveat in mind, this paper presents preliminary evidence consistent with high compliance to, and additional performance costs for, financial firms subject to FATCA.

Appendix 1 - Variable Definitions

DELAY	The the number of days after FATCA withholding became effective on July 1, 2014 that a country agreed to become an IGA partner jurisdiction. Negative values are converted to zeros.
IGA	An indicator variable equal to one if a country is an IGA partner jurisdiction, and zero otherwise.
TREATY	An indicator variable equal to one if a country has a tax treaty with the U.S., and zero otherwise. Source: IRS Tax Treaty Table 3 - https://www.irs.gov/pub/irs-utl/Tax_Treaty_Table_3.pdf
TAXHAVEN	An indicator variable equal to one if a country is a tax haven, and zero otherwise, following Dyreng and Lindey (2009)
LOG_GDP	The logged value of a country's gross domestic product. Source: World Bank and CIA.gov
ROL	A country's rule of law value from the World Bank's Worldwide Governance Indicators.
LOG_FPI	The logged value of a country's portfolio investment in U.S. securities. Source: U.S. Treasury.
SALES	Operating revenue from Orbis. In USD thousands.
ASSETS	Total assets from Orbis. In USD thousands.
EQUITY	Shareholder funds from Orbis. In USD thousands.
LEVERAGE	(Total assets - Shareholder funds)/Total assets, all variables from Orbis. Winsorized at the 1st and 99th percentile.
PRETAX_INCOME	P/L before tax from Orbis. In USD thousands.
NET_INCOME	P/L for period from Orbis. In USD thousands.
ROE	In Compustat Global: earnings before extraordinary items scaled by lagged book value of equity (IB_t /CEQ_{t-1}). In Orbis: P/L for period divided by shareholder funds. *ROE* is winsorized at the 1st and 99th percentile
ROA	In Compustat Global: earnings before extraordinary items scaled by lagged total assets (IB_t /AT_{t-1}). In Orbis: P/L for period dividied by total assets. *ROA* is winsorized at the 1st and 99th percentile
ROS	(P/L for period/Operating revenue) from Orbis. ROS is winsorized at the 1st and 99th percentile.
DEPOSITORY INSTITUTION	An indicator variable equal to one for firms with an SIC code between 6000 and 6099.
POST	An indicator variable equal to one for for firm-year observations for which both (1) the firm is located (Compustat *LOC*) in a country that has an IGA with the U.S. and (2) the *DATADATE* is more than 365 days following the day the IGA was signed or agreed to.

Appendix 2 - FATCA Agreements by Country

Jurisdiction	Status	Status Date	IGA Effective Date	IGA Model Type
Algeria	In Force	1/18/2017	6/30/2014	Model 1
Angola	In Force	10/2/2017	11/30/2014	Model 1
Anguilla	Signed	6/6/2016	6/30/2014	Model 1
Antigua and Barbuda	Signed	6/3/2014	6/30/2014	Model 1
Armenia	Agreement in Substance	5/8/2014	6/30/2014	Model 2
Australia	In Force	6/30/2014	6/30/2014	Model 1
Austria	In Force	12/9/2014	6/30/2014	Model 2
Azerbaijan	In Force	11/5/2015	6/30/2014	Model 1
Bahamas	In Force	9/17/2015	6/30/2014	Model 1
Bahrain	Signed	6/30/2014	6/30/2014	Model 1
Barbados	In Force	9/25/2015	6/30/2014	Model 1
Belarus	In Force	7/29/2015	6/30/2014	Model 1
Belgium	In Force	12/23/2016	6/30/2014	Model 1
Bermuda	In Force	8/19/2014	6/30/2014	Model 2
Brazil	In Force	6/26/2015	6/30/2014	Model 1
British Virgin Islands	In Force	7/13/2015	6/30/2014	Model 1
Bulgaria	In Force	6/30/2015	6/30/2014	Model 1
Cape Verde	Agreement in Substance	6/30/2014	6/30/2014	Model 1
Cambodia	In Force	12/23/2016	11/30/2014	Model 1
Canada	In Force	6/27/2014	6/30/2014	Model 1
Cayman Islands	In Force	7/1/2014	6/30/2014	Model 1
Chile	Signed	3/5/2014	6/30/2014	Model 2
China	Agreement in Substance	6/26/2014	6/30/2014	Model 1
Colombia	In Force	8/27/2015	6/30/2014	Model 1
Costa Rica	Signed	11/26/2013	6/30/2014	Model 1
Croatia	In Force	12/27/2016	6/30/2014	Model 1
Curacao	In Force	8/3/2016	6/30/2014	Model 1
Cyprus	In Force	9/21/2015	6/30/2014	Model 1
Czech Republic	In Force	12/18/2014	6/30/2014	Model 1
Denmark	In Force	9/30/2015	6/30/2014	Model 1
Dominica	Agreement in Substance	6/19/2014	6/30/2014	Model 1
Dominican Republic	Signed	9/21/2014	6/30/2014	Model 1
Estonia	In Force	7/9/2016	6/30/2014	Model 1
Finland	In Force	2/20/2015	6/30/2014	Model 1
France	In Force	10/14/2014	6/30/2014	Model 1
Georgia	In Force	9/18/2015	6/30/2014	Model 1
Germany	In Force	12/11/2013	6/30/2014	Model 1
Gibraltar	In Force	9/17/2015	6/30/2014	Model 1
Greece	Signed	1/25/2017	11/30/2014	Model 1
Greenland	Signed	1/31/2017	6/30/2014	Model 1

Grenada	Signed	12/6/2016	6/30/2014	Model 1
Guernsey	In Force	8/26/2015	6/30/2014	Model 1
Guyana	Signed	5/31/2017	6/30/2014	Model 1
Haiti	Agreement in Substance	7/1/2014	6/30/2014	Model 1
Holy See (Vatican City State)	In Force	6/10/2015	11/30/2014	Model 1
Honduras	In Force	2/19/2015	6/30/2014	Model 1
Hong Kong, SAR China	In Force	7/6/2016	6/30/2014	Model 2
Hungary	In Force	7/16/2014	6/30/2014	Model 1
Iceland	In Force	9/22/2015	11/30/2014	Model 1
India	In Force	8/31/2015	6/30/2014	Model 1
Indonesia	Agreement in Substance	5/31/2014	6/30/2014	Model 1
Iraq	Agreement in Substance	7/1/2014	6/30/2014	Model 2
Ireland	In Force	4/2/2014	6/30/2014	Model 1
Isle of Man	In Force	8/26/2015	6/30/2014	Model 1
Israel	In Force	8/29/2016	6/30/2014	Model 1
Italy	In Force	8/17/2015	6/30/2014	Model 1
Jamaica	In Force	9/24/2015	6/30/2014	Model 1
Japan	In Force	6/11/2013	6/30/2014	Model 2
Jersey	In Force	10/28/2015	6/30/2014	Model 1
Kazakhstan	Signed	9/11/2017	11/30/2014	Model 1
Kosovo	In Force	11/4/2015	6/30/2014	Model 1
Kuwait	In Force	1/28/2016	6/30/2014	Model 1
Latvia	In Force	12/15/2014	6/30/2014	Model 1
Liechtenstein	In Force	1/22/2015	6/30/2014	Model 1
Lithuania	In Force	10/7/2014	6/30/2014	Model 1
Luxembourg	In Force	7/29/2015	6/30/2014	Model 1
Macao, SAR China	Signed	12/14/2016	11/30/2014	Model 2
Malaysia	Agreement in Substance	6/30/2014	6/30/2014	Model 1
Malta	In Force	6/26/2014	6/30/2014	Model 1
Mauritius	In Force	8/29/2014	6/30/2014	Model 1
Mexico	In Force	4/10/2014	6/30/2014	Model 1
Moldova	In Force	1/21/2016	6/30/2014	Model 2
Montenegro	Signed	6/1/2017	6/30/2014	Model 1
Montserrat	In Force	10/28/2016	11/30/2014	Model 1
Netherlands	In Force	4/9/2015	6/30/2014	Model 1
New Zealand	In Force	7/3/2014	6/30/2014	Model 1
Nicaragua	Agreement in Substance	7/1/2014	6/30/2014	Model 2

Norway	In Force	1/27/2014	6/30/2014	Model 1
Panama	In Force	10/25/2016	6/30/2014	Model 1
Paraguay	Agreement in Substance	6/6/2014	6/30/2014	Model 2
Peru	Agreement in Substance	5/1/2014	6/30/2014	Model 1
Philippines	Signed	7/15/2015	11/30/2014	Model 1
Poland	In Force	7/1/2015	6/30/2014	Model 1
Portugal	In Force	8/10/2016	6/30/2014	Model 1
Qatar	In Force	6/23/2015	6/30/2014	Model 1
Romania	In Force	11/3/2015	6/30/2014	Model 1
San Marino	In Force	8/30/2016	6/30/2014	Model 2
Saudi Arabia	In Force	2/28/2017	6/30/2014	Model 1
Serbia	Agreement in Substance	7/1/2014	6/30/2014	Model 1
Seychelles	Agreement in Substance	5/28/2014	6/30/2014	Model 1
Singapore	In Force	3/28/2015	6/30/2014	Model 1
Slovakia	In Force	11/9/2015	6/30/2014	Model 1
Slovenia	In Force	7/1/2014	6/30/2014	Model 1
South Africa	In Force	10/28/2014	6/30/2014	Model 1
Korea (South)	In Force	9/8/2016	6/30/2014	Model 1
Spain	In Force	12/9/2013	6/30/2014	Model 1
Saint Kitts and Nevis	In Force	4/28/2016	6/30/2014	Model 1
Saint Lucia	In Force	9/1/2016	6/30/2014	Model 1
Saint Vincent and Grenadines	In Force	5/13/2016	6/30/2014	Model 1
Sweden	In Force	3/1/2015	6/30/2014	Model 1
Switzerland	In Force	6/2/2014	6/30/2014	Model 2
Taiwan, Republic of China	Signed	1/3/2017	6/30/2014	Model 2
Thailand	Signed	3/4/2016	6/30/2014	Model 1
Trinidad and Tobago	In Force	9/22/2017	11/30/2014	Model 1
Tunisia	Agreement in Substance	11/30/2014	11/30/2014	Model 1
Turkey	Signed	7/29/2015	6/30/2014	Model 1
Turkmenistan	In Force	11/6/2017	6/30/2014	Model 1
Turks and Caicos Islands	In Force	7/25/2016	6/30/2014	Model 1
Ukraine	Signed	2/7/2017	6/30/2014	Model 1
United Arab Emirates	In Force	2/19/2016	6/30/2014	Model 1
United Kingdom	In Force	8/11/2014	6/30/2014	Model 1
Uzbekistan	In Force	7/7/2017	6/30/2014	Model 1
Vietnam	In Force	7/7/2016	7/7/2016	Model 1

Appendix 3 - Largest Firms (By Assets) in Each FF48 Industry

Industry	Firm	Country	Total Assets (thousands)
AERO	LEONARDO S.P.A.	Italy	26,758,329
AGRIC	EWOS GROUP AS	Norway	843,900
AUTOS	TOYOTA MOTOR CORPORATION	Japan	435,075,307
BANKS	INDUSTRIAL & COMMERCIAL BANK of CHINA (THE) - ICBC	China	3,473,087,883
BEER	DIAGEO PLC	Great Britain	37,440,374
BLDMT	METSALIITTO OSUUSKUNTA	Finland	6,267,468
BOOKS	SENSIS PTY LTD	Australia	36,230,446
BOXES	ARDAGH GROUP S.A.	Luxembourg	10,816,120
BUSSV	NEDGROUP PRIVATE WEALTH (PTY) LTD	South Africa	71,458,980
CHEM	HANWHA CORP.	South Korea	128,236,350
CHIPS	ASML HOLDING N.V.	Netherlands	19,729,435
CLTHS	BELLE INTERNATIONAL HOLDINGS LIMITED	Cayman Islands	4,621,441
CNSTR	CANARY WHARF LIMITED	Great Britain	5,744,633
COAL	UP ENERGY DEVELOPMENT GROUP LIMITED	Hong Kong	2,579,098
COMPS	GRAND T G GOLD HOLDINGS LIMITED	Cayman Islands	91,392
DRUGS	FOREST LABORATORIES HOLDINGS LIMITED	Ireland	4,334,094
ELCEQ	HITACHI LTD	Japan	86,246,474
FABPR	TAKUMA CO LTD	Japan	1,251,236
FIN	MITSUBISHI UFJ FINANCIAL GROUP INC	Japan	2,706,804,519
FOOD	NESTLE S.A.	Switzerland	129,594,221
FUN	PADDY POWER BETFAIR PUBLIC LIMITED COMPANY	Ireland	6,141,158
GOLD	PETROPAVLOVSK PLC	Great Britain	1,387,965
GUNS	PUBLICHNOE AKTSIONERNOE OBSCHESTVO MASHINOSTRO	Russian Federation	1,280,356
HLTH	SAGA PLC	Great Britain	3,363,110
HSHLD	THE SWATCH GROUP LTD.	Switzerland	12,876,793
INSUR	AXA SA	France	941,082,593
LABEQ	KOKUSAI COMPANY LIMITED	Japan	146,795
MACH	CHIGO HOLDING LTD	Cayman Islands	1,472,858
MEALS	LAS VEGAS SANDS CORP.	United States	20,469,000
MEDEQ	SMITH & NEPHEW PLC	Great Britain	7,344,000
MINES	EUROCHEM GROUP	Russian Federation	8,337,416
OIL	STATOIL ASA	Norway	104,530,000
OTHER	CHINA EVERBRIGHT GREENTECH LIMITED	Cayman Islands	962,541
PAPER	OJI HOLDINGS CORPORATION	Japan	17,118,501
PENSN	LEGAL & GENERAL ASSURANCE (PENSIONS MANAGEMENT)	Great Britain	370,081,661
PERSV	KOREA FEDERATION OF SMALL BUSINESS.	South Korea	5,301,746
RLEST	CHINA EVERGRANDE GROUP	Cayman Islands	194,375,099
RTAIL	RAKUTEN INC	Japan	39,423,561
RUBBR	FUKOKU COMPANY LIMITED	Japan	581,464
SHIPS	BOMBARDIER TRANSPORTATION (PROPULSION & CONTROL	Germany	286,235
SMOKE	FORTUNE NG FUNG FOOD (HEBEI) CO., LTD.	China	374,478
SODA	NIGERIAN BOTTLING COMPANY PLC	Nigeria	392,366
STEEL	NIPPON STEEL & SUMITOMO METAL CORPORATION	Japan	64,809,668
TELCM	CHINA MOBILE LIMITED	Hong Kong	218,854,366
TOYS	HANERGY THIN FILM POWER GROUP LIMITED	Bermuda	1,701,615
TRANS	PUBLIC JOINT STOCK COMPANY GAZPROM	Russian Federation	278,928,484
TXTLS	PACIFIC TEXTILES HOLDINGS LIMITED	Cayman Islands	645,015
UTIL	BROOKFIELD RENEWABLE PARTNERS L.P.	Bermuda	27,737,000
WHLSL	MITSUBISHI CORPORATION	Japan	140,594,000

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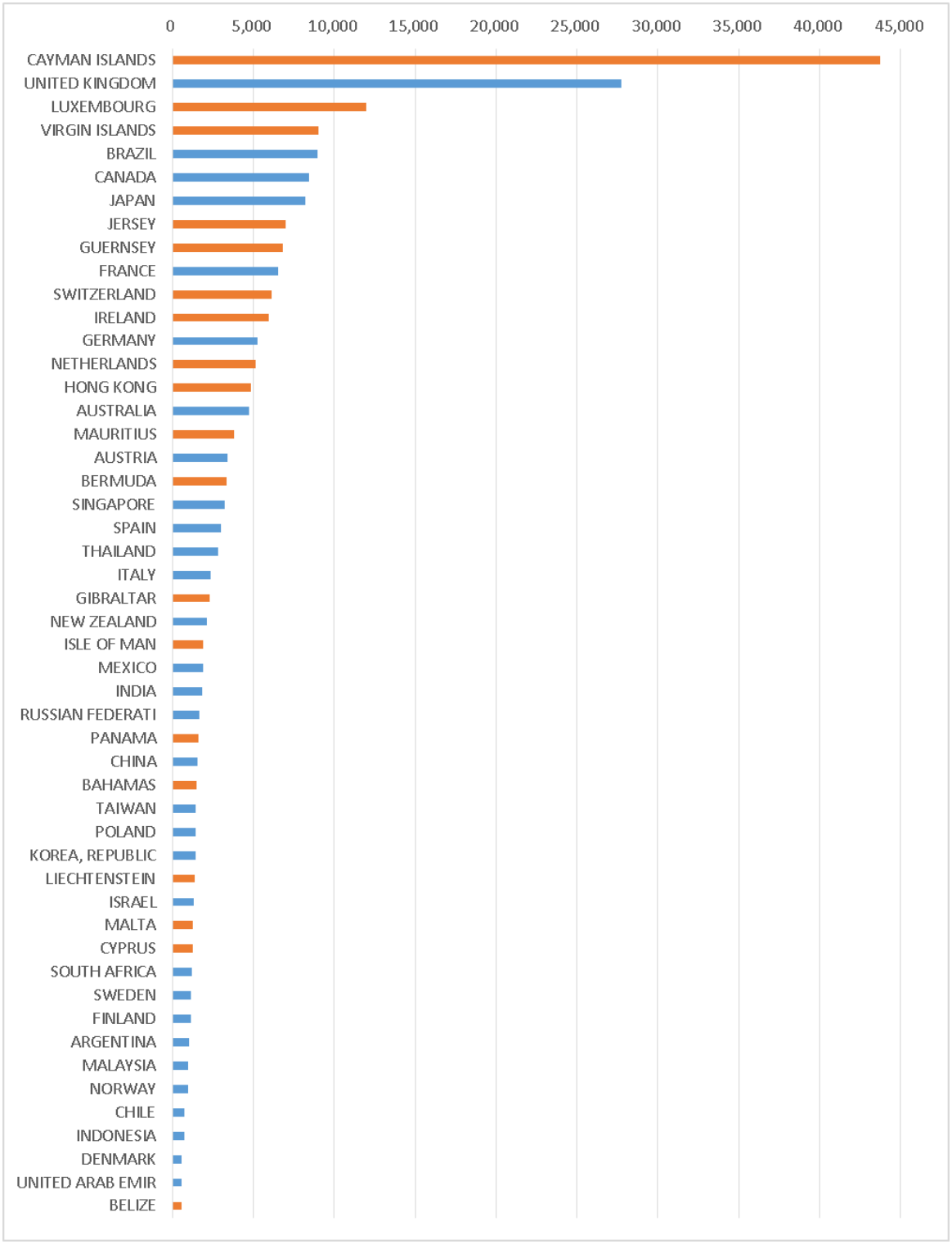
Figure 1 - Composition of the FFI List

Panel A: Composition of the FFI List – Tax Havens Highlighted in Orange



Panel B: Composition of the FFI List – Non-treaty Countries Highlighted in Orange

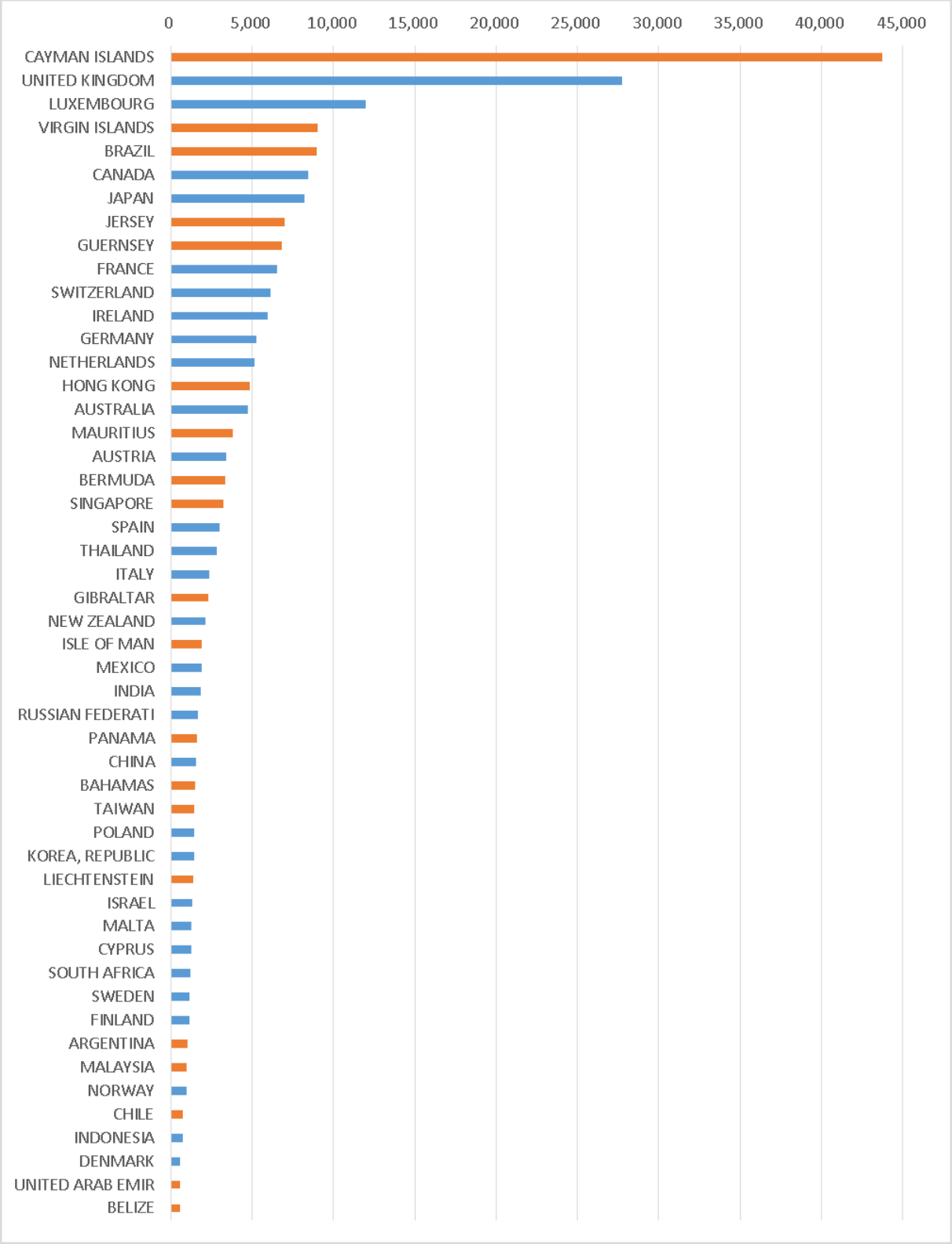


Table 1 - Descriptive Statistics for Country-level Tests

This table provides summary statistics (Panel A) and univariate correlations (Panel B) of variables used in country-level tests reported on Table 2. In Panel B, Pearson correlations are below the diagonal and Spearman correlation are above the diagonal. All variables are defined in Appendix 1.

Panel A: Summary Statistics

	N	*MEAN*	*STDDEV*	*P25*	*MEDIAN*	*P75*
DELAY	189	921	604	387	1,003	1,499
IGA	189	0.54	0.50	0.00	1.00	1.00
TREATY	189	0.30	0.46	0.00	0.00	1.00
TAXHAVEN	189	0.19	0.39	0.00	0.00	0.00
GDP ($B)	189	314	945	8	30	210
LOG_GDP	189	24.2	2.3	22.8	24.1	26.1
ROL	189	0.01	0.99	-0.78	-0.16	0.84
FPI ($B)	189	74	244	0	1	15
LOG_FPI	189	6.8	3.9	4.4	7.0	9.6

Panel B: Correlation Table

		(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*	*(7)*	*(8)*	*(9)*
DELAY	*(1)*	1.0000	-0.9090	-0.4580	-0.1880	-0.3200	-0.4340	-0.5330	-0.3510	-0.5640
IGA	*(2)*	-0.8850	1.0000	0.4450	0.1780	0.2420	0.4180	0.5120	0.2710	0.5410
TREATY	*(3)*	-0.4620	0.4450	1.0000	-0.1430	0.3820	0.5950	0.4210	0.2990	0.5130
TAXHAVEN	*(4)*	-0.1840	0.1780	-0.1430	1.0000	-0.1300	-0.3360	0.3520	0.0890	0.1380
GDP ($B)	*(5)*	-0.3200	0.2420	0.3820	-0.1300	1.0000	0.5570	0.1760	0.7300	0.4500
LOG_GDP	*(6)*	-0.4340	0.4180	0.5950	-0.3360	0.5570	1.0000	0.2150	0.3920	0.6680
ROL	*(7)*	-0.5330	0.5120	0.4210	0.3520	0.1760	0.2150	1.0000	0.3260	0.5080
FPI ($B)	*(8)*	-0.3510	0.2710	0.2990	0.0890	0.7300	0.3920	0.3260	1.0000	0.5060
LOG_FPI	*(9)*	-0.5640	0.5410	0.5130	0.1380	0.4500	0.6680	0.5080	0.5060	1.0000

Table 2 - Country-level Decision to Become IGA Partner Jurisdiction

This table examines countries' decision to become IGA partner jurisdictions. Panel A presents the results of univariate tests that compare the likelihood of becoming an IGA across four country characteristics: treaty status, tax haven, quality of the rule of law, and foreign portfolio income into the U.S. In Panel B we tabulate the results of a probit model that predicts IGA participation *(IGA)* based on country characteristics. In Panel C we perform a negative binomial regression to predict how long it took foreign countries to finalize an IGA with the U.S. (i.e., *DELAY).* In both Panel B and C, Model 1 excludes the *RULE OF LAW* control variable, which is compiled by the World Bank and is missing for 11 countries in our sample including several tax havens. Model 2 includes the *RULE OF LAW* control variable and uses a smaller sample. All variables are defined in Appendix 1. T-statistics based on robust standard errors are presented below the coefficients in parentheses. ***, **, * denotes statistical significance at the 10, 5, or 1 percent level, respectively.

Panel A: Univariate Tests

	TREATY = 0		TREATY = 1			
	N	*MEAN*	*N*	*MEAN*	*T-STAT*	
IGA	132	0.39	57	0.88	-6.79	***

	TAXHAVEN = 0		TAXHAVEN = 1			
	N	*MEAN*	*N*	*MEAN*	*T-STAT*	
IGA	153	0.50	36	0.72	-2.47	***

	HIGH_ROL = 0		HIGH_ROL = 1			
	N	*MEAN*	*N*	*MEAN*	*T-STAT*	
IGA	94	0.32	95	0.76	-6.70	***

	HIGH_FPI = 0		HIGH_FPI = 1			
	N	*MEAN*	*N*	*MEAN*	*T-STAT*	
IGA	94	0.31	95	0.77	-7.11	***

Panel B: Probit Regression on the Decision to Become IGA Partner Jurisdiction

	(1)	(2)
	IGA	*IGA*
TREATY	0.848***	0.490
	(2.965)	(1.594)
TAXHAVEN	1.175***	0.607*
	(3.494)	(1.669)
LOG_GDP	0.123	0.208***
	(1.602)	(2.615)
ROL		0.618***
		(3.927)
LOG_FPI	0.125***	0.075
	(3.049)	(1.636)
INTERCEPT	-4.109**	-5.562***
	(-2.398)	(-3.186)
N	200	189
R-SQUARED	0.328	0.376

Panel C: Negative Binomial Regression on Adoption Speed

	(1)	(2)
	DELAY	*DELAY*
TREATY	-0.424***	-0.309**
	(-2.829)	(-2.150)
TAXHAVEN	-0.548***	-0.349**
	(-3.357)	(-2.011)
LOG_GDP	-0.074**	-0.111***
	(-2.216)	(-3.364)
ROL		-0.298***
		(-4.498)
LOG_FPI	-0.056***	-0.017
	(-3.457)	(-0.925)
INTERCEPT	9.111***	9.661***
	(12.012)	(12.991)
N	200	189

Table 3 - Composition and Coverage of FFI List

This table presents a frequency table describing the sample of firms collected from the IRS FFI List. Panel A reports the number of firms from the FFI List that we were able to match to firms in Orbis, and splits this detail based on both *TAX HAVEN* and *TREATY* status. It also details the number of entities identified in Orbis that also report industry codes and total assets, respectively. Panel B reports the industry composition of participating financial firms on the FFI List (where industry is not missing in Orbis). It also reports how many participating FFIs come from non-financial industries. All variables are defined in Appendix 1.

Panel A: FFI's by TAX HAVEN and TREATY Status

	No. FFIs	**Orbis**	**Orbis w/ industry**	**Orbis w/ assets**
HAVEN	127,206	102,409	76,100	12,491
NON-HAVEN	115,429	95,003	77,898	36,313
	242,635	197,412	153,998	48,804
TREATY	128,841	105,478	84,871	39,956
NON-TREATY	113,794	91,934	69,127	8,848
	242,635	197,412	153,998	48,804

Panel B: FFI's by Industry

Financial	112,606	
Banks	20,098	
Insurance	4,143	
Real Estate	2,203	
Pension Funds	607	
Total Financial Industries		139,657
Non-financial Industries		14,341
Total		**153,998**

Table 4 - Descriptive Statistics for Entity-level Tests (Orbis Data)

This table provides summary statistics for our sample of Orbis financial institutions that we manually matched with the FFI List to verify FATCA participation. Panel A describes the Orbis firms we successfully matched with the FFI List. Panel B describes the Orbis firms that are not on the FFI List and do not comply with FATCA. Panel C indicates the countries from which the unmatched firms originate. All variables are defined in Appendix 1.

Panel A: Summary Statistics for FFI Sample

	N	*MEAN*	*STD DEV*	*P25*	*MEDIAN*	*P75*
SALES	5,470	1,837,012	7,012,088	176,836	350,781	979,309
ASSETS	5,470	38,100,000	167,000,000	1,100,725	4,467,937	17,100,000
EQUITY	5,470	2,844,427	11,300,000	168,460	523,100	1,623,749
LEVERAGE	5,470	0.81	0.22	0.77	0.89	0.94
PRETAX_INCOME	5,470	314,980	1,596,814	14,845	60,036	186,407
NET_INCOME	5,470	242,379	1,243,001	10,118	46,271	144,448
ROE	5,470	0.13	0.25	0.04	0.09	0.16
ROA	5,470	0.03	0.08	0.00	0.01	0.02
ROS	5,470	0.17	0.24	0.03	0.12	0.27

Panel B: Summary Statistics for Non-FFI Sample

	N	*MEAN*	*STD DEV*	*P25*	*MEDIAN*	*P75*
SALES	18	5,776,881	10,400,000	538,268	1,640,341	4,671,690
ASSETS	18	34,500,000	23,100,000	20,200,000	22,300,000	44,700,000
EQUITY	18	4,866,450	8,829,204	1,183,370	2,520,014	3,897,397
LEVERAGE	18	0.88	0.14	0.90	0.92	0.95
PRETAX_INCOME	18	818,238	1,604,239	107,425	223,754	538,982
NET_INCOME	18	396,011	477,549	77,397	167,982	455,458
ROE	18	0.11	0.08	0.06	0.09	0.13
ROA	18	0.01	0.01	0.00	0.01	0.01
ROS	18	0.18	0.16	0.05	0.13	0.22

Panel C: Non-FFIs by Country

COUNTRY	COUNT
Bermuda	1
Canada	2
China	6
Denmark	2
UK	1
Iran	3
Japan	2
Taiwan	1
TOTAL	**18**

Table 5 - Descriptive Statistics for Firm-level Consequences Tests (Compustat Global)

This table provides summary statistics (Panel A) and univariate correlations (Panel B) for our sample of non-U.S. financial institutions from Compustat Global. This sample is used in public-firm level tests that are reported in Tables 6 and 7. In Panel B, Pearson correlations are below the diagonal and Spearman correlations are above the diagonal. All variables are defined in Appendix 1.

Panel A: Summary Statistics

	N	*MEAN*	*STD DEV*	*P25*	*MEDIAN*	*P75*
ROA	17,578	0.022	0.086	0.003	0.015	0.042
ROE	17,578	0.063	0.265	0.024	0.077	0.141
DEPOSITORY INSTITUTIONS	17,578	0.401	0.490	0.000	0.000	1.000
POST	17,578	0.167	0.373	0.000	0.000	0.000
GDP	17,578	27.190	1.631	26.275	26.939	28.519

Panel B: Correlation Table

		(1)	*(2)*	*(3)*	*(4)*	*(5)*
ROA	*(1)*	1.000	0.709	-0.280	0.006	-0.011
ROE	*(2)*	0.413	1.000	0.126	-0.002	-0.004
DEPOSITORY INSTITUTIONS	*(3)*	-0.114	0.053	1.000	-0.016	-0.141
POST	*(4)*	0.018	0.013	-0.016	1.000	0.247
GDP	*(5)*	-0.011	-0.004	-0.141	0.247	1.000

Table 6 - Firm-level Tests of the Consequences of IGA Adoption (Compustat Global)

This table presents the results of difference-in-differences tests that examine the performance of firms affected by FATCA. In Panel A, our sample contains depository institutions (the treatment group) and real estate firms (the control group). The variable of interest is the interaction *DEPOSITORY INSTITUTIONS*POST*, which estimates the relative change in profitability that resulted from FATCA. In Panel B, the control group is expanded to include all non-depository financial institutions. All variables are defined in Appendix 1. T-statistics based on standard errors clustered by country are presented below the coefficients in parentheses. ***, **, * denotes statistical significance at the 10, 5, or 1 percent level, respectively.

Panel A: Difference-in-differences Around FATCA Adoption – Depository Institutions vs. Real Estate

	(1)	(2)
	ROA	*ROE*
DEPOSITORY INSTITUTIONS	-0.018***	0.041***
	(-4.41)	(5.03)
POST	0.013**	0.024
	(2.08)	(1.47)
*DEPOSITORY INSTITUTIONS * POST*	-0.012*	-0.036**
	(-1.67)	(-2.05)
GDP	-0.022	-0.076*
	(-1.48)	(-1.92)
FIXED EFFECTS	Country & Year	Country & Year
S.E. CLUSTERED BY:	Country	Country
OBSERVATIONS	17,578	17,578
R-SQUARED	0.061	0.049

Panel B: Difference-in-differences – Depository Institutions vs. Other Financial Institutions

	(1)	(2)
	ROA	*ROE*
DEPOSITORY INSTITUTIONS	-0.020***	0.031***
	(-5.31)	(3.91)
POST	0.003	0.003
	(0.75)	(0.32)
*DEPOSITORY INSTITUTIONS * POST*	-0.009**	-0.020
	(-2.39)	(-1.64)
GDP	-0.029**	-0.079***
	(-2.42)	(-2.65)
FIXED EFFECTS	Country & Year	Country & Year
S.E. CLUSTERED BY:	Country	Country
OBSERVATIONS	39,469	39,469
R-SQUARED	0.034	0.031

Table 7 - More Firm-level Tests of the Consequences of IGA Adoption (Compustat Global)

This table presents the results of interrupted time series tests that examine the performance of firms affected by FATCA. In Models 1 and 2 we examine all financial firms (SIC Codes 6000-6999); in Models 3 and 4 we examine only depository institutions (SIC Codes 6000-6099). All variables are defined in Appendix 1. T-statistics based on standard errors clustered by country are presented below the coefficients in parentheses. ***, **, * denotes statistical significance at the 10, 5, or 1 percent level, respectively.

	ALL FINANCIAL FIRMS		DEPOSITORY INSTITUTIONS ONLY	
	(1)	(2)	(3)	(4)
	ROA	*ROE*	*ROA*	*ROE*
POST	0.001	-0.000	0.003	-0.003
	(0.34)	(-0.01)	(1.16)	(-0.28)
GDP	-0.028**	-0.076**	0.002	-0.038
	(-2.39)	(-2.58)	(0.18)	(-1.07)
FIXED EFFECTS	Country & Year	Country & Year	Country & Year	Country & Year
S.E. CLUSTERED BY:	Country	Country	Country	Country
OBSERVATIONS	39,469	39,469	7,049	7,049
R-SQUARED	0.030	0.030	0.092	0.123