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Is Panama really your tax haven?

Secrecy jurisdictions and the countries they harm

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Is Panama really your tax haven? Secrecy jurisdictions and the countries they harm

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Abstract

Secrecy jurisdictions provide services that enable the residents of other countries to escape the laws and regulations of their home economies, evade tax, or hide their legally or illegally obtained assets. Recent offshore leaks offer only a limited and biased view of the world of financial secrecy. In this paper we quantify which secrecy jurisdictions provide secrecy to which countries and assess how successful countries are in targeting these jurisdictions with their policies. To that objective we develop the Bilateral Financial Secrecy Index (BFSI) and estimate it for 86 countries by quantifying the financial secrecy supplied to them by up to 100 secrecy jurisdictions. We then evaluate two major recent policy efforts by comparing them with the results of the BFSI. First, we focus on the blacklisting process of the European Commission and find that most of the important secrecy jurisdictions for EU member states have been identified by the lists. Second, we link the results to data on active bilateral automatic information exchange treaties to assess how well-aimed are the policymakers' limited resources. We argue that while low-secrecy jurisdictions' gains are maximized if a large share of received secrecy is covered by automatic information exchange, tax havens aim not to activate these relationships with countries to which they supply secrecy. Our results show that so far, some major secrecy jurisdictions successfully keep their most prominent relationships uncovered by automatic information exchange, and activating these relationships may thus be an effective tool to curb secrecy.

Keywords: tax havens; secrecy jurisdictions; financial secrecy; financial transparency; offshore finance; automatic exchange of information; global development

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

1 Introduction

Secrecy jurisdictions provide services that enable the residents of other countries to escape the laws and regulations of their home economies, evade tax, or hide their legally or illegally obtained assets. Recent leaks of confidential documents from offshore service providers provided numerous examples of the harm financial secrecy can cause and also reaffirmed the global nature of financial secrecy in which many countries now serve as secrecy jurisdictions by supplying financial secrecy to other countries. The Panama Papers, for example, affected the valuation of firms around the world (O'Donovan, Wagner, and Zeume 2017). Despite this global nature of the offshore world (Palan 2003), secrecy jurisdictions, or tax havens (terms that we use interchangeably throughout this paper), tend to specialize geographically and in the kinds of services they provide. Some focus more on low taxation for multinational enterprises (Alvarez-Martinez et al. 2018), while others offer high financial secrecy (Cobham, Janský, and Meinzer 2015). Furthermore, each tax haven is relevant for a different set of countries. For example, while Cyprus has been a favourite tax haven for Russian depositors and combines both low taxation and high secrecy (Pelto, Vahtra, and Liuhto, 2004; Ledyaeva et al. 2015), Mauritius has been notoriously secretive and important for multinational enterprises active in India (Janský & Prats, 2015; Schjelderup, 2015). Unlike these examples, systematic evidence of which secrecy

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jurisdictions are important for which countries has so far not been available, at least not for a large number of countries, and for understandable reasons. First, empirical identification of tax havens' financial secrecy, which by design might not want to be identified, is difficult and even more so at the bilateral level. Second, and relatedly, due to tax havens' reluctance to be transparent, there is hardly any cross-country data about the economic scale of countries' relationships with some of the most secretive tax havens. Unsurprisingly then, the research question outlined above has so far remained largely without systematic responses.

To fill this gap, in this paper we quantify which secrecy jurisdictions harm individual countries the most and whether countries are successful in targeting these secrecy jurisdictions with their policies. We are defining harm as increasing the risk for illicit financial flows and for a further elaboration of the relationship between financial secrecy and illicit financial flows, we refer to existing literature (Cobham 2014; Janský, 2015; United Nations Economic Commission for Africa and African Union 2015; Cobham, Janský, and Meinzer 2015; Meinzer 2016). To that end, we develop the Bilateral Financial Secrecy Index (BFSI) on the basis of the Financial Secrecy Index (FSI) by Cobham, Janský, and Meinzer (2015). The BFSI is a direct country-specific extension of the FSI, and answers a similar, but somewhat more nuanced question than the FSI: Which jurisdictions contribute most to the financial secrecy to which each specific country is exposed? We estimate the BFSI for 86 countries with available data by quantifying the financial secrecy supplied to their residents by 112 secrecy jurisdictions. We use the BFSI to uncover the heterogeneity in the specialization of different secrecy jurisdictions and demonstrate its usefulness as a tool to evaluate policy responses. Two widely discussed policy measures in response to harmful financial secrecy are the European Union's blacklist of tax havens (European Commission 2017b) and automatic tax information exchange (AIE), which is an international agreement among countries to automatically exchange information on individuals accounts in order to combat tax evasion (OECD 2015). We analyse the congruence between the jurisdictions on which these policy measures have focused and the jurisdictions which empirically supply most secrecy to any given country (e.g. their residents, depositors or firms) as revealed by the Bilateral Financial Secrecy Index. Such comparisons can, for example, reveal systematic inefficiencies in taming tax havens or, more practically, cases where policies should be redirected towards secrecy jurisdictions which supply most secrecy.

To estimate which secrecy jurisdictions are most harmful for which countries we need both a measure of the intensity of financial secrecy of a jurisdiction and an indicator showing the strength of the economic relationship between each pair of jurisdictions. For the measure of the intensity of financial secrecy we use the secrecy scores of the 2018 Financial Secrecy Index, established as the leading, if not the only, indicator of financial secrecy (Cobham, Janský, and Meinzer 2015). The secrecy score is a qualitative indicator comparable across 112 jurisdictions (Tax Justice Network, 2018b). Since these secrecy scores are published as a single indicator for each jurisdiction and thus without distinguishing between various partner countries, we need to make an assumption that financial secrecy does not differ with respect to the receiving country. While knowing this assumption is sometimes violated (e.g. when specific bilateral agreements such as AIE are in place), there is no comparable (or even more detailed, i.e. country pair-specific) indicator that we could use instead. As an indicator of the scale of the relationship between each country and secrecy jurisdiction, we use the International Monetary Fund's (IMF) data on total portfolio investments. This data fulfils the condition of being relevant for the provision of financial services that can be abused under conditions of secrecy, and are available for many relevant countries worldwide and on a bilateral basis. A combination of these two information sources enables us to derive the BFSI as a country-specific ranking of the harm caused by individual secrecy jurisdictions. By aggregation in political, income, and geographical groups, the BFSI can be used to analyse the geography of financial secrecy by differentiating between the recipients and suppliers of financial secrecy. While the harm caused through financial secrecy is not directly observable, in this paper we consider suppliers of financial secrecy as those harming other jurisdictions on the basis of financial secrecy creating a criminogenic or enabling environment for illicit financial flows. Vice versa, we treat receivers of financial secrecy as those being harmed by secrecy jurisdictions.

As we show in this paper on the examples of tax haven blacklists and AIE, the BFSI is useful for evaluating the policymakers' efforts to fight financial secrecy. Automatically exchanging tax information between pairs of countries under the Common Reporting Standard is a relatively novel international policy response to harmful financial secrecy. Often regarded as an innovative policy for addressing cross-border tax evasion, the de facto exclusion of developing countries and a lack of incentives for large uncooperative countries to participate, the United States in particular, remain some of the challenges for AIE itself (Meinzer 2017). Yet

the network of bilateral exchange relationships (over 3700 as of 4 January 2018) keeps growing since 2016, including 80 countries at the time of this writing (OECD 2018). The conventional wisdom in the literature expects tax havens to fight for excluding their most relevant secrecy counterparts from their information exchange network. Conversely, more powerful countries are expected to more successfully coerce tax havens to exchange information with them (Hakelberg and Schaub 2017b). We test these hypotheses by checking how much of any country's BFSI is or is not currently covered by active AIE relationships. For policy makers, our findings provide guidance as to which secrecy jurisdictions they should make it their priority to activate AIE relationships with. Similarly, we analyse the coverage of the European Union's recent blacklists to see whether they are neatly pointing to the tax havens of highest importance for the European Union as a whole, or if the blacklisting exercise is driven by other, most importantly political, motives (Knobel and Meinzer 2015; Meinzer 2016).

Having developed and estimated the BFSI as a country-specific indicator of financial secrecy, we first confirm the findings of the FSI that some major global economies are responsible for the bulk of global harmful financial secrecy. For most countries, the United States, Switzerland, and Cayman Islands are among the most important secrecy jurisdictions. From the detailed results of the BFSI, we learn that certain countries are affected relatively more by specific secrecy jurisdictions, such as European economies by Luxembourg and the Netherlands, or the United States and Japan by the Cayman Islands. Generally, our results point to many countries supplying harmful secrecy and we argue that only extensive cooperation of countries at the global scale is capable of taming the bulk of harmful financial secrecy. Comparing the results of the BFSI for the European Union with the recent efforts of the EU to blacklist important tax havens, we find that only 12 of the top 15 contributors to financial secrecy in the EU have been identified by the Commission's screening process. At the same time, the blacklist includes jurisdictions which are very unlikely to be relevant suppliers of harmful secrecy.

Finally, we observe how big a share of harmful secrecy is covered by existing active AIE relationships. We find that countries have not been particularly successful so far at setting up AIE with tax havens that predominantly supply financial secrecy to them. On average, the EU member states have covered 78.5% of the received secrecy, while among lower-middle income countries, we document that only India and Indonesia have been actively signing AIE treaties and have covered around 72% of the secrecy these two countries are exposed to. Some other countries have not yet activated any AIE relationships. In terms of covering the supplied secrecy by AIE, we find evidence consistent with the notion that more secretive countries are aware of what the destinations of their secrecy are and successfully avoid setting up AIE with these jurisdictions. Our results thus point to AIE being of high importance to secrecy jurisdictions, and future policy efforts should stress the development of AIE relationships with the most secretive tax havens. We identify the secrecy jurisdictions that provide the most secrecy and have so far managed to avoid AIE treaties to be the United States, Taiwan, United Arab Emirates and, indeed, Panama.

The remainder of this paper is structured as follows. Section 2 provides a brief overview of related literature. Section 3 introduces the data, while Section 4 explains the methodology. Section 5 discusses the results, especially the comparison of the BFSI with the current state of policies regarding tax haven blacklisting and AIE. Section 6 concludes.

2 Related literature

This paper contributes, with a combination of these findings, conceptual arguments and methodology development, to three broad strands of economic literature. First, research on tax havens has been growing in recent years, yet lacks systematic bilateral analyses of financial secrecy. Most economic studies quantify the effect that low tax rates have on inward FDI or profit allocation of multinational corporations, with recent literature overviews provided by Dharmapala (2014) or Dowd, Landefeld, and Moore (2017). While most of the papers such as Crivelli, de Mooij, and Keen (2016) and Cobham and Janský (2018) quantify tax revenue losses only aggregately for a group of tax havens, recent papers such as Cobham and Janský (2017) and (Tørsløv, Wier, and Zucman 2018) manage to attribute the responsibility for the losses to specific tax havens. Similarly, Egger et al. (2009) account for bilateral aspects of taxation in their estimation of effective tax rates and find that relying only on unilateral rates leads to biased estimates. Yet, there is less empirical research

on the impact of financial secrecy. For example, Johannesen & Larsen (2016) find that the introduction of country-by-country reporting of tax payments in extractive industries is associated with significant decreases in firm value, while Dyreng, Hoopes, & Wilde (2016) find evidence of the impact of public pressure on firms that fail to comply with a financial transparency rule. Another undercurrent of the tax haven literature focuses on the size of offshore wealth, for which Zucman (2013) and Henry (2012) provide global estimates and which has been enriched recently by Caruana-Galizia & Caruana-Galizia (2016) and Zucman, Johannesen, and Alstadsaeter (2017) by combining traditional data sources with data becoming available through the recent offshore leaks.

Much of this tax haven-related research has dealt with the definitional issues by differentiating groups of tax havens according to the type of taxation (Eden and Kudrle 2005), or on the basis of activity (AviYonah 2000; Kudrle and Eden 2003). Later, a "consensual approach" has been originally pioneered by Palan, Murphy, & Chavagneux (2009) and relabelled "expert agreement" by Haberly & Wójcik (2015b). This approach applies classifications of tax havens on the basis of a number of mentions on the lists of tax havens. An alternative approach has been developed by Garcia-Bernardo et al. (2017) with the use of firm-level data. The Financial Secrecy Index (Cobham, Janský, and Meinzer 2015) offers another approach at overcoming these definitional issues. Also, while the FSI pioneered the quantification of the term secrecy jurisdiction, this term was already in use a few decades ago, as documented by Peet & Dickson (1979) and the United States House of Representatives (1970). The FSI operationalised the concept of a secrecy jurisdiction by attributing each reviewed jurisdiction a secrecy score and combining this with the jurisdiction's market share in offshore financial services. This approach allows accommodating all countries on a spectrum of secrecy and global secrecy contribution, rather than maintaining a somewhat arbitrary dichotomy between tax havens and other countries. With the FSI, some major secrecy-supplying economies come into focus in addition to the resource-poor micro-states considered by earlier literature (Hudson 2000; Roberts 1995). Similar to the papers referred to above which incorporate bilateral country pair analyses into corporate tax research, with the BFSI we add a new level of analyses to the original approach of the FSI.

The second strand of literature to which we contribute with the BFSI is that on illicit financial flows and (anti-) money laundering, most of which concerns definitional questions and measurement methodologies (Hong and Pak 2017, Reuter 2012, Kar and Cartwright-Smith 2009). Cobham (2014), however, used measures of financial secrecy from the FSI 2013 to identify country-specific vulnerabilities, and used other bilateral economic data, such as foreign direct investment and commodity trade, to rank vulnerabilities for a range of African countries. In this subcurrent of literature, both Schwarz (2011) and Gnutzmann, McCarthy, & Unger (2010) relate to tax havens and financial secrecy, arguing that poorer and smaller countries bear only a tiny share of the total costs relative to the potential benefits of investment that money laundering offers, and so have a higher incentive to tolerate the practice compared to their larger neighbours. More recently, economists in anti-money laundering increasingly use measures of financial secrecy as risk factors (Savona and Riccardi 2017; Cassetta et al. 2014). In this paper, we employ a similar approach to the one pioneered by Cobham (2014), yet focus on a specific type of bilateral economic data and carry out an analysis on a global scale.

Finally, the third strand of literature to which we contribute is the rapidly developing area of responsiveness of economic behaviour to exchange of tax information. In an influential paper that spurred this stream of research, Johannesen and Zucman (2014) assess the impact of G20 policy crackdown on tax havens and find that tax evaders tend to shift deposits to havens not covered by a treaty with their home country. Braun & Weichenrieder (2015) find evidence that the conclusion of a bilateral tax information exchange agreement is associated with fewer operations of German MNEs in those tax havens and therefore that these tax agreements affect FDI as well, which they consider as suggesting that firms seek out tax havens not only due to tax, but also because of secrecy they offer. Relatedly, Hanlon, Maydew, and Thornock (2015) examine a form of round-tripping tax evasion in which US individuals hide funds in entities located in offshore tax havens and then invest those funds in US securities markets.

With the advent of automatic exchange of tax information, new research has been started. Hakelberg and Schaub (2017) examined the case of the USA which successfully coerced smaller tax havens into an information exchange regime, while abstaining itself from participation. Steinlin and Trampusch (2012) and Emmenegger (2017) focused on the development of banking secrecy and information exchange in Switzerland; Hakelberg (2015) argued that the rules for the exchange of information imposed by the US on

Luxembourg and Austria played a fundamental role for the eventual adoption of the EU-proposed scheme by these two secrecy jurisdictions. Miethe and Menkhoff (2017) analysed the effect AIE relationships have on banking deposits in tax havens and others. They found a similar effect to the one identified by Johannesen and Zucman (2014), that banking deposits fall upon the signing of a bilateral exchange agreement. Our contribution to this strand of literature consists in overlaying the bilateral financial secrecy configuration of any jurisdiction with its automatic exchange network. By doing so, we are able to contribute to both academic and policy relevant findings, e.g. on which secrecy jurisdictions might be missing from any country's treaty network, and where secrecy jurisdictions successfully refrain from engaging in exchanges.

3 Data

In this section we summarize the sources of data used in our empirical analysis: first, we describe the data that enter the estimation of the Bilateral Financial Secrecy Index; second, we present the sources of data on automatic exchange of information relationships and blacklists of tax havens. The financial secrecy part of the BFSI are the secrecy scores which measure the level of financial secrecy of each jurisdiction, and which we source from the original FSI in its 2018 version (Cobham, Janský, and Meinzer 2015, Tax Justice Network 2018b). The secrecy scores thus reflect the extent to which jurisdictions are secretive and may range from 0 (least secretive) to 100 (most secretive). They are calculated as arithmetic averages of 20 indicators which are grouped around four broad dimensions of secrecy: (1) ownership registration (five indicators); (2) legal entity transparency (five indicators); (3) integrity of tax and financial regulation (six indicators); and (4) international standards and cooperation (four indicators). A detailed description of the secrecy scores and each of its indicators is provided by Tax Justice Network (2018b). We adjust the secrecy scores only in one exception – for intra-EU relationships. In particular, for these relationships, adjustments were made in the secrecy score of indicators 18 (automatic exchange of information), 19 (on bilateral treaties) and 20 (international legal cooperation) vis-à-vis other EU member states (Tax Justice Network 2018b). In the case of indicator 18, based on EU-related agreements, the secrecy score of 5 additional countries (Andorra, Liechtenstein, Monaco, San Marino and Switzerland) has also been adjusted. After all, indicator 19 (on bilateral treaties) did not require any adjustments since all EU countries already had the best transparency score.[2]

An important departure from the original FSI methodology is in the data that we use to estimate the quantitative part of the index. The original FSI uses unilateral data on exports of financial services of each jurisdiction to derive the global scale weights, i.e. the share of the value of each jurisdiction's financial services provided to foreign residents on the value of the global total of cross-border financial services. Where data is missing, the FSI methodology extrapolates for exports of financial services from data on portfolio investment assets and, where that is also missing, from data on portfolio investment derived liabilities. In contrast, the bilateral version of the index requires data at the bilateral level, at which data on exports of financial services are not available and we therefore need a substitute.

To construct the bilateral scale weights, we use information on assets from data on cross-border portfolio investment, which we source from the IMF's Coordinated Portfolio Investment Survey (CPIS). For 2015, the dataset includes data on the value of cross-border portfolio investment (assets) for 14,038 bilateral relationships. In the calculation of the BFSI, we combine the value of assets held by residents of country i in secrecy jurisdiction j with the secrecy score of secrecy jurisdiction j. With this approach we aim to capture the relative size of the economic relationship of the country's residents with different secrecy jurisdictions and the interaction of this activity with the secrecy offered by secrecy jurisdictions. Naturally, when some countries do not report a lot of data to the IMF CPIS, they do not have a lot of countries in their BFSI rankings, e.g. Mexico with 31 jurisdictions.

We use the CPIS's assets to indicate the role of tax havens for other countries. The CPIS includes information about assets and liabilities and the use of each would make some sense. On the one hand, German assets in Switzerland might be deposits of German citizens invested in US securities through a Swiss bank. In this

[2] These adjustments overall did not result in substantial secrecy score changes as defined by our indicators except for only a few country-pairs, and the adjustment caused only minor differences in the resulting Bilateral Financial Secrecy Index values.

case we would not know about the US securities and the Swiss position would be inflated beyond any Swiss securities. On the other hand, German liabilities to Switzerland might reflect round-tripping by German depositors or investment from residents in third countries investing in Germany through Switzerland. On balance, we use assets as the main indicator as it is more likely to reflect the role played by tax havens, which is the focus of our paper.

We use the best available data, while keeping in mind their weaknesses. First, the CPIS includes information on overall portfolio investments that include households, but also companies and banks with the latter two likely dominating at least some of the bilateral relationships. Also, CPIS might not reflect well the whole scale of activities related to financial secrecy and might thus lead to imprecise results, however, the lack of alternative data sources at the bilateral level and with a wide coverage of countries prevents us from improving on these results. We argue that individuals' holdings of financial assets included in the CPIS best reflect what we would like to capture in the BFSI. Other data, including foreign direct investment or commodity or service trade, could be a part of the BFSI as well. This is similar to the approach of Cobham (2014), who used a wider range of data than we do here. We propose that until further research fully addresses these issues, we shall interpret the results discussed in this paper with caution.

The closest alternative to the CPIS is the Bank for International Settlements (BIS) data. Since 2016 the BIS publishes new data at the bilateral level, including many tax havens and going back retrospectively to early 2000s in most cases. The data include the value of the bank deposits owned by, for example, German residents in Switzerland or in Jersey. The BIS data has its own weaknesses. It only includes bank deposits, not the portfolios of equities, bonds, and mutual fund shares that households entrust to offshore banks. Also, as Alstadsaeter, Johannesen, and Zucman (2018) argue, the use of anonymous shell corporations makes it increasingly hard to identify the beneficial owners of the wealth held offshore. They find that a growing amount of wealth is assigned to the British Virgin Islands, Panama, and similar tax havens where most of the world's shell corporations are domiciled and that the use of shell companies has increased particularly fast since the mid-2000s. Future research should account for these weaknesses and use the BIS data alongside the CPIS data.

For automatic exchange of information, we use bilateral data available on the OECD's Automatic Exchange Portal, as updated last on 21 December 2017 (OECD 2018). This portal displays all activated relationships between pairs of jurisdictions. Notwithstanding other conditions, an exchange relationship is activated whenever two jurisdictions either conclude a bilateral competent authority agreement or list each other under the multilateral competent authority agreement (MCAA) in its Annex E (Meinzer 2017, 14). However, Annex E is not made public. This prevents us from directly observing countries' preferences for activating – or not - exchanges with any given jurisdiction. Therefore, only pairs of countries can be observed which have chosen each other in Annex E or have otherwise concluded a bilateral agreement. A further complicating factor is the absence of harmonised deadlines for the submission of countries' exchange preferences and the fact that many jurisdictions have committed to exchange only in 2018 or some even later (OECD 2017). Furthermore, the updates on the OECD data portal are made without clear timelines. Therefore, our data sample is a snapshot in time which will need to be complemented by analyses further down the line.

Three complicating factors concern the multilateral agreements. The first consists of the possibility for jurisdictions to voluntarily choose only to send, but not receive, tax information. These jurisdictions enlist in Annex A and will not be receiving any information. Moreover, the banks in any participating jurisdiction will not be required to report accounts held or controlled by people resident in those jurisdictions. The risk of this tactic clearly consists in notorious tax havens attempting to lure foreign residents into taking up fake residency or citizenship there, with tax information exchanges falsely being classified as belonging to an Annex A jurisdiction resident, which will thus not be collected nor exchanged by the banks at all (Tax Justice Network 2018b, p. 97–104, 133–40). The second problem consists in the data protection assessments the OECD is currently performing on entrants to the AIE mechanism, the outcomes of which remain confidential. As long as the OECD diagnosed weaknesses in data protection, the jurisdiction in question would not be eligible to receive any data under competent authority agreements. There is no way to differentiate between the first and second type of asymmetric data provision (Annex A or data protection concerns).

The third complicating factor of the multilateral agreements is the EU directive on AIE (Council of the European Union 2014), which does not provide for non-reciprocal information exchanges and which

overrides any EU member's preference as expressed in Annex A of the MCAA, and which also might override the data protection assessments of the OECD. In addition to the EU member states, there are specific treaties between the EU as a whole and six non-EU members in place which very likely only allow for reciprocal exchanges. The countries concerned are Switzerland, Liechtenstein, San Marino, Andorra, Monaco and Saint-Barthelemy (European Commission 2017a). As a result, we observe in the data that some jurisdictions (Cyprus, Romania) are exchanging information reciprocally with the EU and a handful of third countries covered by EU-equivalent treaties, but not with the rest of the world. While it is impossible for us to know the reasons for sure, it is likely that data protection concerns explain Romania's exclusion, and Annex A might explain Cyprus' asymmetry.

The last group of data we use in our empirical analysis are lists of tax havens published by the EU. On December 5, 2017, after years of political pressures and negotiations, the European Commission published a blacklist of 17 non-cooperative jurisdictions (European Commission 2017b). The blacklist is a result of a screening process that has covered 92 jurisdictions. 72 of these were asked to address deficiencies, and 47 of them committed to "improve transparency, stop harmful tax practices, introduce substance requirements or implement OECD BEPS." (European Commission 2017b). Eight countries were given more time to address the deficiencies as they had recently been hit by natural disasters. Finally, the remaining 17 jurisdictions were blacklisted as non-cooperative. On January 23, 2018, the European Commission reduced the 17-country list to 9 following additional commitments from 8 countries (European Commission 2018). On March 13, 2018, seven of the eight countries that had not been assessed were included in the evaluation, with three of them joining the blacklist and four joining the grey list. At the same time, Bahrain, Marshall Islands and Saint Lucia were moved from the blacklist to the grey list. Finally, on May 25, 2018, the Bahamas and Saint Kitts and Nevis were moved from the blacklist to the grey list, and the last country that had not been evaluated before, Turks and Caicos Islands, were added to the grey list. In our analysis, we thus compare the results of the BFSI with the version of the lists as of May 25, 2018.

4 Methodology

In this section we describe our methodology used to estimate, first, for each country which secrecy jurisdictions harm them most and, second, whether countries are successful in targeting these jurisdictions with their policies. To do so, we build on existing approaches to monitoring financial secrecy and its impact, most notably the FSI (Cobham, Janský, and Meinzer 2015). Whereas the FSI is designed to identify the most important secrecy jurisdictions globally, the BFSI aims to identify secrecy jurisdictions for specific countries, i.e. bilaterally. Since the FSI is a well-established indicator in both policy and academic discourse (Cobham, Janský, and Meinzer 2015), we aim to maintain consistency between the FSI and the BFSI to as great an extent as possible.

The FSI is composed of two parts – secrecy scores (SS) and global scale weights (GSW). The secrecy score values used are from the FSI in its 2018 edition and are based on 20 explicit, detailed, verifiable and equally weighted indicators that measure the secrecy provided to non-residents in the laws and regulations of each jurisdiction. As described above, we made an adjustment to the secrecy scores within the EU member states to reflect their closer cooperation on financial, tax, and judicial matters and corresponding lower secrecy levels among EU members.

The second part of the FSI, the GSWs, measure each jurisdiction's share on the total global value of exports of financial services. This variable is used as a proxy for the relative importance of the scale of a jurisdiction and is complemented by data extrapolated from other sources following IMF's methodology (Zoromé 2007) to estimate the GSW for 2015 data. The two entities, the SS and the GSW, are then combined using a cube/cube-root formula to derive the Financial Secrecy Index.[3] This formula is used to measure each jurisdiction's contribution to global financial secrecy in a way that highlights harmful secrecy regulations.

[3] As explained by Cobham et al. (2015), since there is significantly more variation in the scale weighting than the secrecy score, they transform the two to generate a series with variations of a similar order. The simplest transformation to achieve this is to take the cube of the secrecy score and the cube root of the scale weight. This formula has been used

In the construction of the BFSI, we follow the FSI's methodology as closely as possible to maintain consistency. The BFSI uses the same information for secrecy scores as published in the 2018 version of the FSI (adjusted for intra-EU relationships, as described above), but it applies a bilateral scale weight (BSW) specific for each country instead of the GSW. Because the data on exports of financial services used for the original GSW is not available in bilateral country-level breakdown, we are using the IMF's 2015 CPIS data on total portfolio assets as an approximation for the strength of the economic link between country i and jurisdiction j.[4] The BSW thus estimates the share of each country's total portfolio investment in a jurisdiction as a ratio to the total global cross-border portfolio investment. More formally, we define the BSW as:

$$BSW_{ij} = \frac{Cross-border\ portfolio\ assets\ (true\ or\ approximated)_{ij}}{Sum\ of\ all\ global\ cross-border\ portfolio\ assets\ (true\ or\ approximated)}.$$

for each country i and each jurisdiction j. We then define the BFSI, using secrecy scores from the 2018 FSI and the same transformation as in the FSI, as:

$$Bilateral\ Financial\ Secrecy\ Index_{ij} = Secrecy\ Score_j{}^3 * \sqrt[3]{Bilateral\ Scale\ Weight_{ij}}$$

and thereby we obtain one value of the BFSI for each country i and partner jurisdiction j.

As with the methodology of any policy indices, we are, of course, aware that the quality of the BFSI cannot be any better than the quality of its components and the underlying data. Despite their imperfections, we consider the secrecy scores of the FSI the best available indicators of financial secrecy and the academic as well as policy debate seem to support this view (see, for example, Clark, Lai, and Wójcik 2015). Furthermore, the approach to quantify the scale weights of the FSI is the best established methodology to determine the extent of financial secrecy, although there is an ongoing discussion on how best to combine the two components (Becker et al. 2016).

After establishing the BFSI, we address the question of whether countries are successful in targeting the most important secrecy jurisdictions by analysing two major streams of policy efforts to tame tax havens. First, we compare the results of the BFSI with two lists of non-cooperative jurisdictions published by the European Commission in the recent past and observe to what extent has the selection process used to compile these lists successfully identified the most harmful secrecy jurisdictions for the EU member states, as estimated by the BFSI.

The second major policy effort to combat financial secrecy that we compare with the BFSI results is automatic exchange of information. In particular, we study the extent to which countries have so far covered harmful secrecy by having activated automatic exchange of information. To that end we construct the share of received (supplied) secrecy of each country as measured by the BFSI that is covered by activated AIE relationships on the sum of the country's total received (supplied) secrecy. This share for country i is thus defined as follows:

$$Share\ of\ received/supplied\ BFSI\ covered\ by\ AIE_i = \frac{\sum_{j=1}^{k} BFSI_{ij}}{\sum_{l=1}^{m} BFSI_{il}},$$

where k is the number of jurisdictions j with which country i has an activated AIE relationship, and m is the number of jurisdictions l for which the BFSI is estimated for country i.

An important caveat to consider in this part of the analysis is that the secrecy scores themselves include an indicator on automatic exchange of information. In particular, Key Financial Secrecy Indicator 18 (KFSI-18; see Tax Justice Network 2018b, p. 133) focuses precisely on AIE. Since the final SS of a jurisdiction is

constantly since the FSI 2011, and has desirable characteristics in emphasizing the risks of extreme secrecy and extreme size. For further details, including analyses of alternative combinations, see (Tax Justice Network 2018b, 158–98).

[4] We considered another opportunity for estimation of the BSW, provided by the UN, which, unlike the IMF, publishes some bilateral data on trade in financial services. However, the number of observations in the UN dataset is very limited and we thus still strongly prefer the total portfolio investment data. We empirically explored the possibility of combining the UN information on bilateral exports of financial services and the IMF's information on portfolio investment, but the limited availability and quality of the UN data led us to conclude that it was advisable for the time being to use only the IMF data.

calculated as the arithmetic average of 20 KFSI, for the purposes of this part of the analysis, we derive an alternative set of SS which exclude KFSI 18. These alternative SS are thus constructed as arithmetic averages of 19 KFSIs. We do this to prevent potential endogeneity of SS, and thus FSI, when assessing the relationship between FSI and the ratio of received and supplied BFSI covered by AIE.

Next, we hypothesize that secrecy jurisdictions that contribute most to global financial secrecy or that have a very high secrecy score seek to defend their business model by avoiding or at least delaying the activation of AIE relationships with countries to which they supply their secrecy (as opposed to countries that lose out due to the secrecy jurisdictions' secrecy which aim to cover as much of the received secrecy as possible by AIE). Specifically, we analyse whether countries that score high on the FSI 2018 have so far been successful in keeping the highest possible share of the secrecy they supply uncovered by AIE relationships. To do so, we estimate the following model:

$$Share\ of\ supplied\ BFSI\ covered\ by\ active\ AIE_i = \alpha + \beta * FSI_i + \gamma * X_i + \mu \qquad (1)$$

where FSI_i is the value of the 2018 FSI of country i, X_i is a set of income and regional group binary variables, and μ an error term. We hypothesize that $\beta < 0$, i.e. that countries that score higher on the FSI manage to avoid or delay the activation of AIE relationships with countries to which they supply a lot of harmful secrecy (as measured by the BFSI). In addition, we estimate a version of this model that divides the FSI value into its two components, the secrecy scores and the global scale weights, to determine which of the two factors is driving the negative relationship.

5 Results

In this section we first present the estimated values of BFSI as a starting point for the main results and its policy applications in the form of the EU's lists of non-cooperative jurisdictions and AIE.

5.1 Bilateral Financial Secrecy Index

We begin the discussion of our results by presenting the results of the BFSI itself. As an illustration of what the BFSI is, we present its results for a few selected countries, because the number of countries for which we have estimated the BFSI, 86, does not enable us to present all the detailed results in this limited space.[5] Table 1 shows the results of the BFSI for three rich countries from three continents: Germany, Japan and the United States. For each of them, it shows the top ten jurisdictions with the highest values of the BFSI. The table also shows the two components on which the BFSI is based: the secrecy score value from the FSI 2018 and the BSW. The results for the three countries show that three secrecy jurisdictions are in all three top ten sets (Switzerland, Cayman Islands, the Netherlands).[6] Yet, we also observe that there is substantial heterogeneity and a number of one-off jurisdictions. Indeed, given this level of heterogeneity for three countries that are relatively similar in terms of their level of development and their interconnectedness, we expect even higher heterogeneity when comparing countries from different income groups and across regions. For the United States we observe that there is some overlap of its top ten secrecy jurisdictions with the six major profit

[5] Altogether we estimate the BFSI for 86 countries and how they are harmed by 112 secrecy jurisdictions, which – due to not having all the data for all the potential country-secrecy jurisdictions pairs - results into 4939 estimated values. We find that a relatively small number of relationships is responsible for a large share of BFSI - of the 4939 relationships for which we have estimated the BFSI, the top 50 alone are responsible for 9.46% of all global secrecy as measured by the BFSI. In Table A1 in the Appendix we provide a list of the fifteen relationships with the highest BFSI values.

[6] Using similar logic as in Table 1, we can reverse the analysis and look at countries that supply the most secrecy to other jurisdictions by summing up the BFSI scores for jurisdictions that supply secrecy. By doing so, we essentially create a single ranking of jurisdictions in terms of how much secrecy they provide to other countries – an objective of the original FSI from which the BFSI departs by using a different variable, portfolio assets at the bilateral level, as the scale weight. The results of the summed BFSI and the original FSI are indeed quite similar, with a correlation coefficient of 0.865. It is thus no surprise that the same secrecy jurisdictions come out at the top of the ranking– the United States are followed by Cayman Islands, Switzerland, the Netherlands and Luxembourg. Table A2 in the Appendix shows the top ten receivers of secrecy from the top four suppliers of secrecy.

havens (the Netherlands, Ireland, Bermuda, Luxembourg, Switzerland, Singapore) identified by Cobham & Janský (2015), with Switzerland, Bermuda and the Netherlands being in both groups.

Table 1. Top ten secrecy jurisdictions and BFSI results for Germany, Japan and the United States of America

Rank	Germany	SS	BSW	BFSI	Japan	SS	BSW	BFSI	United States	SS	BSW	BFSI
1	Netherlands	66.03	0.52%	469.37	Cayman Islands	72.28	1.41%	911.12	Cayman Islands	72.28	2.77%	1142.17
2	Luxembourg	58.20	1.20%	434.77	United States	59.83	3.12%	673.97	Switzerland	76.45	0.95%	947.92
3	United States	59.83	0.73%	415.18	Netherlands	66.03	0.27%	400.20	Bermuda	73.05	0.49%	663.37
4	Switzerland	76.45	0.11%	394.01	Switzerland	76.45	0.07%	388.61	Netherlands	66.03	0.92%	602.96
5	Cayman Islands	72.28	0.04%	283.52	Germany	59.10	0.29%	295.27	Taiwan	75.75	0.25%	585.97
6	France	51.65	0.82%	266.37	Bermuda	73.05	0.04%	281.26	Japan	60.50	1.85%	585.18
7	United Arab Emirates	83.85	0.01%	231.92	Hong Kong	71.05	0.05%	277.14	Hong Kong	71.05	0.31%	522.67
8	Guernsey	72.45	0.01%	192.51	Thailand	79.88	0.02%	276.17	Curacao	74.80	0.16%	488.92
9	Japan	60.50	0.06%	188.94	Luxembourg	58.20	0.23%	259.34	Thailand	79.88	0.07%	447.49
10	Austria	55.90	0.19%	187.71	France	51.65	0.51%	236.49	Germany	59.10	0.85%	421.11

Source: Authors.

Notes: Secrecy scores (SS) of the Financial Secrecy Index (FSI) and bilateral scale weights (BSW) of the Bilateral Financial Secrecy Index (BFSI).

Having shown the BFSI for individual countries, we show how the most harmful secrecy jurisdictions vary across groups of countries. As an example, in Table 2 we explore the differences between countries grouped according to their per capita income and we provide similar results for the regional groups in the Appendix.[7] We employ the World Bank's classification of five income groups valid as of July 2016, but since there is no data available to estimate the BSW for any of the low-income countries, we only compare the remaining four income groups. Six jurisdictions are included among the top 10 jurisdictions for all four income groups – the United States (which top the list for every income group), Hong Kong, the Netherlands, the Cayman Islands, Switzerland and United Arab Emirates. These results suggest that the major global financial centres are responsible for most of the secrecy received by most countries, regardless of their income. Still, there are secrecy jurisdictions such as Luxembourg or Bermuda that seem to be more important for some groups of countries.

Table 2: Top ten secrecy jurisdictions for four income groups

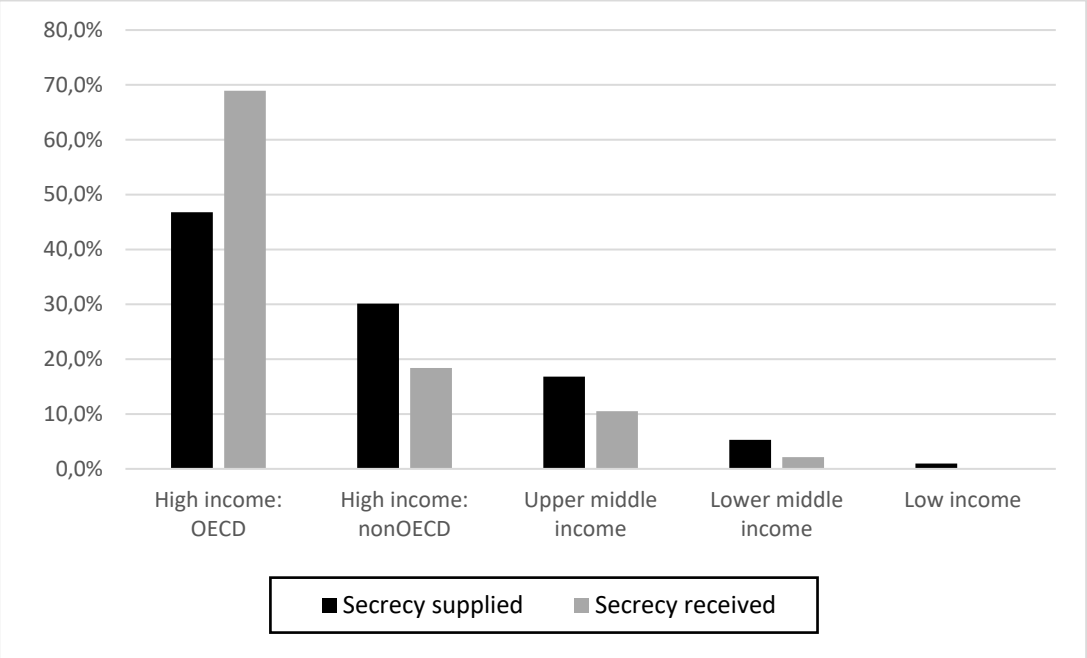
Rank	Lower middle income	BFSI	Upper middle income	BFSI	High income: nonOECD	BFSI	High income: OECD	BFSI
1	United States	435.93	United States	2170.79	United States	3263.12	United States	8448.78
2	Cayman Islands	335.36	Cayman Islands	1345.38	Cayman Islands	2646.67	Switzerland	7594.26
3	Netherlands	318.23	Hong Kong	1202.21	UAE	1752.42	Cayman Islands	7062.94
4	Hong Kong	298.27	Switzerland	1066.12	Bermuda	1654.66	Netherlands	6805.79
5	UAE	285.56	Luxembourg	957.84	Switzerland	1620.28	Luxembourg	5883.16
6	Switzerland	215.33	Netherlands	847.24	Luxembourg	1455.97	Germany	5534.92
7	China	203.93	Bermuda	808.00	Hong Kong	1439.24	Japan	4357.19
8	Malaysia	184.28	Singapore	805.13	China	1434.94	Hong Kong	4341.20
9	Saudi Arabia	179.06	UAE	782.44	BVI	1425.70	Taiwan	4013.14
10	Germany	175.42	Germany	744.79	Netherlands	1383.37	UAE	3964.31

[7] For the comparison by region, we again use the classification of countries by the World Bank and find that, in line with previous evidence, there are some secrecy jurisdictions that specialize in certain regions that are geographically close to them, such as the United Arab Emirates for the Middle East and South Asia. The results for all seven regional groups are presented in Table A4 in the Appendix. We derive the matrix of shares of total global secrecy among regional groups (Table A5 as well as Figure A1 in the Appendix) and find that Europe & Central Asia supplies 40% and receives 54% of the total global secrecy, most of which is among the members of this geographical group. We also find that while Europe & Central Asia and North America are among the regions that receive more secrecy than they supply, Latin America & the Caribbean and East Asia & Pacific supply this additional secrecy.

Source: Authors.

In addition to grouping the receivers of secrecy, we can also group the suppliers of secrecy and thus analyse the relationships among the groups. Figure 1 pictures the shares of global secrecy supplied and received by each income group. In total, OECD countries receive 68.9% of the global secrecy, while only supplying 46.8%. The results suggest that the remaining income groups supply more secrecy that they receive. Similarly, Table A3 in the Appendix shows a matrix of shares of secrecy supplied by income groups in columns to income groups in the rows, and we observe that high income countries from the OECD supply 33.5% of total global secrecy to other OECD countries. A similar exercise can be carried out for individual countries as well, and we discuss this possibility in Section 8.1 in the Appendix.

Figure 1: Shares of global secrecy supplied and received by each income group



Source: Authors.

5.2 EU's tax haven blacklists

The BFSI also allows to easily derive a ranking of harmful secrecy jurisdictions for specific political groups, such as the European Union, and thereby provides a useful tool to analyse which countries are potentially most harmful for EU member states. We compare the results of a common BFSI for EU member states with jurisdictions that the European Commission included on its black list and grey list of non-cooperative jurisdictions (as described in Section 2).[8] The lists were first published in December 2017 and have been revised 3 times at the time of this writing – in January, March and May 2018. In our comparison, we will focus on the latest edition, i.e. the lists published on May 25, 2018, which include 7 jurisdictions on the black

[8] By European Commission's design, all three blacklists automatically omit EU member countries, while the BFSI can be used to quantify the extent to which EU countries harm other EU member states relative to jurisdictions outside the EU. We find that according to the BFSI, 34% of the secrecy faced by EU countries is supplied by other member states (most importantly by the Netherlands and Luxembourg). Separately, another useful observation can be made from the results of the BFSI if we focus on one particular group of jurisdictions that is often pointed to as harmful to the financial transparency in the EU – the British Overseas Territories and British Crown Dependencies. This group includes some of the most prominent secrecy jurisdictions in the world, including the Cayman Islands, Bermuda or Guernsey. We find that of the total secrecy received by the EU member states from the outside world, the British Overseas Territories are responsible for 11% and the British Crown Dependencies for 6%.

list and 65 on the grey list (as explained above, the grey list contains jurisdictions that have been identified as problematic but have committed to amend corrective regulation in the near future).

Table 3 shows the top 15 providers of secrecy to the EU member states (excluding intra-EU secrecy) together with an indication of whether the jurisdiction is included in the black or the grey list published by the European Commission. Out of the 7 blacklisted jurisdictions, only 3 have secrecy scores available, and these are together responsible for only 0.47% of the BFSI faced by the EU member states from the outside countries. We thus argue that any potential sanctions against the blacklisted countries would not have a significant effect on the harmful secrecy faced by the EU.

Second, we compare the results of the BFSI with the grey list – a list of countries that were identified as non-cooperative in at least one assessed area, but have managed to stay off the black list thanks to their prior commitment to amend regulation. This list includes a total of 65 jurisdictions. Secrecy scores are available for 44 of these jurisdictions of which 40 also have data on portfolio investment and thus have the BFSI scores estimated. These 40 jurisdictions are altogether responsible for 54.12% of the secrecy faced by the EU. We find that twelve of the top fifteen BFSI jurisdictions are included on the grey list, with only the United States, Japan and Canada (i.e. the three countries with lowest secrecy scores of the top fifteen secrecy jurisdictions) missing.[9] The United Arab Emirates have moved from the black list the grey list only in the January 2018 update. Overall, while the EU has to a large extent succeeded to identify the most potentially harmful jurisdictions according to the BFSI, none of these have made it to the most recent list from May 2018 due to their promise to cooperate in the near future.

Table 3: Top 15 secrecy jurisdictions (outside the EU) for EU member states and the EU black list and grey list

Rank	Country	BFSI value	Secrecy Score	Black list	Grey list
1	United States	5519.55	59.83	0	0
2	Switzerland	4318.90	76.45	0	1
3	Cayman Islands	4013.84	72.28	0	1
4	Japan	2661.46	60.50	0	0
5	United Arab Emirates	2503.45	83.85	0	1
6	Hong Kong	2455.64	71.05	0	1
7	Turkey	2350.30	67.97	0	1
8	Bermuda	2317.49	73.05	0	1
9	Jersey	2222.51	65.45	0	1
10	Taiwan	2205.95	75.75	0	1
11	Guernsey	2202.64	72.45	0	1
12	Thailand	1930.65	79.88	0	1
13	British Virgin Islands	1733.57	68.65	0	1
14	Canada	1724.34	54.75	0	0
15	Curacao	1679.54	74.80	0	1

Source: Authors.

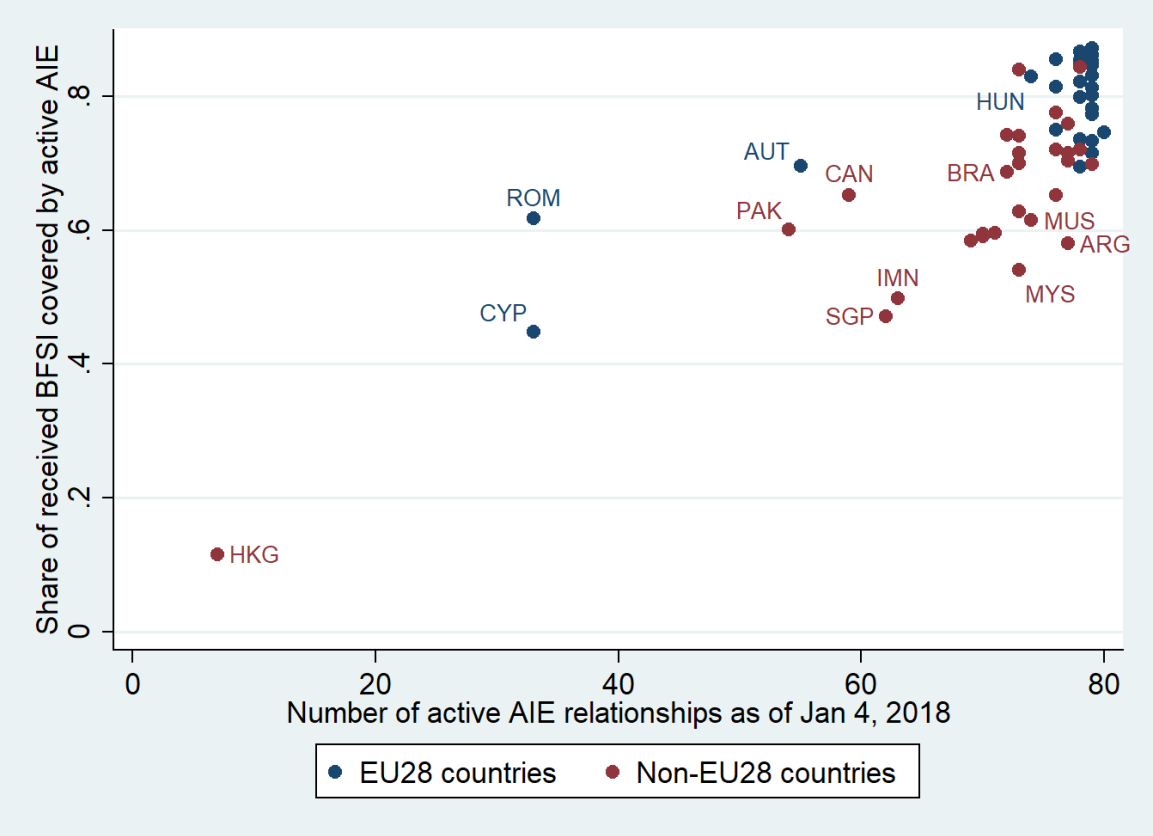
5.3 Automatic exchange of information

We now turn to testing whether countries, in their efforts to counter tax havens, focus on the most important secrecy jurisdictions. In particular, we focus on one specific channel through which countries aim to lower financial secrecy - AIE. As described above, we calculate the share of the values of the BFSI for relationships with jurisdictions with which a country has had an activated AIE relationship as of January 4, 2018, on the total sum of the country's BFSI. We report these results only for the 81 countries for which we estimated the BFSI for at least 10 partner jurisdictions (for 5 countries, the BFSI is only estimated for less than 10 counterparty jurisdictions). Figure 2 shows the share of BFSI accounted for by countries which are covered by an existing activated AIE treaty versus the number of AIE relationships set up with these jurisdictions.

[9] While the British Virgin Islands was missing in the first grey list, the inclusion was only delayed because of the devastating consequences of the hurricane Irma (European Commission 2018).

We observe that while some countries, such as Greece, Slovakia or Czechia, have already covered around 85% of the financial secrecy received, other countries, despite having activated more than 60 AIE relationships, have only covered less than 60% of the received secrecy. Except for the notorious outlier tax havens of Hong Kong, Cyprus, Singapore and Isle of Man, all jurisdictions cover more than 50% of the received secrecy.

Figure 2: Share of BFSI covered by currently activated AIE relationships vs. the number of activated AIE relationships



Source: Authors.

Note: In this figure we only show the 81 countries for which we have BFSI scores for at least 10 counterpart countries.

This straightforward comparison between a share of financial secrecy covered by AIE and the number of AIE treaties signed can help us identify cases in which the attention and resources of policymakers regarding AIE might not be directed to the jurisdictions which harm their countries the most. For example, Brazil, while having activated 72 AIE relationships, has covered only 68.65% of its total received BFSI. In particular, Brazil does not have a treaty on AIE with 7 out of its top ten largest contributors to harmful financial secrecy. As Brazil is not generally regarded as a secrecy jurisdiction (it ranked 73rd out of 112 on the FSI 2018 with a secrecy score of 49, one of the lowest in the world), its low share of BFSI covered by AIE treaties despite a large number of activated relationships may be interpreted as misaimed efforts of its policymakers. Incidentally, Brazil has also been identified by Janský and Palanský (2017) as one of the countries that lose the most tax revenue as relative to their GDP due to corporate profit shifting related to foreign direct investment. In contrast, Russia has activated just one relationship more than Brazil, and in doing so has covered 84% of the secrecy it receives. Malaysia, China, Argentina or Colombia are in a similar situation as Brazil. We argue that the BFSI may be a useful tool for such countries when deciding about where to focus their policymakers' efforts next.

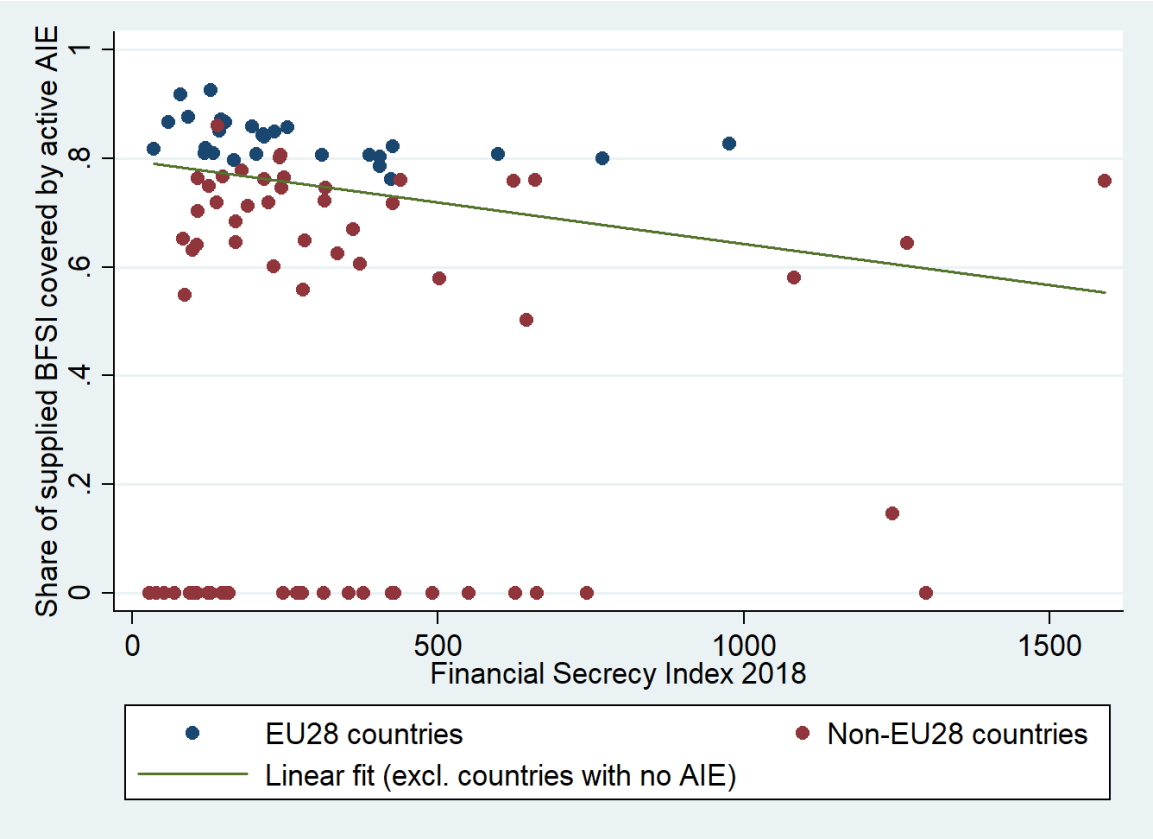
We expect that many secrecy jurisdictions would aim not to have signed AIE with countries important for them. Hong Kong is a clear example of a secrecy jurisdiction that provides substantial secrecy to other

jurisdictions and yet has activated only very few AIE relationships so far. One particular country that does not yet participate in AIE and is, at the same time, responsible for a significant share of received secrecy in a number of countries, is the United States. For example, Japan has activated 77 treaties on AIE and has thereby covered 75.9% of the secrecy that it faces. Adding an AIE relationship with the US would increase the coverage by 6.5 percentage points. Instead of joining the bulk of countries that have signed the AIE treaties, the US has implemented its own standard, FATCA, which, however, is not a bilateral treaty on two-way exchange of information, but rather a rule granting the US a non-reciprocated access to information about foreign persons (Knobel 2016, Hakelberg and Schaub, 2017).

Furthermore, in Figure 2, we see that four EU member states have a particularly low number of activated AIE relationships – Cyprus, Romania, Austria and Hungary. It is not a coincidence that some of these countries, along with Luxembourg, Ireland and the Netherlands, are often considered as tax havens. Austria delayed the introduction of AIE for many decades, whilst providing high secrecy to account holders and being a popular destination for German capital (Tax Justice Network 2018a), while Hungary publicly proclaims their efforts to lure in foreign capital by offering the lowest corporate tax rate in Europe within the EU28 countries (Reuters 2018).

Figure 3 shows the relationship between the share of supplied secrecy covered by active AIE treaties and the FSI value of all 95 countries in the sample for which the FSI value is available and which have the BFSI estimated for at least 10 partner jurisdictions. We observe that for countries that have engaged in at least one AIE relationship, there is a negative correlation between the share of supplied secrecy covered by active AIE and the FSI value, suggesting that jurisdictions that score highly on the FSI are less likely to activate AIE relationships with countries that are significant destinations for their secrecy. In addition to this trend, there is a cluster of jurisdictions in the bottom left corner of the graph that have low FSI values and, at the same time, have not yet disclosed any AIE exchange partners. We recognize three possible explanations. First, these jurisdictions aim to gain from their secrecy by attracting wealth from abroad, and so far they have been successful in avoiding the activation of any AIE relationships (either by delaying the start of the signed treaties or by not signing any treaties). Second, these jurisdictions' foreign activities may be very small and it is thus not on their policymakers' agendas to negotiate AIE treaties at all. Third, if the jurisdiction's foreign activities are indeed very small, it may be the case that it is not on the agenda of policymakers of other countries to negotiate AIE relationships with these jurisdictions. There is a theoretically possible fourth explanation – that some of these countries have activated some AIE relationships, but there is no data available on portfolio assets between these countries, which is why the share of covered BFSI would be zero. However, there is no such case.

Figure 3: Relationship between the share of supplied BFSI covered by active AIE treaties and the 2018 Financial Secrecy Index



Source: Authors.

We now examine the negative relationship between FSI and the share of BFSI covered by AIE more formally using regression analysis. We exclude from this regression those jurisdictions whose share of BFSI covered by AIE relationships is zero, since we recognize different explanations of the relationship for such jurisdictions (see above). Then, using other measures than the FSI, we explore which of the three listed explanations is most likely to be true for the jurisdictions in the bottom left corner of Figure 3. Column 1 of Table 4 presents the results of the estimation of the model characterized by Equation 1. We find that there is a negative and statistically significant relationship between the FSI score and the share of supplied BFSI covered by activated AIE relationships, controlling for income and regional effects. The results, robust to the exclusion of income and regional fixed effects (see columns 2-4 in Table 4), suggest that an increase of 100 points in the FSI value is associated with a roughly 1.2 percentage point lower share of BFSI covered by activated AIE treaties. Our findings thus suggest that high-secrecy jurisdictions are aware of which countries they supply their secrecy to, and have so far been successful in avoiding or delaying the activation of AIE relationships with these countries.

Table 4: Estimation of the relationship between FSI value and the share of supplied BFSI covered by AIE treaties

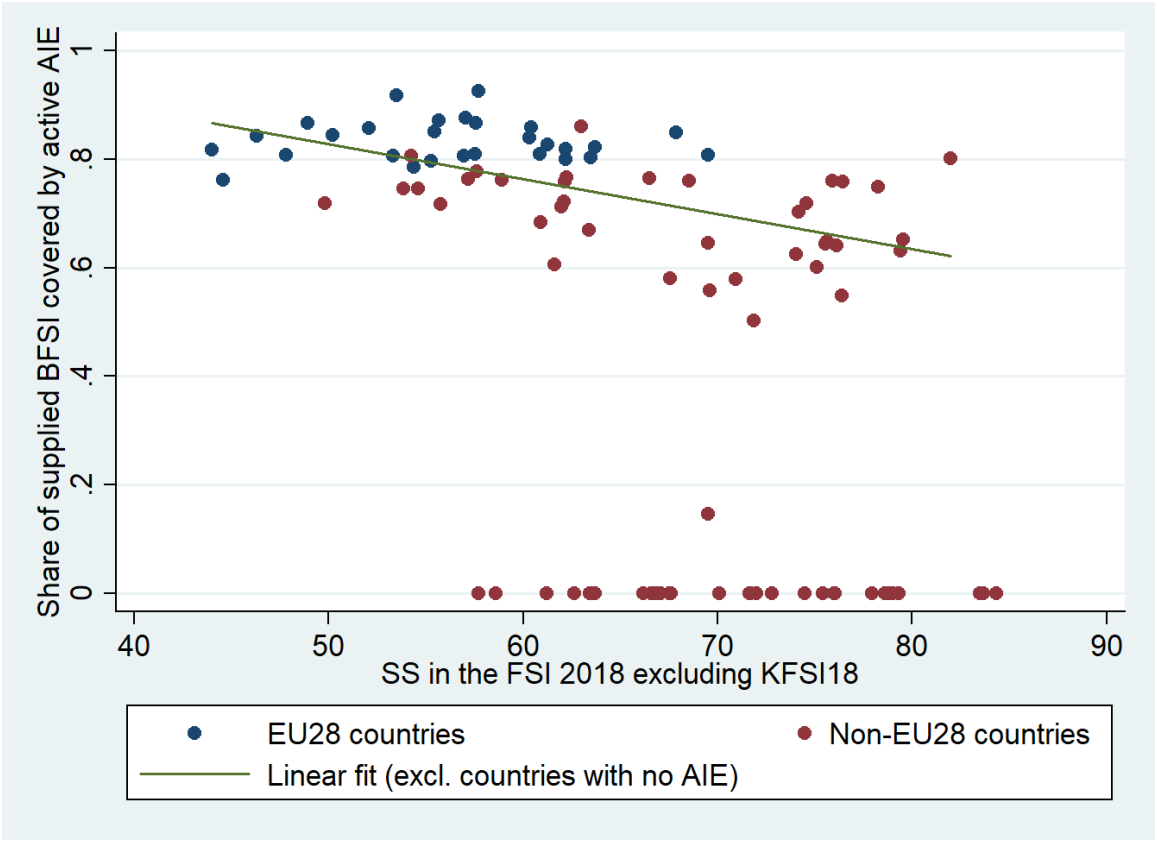
	(1)	(2)	(3)	(4)
FSI2018	-.000116** (.0000589)	-.000152* (.0000864)	-.00012* (.0000686)	-.000157** (.0000734)
Regional groups	Yes	No	Yes	No
Income groups	Yes	No	No	Yes
No. of observations	66	66	66	66
R-squared	0.578	0.151	0.501	0.405

Source: Authors.

*Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

To further examine the relationship and to provide more insight into which secrecy jurisdictions manage to keep out of the AIE system entirely, we divide the explanatory variable into its components: the secrecy scores and the global scale weights. In doing so, we assess whether the negative relationship found above is driven by secrecy, by the scale of cross-border activity, or both. Figure 4 shows the relationship between secrecy scores and the share of supplied BFSI covered by AIE. We observe that only countries with relatively high secrecy (with Secrecy Scores above 58) have not yet activated any AIE relationships, which is a result in favour of our first explanation for no AIE relationships – that there are jurisdictions that aim to gain from their secrecy by attracting wealth from abroad, and so far they have been successful in avoiding activating any AIE relationships.

Figure 4: Relationship between the share of supplied BFSI covered by AIE treaties and secrecy scores



Source: Authors.

In Table 5 we present the results of the estimation of a similar model that was represented by Equation 1, with secrecy scores and global scale weights as explanatory variables instead of the FSI value. We find that

both the secrecy scores and the global scale weights are negatively associated with the share of supplied BFSI covered by AIE treaties. The results suggest that higher secrecy and higher cross-border provision of financial services are both indicators of a tendency of jurisdictions to delay the activation of important AIE relationships.

Table 5: Estimation of the relationship between secrecy scores, global scale weights, and the share of supplied BFSI covered by AIE treaties

	(1)	(2)	(3)	(4)
Secrecy score (excluding KFSI18)	-.00371*** (.00113)	-.00683*** (.00136)	-.00446*** (.00112)	-.00488*** (.0014)
Global scale weight	-.00863** (.00405)	-.00692 (.00551)	-.0082** (.00438)	-.00915* (.00544)
Regional groups	Yes	No	Yes	No
Income groups	Yes	No	No	Yes
No. of observations	66	66	66	66
R-squared	0.581	0.283	0.535	0.37

Source: Authors.

*Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.*

6 Conclusion

In the wake of the Panama Papers, both academic research on the role of secrecy jurisdictions and policy responses to their harmful financial secrecy have intensified. In terms of the research, recent findings evaluate the effects of offshore leaks on the valuation of firms or draw on the data leaked by the Panama Papers to shed more light on income inequality hidden by secrecy jurisdictions. In terms of policy, a case in point is the European Parliament's Committee of Inquiry into Money Laundering, Tax Evasion and Tax Avoidance (PANA) that issued far-reaching policy recommendations in late 2017, and the Panama Papers have arguably contributed to a December 2017 European Union anti-money laundering directive that includes a requirement for companies to disclose their beneficial owners in a publicly available register. Yet, no academic research has so far provided evidence for more targeted policy responses through the identification of the most important secrecy jurisdiction, Panama or otherwise, for as many countries worldwide as possible. This is the task that we set for ourselves in this paper.

Indeed, in this paper we argued that individual tax havens affect countries to a varying extent. To answer which jurisdiction's financial secrecy is harmful to which countries, we built on the existing Financial Secrecy Index and developed its country-specific extension, the Bilateral Financial Secrecy Index. For 86 countries we created rankings of up to 100 secrecy jurisdictions whose financial secrecy they face. The results point to major offshore financial centres being responsible for the bulk of global financial secrecy, but with substantial heterogeneity in the specific countries that secrecy jurisdictions cater to. We found that, for example, the Netherlands and Luxembourg are among the most harmful secrecy jurisdictions in the European Union; that Mauritius specializes in providing secrecy to countries in South Asia and Africa; or that the United States, Switzerland and the Cayman Islands are important secrecy jurisdictions for most countries in the world.

Importantly, we explored how the BFSI can be useful for policymakers in determining on which secrecy jurisdictions they should focus their limited resources on. We found that the European Commission's black list does not include any of the top fifteen secrecy jurisdictions that are most harmful for the European Union. However, the accompanying grey list, which includes countries that do not currently cooperate with the EU's authorities to a satisfactory extent, but have committed to do so in the near future, includes twelve of the top fifteen. Last but not least, we analysed one of the recently launched areas of cooperation – automatic exchange of information. We find that many countries worldwide are not particularly successful in establishing automatic exchange of information with their most important secrecy jurisdictions as identified

by the BFSI. We also find that jurisdictions that score highly on the FSI have so far been relatively successful in avoiding the activation of AIE relationships with the countries to which they provide significant amounts of secrecy.

Our results unveil a new geography of financial secrecy, one in which major global financial centres play first fiddle and in which some tax havens strategically target specific countries. Our paper also contributes to the relatively scarce research on how different tax havens affect different countries, while future research should consider specific areas of financial secrecy, related to trade, banking, or investment. Our methodology and results provide insights for both specific countries and groups of countries and it thus also paves the way for additional research, for example, in the area of the political economy of financial secrecy and related policy actions. Last but not least, since countries are still being harmed by a variety of secrecy jurisdictions, Panama or others, more targeted policy efforts can diminish financial secrecy, and thus the harm done, more effectively. In this respect, we believe that the BFSI may provide useful guidance to policymakers around the world in their efforts to diminish the harmful role of secrecy jurisdictions.

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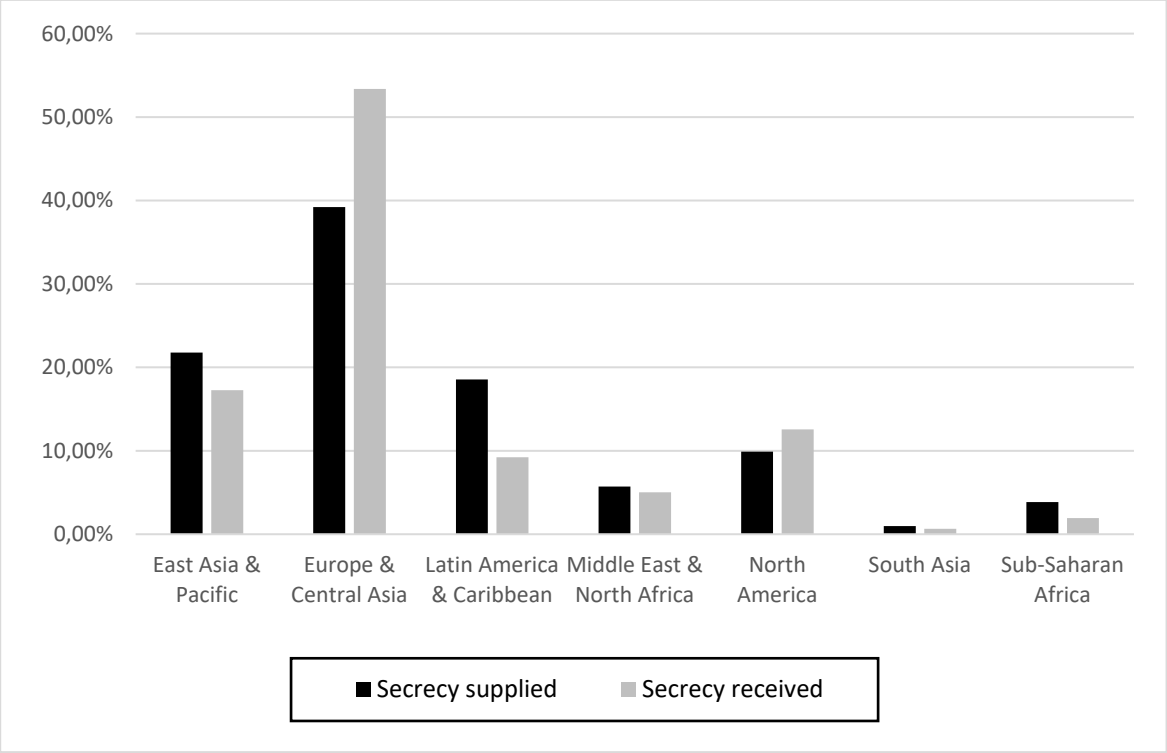
8 Appendix

Figure A1: Shares of global secrecy supplied and received by regional groups



Source: Authors.

Table A1: The most potentially harmful relationships

Supplier of secrecy	Receiver of secrecy	Secrecy score	Bilateral scale weight	BFSI value
Cayman Islands	United States	72.28	2.77%	1142.17
Switzerland	United States	76.45	0.95%	947.92
Cayman Islands	Japan	72.28	1.41%	911.12
Cayman Islands	Hong Kong	72.28	0.73%	732.09
United States	Japan	59.83	3.12%	673.97
Bermuda	United States	73.05	0.49%	663.37
United States	Cayman Islands	59.83	2.60%	634.08
Netherlands	United States	66.03	0.92%	602.96
United States	United Kingdom	59.83	2.20%	600.19
Bermuda	Hong Kong	73.05	0.35%	590.36
Taiwan	United States	75.75	0.25%	585.97
Japan	United States	60.50	1.85%	585.18
United States	Luxembourg	59.83	2.02%	583.00
United States	Canada	59.83	1.65%	544.85
Hong Kong	United States	71.05	0.31%	522.67

Source: Authors.

Table A2: Top destinations of secrecy supplied by the United States, Cayman Islands, Switzerland, and the Netherlands

	United States	**BFSI**	**Cayman Islands**	**BFSI**	**Switzerland**	**BFSI**	**Netherlands**	**BFSI**
1	Japan	673.97	United States	1142.17	United States	947.92	United States	602.96
2	Cayman Islands	634.08	Japan	911.12	Luxembourg	484.33	France	489.42
3	United Kingdom	600.19	Hong Kong	732.09	UK	477.66	Germany	469.37
4	Luxembourg	583.00	Luxembourg	482.57	Norway	414.02	Luxembourg	439.53
5	Canada	544.85	UK	461.48	Germany	394.01	UK	431.49
6	Ireland	521.55	Switzerland	406.79	Japan	388.61	Japan	400.20
7	Netherlands	455.93	Ireland	377.44	Canada	371.39	Ireland	362.81
8	Germany	415.18	Curacao	318.40	Ireland	331.25	Switzerland	337.25
9	Norway	409.03	Canada	318.08	France	325.49	Italy	277.45
10	Singapore	404.79	Australia	313.10	Netherlands	307.41	Belgium	271.83

Source: Authors.

Table A3: Shares of secrecy supplied by income groups in the columns to income groups in the rows

	High income: OECD	High income: nonOECD	Upper middle income	Lower middle income	Low income	Total
High income: OECD	33.5%	19.5%	11.5%	3.7%	0.8%	68.9%
High income: nonOECD	7.7%	6.4%	3.3%	1.0%	0.1%	18.4%
Upper middle income	4.6%	3.6%	1.6%	0.5%	0.1%	10.5%
Lower middle income	1.0%	0.7%	0.4%	0.1%	0.0%	2.2%
Low income	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Total	46.8%	30.1%	16.8%	5.3%	1.0%	100.0%

Source: Authors.

Table A4: Top ten most potentially harmful secrecy jurisdictions for seven regional groups

Rank	East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North Africa	North America	South Asia	Sub-Saharan Africa
1	Cayman Islands	United States	United States	United Arab Emirates	Cayman Islands	United Arab Emirates	United States
2	United States	Netherlands	Cayman Islands	United States	Switzerland	United States	Bermuda
3	Hong Kong	Luxembourg	Switzerland	Switzerland	Netherlands	Saudi Arabia	Hong Kong
4	China	Switzerland	Luxembourg	Turkey	Japan	Hong Kong	Singapore
5	Bermuda	Cayman Islands	Netherlands	Cayman Islands	United States	Turkey	India
6	Switzerland	Germany	Panama	Bahrain	Hong Kong	China	Luxembourg
7	Netherlands	Japan	British Virgin Islands	Netherlands	Taiwan	Cayman Islands	Cayman Islands
8	Thailand	United Arab Emirates	Germany	Germany	Bermuda	Thailand	Switzerland
9	Taiwan	France	Bermuda	Malaysia	Germany	Switzerland	Kenya
10	Singapore	Hong Kong	Japan	Hong Kong	Thailand	Malaysia	Guernsey

Source: Authors.

Table A5: Shares of global secrecy supplied by regions in the columns to regions in the rows

	East Asia & Pacific	Europe & Central Asia	Latin America & Caribbean	Middle East & North Africa	North America	South Asia	Sub-Saharan Africa	Total
East Asia & Pacific	5.53%	4.93%	3.10%	0.88%	2.10%	0.22%	0.49%	17.26%
Europe & Central Asia	10.04%	24.62%	8.75%	2.74%	4.65%	0.39%	2.16%	53.36%
Latin America & Caribbean	1.44%	2.92%	2.85%	0.41%	1.37%	0.06%	0.19%	9.23%
Middle East & North Africa	0.99%	1.87%	0.65%	0.85%	0.51%	0.05%	0.09%	5.02%
North America	3.09%	4.11%	2.93%	0.65%	0.95%	0.17%	0.67%	12.57%
South Asia	0.20%	0.20%	0.06%	0.09%	0.06%	0.01%	0.03%	0.64%
Sub-Saharan Africa	0.47%	0.56%	0.22%	0.11%	0.25%	0.09%	0.23%	1.93%
Total	21.77%	39.21%	18.56%	5.72%	9.90%	0.98%	3.86%	100.00%

Source: Authors.

8.1 Net suppliers and receivers of secrecy

It is clear that virtually all countries are receivers and at the same time providers of secrecy. The methodology that we employ in the BFSI allows to distinguish between the two directions of secrecy – in the relationship of two countries, the BFSI results provide two values. First, the BFSI uses the portfolio assets from country A in country B combined with the secrecy provided by country B, and second, vice versa, the portfolio assets from country B in country A combined with the secrecy provided by country A. The methodology of the BFSI thus implicitly assumes that if there is existing financial secrecy between any number of countries and these countries' residents engage in cross-border activities, all the countries are potentially harmed by the other countries' secrecy, and, at the same time, themselves harm the other countries.

While all financial secrecy is potentially harmful, in this part of the analysis we are interested in which countries on balance receive more secrecy than they provide. To that objective, we define the Net BFSI of a jurisdiction i as the difference between the BFSI supplied to all other countries and the BFSI received from all other countries:

$$Net\ BFSI_i = \sum_{j=1}^{111} BFSI_{ij} - \sum_{j=1}^{111} BFSI_{ji}$$

We argue that those jurisdictions which on balance supply more secrecy than they provide are more likely to pursue a deliberate secrecy jurisdiction strategy than net receivers of financial secrecy. In Table A6 we provide a list of the top ten net suppliers and receivers of financial secrecy. We observe that the Cayman Islands, Turkey and Thailand, while being among the top 3 suppliers of secrecy, are not among the largest receivers of secrecy, resulting into the highest three net BFSI values. On the other hand, the results point to the United Kingdom, Ireland, and Norway as countries that lose out the most.[10] Interestingly, we find that the United States, while being the largest global supplier of secrecy, are also the largest global receiver of secrecy, and lose out in total.

Table A6: Top and bottom ten countries according to the net BFSI.

Country	Secrecy Score	Secrecy supplied	Secrecy received	Net BFSI
Cayman Islands	72.28	12422.88	8002.31	4420.56
Turkey	67.97	4768.86	593.41	4175.45
Thailand	79.88	5298.63	2268.68	3029.95
Russia	63.97	3415.38	1085.93	2329.45
Switzerland	76.45	10406.12	8177.53	2228.59
Indonesia	61.45	2987.12	839.96	2147.17
Panama	76.63	3407.03	1339.64	2067.40
Malaysia	71.93	4531.49	2619.87	1911.62
Mexico	54.38	2727.80	837.78	1890.02
Venezuela	68.53	2125.30	253.63	1871.67
Canada	54.75	4212.52	7380.81	-3168.29
Belgium	44.00	1682.36	4910.63	-3228.27
Denmark	52.50	2633.10	5937.40	-3304.30
Sweden	45.47	2187.99	5582.77	-3394.78
France	51.65	5142.34	8673.83	-3531.48
Japan	60.50	6318.75	10355.16	-4036.41
Luxembourg	58.20	8787.93	13574.86	-4786.93
United States	59.83	14769.09	19945.85	-5176.76

[10] An important caveat to discuss here is that the data that we use to estimate the scale of countries' activity in the global market for secrecy, portfolio assets, is not designed to capture multiple-step investment relationships. In other words, portfolio investment that flows through a third country before reaching its final destination as a productive asset is captured twice in the data. To be more precise, financial secrecy among any of the three countries is potentially harmful because it may serve as a way to hide the true investors.

Ireland	50.65	4493.63	10001.07	-5507.45
United Kingdom	42.35	3462.25	12432.66	-8970.41

Source: Authors.

Table A7 presents the results of the net BFSI for EU28 member states. We find that most countries in the EU are net receivers of secrecy, with the exception of Poland and Romania. In addition, Croatia does not report portfolio assets to the IMF's CPIS database and we thus cannot estimate the amount of secrecy it receives. In total, the EU28 is a net receiver – in fact, the member states receive more than twice the secrecy they supply to the rest of the world.

Table A7: Net BFSI for EU28 member states

Country	Secrecy Score	Secrecy supplied	Secrecy received	Net BFSI
Poland	57.35	1068.63	492.04	576.59
Romania	65.53	675.81	259.94	415.87
Croatia	59.28	373.10	0.00	373.10
Greece	57.88	609.18	620.63	-11.44
Hungary	54.70	603.76	672.80	-69.04
Malta	60.53	561.15	701.80	-140.65
Cyprus	61.25	671.66	845.54	-173.88
Bulgaria	54.17	183.00	387.17	-204.16
Lithuania	46.78	176.81	434.21	-257.40
Estonia	52.92	443.38	808.45	-365.08
Czech Republic	50.85	104.73	472.56	-367.83
Slovak Republic	54.90	276.77	708.35	-431.58
Latvia	57.38	221.71	717.58	-495.87
Portugal	54.67	714.98	1271.53	-556.55
Slovenia	41.83	163.88	807.46	-643.58
Spain	47.70	1206.04	1920.88	-714.85
Netherlands	66.03	4920.60	6337.42	-1416.82
Finland	52.70	1083.82	2765.51	-1681.69
Austria	55.90	1168.76	2994.79	-1826.03
Belgium	44.00	710.88	2742.87	-2031.99
Germany	59.10	4017.35	6437.23	-2419.87
Italy	49.47	1197.67	3793.36	-2595.69
Sweden	45.47	1100.84	3976.13	-2875.29
Denmark	51.65	2495.43	5466.21	-2970.78
France	52.50	1393.27	4371.19	-2977.92
Ireland	50.65	2310.25	7380.09	-5069.84
Luxembourg	58.20	4316.18	10179.84	-5863.66
United Kingdom	42.35	2033.61	9284.36	-7250.75

Source: Authors.