

# The most important tax havens and the role of intermediaries

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<i>Author(s)</i>	Petr Janský Charles University <a href="mailto:petr.jansky@fsv.cuni.cz">petr.jansky@fsv.cuni.cz</a>	Miroslav Palanský Charles University <a href="mailto:miroslav.palansky@fsv.cuni.cz">miroslav.palansky@fsv.cuni.cz</a>

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# The most important tax havens and the role of intermediaries

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Petr Janský<sup>1</sup>, Miroslav Palanský<sup>1</sup>

## Abstract

Tax havens are important players in today's global economy; in this paper, we contribute to the ongoing conceptual and empirical discussions of how to assess the importance of individual tax havens. We conceptually distinguish between two areas of regulatory arbitrage – tax avoidance and financial secrecy – as well as between four different concepts of being of importance to other countries. Ultimately, we provide guidance on which indicators of tax havens and corresponding data sources may be used to what purpose and when, and we apply some of these in the empirical part. We find that many countries offer tax and secrecy arbitrage opportunities and for a relatively large number of tax havens the activity attracted by these opportunities is important economically, but only a handful of jurisdictions act as important tax havens globally. Notably, we document a strong positive relationship between arbitrage opportunities offered (particularly low corporate tax rates, loopholes and tax treaty aggressiveness) and the scale of the relevant economic activity (foreign direct investment in particular) relative to the size of the tax havens' economies. We then use the developed conceptual framework to discuss how intermediaries, the Big Four accountancy firms in particular, facilitate the use of tax havens, before concluding with recommendations.

**Keywords:** tax havens; secrecy jurisdictions; offshore financial centres; offshore; indicators; intermediaries

**JEL classification:** F36, F63, F65, H26, O16

## 1 Introduction

Tax havens are a defining feature of the global economy. They provide multinational corporations (MNCs) and individuals with regulatory arbitrage opportunities (Baker and Murphy 2019), in particular in the areas of tax avoidance and financial secrecy. Recent research suggests that some USD 450-600 billion in corporate profits is shifted to tax havens (Tørsløv, Wier, and Zucman 2018; Janský and Palanský forthcoming), and several recent leaks of confidential documents from offshore law firms, such as the Panama Papers, provided merely a glimpse of how numerous rich individuals and politicians hide from taxes and regulatory scrutiny in their home countries under tax havens' veil of secrecy. Much of the activity in tax havens is deliberately hidden, but from what we do know about them, it is clear

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<sup>1</sup> Institute of Economic Studies, Faculty of Social Sciences, Charles University, Prague, Czech Republic. Corresponding author: Petr Janský (petr.jansky@fsv.cuni.cz). We are grateful to Sheila Killian and Duncan Wigan for comments. This research has been supported by the European Union's Horizon 2020 program through the COFFERS project (No. 727145). The authors also acknowledge support from the Grant Agency of the Czech Republic (P403/18-21011S) and the Charles University Grant Agency (848517).

that tax havens are important and have become more so over the past decades. This has negative consequences for other countries, which experience less economic activity, erosion of their often already weak institutions, and lower government tax revenue (Picciotto 2011). When MNCs avoid paying taxes through tax havens, either other tax payers need to pay more in taxes or there is less revenue for government expenditures such as education and health care.

Identifying and characterising the specific tax havens responsible for this harm with more precision is bound to empower other countries to challenge tax havens more efficiently. While most tax havens share certain characteristics, they are not all the same. They tend to specialize in different aspects and in different players of the offshore game: the British Virgin Islands specialize in incorporation, Liechtenstein in foundations, Cyprus combines low taxation with high secrecy and is especially important for Russia, Bermuda is an insurance specialist with a focus on the English-speaking world. Some tax havens are large, diverse economies, while for others most of their economic activity is dependent on the opportunities for tax avoidance and financial secrecy that they offer to foreign agents.

Our main research question in this paper is which tax havens are the most important. We answer this question from a number of different perspectives and dissect it along two dimensions. The first dimension concerns which regulatory arbitrage opportunities tax havens offer. We distinguish between two primary areas of regulatory arbitrage opportunities: tax avoidance and financial secrecy. Tax havens may specialize in providing such opportunities – in the area of tax avoidance, financial secrecy, or both – and this first dimension aims to capture this element of tax haven specialization.

The second dimension relates to various notions of importance. The basic distinction is fourfold. First, some tax havens are important in the sense that they offer opportunities for tax avoidance and financial secrecy in their most extreme forms, such as zero corporate tax rates or anonymous company ownership. We call this the Score indicator and define it as a measure that reflects the extent to which countries offer regulatory arbitrage opportunities. Second, some tax havens are important in exhibiting large amounts of economic activity often related to tax avoidance and financial secrecy. We call this second indicator Scale. It shows to what extent the opportunities quantified by the Score indicator are used by foreign agents. Third, some tax havens turn out to have attracted disproportionate amounts (relative to the size of their economies) of activity that stands to benefit from opportunities for tax avoidance and financial secrecy. We call this indicator Intensity. Fourth, we recognize an indicator that we call Contribution. It measures how much individual jurisdictions contribute to the global sum of all tax avoidance and financial secrecy.

It is possible to combine these indicators and use the so-called two-indicator approach. First, combining Score and Scale in a specific way may yield a Contribution indicator. This approach is being pioneered by two recent indices published by the Tax Justice Network – the Corporate Tax Haven Index (CTHI) and the Financial Secrecy Index (FSI) – which we discuss and also use in this paper. Second, combining

Score and Intensity enables us to answer the question of which tax havens are important from yet another standpoint. In particular, it allows us to analyse which features of the tax havens' legislation are associated with disproportionate amounts of economic activity by foreigners and to what extent more aggressive tax havens attract more such activity.

Alongside answering our main research question in its multiple versions, we hope to fulfil three more practical and forward-looking objectives. One of those objectives is to provide evidence about tax havens that could be used by tax authority experts. The tools developed in this paper may serve policymakers to identify important tax havens in different areas and scopes. We introduce one specific application of the indicators to achieve our second objective – to analyse and discuss one specific phenomenon of the offshore world, the presence of the Big Four accountancy firms and their role in facilitating the use of tax avoidance and secrecy regulatory arbitrage. Finally, our third objective is to provide other researchers with indicators about tax avoidance and financial secrecy for the purposes of further research.

We aim to contribute to the existing literature in at least three interrelated fields: economics, economic geography and international political economy. Each has provided seminal contributions to our understanding of tax havens, on which we build in this paper. We discuss our specific links to the existing literature in the following chapter. Here we briefly discuss a few papers and books that provide recent overviews of selected tax haven scholarship in each of the three fields. For economics, these are a book by Zucman (2015) and a paper by Schjelderup (2016). For economic geography, a review paper by Aalbers (2018) and a handbook chapter by Wójcik (2018). For international political economy, Murphy, Palan and Chavagneux (2010) and, more recently, Christensen and Hearson (2019). It is our hope that this paper may be of interest to scholars working in other disciplines, as well as to tax authorities and policy makers as we discuss at the end of the paper.

While our approach is interdisciplinary, we aim in particular to fill a research gap in economics. Traditionally, other fields such as economic geography and international political economy have provided a rich understanding of various tax haven concepts and their taxonomies. Economists have long studied tax havens, but have not usually given much explicit thought to how they would define them or what indicators would best capture whether countries are tax havens or not and, in this respect, they have arguably lagged behind. Today economists most frequently employ two approaches. First, they often use lists of tax havens that are based on arbitrary indicators and criteria. This binary classification of countries into tax havens and other countries is a false dichotomy since all countries can act as tax havens to a certain extent, as long as they provide opportunities for tax or secrecy arbitrage and foreigners use them. Second, economists also often use statutory corporate income tax rates, in particular when they study MNCs' profit shifting to tax havens (a less frequently used alternative is to use average effective tax rates (ETRs), more often those based on a model rather than data).

Our contribution in this paper is in structuring the discussion around tax havens for economists and exploring the existing sources of data that can be used as indicators of tax havens. With our proposed indicators, we reveal how some challenges of the past have been overcome over time. The availability of data has improved over the past decade, both in terms of their scope and their coverage of countries and years. For example, both forward-looking model-based and backward-looking data-based ETRs are now available for 50-100 countries, as is information on countries' financial transparency policies. Our aim is to position these indicators in a conceptual framework that differentiates between various objectives. We also propose previously seldom used indicators and show how they compare conceptually and empirically.

In the empirical part of this paper, we combine the proposed indicators and find that there is a positive and significant relationship between Score and Intensity in the area of tax – a one-point higher Haven Score is associated with, on average, an 8.4% higher ratio of FDI to GDP. Notably, we find that virtually no jurisdiction has been able to attract disproportionate FDI without having implemented high-Score regulations. The most important characteristics of tax havens for attracting disproportionate amounts of foreign direct investment seem to be low corporate income tax rates, the existence of loopholes and gaps, and double tax treaty aggressiveness. We do not find such strong evidence for the role of secrecy.

Combining the two-indicator approach with data on the presence of the Big Four accountancy firms, we find that they are disproportionately present primarily in tax havens with low corporate tax rates and in those that offer loopholes and gaps that allow firms to lower their tax burden. At the same time, these tax havens have attracted disproportionate amounts of international economic activity, pointing to the importance of the role of intermediaries in facilitating regulatory arbitrage in tax avoidance and financial secrecy.

The rest of the paper is structured as follows. Section 2 introduces our preferred conceptual framework and links it to the existing literature. Alongside that, it also reviews past efforts to classify tax havens and discusses the advantages and disadvantages of various approaches. Section 3 describes our empirical methodology with a focus on the data that operationalise our conceptual framework and how the various data sources differ in their usefulness for different purposes. Section 4 presents the estimation results and therefore the outcomes of operationalising the concepts from Section 2 with data from Section 3. This includes sub-sections on how the data sources can be combined to determine which tax havens are important in which areas. Section 5 discusses how the concepts and indicators presented in this paper can help us understand the role of intermediaries in facilitating the use of tax havens. Section 6 concludes.

## **2 Conceptual framework and related literature**

Our main research question is which tax havens are the most important. In response, we provide a conceptual framework in this section and empirical results in the two sections that follow it. Conceptually, we argue that this question has multiple answers, structured along two critical dimensions.

The first dimension concerns which regulatory arbitrage opportunity the tax havens offer. Arguably the most common forms of regulatory arbitrage concern tax avoidance (tax) and financial secrecy (secrecy), which are two of the main draws of tax havens. While some tax havens offer opportunities for both tax avoidance and financial secrecy, others specialise in one or the other, as we show in detail in the results section. We differentiate between tax havens that specialise in tax on the one hand, and those that specialise in secrecy on the other hand. This difference is, for example, inherently reflected in the Tax Justice Network's twin policy indices, the Corporate Tax Haven Index (CTHI) and the Financial Secrecy Index (FSI), which are also key data sources that we draw on in later sections.

The second dimension concerns various notions of importance. We discuss four varieties of importance in total. First, some tax havens are important in that they offer opportunities for tax avoidance and financial secrecy in their most extreme forms, such as providing zero corporate tax rates or anonymous company ownership. We label this variety of importance as Score, in line with CTHI's Haven Score and FSI's Secrecy Score, which are measures of how much a jurisdiction's regulatory framework offers opportunities for arbitrage in corporate tax and financial secrecy, respectively.

Second, some tax havens are important in that they exhibit large amounts of international economic activity which may be related to tax avoidance and financial secrecy. We label this importance as Scale, again, in line with CTHI's and FSI's Global Scale Weights. While Score reflects the extent to which countries offer arbitrage opportunities in tax and secrecy, Scale shows the extent to which those opportunities are or may potentially be used.

Third, some tax havens are important in their Intensity, i.e. how much international economic activity that stands to benefit from opportunities for tax avoidance and financial secrecy takes place in a tax haven, relative to the jurisdiction's overall economic activity (most often proxied by gross domestic product, GDP). We refer to this as Intensity in line with Fichtner (2015), who, together with Zoromé (2007), is one of the few scholars to have focused on this indicator of tax havens.

Fourth, some tax havens are important in terms of being significant contributors to the global sum of all tax avoidance and financial secrecy. The contribution that each individual tax haven makes underlies the logic of the main values and rankings of both the CTHI and the FSI, which are built on the combination of Score and Scale. In line with the indices' stated objectives, we use the term Contribution to refer to this notion of importance. Contribution is an example of what we label a two-indicator approach. In this case, countries that are with both high Score and high Scale are highlighted. As the CTHI and the FSI have both argued, both qualitative and quantitative approaches (i.e. both Score and Scale) are relevant in identifying important tax havens. In line with the two indices, we argue that it is

only when Score is combined with Scale that we are able to determine which tax havens make the largest contributions to the challenges of tax avoidance and financial secrecy globally.

These two dimensions to our main research question produce, in turn, multiple questions and answers and thus multiple sets of so-called important tax havens. The intersections of the two dimensions create several domains within which tax havens can be evaluated according to their importance, as detailed in the illustrative matrix in Table 1. More detailed questions raised include, for example, which tax havens result in the most tax avoidance absolutely and which in the most tax avoidance relative to the size of their economy? Which tax havens offer secrecy in its most extreme forms and which tax havens contribute most to the global issue of financial secrecy? Each of the cells in Table 1 provides an answer to the question “which are the most important tax havens?” for the given area and indicator. In Section 3 we operationalise this conceptual framework in detail, presenting the specific indicators and the best currently available data sources for them. Here we provide just a few examples. Tax havens with high Score in tax could be those with high CTHI’s Haven Scores or low statutory or effective corporate income tax rates, while Scale in tax can be proxied by the amount of foreign direct investment, high corporate profit booked in a jurisdiction or high corporate tax revenue.

**Table 1: Importance of tax havens – summary of the conceptual framework**

Indicator	Area	
	Tax	Secrecy
Score	CTHI’s haven score, statutory and effective corporate income tax rates	FSI’s secrecy score, a number of mentions in Panama Papers
Scale	Foreign direct investment, reported profits, tax revenue, individual wealth	Exports of financial services, portfolio investment assets, bank deposits, individual wealth
Intensity	FDI/GDP, profit shifted/GDP, profit shifted/total profit, revenue gain/revenue	Exports of financial services/GDP, portfolio investment assets/GDP, bank deposits/GDP
Contribution	CTHI, tax revenue gain, shifted profit, revenue losses	FSI

*Source: Authors*

This conceptual framework helps to structure the discourse about tax havens. It provides a straightforward distinction between tax and secrecy and various perspectives on importance, each of which can be used to answer a specific version of the general question “which tax havens are the most important?”. The framework should be useful for participants in the ongoing debate about tax havens, helping them to see more clearly what they agree and disagree about when it comes to the question of importance of tax havens. For example, they should be able to identify whether they are misunderstanding each other by having an across-domain dispute (one talking about secrecy, while the other sees only tax; one looking at intensity and the other at contribution) or whether they genuinely disagree about the situation within one domain (such as which countries provide the most extreme tax

avoidance opportunities). This framework, in combination with its operationalisation in the form of specific empirical indicators, supported by the data and results we introduce in the later sections of this paper, should provide useful guidance to those who are new to tax havens and want to understand individual tax havens' importance, as well as to the scholars on whose existing work we build.

Before we briefly review the most relevant existing literature, a short note on the language we use. The various concepts and taxonomies of tax havens use different terminology, which often carries specific nuance. For example, while Zoromé (2007) focuses on offshore financial centres, Cobham, Janský, and Meinzer (2015) study secrecy jurisdictions. Similarly, we could, in theory, refer to tax havens only when tax avoidance is in question, and to secrecy jurisdictions when it is about financial secrecy, and we could use the broader label “offshore financial centres” to refer to both together. While this is a good option, whose prior uses and suitability we recognise, we prefer to use only the term tax havens. This is primarily because we focus on the extent and use of regulatory arbitrage opportunities offered by all countries, rather than on a particular selection of countries (note that Cobham, Janský, and Meinzer, 2015, argue that all countries can be considered secrecy jurisdictions to some extent). And if we are to refer to all countries with one label, we prefer to use the arguably most recognisable and most commonly used label – tax havens.

We now discuss how the conceptual framework we have presented relates to existing concepts and taxonomies. There is rich related literature and, for a recent review paper, we refer to Aalbers (2018). Our conceptual framework accommodates most of the existing categorisations of tax havens in one way or another. In some cases, it can further clarify the existing taxonomies and the differences among them. Our contribution to the existing literature includes structuring aspects of the ongoing scholarly discussions about categories of tax havens.

The way academic literature has treated tax havens has undergone limited development over time. The first efforts to identify tax havens for the purposes of academic research employed a straightforward, binary approach. Much of the early work on tax havens was politically motivated (Palan 2000, 2002), and often for good reasons, since empirical data on activity in tax havens has been very scarce. Examples of influential early research on tax havens that used a binary classification include Irish (1982), Johns (1983), or Hines and Rice (1994). In a seminal report to the OECD's Ministerial Council Meeting and following important empirical observations presented by OECD (1998), OECD (2000) brought forth a set of transparent, data-driven criteria with which to classify tax havens. Much research since has either used the same list or has used similar methods to establish which countries could be considered tax havens for its specific purposes.

Recently, the European Commission has led the way in the blacklisting exercise, starting with the publication of black and grey lists of non-cooperative jurisdictions in December 2017. The lists are drawn up on the basis of a transparent assessment of empirical criteria in combination with political (and



potentially economic) pressure to establish cooperation in several areas. Jurisdictions that commit to improving cooperation with the EU member states' authorities in the near future are placed on the grey list and jurisdictions that do not do so end up in the black list. This assessment is then regularly updated and jurisdictions moved across the lists accordingly – between December 2017 and April 2019, there have been six sets of updates to the lists. A number of jurisdictions have committed to improving transparency and international cooperation and it remains to be seen how effective this effort will be and, importantly, what effects these changes will have on real activity in tax havens.

Binary classifications have a number of important shortcomings that impact their usefulness in academic research; these fall broadly into two categories. First, the selection of the indicators that are used to assess jurisdictions has a great impact on the final outcome of the exercise. As different tax havens specialize in the provision of different services, any efforts to reduce the approach to a single binary classification will result in a biased view of the offshore world. Moreover, the indicators selected are, naturally, those that are measurable and available for the jurisdictions in question – another important source of bias. Second, considerable arbitrariness is introduced in the process when a threshold must be set for each indicator, above which the jurisdictions are considered tax havens.

For these reasons, some researchers have adopted a somewhat meta-analytical view of tax haven classification. Palan, Murphy, and Chavagneux (2010) pioneered what they called a consensual approach, later relabelled as expert agreement and reused by Haberly and Wojcik (2014), in which a set of lists of tax havens from influential studies is used to compile a ranking of tax havens based on the number of times they appear on the lists (see Figure A1 in the Appendix for a summary of the results of this approach based on 15 influential lists of tax havens). While this method does provide a sort of measure of the extent to which a jurisdiction is considered to be a tax haven, the considerable methodological differences between the studies used to compile the ranking render our levels of confidence as to what this ranking actually tells us rather low.

Simultaneously, a further strand of literature has been developing which provides a more detailed and sophisticated view of the offshore world. Garcia-Bernardo, Fichtner, Takes, et al. (2017) use data on corporate structures to identify which tax havens act as sinks and conduits based on their position in the global ownership chains; Seabrooke and Wigan (2014) provide a theoretical framework to explain how global ownership chains are created, maintained, and governed; Eden and Kudrle (2005) focus on the types of taxation in which individual tax havens specialize; Bruner (2016) classifies tax havens based on the sectors in which they specialize; Sharman (2012) explores tax havens' strategic growth trajectories; Avi-Yonah (1999) proposed a typology based on the part of the value chain to which each tax haven most relates. Albeit at different levels, similar methodological issues to those described above persist in research that uses these classifications.

A straightforward qualitative indicator of tax havens is the effective tax rate, or rather the difference between the effective tax rate in one jurisdiction and that in another. By definition, only countries that offer a lower effective tax rate than that in a given agent's home country can act as tax havens for that agent. Data on nominal tax rates are collected by a number of international organizations and private companies, which makes them readily available to researchers. Data availability is much more limited for average effective tax rates (AETRs). Most recently, Janský (2019) has discussed the difficulties that arise in the estimation of corporate effective tax rates and provides estimates for European multinationals. The results of existing studies that have estimated AETRs show that these can differ significantly between jurisdictions. For example, according to estimates by Cobham and Janský (2017), the AETR in the Czech Republic is 18 % (in comparison with a statutory rate of 19 %), whereas, for example, Luxembourg and the Netherlands have AETRs of 1 % and 2 % and statutory rates of 29.2 % and 25 %, respectively.

The last strand of literature that is related to this paper is the scarce literature on the role of financial intermediaries in offshore finance. Harari, Meinzer, and Murphy (2012) presented the first evidence that large accountancy firms and banks carry out their activities with disproportionate intensity in jurisdictions that rank high in some of the qualitative indicators discussed above. Similar results hold for quantitative criteria as well (Murphy, Seabrooke, and Stausholm 2019), however, since financial intermediaries can be thought of as facilitators of tax and secrecy services, the quantitative criteria are endogenously influenced by the activity of intermediaries. In Section 5 we present some results and discuss their implications for our understanding of the role financial intermediaries play in offshore finance.

### **3 Indicators of tax havens and data sources**

Data is naturally needed to operationalise all of the indicators outlined above in our conceptual framework. In this section we first describe what types of data are needed for both qualitative and quantitative indicators and then provide a list (albeit incomplete) of the existing data sources that can be currently used to construct these indicators.

#### **3.1.1 Indicators of tax havens**

In the previous section, we outlined 4 main types of indicators, one of which falls into the category of qualitative indicators (Score), two of which can be classified as quantitative (Scale and Intensity) and one of which is a combination of the first two (Contribution; a combination of Score and Scale).

Qualitative indicators can be obtained in two ways – theoretically and empirically. Theoretical Scores are constructed directly from a jurisdiction's laws, while empirical Scores are based on actual data. As an example, the effective tax rate can either be derived theoretically, in a so-called forward-looking approach, as the statutory tax rate cleared of any deductions, loopholes and other exceptions, or it can

be observed, in a so-called backward-looking approach, from the data reported by taxpayers or tax authorities as the tax that has actually been paid divided by the tax base. Both these approaches have been used in the literature and have recently become available for a large number of countries; we build on these efforts in this paper.

Quantitative indicators (Scale and Intensity) require data on international economic activity. As Fichtner (2015) explained, three main types of data: foreign direct investment, foreign portfolio investment, and foreign banking deposits – all of which are collected by international organizations – represent virtually the entire international financial system.<sup>2</sup> While foreign direct investment is mostly relevant for corporate tax avoidance, portfolio investment and banking deposits are likely to be relevant for both tax and secrecy. In addition to these three sources of data, there are other activities that may be motivated by tax or secrecy arbitrage considerations (such as tax domicile or citizenship changes), but data on these activities is not generally available.

### **3.1.2 Data sources for indicators of tax havens**

In Table 2 we provide an overview of the sources of data that can be used for each of the indicators. Here we present in greater detail the eight sources that we use in this paper. They can be classified into three groups. First, two sources of qualitative data come from two indices published by the Tax Justice Network – the Corporate Tax Haven Index (Tax Justice Network 2019) and the Financial Secrecy Index (Tax Justice Network 2018). The CTHI's qualitative indicator is called the Haven Score and it is a measure, on a scale from 0 to 100, of how much each jurisdiction's regulations allow for corporate tax arbitrage, i.e. the erosion of corporate tax base from a foreign country with the aim of lowering an MNE's overall tax burden. The Haven Score is a product of a total of 20 indicators in 5 categories: the Lowest Available Corporate Income Tax Rate, Loopholes and Gaps, Transparency, Anti-Avoidance, and Double Tax Treaty Aggressiveness. The FSI's qualitative indicator, the Secrecy Score, is a measure, again on a scale from 0 to 100, of how secretive each jurisdiction is. Secrecy scores are calculated as an arithmetic average of 20 so-called Key Financial Secrecy Indicators (KFSIs) in 4 categories. Each of the KFSIs focuses on one particular aspect of a jurisdiction's legal system and together they represent a comprehensive indicator of how easy it is for foreign agents to hide their identity as owners of capital or beneficiaries of income in that jurisdiction.

Second, for the Contribution indicator, we directly use the values of the CTHI and FSI, which are calculated by combining the Haven Scores or Secrecy Scores (respectively) with so-called Global Scale Weights, which are quantitative measures of each jurisdiction's share of the global market for foreign direct investment (exports of financial services). Both indices use a cube/cube-root formula, which puts

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<sup>2</sup> In addition, internationally owned derivatives and reserve assets are held by central banks; data on these is difficult to obtain and their role in relation to tax avoidance and secrecy is not straightforward.

relatively more emphasis on the qualitative indicator (compared to a simple multiplication formula) so that it highlights the harmfulness of high-Score regulations (Tax Justice Network 2018).

Third, we use four sources of quantitative data for the indicators of Scale and Intensity – foreign direct investment (FDI), exports of financial services, foreign portfolio investment, and foreign bank deposits. For FDI, we follow the CTHI methodology (Tax Justice Network 2019) and construct the average of each country’s inward and outward FDI positions vis-à-vis other countries, taking the maximum of reported and derived data for each bilateral pair. We source our data from the IMF’s Coordinated Direct Investment Survey, which covers around 100 countries starting from 2009. As complementary sources we use data on inward FDI positions from UNCTAD’s FDI Statistics and data on FDI income from the IMF’s Balance of Payments Statistics.

For exports of financial services, we follow the FSI methodology (Tax Justice Network 2018), using data from the IMF’s Balance of Payments Statistics. For foreign portfolio investment we use the IMF’s Coordinated Portfolio Investment Survey, and for foreign banking statistics we use the Bank for International Settlements’ Locational Banking Statistics.

There are other sources of data that can be used to construct indicators of tax havens, however, they are either not available for a large number of countries or do not seem as relevant for capturing the economic activity that may benefit from tax avoidance and secrecy arbitrage opportunities. We outline and classify some of these additional sources along with the sources that we use in this paper in Table 2.

**Table 2: Indicators of tax haven importance – summary of existing data sources**

<b>Indicator</b>	<b>Area (Tax / Secrecy)</b>	<b>Type of agents (Corporations / Individuals)</b>	<b>Data</b>	<b>Sources</b>
<b>Score</b>	Tax	Corporations	Haven Scores (and their components)	Corporate Tax Haven Index (Tax Justice Network)
	Tax	Corporations	Corporate statutory tax rates	OECD, KPMG, etc.
	Tax	Corporations	Corporate forward-looking effective tax rates	OECD, ZEW, etc.
	Tax	Corporations	Corporate backward-looking effective tax rates	Orbis, Bureau of Economic Analysis, etc.
	Tax	Individuals	Personal income tax rates	PWC, World Bank, etc.
	Secrecy	Both	Secrecy Scores (and their components)	Financial Secrecy Index (Tax Justice Network)
	Secrecy	Both	Number of mentions in leaks	Panama Papers, Lux Leaks, Swiss Leaks, Paradise Papers
<b>Scale</b>	Tax	Corporations	Foreign direct investment (stocks, income)	IMF’s Coordinated Direct Investment Survey, UNCTAD FDI Statistics, Bureau of Economic Analysis, IMF’s Balance of

				Payments Statistics, OECD FDI Statistics
	Tax	Corporations	Reported corporate profits	Orbis, Amadeus
	Tax	Both	Tax revenue	Government Revenue Dataset, IMF's Government Finance Statistics
	Both	Both	Exports of financial services	IMF's Balance of Payments Statistics
	Secrecy	Individuals	Portfolio investment assets	IMF's Coordinated Portfolio Investment Survey
	Secrecy	Individuals	Banking deposits	Bank for International Settlements Location Banking Statistics
<b>Intensity</b>	Data used for Scale, relative to the size of the economy (where size of the economy can be measured by GDP, population, etc.)			
<b>Contribution</b>	Tax	Corporations	CTHI	Tax Justice Network
	Secrecy	Both	Financial Secrecy Index	Tax Justice Network
	Misaligned portion of data used for Scale (i.e. actual values minus expected values)			

*Source: Authors*

### 3.1.3 Other data sources

In addition to the data sources we use to construct indicators of tax havens, we also make use of data on the presence of the Big Four accountancy firms (KPMG, EY, Deloitte, and PriceWaterhouseCoopers). These have been collected by Murphy, Seabrooke, and Stausholm (2019) based on publicly available information on the firms' websites and in their annual reports. This data includes the firms' reported numbers of employees and offices in 137 jurisdictions in which they are present.

In addition to the sources outlined above, we use data on GDP from the World Bank and, where missing, the latest available data in the CIA World Factbook.

## 4 Results

In this section we empirically answer our main research question: which tax havens and secrecy jurisdictions are most important? To do so, as outlined in Section 2, we look in detail at a number of sub-questions relating to jurisdiction specialization and indicator types.

Where specialization is concerned, the services that OFCs offer to foreigners can be classified into the two principal and broadly defined categories of tax and secrecy. Tax havens enable foreign agents to move their taxable base away from their home jurisdiction to a lower-tax jurisdiction, ultimately

allowing them to decrease their overall tax liabilities.<sup>3</sup> Additionally, some tax havens provide the means to hide the identity of true owners of wealth or beneficiaries of income.

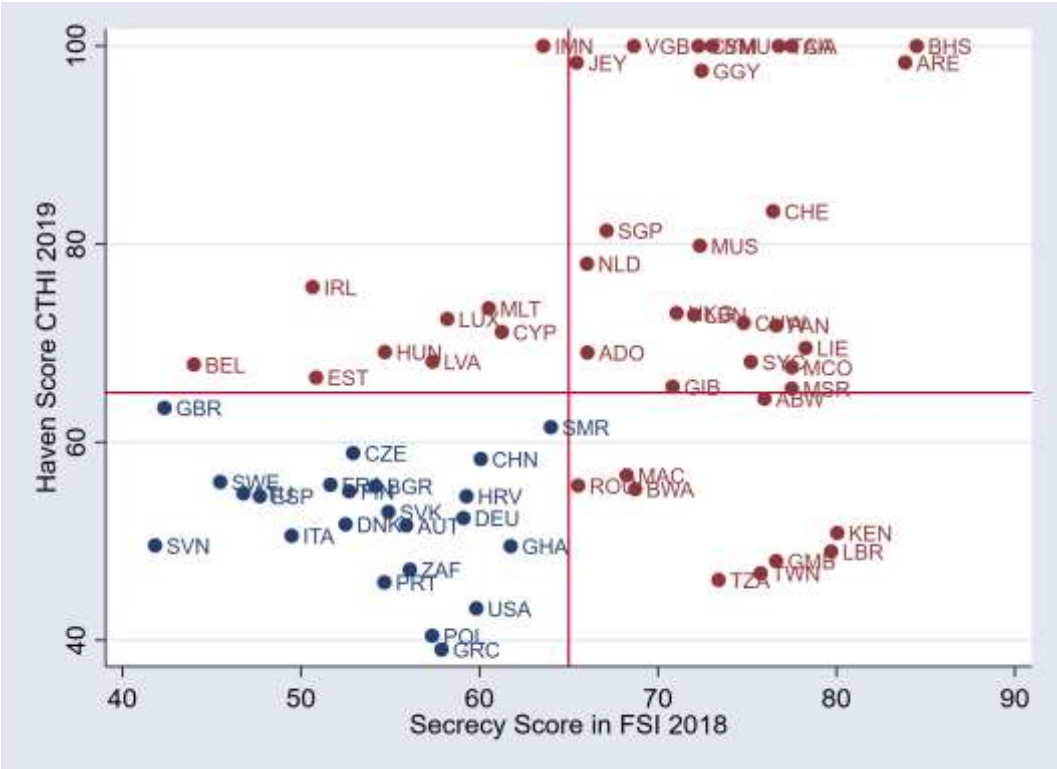
As far as indicator types are concerned, by using the three types of indicators defined above (Score, Scale and Intensity) and their combinations we are able to identify the most important tax havens and secrecy jurisdictions from multiple perspectives.

In Figure 1 we plot two indicators of the first type, Score. In the area of financial secrecy, we use the Secrecy Score from the FSI, and in the area of corporate tax, we use the Haven Score from the CTHI. Four main clusters of countries are recognizable in Figure 1. A first group of countries serve as aggressive corporate tax havens while simultaneously being very secretive. This group includes most of the Caribbean tax havens, some British Crown Dependencies, and the United Arab Emirates. A number of other countries serve as corporate tax havens but are not as aggressive with their tax haven policies and do at the same time cooperate with other countries to various extents. This group includes less secretive European OFCs such as Ireland, Luxembourg, and Malta, and a number of relatively highly secretive tax havens, such as Switzerland, Singapore, Panama, and Hong Kong. A third group of countries combine relatively high secrecy (mainly due to low international cooperation) with low Haven Scores, such as Gambia, Liberia, Taiwan, and Kenya. Fourth, the blue dots represent countries that have low Haven Scores and low Secrecy Scores. These countries are mainly located in Europe and are very rarely associated with the term tax haven (although some of them do provide specific opportunities to escape or undermine the home legislation of foreign agents, as discussed for example for Germany by Meinzer (2015)).

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<sup>3</sup> Tax havens could be further distinguished in terms of the types of taxes that they provide the opportunity to avoid---some tax havens make it attractive and easy for multinational firms to shift profits under their taxable base, while others will allow foreigners to change their citizenship or tax domicile so that they may escape personal income tax, wealth tax or estate tax. In this paper we focus primarily on corporate tax havens.

**Figure 1: Score indicator for corporate tax (Haven Score from Corporate Tax Haven Index) and secrecy (Secrecy Score from Financial Secrecy Index)**

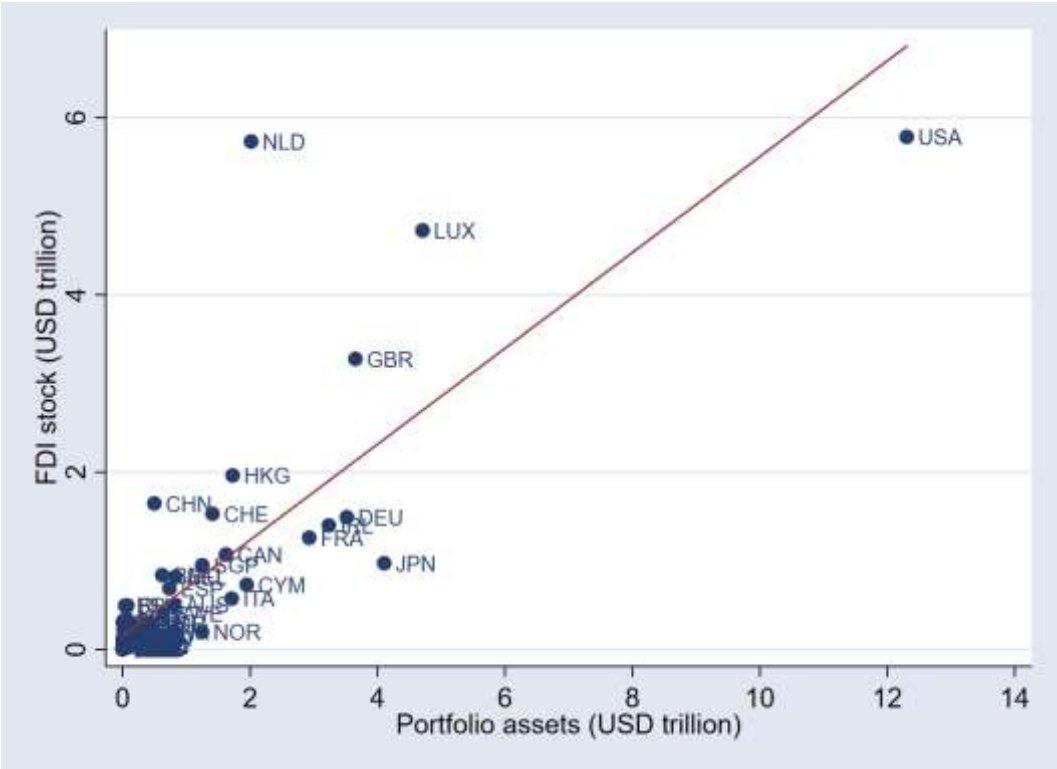


Source: Authors; data from CTHI and FSI.

In Figure A2 we provide a more detailed look at the same by considering the components of Haven Scores and Secrecy Scores separately. We find that virtually all countries that offer low corporate income tax rates are relatively secretive in the areas of Ownership Registration and Integrity of Tax and Financial Regulation, while the category of International Standards and Cooperation is not as closely correlated with the corporate tax rate the countries impose.

The second indicator, Scale, is depicted for tax and for secrecy in Figure 2. Since this indicator is in absolute (dollar) terms, large developed countries are naturally at the top of the rankings. The United States leads in both indicators, but several tax havens with much smaller populations report comparable numbers. The Netherlands, Luxembourg, and the United Kingdom also rank high on the Scale indicator. The figure is not very illustrative since most jurisdictions are relatively smaller and report less than 2 trillion USD in FDI stock and portfolio assets – an issue on which our third indicator improves significantly.

**Figure 2: Scale indicator for corporate tax (foreign direct investment stock, average of inward and outward) and secrecy (portfolio assets)**

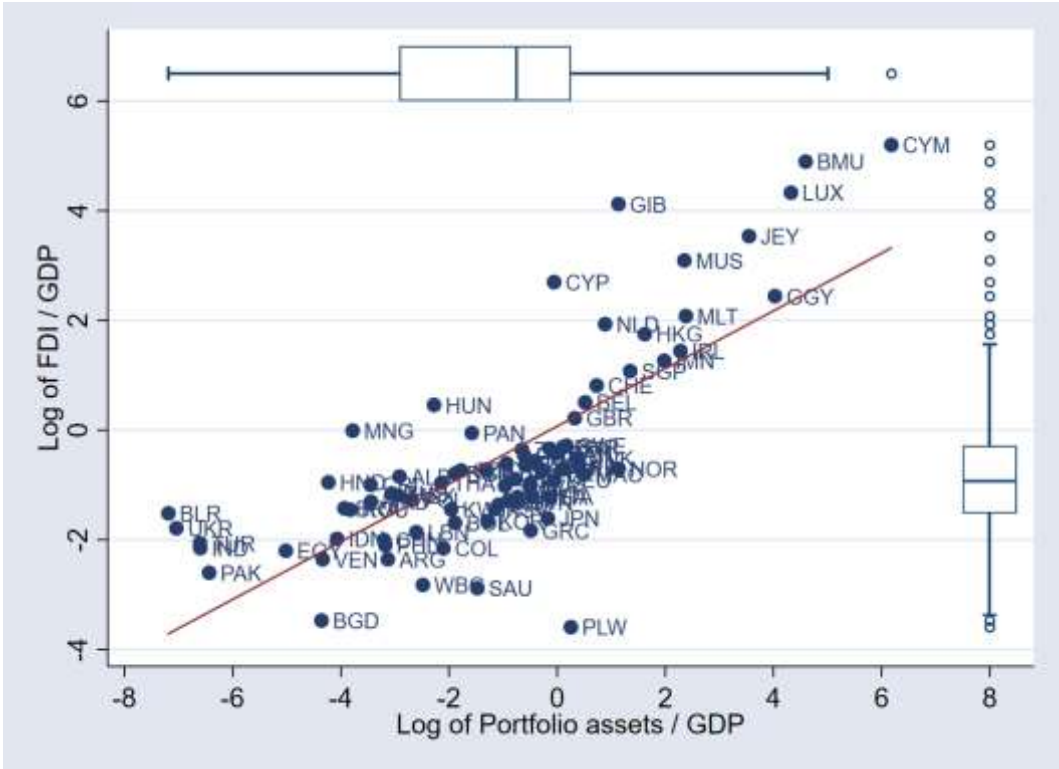


*Source: Authors; data on FDI stock from IMF's Coordinated Direct Investment Survey, data on portfolio assets from IMF's Coordinated Portfolio Investment Survey.*

As we outline above, the third main indicator for the identification of OFCs is Intensity---a measure of how disproportionate the scale of a certain activity is, relative to the size of the economy in the relevant jurisdiction. In Figure 3 we compare Intensity for corporate tax avoidance and for secrecy, again using foreign direct investment for corporate tax avoidance and portfolio investment (assets) for secrecy. We also provide a standard outlier test for both distributions, in which the box represents the distance between the first and third quartiles and the whiskers show the distance within 1.5 times the interquartile range. We identify a number of outliers, especially in terms of FDI/GDP (for the case of portfolio assets, the distribution is more dispersed and only one outlier, the Cayman Islands, is identified by this method). These countries have attracted unusual amounts of foreign direct investment relative to the size of their economies. As we show later, this indicator, albeit only in combination with the first indicator, Score, sheds light on which countries have become intensive tax havens.



**Figure 3: Intensity indicator for corporate tax (foreign direct investment stock relative to GDP) and secrecy (portfolio assets relative to GDP)**

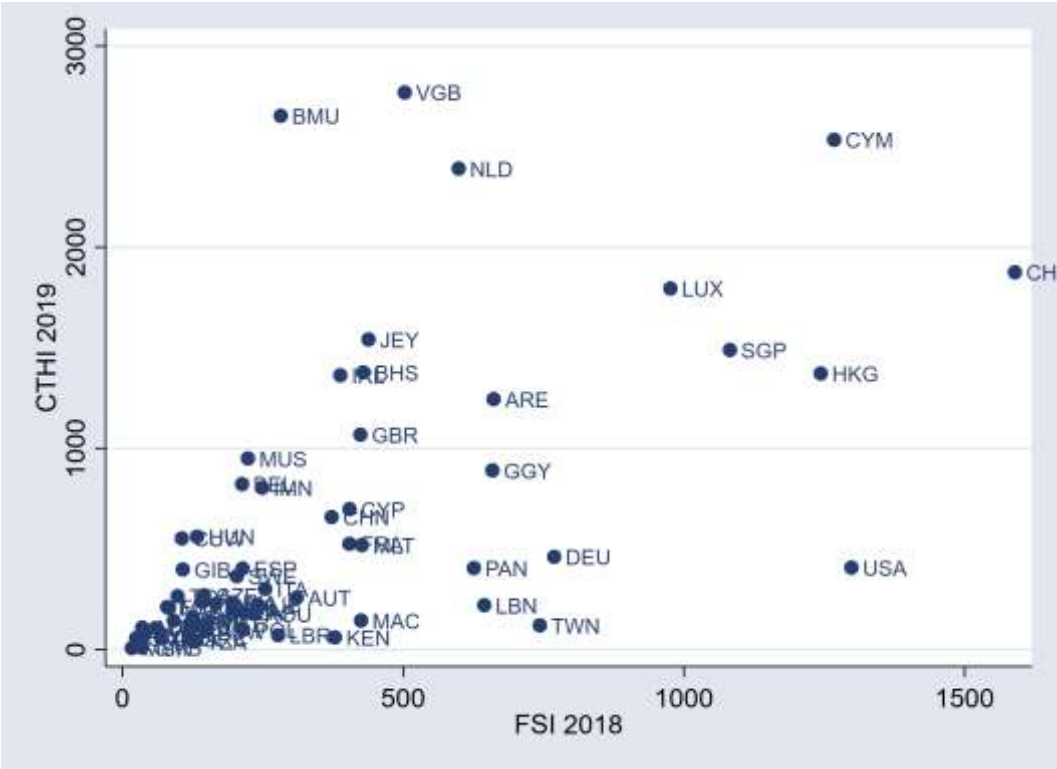


Source: Authors; data on FDI stock from IMF's Coordinated Direct Investment Survey, data on portfolio assets from IMF's Coordinated Portfolio Investment Survey, and data on GDP from the World Bank and CIA.

The data used in these figures form part of two recently published indices which leverage the first type of the so-called two-indicator approach discussed in Section 2: the Corporate Tax Haven Index and the Financial Secrecy Index. These two indices identify and rank the largest contributors to the problem of corporate tax havens and financial secrecy, respectively. They do so by combining the qualitative indicator, Score (i.e. information on how much the regulations of countries allow opportunities in the area of tax avoidance and secrecy, respectively) with one of the two quantitative indicators, Scale (i.e. how much activity that uses these regulations actually takes place in these countries).

In Figure 4 we compare the resulting values of CTHI and FSI and find that not that many jurisdictions serve as important global players in the markets for both tax avoidance and secrecy, despite offering opportunities for both. Bermuda, the British Virgin Islands, and the Netherlands are primarily important for corporate tax, while the Cayman Islands, Switzerland, Luxembourg, Singapore, and Hong Kong are important for both. The United States scores high in the FSI (while scoring low in the CTHI) mostly due to its very high exports of financial services, which are used in the construction of the Global Scale Weights in the FSI.

**Figure 4: Comparison of Corporate Tax Haven Index and Financial Secrecy Index (combining the Score and Scale indicators)**



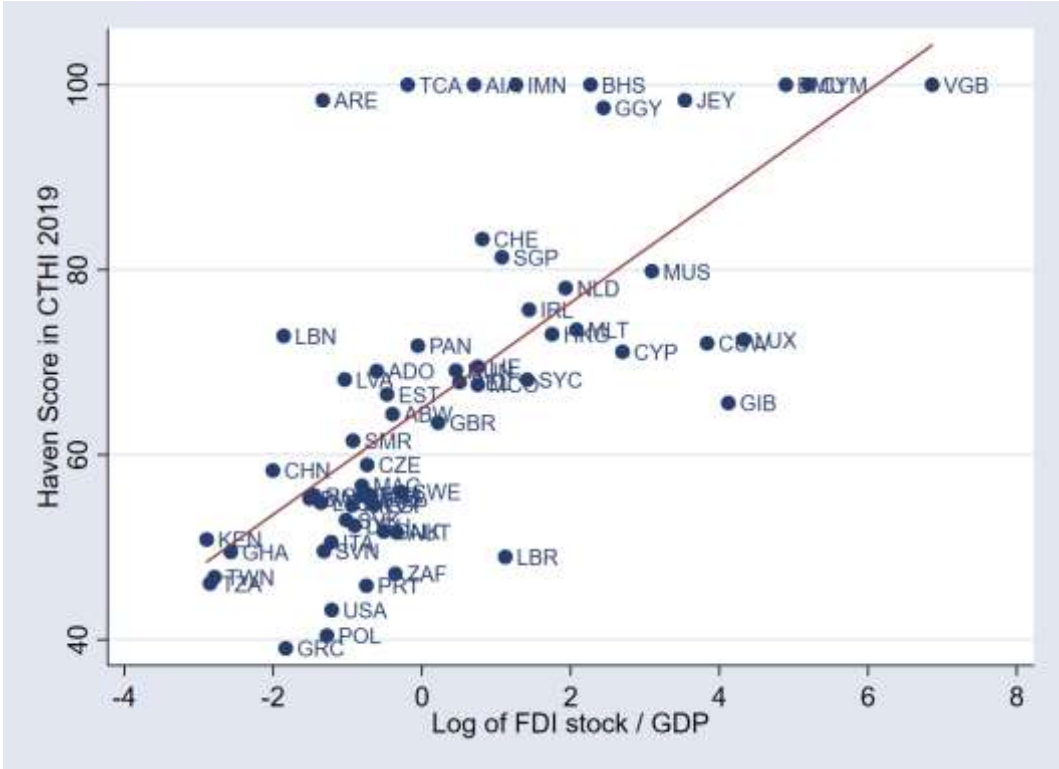
*Source: Authors; data from CTHI and FSI.*

One of our contributions in this paper is that we do not examine which countries are important contributors to the issues of tax avoidance and financial secrecy, but rather those that offer these opportunities (i.e. have a high Score indicator) and at the same time have been exceptionally and disproportionately successful in attracting agents that seek their services (i.e. have a high Intensity indicator). Figure 5 shows the relationship between Haven Scores and the natural logarithm of the ratio of foreign direct investment stock to GDP. We observe a high positive correlation (0.72) between these two variables. Notably, we find that virtually no jurisdictions have been able to attract disproportionate amounts of FDI without having implemented regulations that we associate with the term tax haven. Tax havens such as Luxembourg, Curacao, Gibraltar, and Liberia do report higher FDI to GDP ratios than what their Haven Score would predict, but only by relatively small amounts.

Conversely, all jurisdictions with Haven Scores above 65 reported above-median ratios of FDI to GDP in 2017. Among the most aggressive tax havens (those with Haven Scores above 95), the least successful in this metric are the United Arab Emirates (which, nevertheless, still report the second highest FDI to GDP within the group of OPEC countries), Turks and Caicos Islands, and Anguilla. We analyse the relationship more formally in the first column of Table 3 and find that on average, a one-point increase in the Haven Score is associated with an 8.4% higher ratio of FDI stock to GDP. We find similar coefficients in columns 2 and 3 where we use different relevant dependent variables (i.e. Intensity

indicators) – inward FDI stock (based on UNCTAD’s data) to GDP and FDI income (based on IMF’s Balance of Payments data) to GDP. Scatter plots for all three relationships are presented in Figure A3 in the Appendix.

**Figure 5: Haven Scores (Score) and FDI stocks relative to GDP (Intensity)**



Source: Authors; data on Haven Scores from CTHI, data on FDI stock from IMF’s Coordinated Direct Investment Survey, data on GDP from World Bank and CIA.

**Table 3: Regression results, OLS.**

	(1)	(2)	(3)	(4)	(5)	(6)
	Log of FDI stock / GDP	Log of inward FDI stock / GDP	Log of FDI income / GDP	Log of Portfolio assets / GDP	Log of Bank deposits / GDP	Log of Exports of fin. services / GDP
Haven Score	0.0837*** (0.0120)	0.0557*** (0.0103)	0.0831*** (0.0104)			
Secrecy Score				0.0125 (0.0325)	0.0213 (0.0165)	-0.0258 (0.0230)
Constant	-5.398*** (0.823)	-3.694*** (0.683)	-8.001*** (0.637)	-1.434 (1.992)	-16.02*** (1.092)	-4.247*** (1.393)
Observations	64	56	34	68	103	62
R-squared	0.440	0.349	0.664	0.002	0.016	0.020

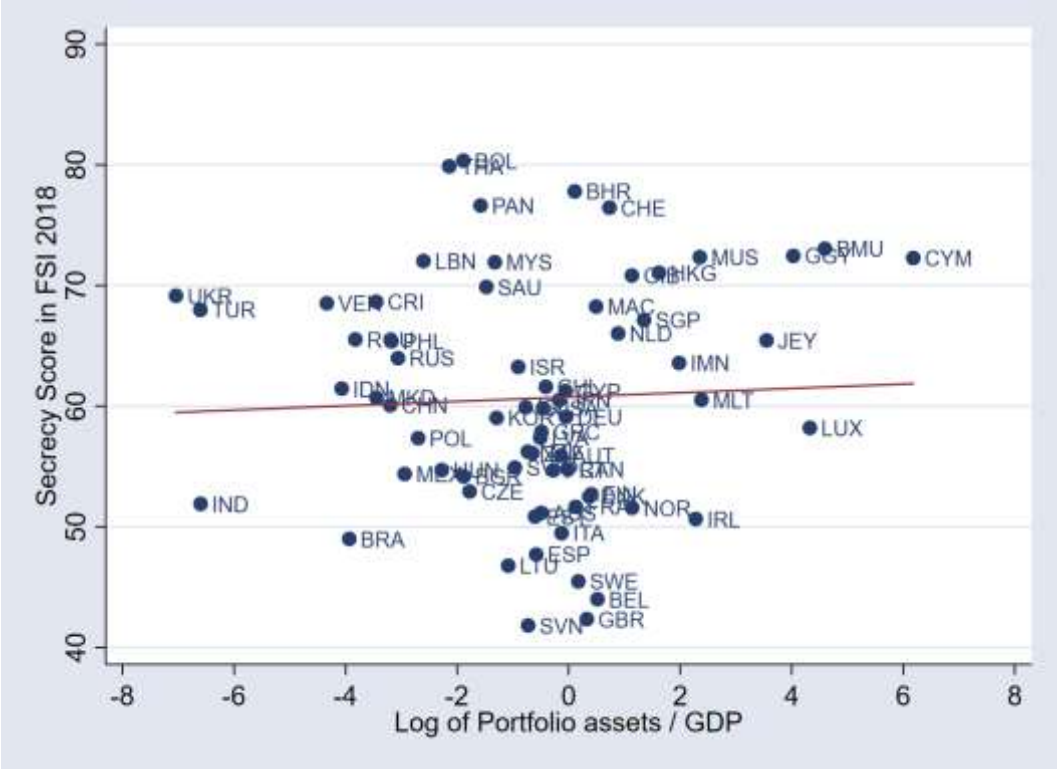
Standard errors in parentheses  
 \*\*\*p<0.01, \*\*p<0.05, \*p<0.1

Being a measure composed of multiple parts, the Haven Score enables us to disaggregate the Score indicator into 5 sub-categories and assess which of them are more closely correlated with the Intensity indicator. In Figure A4 in the Appendix we present a graph similar to Figure 5 but broken down into these 5 parts of the Haven Score. We find that each of the individual categories is positively correlated with our main Intensity indicator for tax (log of average FDI stock relative to GDP), but with different strengths. Figure A5 in the Appendix shows the coefficients and 95% confidence intervals that result from estimating Equation (1) with the 5 different categories of Haven Scores as explanatory variables. All coefficients are statistically significant at the 5% level of significance, with the strongest estimated relationship for the cases of LACIT rate, Loopholes and Gaps and Double Tax Treaties Aggressiveness.

For secrecy, the relationship between the Score indicator (represented by Secrecy Scores from the FSI) and the relevant Intensity indicators is generally weaker than for tax. Figure 6 shows the relationship between Secrecy Scores and the ratio of portfolio assets (based on data from IMF CPIS) to GDP. We find that a number of tax havens with high Secrecy have attracted disproportionate amounts of portfolio investment, such as the Cayman Islands, Bermuda, or Guernsey. At the same time, there are jurisdictions with relatively low Secrecy Scores and above-median Intensity – Luxembourg, Ireland, and Norway are in this group. There is also a group of jurisdictions with relatively high Scores but low Intensity – these include Ukraine, Turkey, and Venezuela. Figure A6 in the Appendix shows a breakdown of the Score indicator for secrecy into its four sub-categories. We do find a positive correlation for Ownership Registration and Integrity of Tax and Financial Regulation, but not for Legal Entity Transparency, nor for International Standards and Cooperation (as shown in Figure A7 in the Appendix).

Overall, we find that none of the three Intensity indicators that we consider relevant for secrecy (i.e. portfolio investment, bank deposits, and exports of financial services, all relative to GDP) are strongly correlated with Secrecy Scores. We present these results in Figure A8 in the Appendix and also more formally in columns 4-6 of Table 2. We find that none of the coefficients are statistically significant at the standard levels of significance. This may be for a number of reasons. Secrecy, as opposed to tax, is more often associated with other phenomena than any deliberate effort to attract investors from abroad. A number of developing countries, for example, exhibit relatively high Secrecy Scores due to their lack of cooperation with other countries and international organizations and because they lack appropriate implementation of costly control mechanisms. Furthermore, secrecy may not play such a large role for certain investors and firms who operate with relative transparency but nonetheless seek to lower their tax liabilities. Finally, it is likely that the data we use to construct the Intensity indicator for secrecy do not reliably represent the activity that is most relevant to secrecy, since by definition that activity tends to be well hidden.

**Figure 6: Secrecy Scores and portfolio assets relative to GDP**



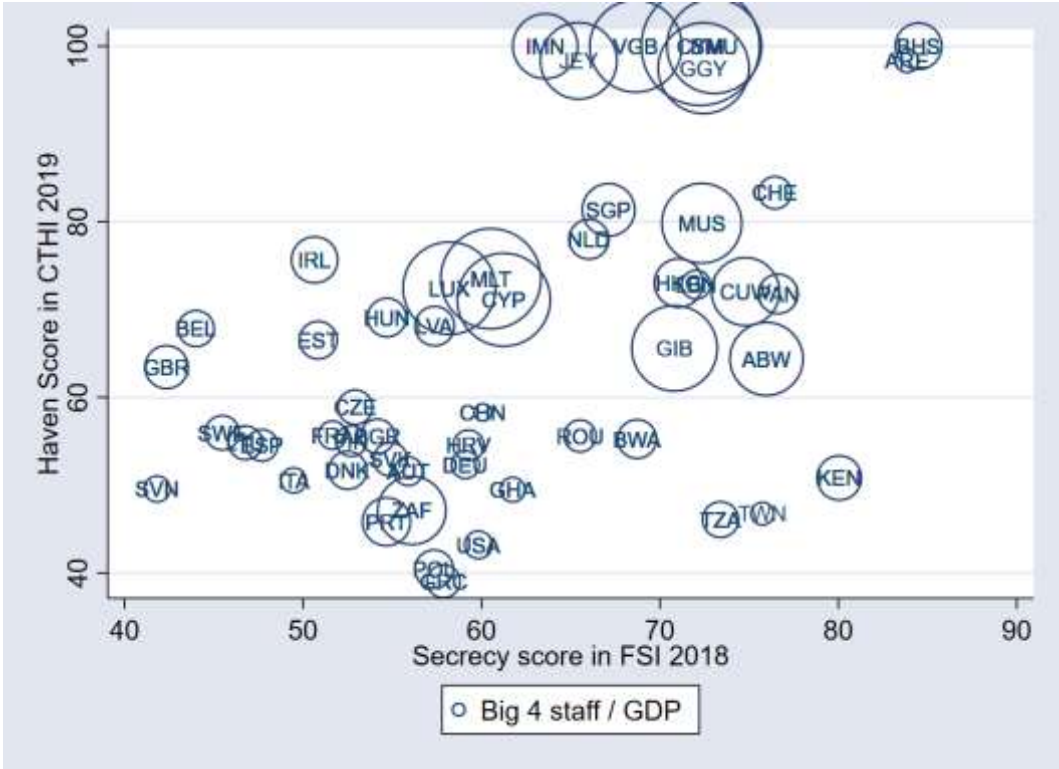
Source: Authors; data on Secrecy Scores from FSI, data on portfolio assets from IMF's Coordinated Portfolio Investment Survey, and data on GDP from the World Bank and CIA.

**5 The role of intermediaries**

In this section we explore how the two-indicator approach can help us to understand the role that intermediaries (the Big Four accountancy firms in particular) play in facilitating firms’ and individuals’ use of tax havens and secrecy jurisdictions. Specifically, we analyse where these firms’ employees are located and which indicators commonly exhibit high levels in the countries in which these firms are present to a disproportionate extent. Figure A9 in the Appendix shows the ratio of Big Four staff to GDP for the top 50 countries in the sample.

Figure 7 is similar to Figure 1 but also includes information on the presence of Big Four employees relative to GDP. We find that disproportionate numbers of Big Four staff are likely to be found in jurisdictions from three groups: those with extremely high Haven Scores (Cayman Islands, Bermuda, Guernsey, British Virgin Islands, Jersey, and Isle of Man), those with both relatively high Haven Scores and relatively high Secrecy Scores (Gibraltar, Curacao, Malaysia, and Aruba), and some European tax havens (Malta, Cyprus, and Luxembourg).

**Figure 7: Haven Scores, Secrecy Scores, and numbers of Big 4 accountancy firm staff relative to GDP**



*Source: Authors; data on HS from CTHI, data on SS from FSI, data on Big Four staff from Murphy, Seabrooke, and Stausholm (2019), data on GDP from WB and CIA.*

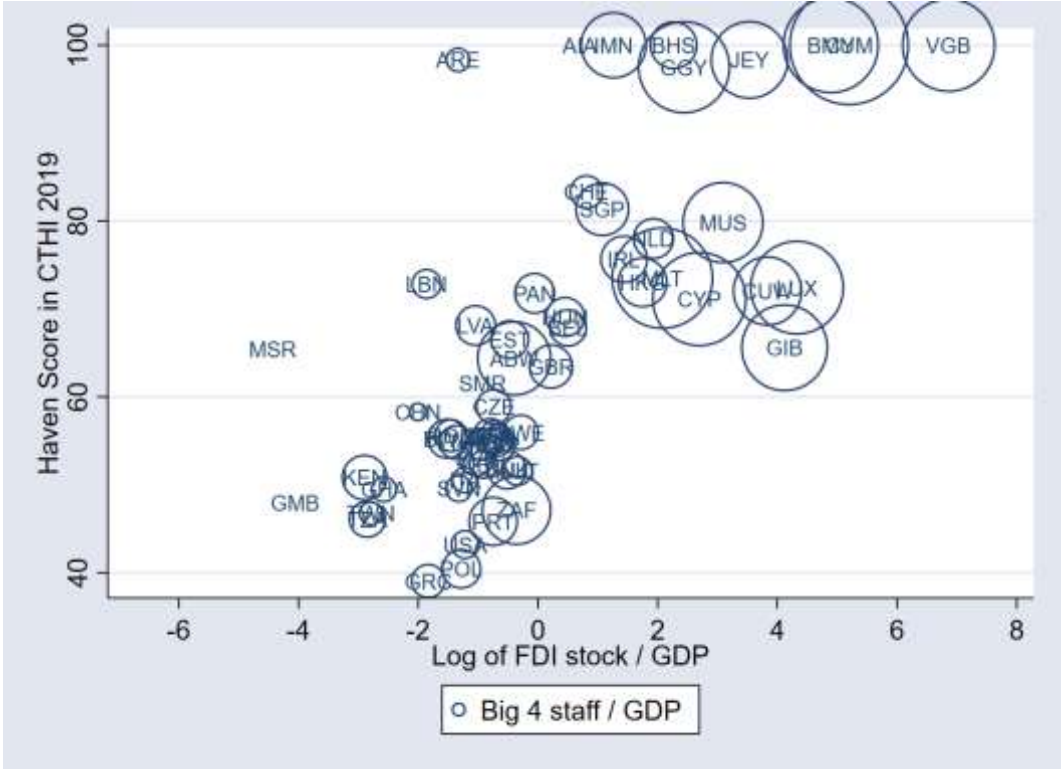
More formally, in Table 4 we present pairwise correlation coefficients and their p-values for Big Four staff relative to GDP and the indicators Score, Intensity, and Contribution, for both tax and secrecy. We find that a disproportionate presence of Big Four employees is positively and highly significantly correlated with all of these indicators, except for Secrecy Score, where the p-value reaches 0.11. The correlation is generally stronger for indicators that pertain to tax, which we examine further in Figure 8 using the two-indicator approach. We find that the Big Four are disproportionately present primarily in jurisdictions that combine high Haven Scores with high Intensity (as measured by FDI stock relative to GDP). In Figure A9 in the Appendix, we break down the Haven Scores into sub-categories, which helps us to identify the characteristics of tax havens that are most associated with disproportionate Big Four presence. A correlation analysis reveals that the LACIT rate and the category Loopholes and Gaps are most correlated with Big Four presence relative to GDP, suggesting that the Big Four play a key role in facilitating tax avoidance.

Regarding secrecy, a similar analysis (in Figures A10 and A11 in the Appendix) confirms our previous finding that tax seems to be a more important area than secrecy for the symbiosis of MNCs and the Big Four.

**Table 4: Correlation matrix of tax haven indicators**

	Big Four staff / GDP	Haven Score	Secrecy Score	FDI / GDP	Portfolio assets / GDP	CTHI 2019	FSI 2018
Big Four staff / GDP	1						
Haven Score	0.533* (0)	1					
Secrecy Score	0.163 (0.108)	0.436* (0)	1				
FDI / GDP	0.387* (0)	0.338* (0.006)	0.048 (0.618)	1			
Portfolio assets / GDP	0.633* (0)	0.458* (0.002)	0.197 (0.107)	0.862* (0)	1		
CTHI 2019	0.572* (0)	0.686* (0)	0.145 (0.253)	0.528* (0)	0.547* (0)	1	
FSI 2018	0.254* (0.011)	0.299* (0.017)	0.043 (0.656)	0.146 (0.125)	0.38* (0.001)	0.589* (0)	1

**Figure 8: Haven Scores, foreign direct investment stock relative to GDP, and the number of staff of the Big Four accountancy firms relative to GDP.**



Source: Authors; data on HS from CTHI, data on FDI from IMF CDIS, data on Big Four staff from Murphy, Seabrooke, and Stausholm (2019), data on GDP from WB and CIA.

## 6 Conclusion

Our main research question in this paper is which tax havens are the most important. There have previously been attempts to classify tax havens in various ways, but no agreement has been reached about what constitutes an "important tax haven", for two very straightforward reasons – first, not all tax havens are active in the same areas and second, "importance" can be assessed from several different perspectives, for each of which different measurement tools (indicators) are appropriate. We outline a conceptual framework which synthesizes these approaches and presents a comprehensive series of tools capable of answering the research question from these multiple perspectives.

We distinguish between four main indicators of tax havens. The first one, Score, is qualitative and measures the extent to which a jurisdiction's rules and regulations applicable to foreigners enable them to escape from or undermine the rules and regulations of their home countries. Two others, Scale and Intensity, are quantitative and measure the absolute amount of economic activity that stands to benefit from arbitrage opportunities (Scale) and the ratio of this absolute amount of economic activity to the size of the overall economy (Intensity). Fourth, the Contribution indicator provides yet another possible answer as to which tax havens are the most important. Two recently published indices, the Corporate Tax Haven Index and the Financial Secrecy Index, combine Score and Scale to derive the Contribution indicator which measures how much each tax haven contributes to the global issue of tax avoidance and financial secrecy, respectively.

In this paper we produce yet another set of important tax havens by combining Score and Intensity in relevant areas so as to identify which tax haven characteristics are most closely associated with disproportionate economic activity making use of arbitrage opportunities. We find that there is a positive and significant relationship between Score and Intensity in the area of tax – a one-point increase in the Haven Score is associated with an average 8.4% increase in the ratio of FDI to GDP. Notably, we find that virtually no jurisdiction has been able to attract disproportionate FDI without having implemented high-Score regulations. The most important characteristics of tax havens for attracting disproportionate amounts of foreign direct investment seem to be low corporate income tax rates, the existence of loopholes and gaps, and double tax treaties aggressiveness. For secrecy, we document a positive but weaker relationship between disproportionate amounts of portfolio investment and both low integrity of tax and financial regulation and non-transparent or non-existent ownership registration.

We also use our conceptual framework to assess the role of intermediaries in facilitating the services that exploit the rules and regulations present in tax havens. We find that the Big Four accountancy firms have a disproportionate presence in jurisdictions that rank high in virtually all of the discussed indicators, with tax-related indicators exhibiting a stronger relationship. While the available data do not enable us to draw any empirical conclusions about the causality within the relationship (i.e. whether MNCs are disproportionately present in tax havens because intermediaries have implemented these structures or



whether intermediaries are disproportionately present in tax havens because there is high demand from MNCs for the intermediaries' services), we argue that it is reasonable to conclude, based on the revealed relationships, that the Big Four firms play an important role in facilitating tax and secrecy arbitrage.

We hope that further research on tax havens can benefit from our work in this paper. In particular, we encourage researchers to use this paper as a roadmap of data sources that can be used to identify important tax havens in specific areas of interest and for specific purposes. Similarly, we aim to provide policymakers and other stakeholders with the tools necessary to allocate their limited resources in the fight against base erosion and profit shifting effectively and based on empirical evidence.

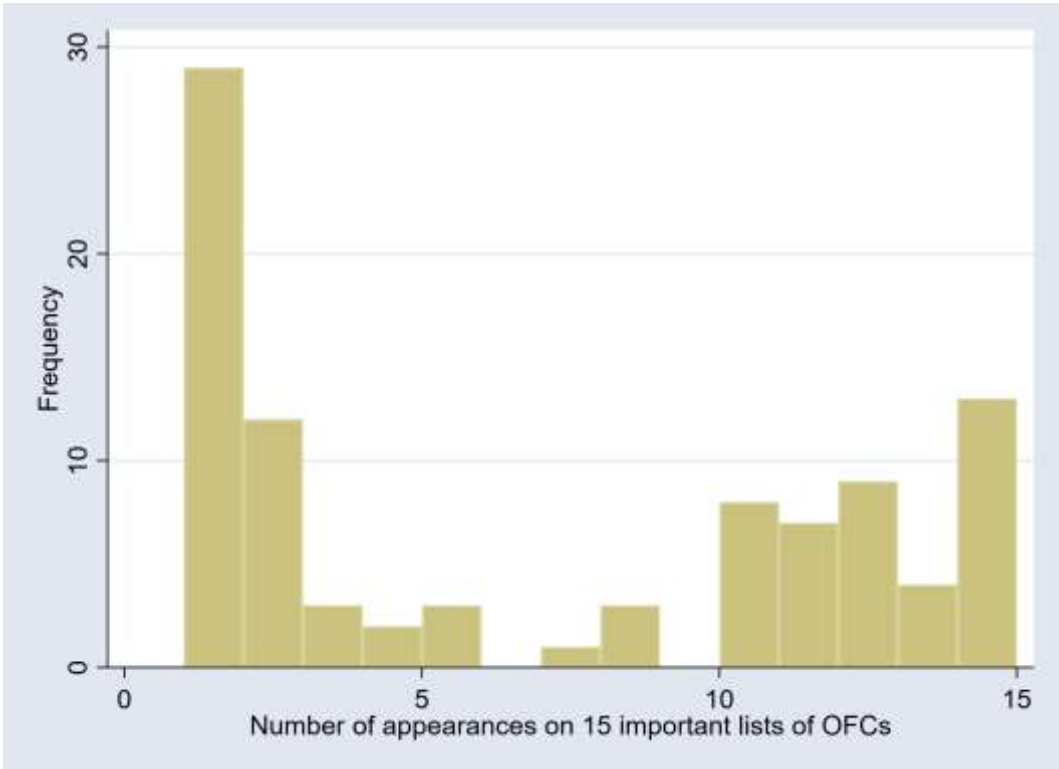
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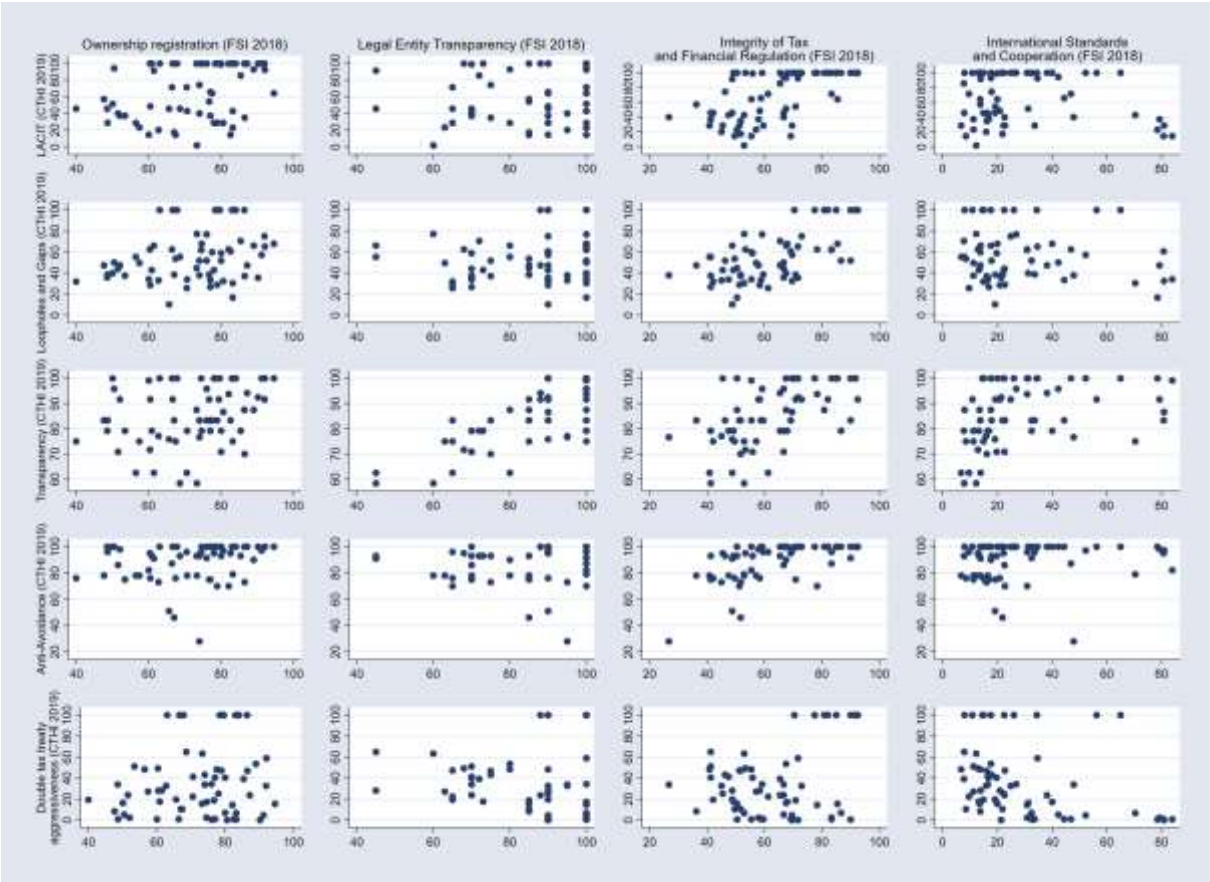
# 8 Appendix

Figure A1: A summary of the consensus approach



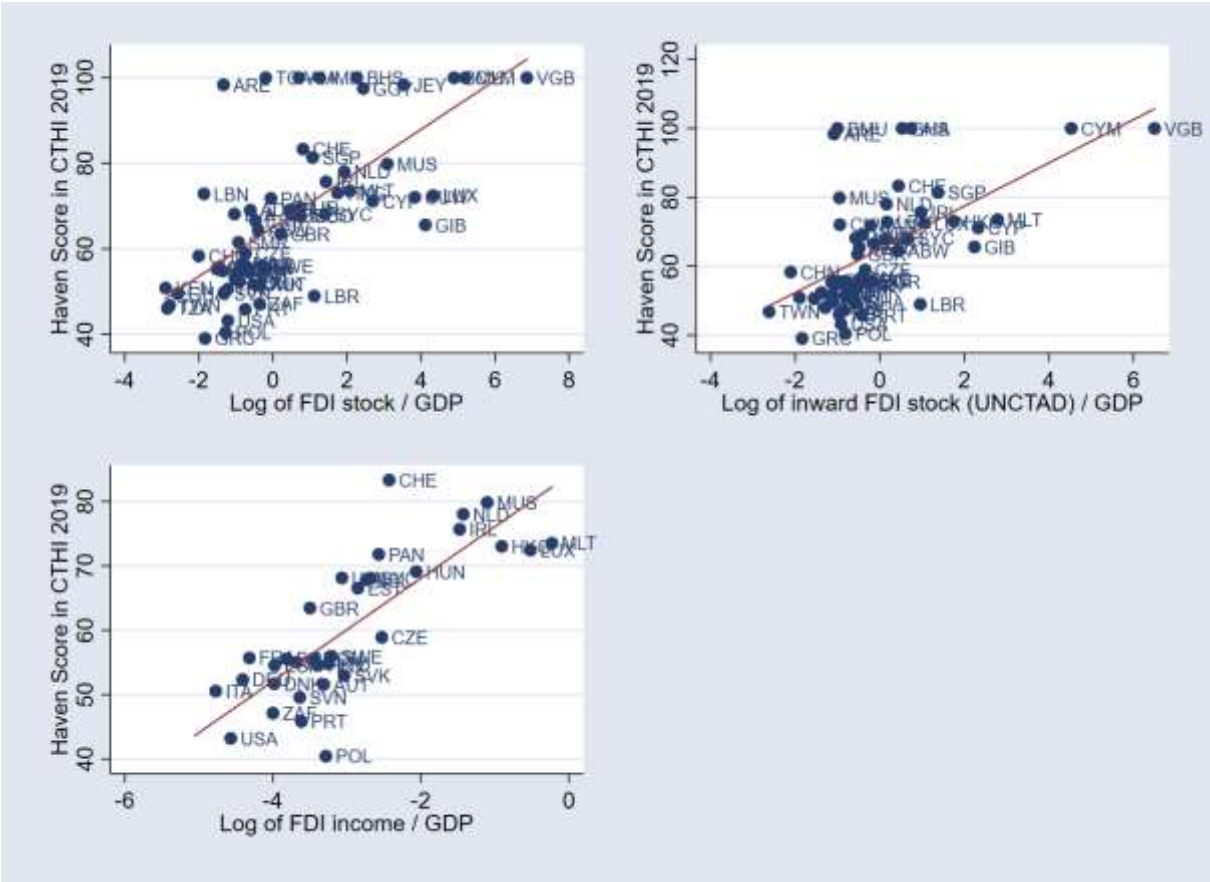
Source: Authors.

Figure A2: Categories of Haven Scores and Secrecy Scores



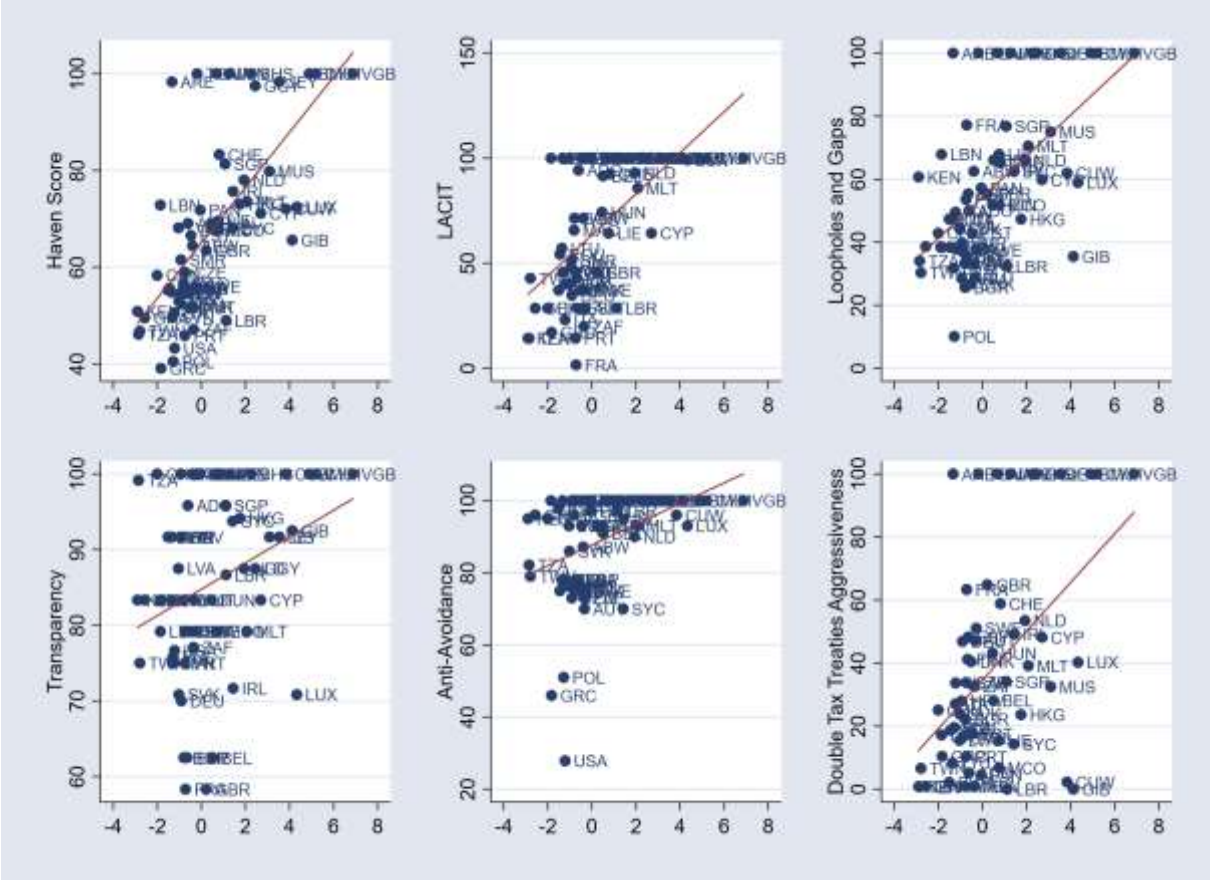
Source: Authors.

**Figure A3: Haven Scores and three relevant Intensity indicators**



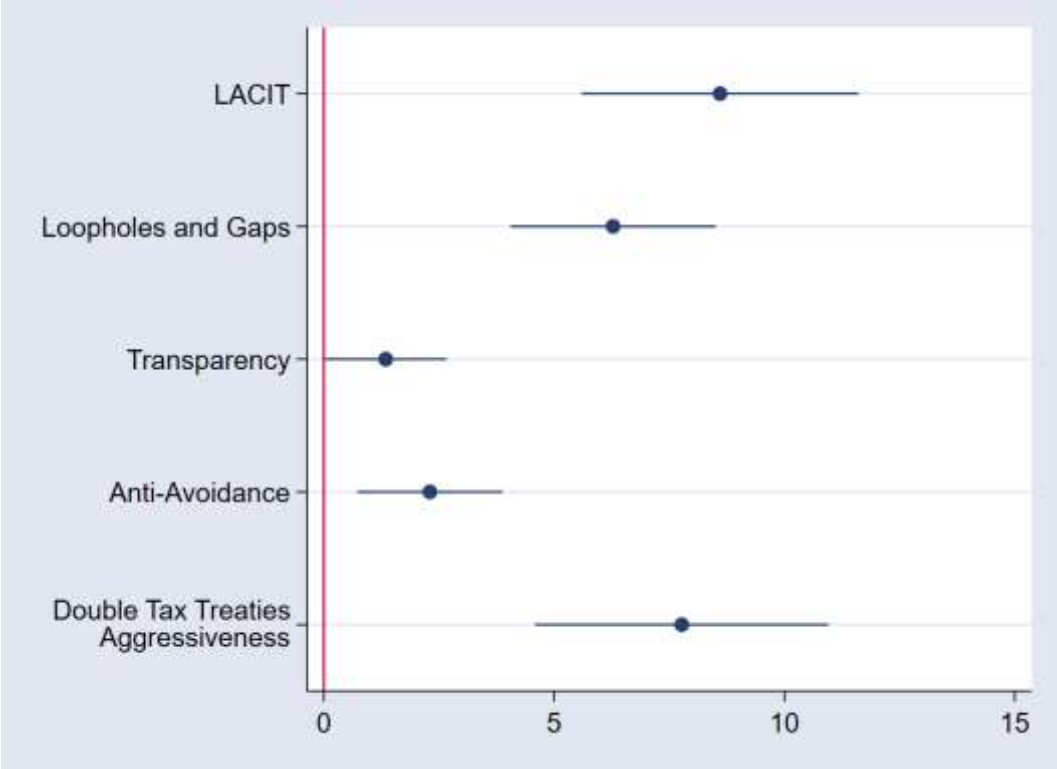
*Source: Authors; data from CTHI, IMF CDIS, UNCTAD FDI Statistics, and IMF BoP.*

Figure A4: Categories of Haven Scores and foreign direct investment stock relative to GDP



Source: Authors; data from CTHI and IMF CDIS.

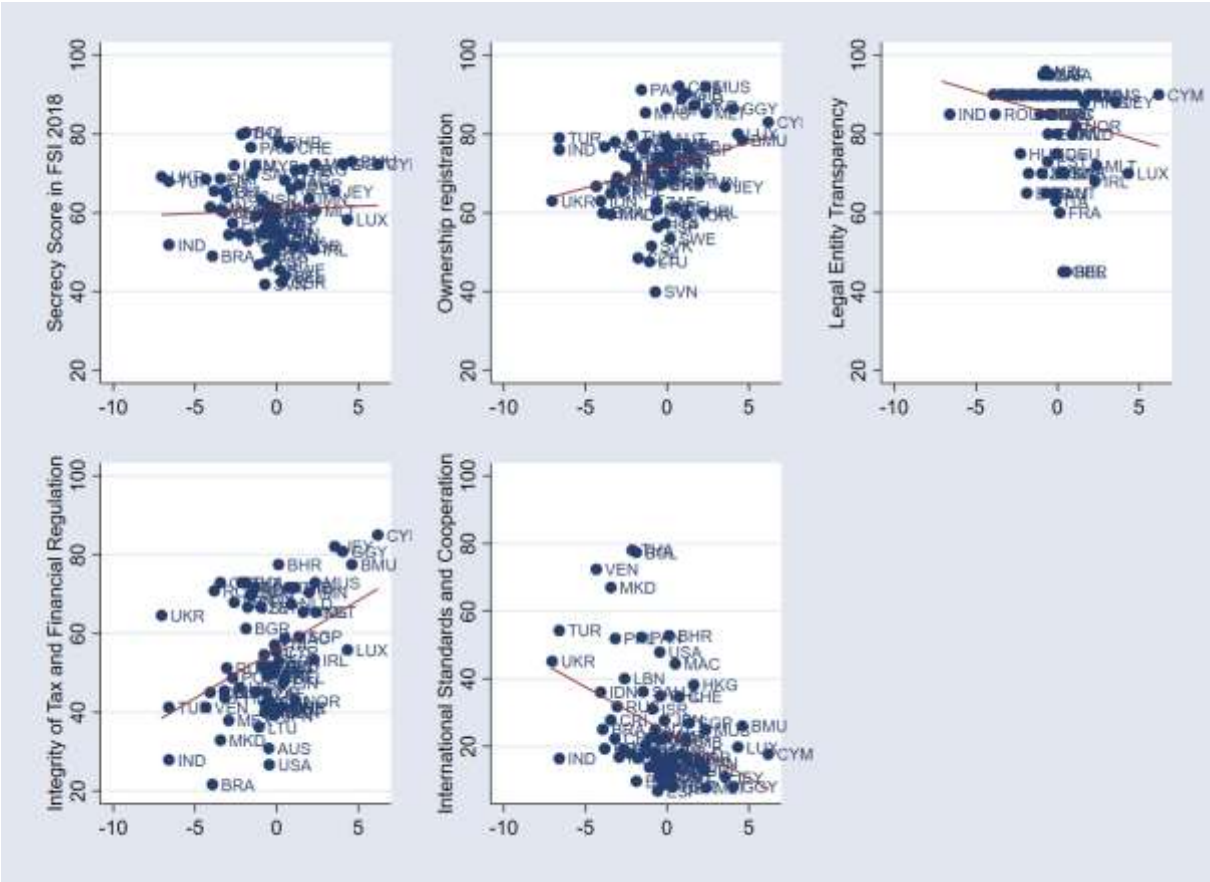
Figure A5: Results of regressions of categories of Haven Scores on log of FDI stocks to GDP



Source: Authors.



Figure A6: Categories of Secrecy Scores and portfolio assets relative to GDP



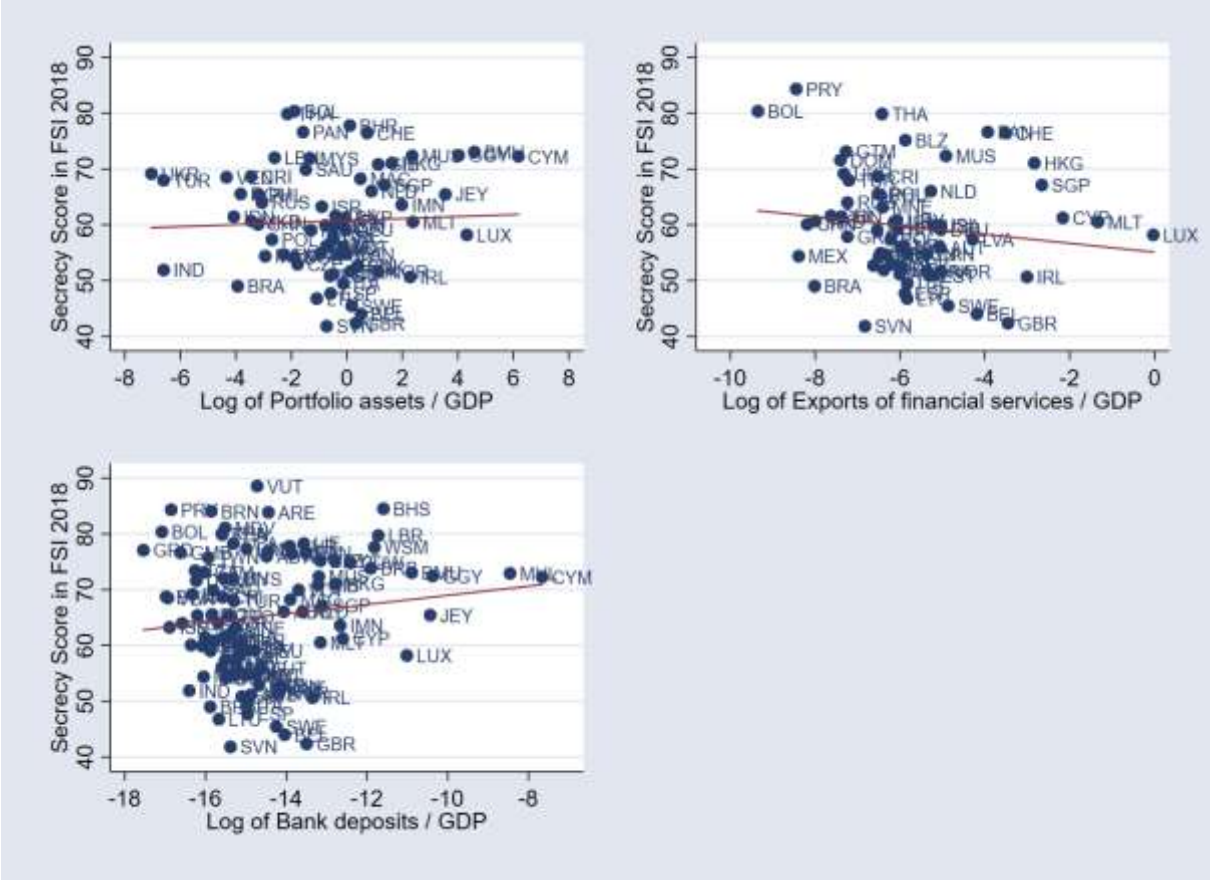
Source: Authors; data from FSI and IMF CPIS.

**Figure A7: Results of regressions of categories of Secrecy Scores on log of FDI stocks to GDP**



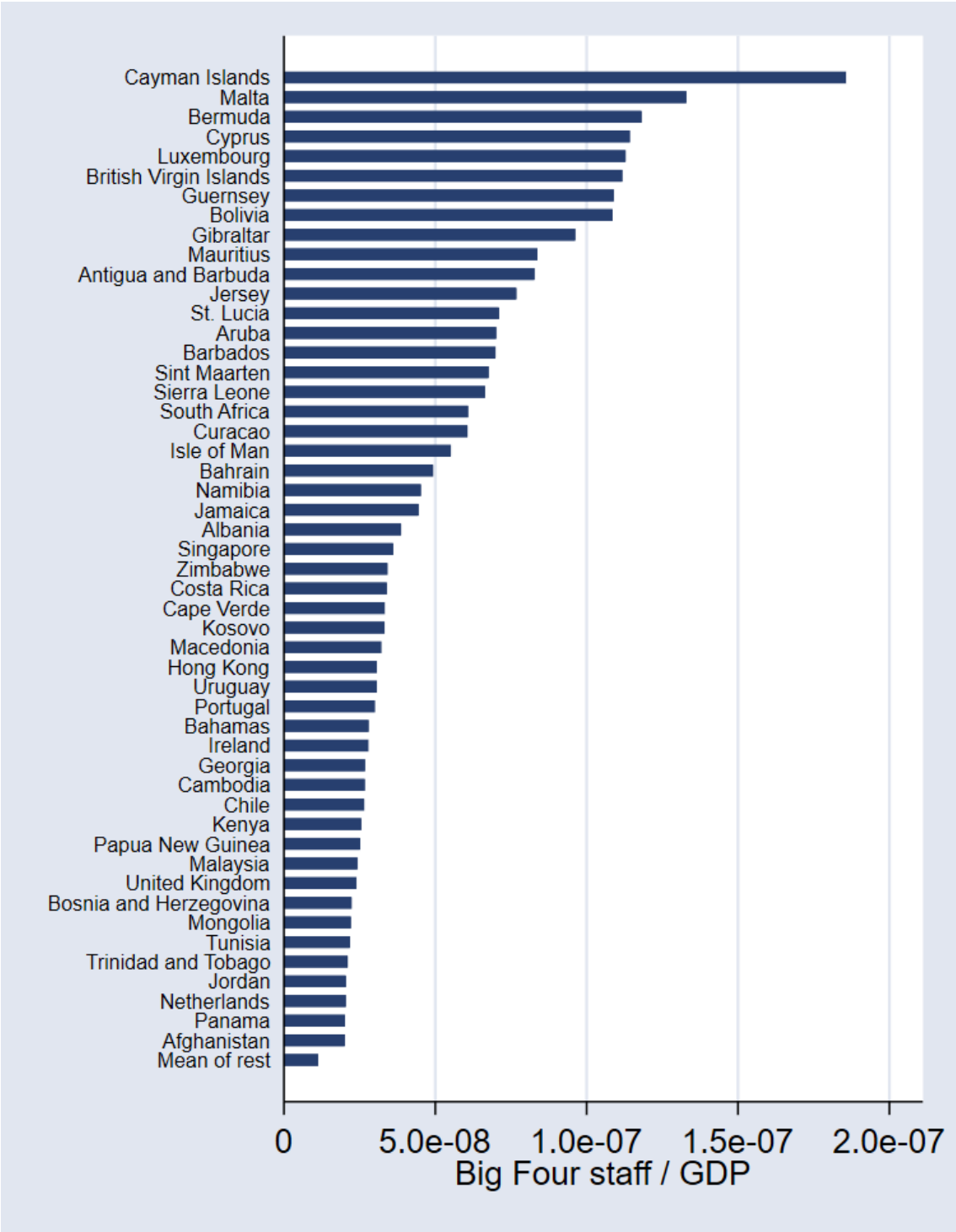
*Source: Authors.*

Figure A8: Secrecy Scores and three relevant Intensity indicators



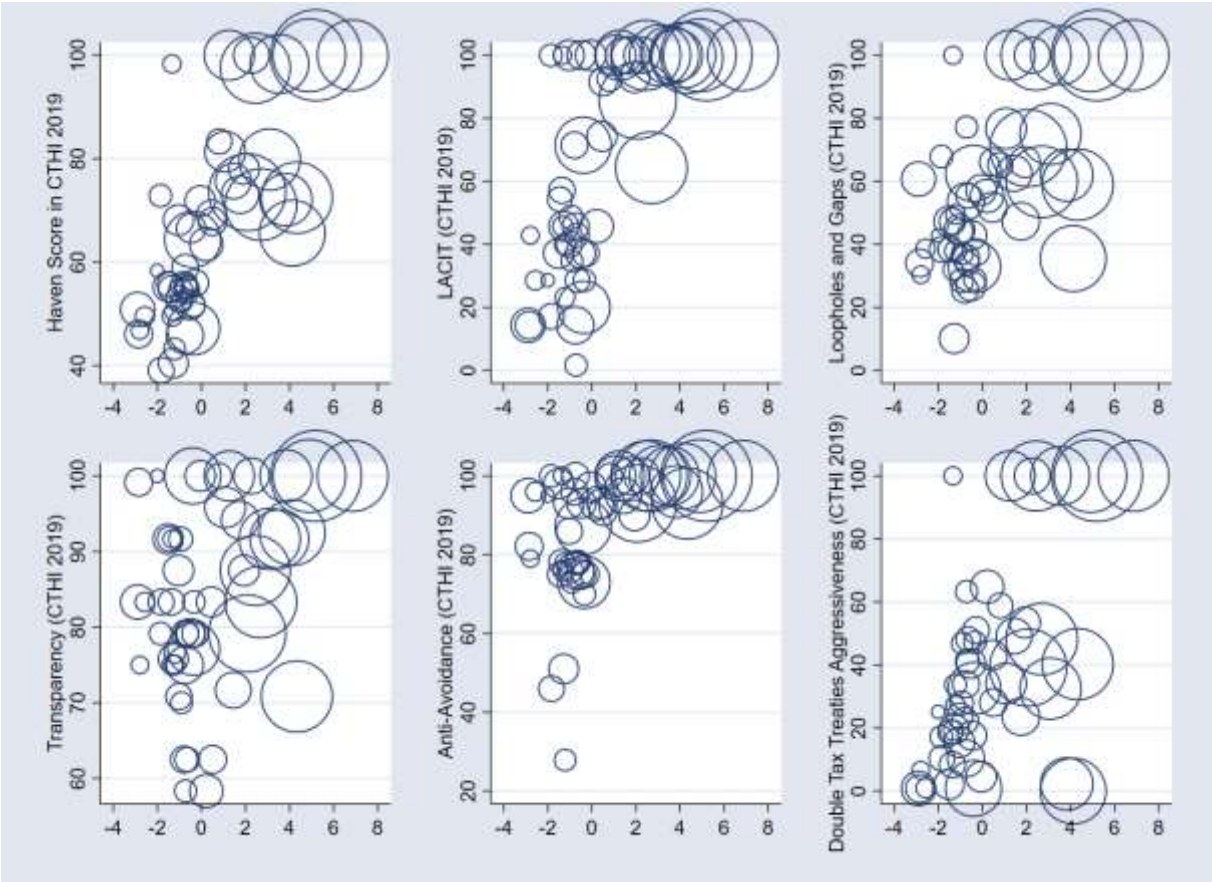
Source: Authors; data from FSI, IMF CPIS, IMF BoP, and BIS Locational banking statistics.

**Figure A9: Big Four staff relative to GDP, by country, top 50 countries.**



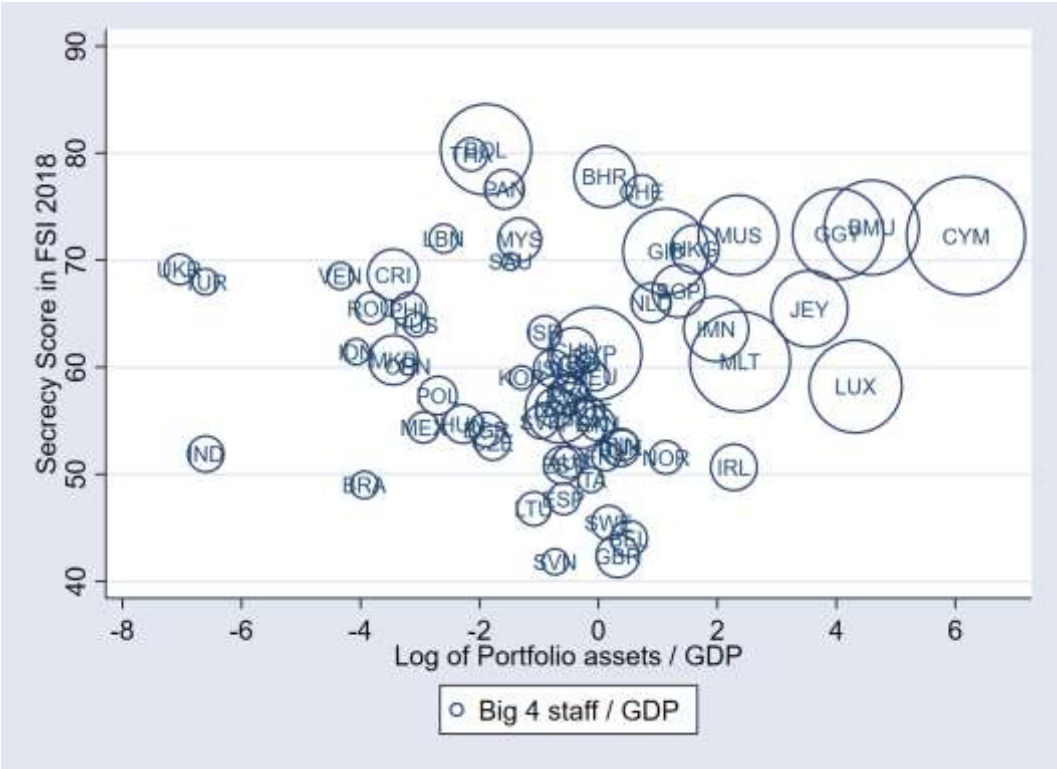
Source: Authors; data on Big Four staff from Murphy, Seabrooke, and Stausholm (2019), data on GDP from WB and CIA.

**Figure A10: Haven Scores and their categories, log of FDI stocks relative to GDP (on the horizontal axis), and Big Four staff relative to GDP (size of the bubble).**



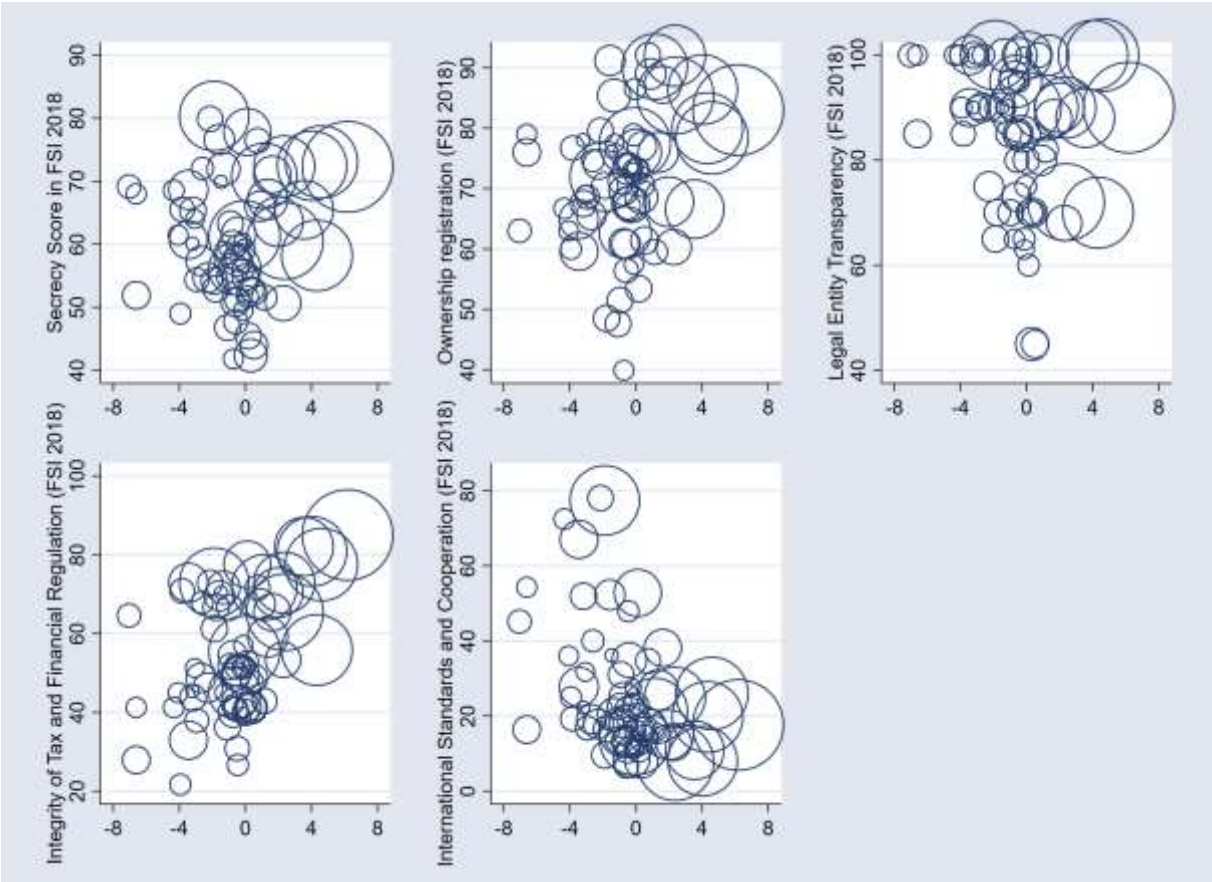
*Source: Authors; data on HS from CTHI, data on Big Four staff from Murphy, Seabrooke, and Stausholm (2019), data on GDP from WB and CIA.*

**Figure A11: Secrecy Scores, log of portfolio assets relative to GDP (on the horizontal axis), and Big Four staff relative to GDP (size of the bubble).**



*Source: Authors; data on SS from FSI, data on Big Four staff from Murphy and Stausholm (2016), data on GDP from WB and CIA.*

**Figure A12: Secrecy Scores and their categories, log of portfolio assets relative to GDP (on the horizontal axis), and Big Four staff relative to GDP (size of the bubble).**



*Source: Authors; data on SS from FSI, data on Big Four staff from Murphy, Seabrooke, and Stausholm (2019), data on GDP from WB and CIA.*