

Kavakl, Kerim Can; Marcolongo, Giovanna; Zambiasi, Diego

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Sanction-busting through tax havens

Kerim Can Kavakli,¹ Giovanna Marcolongo,¹
and Diego Zambiasi²

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Abstract: Financial sanctions, which aim to economically hurt a target by restricting its access to financial assets and markets, require the ability to identify who owns an asset. Although experts have long claimed that offshore financial centres that offer secrecy (‘tax havens’) undermine sanctions by hiding ownership information, so far data limitations have prevented a rigorous test of this claim. We overcome this constraint using data from the Bank of International Settlements and the Offshore Leaks Database and conduct the first systematic analysis of the role that tax havens play in financial sanction evasion. Our main finding is that sanction targets reduce their funds in sanctioning countries while increasing their funds in tax havens. This displacement effect is stronger when the sanction coalition includes the United States or comprises more FATF or OECD members. Lastly, whether a tax haven is in the sanctioning coalition does not seem to make a difference. These findings confirm that target countries evade sanctions by moving large portions of their funds from sanctioning countries to tax havens. More broadly, our paper highlights a novel and geostrategically important role of tax havens in global finance.

Key words: sanctions, financial markets, tax havens, Offshore Leaks Database, offshore financial centres

JEL classification: F51, K42, F02, F33

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¹ Bocconi University, Milan, Italy; ² Newcastle University, Newcastle, UK; corresponding author: giovanna.m@unibocconi.it

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Katajanokanlaituri 6 B, 00160 Helsinki, Finland

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1 Introduction

This paper investigates financial sanction evasion, and, in particular, the role of tax havens in it. Financial sanctions aim to hurt a target country by restricting its access to financial assets and markets. The most recent example comes from the 2022 sanctions of Russia. Following the invasion of Ukraine, a sanctioning coalition led by the United States and the EU have prohibited many Russian financial institutions (including the Central Bank of Russia) and prominent Russians (including President Putin) from accessing their assets or receiving financial services in sanctioning countries (Harrington 2022).

Financial sanctions have become more common in recent decades. According to the Global Sanctions Database (GSDB) (Felbermayr et al. 2020), the number of new sanctions with a financial component rose from 51 in the 1980s to 255 in the last decade. Moreover, whereas in the 1980s about 40 per cent of sanctions included a financial component, in the last decade this number rose to 70 per cent. This rise in financial sanctions has two main causes: (1) the growing importance of finance in global economic ties (Steil and Litan 2008: 3); and (2) the belief that financial sanctions harm civilian populations less by specifically targeting the elites (Drezner 2011: 96).

The critical question is whether financial sanctions are effective in putting economic pressure on the targeted actors. Political scientists have argued that, especially in authoritarian regimes, elites can replace their lost wealth by extracting more from the common people (Brooks 2002; Kirshner 1997; Pape 1997; Peksen 2019; Wood 2008). This ‘burden-shifting’ strategy can undermine sanctions by making them less costly for the people in power. Another method available to targeted elites is to transfer their assets to locations that are beyond the reach of sanctioning authorities. Although there is plenty of anecdotal evidence for this ‘asset-shifting’ strategy (e.g. Miller and Woodman 2022; Vittori 2017), data limitations have prevented researchers from studying it systematically and estimating its extent. Our contribution is to address this gap and provide novel evidence on how targets evade sanctions using global financial links.

Our basic premise is that financial sanctions make it costly for the targeted nation’s citizens to keep their assets in jurisdictions accessible by the sanctioning authorities. For instance, US sanctions against Iran make it hard for Iranians to hold assets in most countries because banks would rather cut their ties to any Iranian customer than run the risk of violating US sanctions (see, e.g. Salari 2020). For this reason, we expect sanctioned country citizens, even if they are not individually targeted, to move their funds to safer jurisdictions. The broader the sanctioning coalition, the harder it will be for the target’s citizens to find a safe harbour for their deposits abroad. Tax havens are ideal for this purpose because they provide secrecy to their customers. The secrecy that helps taxpayers avoid their national tax authorities or drug cartels avoid law enforcement can also help Iranians against US sanction enforcement. Consequently, we expect a target’s citizens to reduce their funds in sanctioning countries while increasing their funds in tax havens.

Beyond this main finding, we also study heterogeneity among tax havens and any sanctioning states. One important question is whether there is a difference between tax havens that participate in sanctions and those that do not. To answer this question, we extend our analysis and distinguish between sanctioning and non-sanctioning tax havens. We do not find a significant difference between different types of tax havens. This null finding suggests that customers do not believe that tax havens enforce the sanctions that they nominally impose.

We also test if international organizations with the mandate and capacity to combat illicit finance, namely the Organisation for Economic Co-operation and Development (OECD) and the Financial Action Task Force (FATF), have an effect on sanction target behaviour. Our results show that sanctioning countries that are members of the FATF or the OECD experience greater drops in deposits from target countries.

This pattern suggests that targets perceive members of these organizations as more credible enforcers of sanction measures.

Our empirical strategy has two parts. First, we use data provided by the Offshore Leaks Database on shell companies established in tax havens. In a two-way (year and sanction target country) fixed effects model, we estimate the relationship between the severity of financial sanctions on a country and the number of shell companies its citizens establish in tax havens. We estimate that, relative to a country free from any financial sanctions, a maximally sanctioned country establishes 70 per cent more entities in tax havens. Unfortunately, this analysis does not allow us to study how the funds in non-tax havens of those targeted by sanctions change when sanctions are imposed. For this reason we conduct a second test using information on countries' bilateral financial positions.

Using data from the Bank of International Settlements (BIS), we compare a target country's deposits in countries imposing the financial sanctions to its deposits in non-sanctioning countries. Crucially, in this analysis we can include depositor country-by-year fixed effects, which eliminates all factors except the difference between the sanctioning and non-sanctioning countries. According to our estimates, if the whole world imposes financial sanctions on a country, we expect it to reduce its deposits in sanctioning countries by 38 per cent while increasing its deposits in tax havens by 31 per cent. This finding is in line with the idea that tax havens undermine sanctions by allowing individuals from target nations to remain in the global financial system.

How important are these effects for the big picture on hidden wealth and sanction evasion? Zucman (2021: 53) estimates that the share of financial wealth elites keep offshore reaches 22 per cent in Latin America, 30 per cent in Africa, and exceeds 50 per cent in Russia and Gulf countries.¹ Therefore, more than one-third of developing world elites' wealth is offshore and potentially subject to asset freeze and seizure. If they are able keep this wealth beyond the reach of the sanctioning countries, it will greatly blunt sanctions' power to hurt and produce policy change.

Our paper contributes to important literatures in political science and economics. First, our findings are directly relevant to the literature on economic sanctions (Bapat et al. 2013; Hufbauer et al. 2007; Kavaklı et al. 2020). While there are several studies on the evasion of trade sanctions (for a recent review, see Early 2021), to the best of our knowledge our paper is the first systematic study on financial sanction evasion. Second, there is plenty of anecdotal evidence that offshore financial centres help human rights violators and dictators protect their wealth from domestic and foreign scrutiny. A growing literature provides systematic evidence for these insights; for example, Andersen et al. (2017, 2022) study how elites use offshore bank accounts to steal petroleum rents and foreign aid. Our paper contributes to this literature on illicit global finance by showing that tax havens are also 'sanction havens'.

2 Institutional context

Economic sanctions are a coercive tool of foreign policy that aim to hurt a target economy by restricting its economic relations with the rest of the world. Traditionally sanctions focused on trade, but financial sanctions have become more common in recent decades.

There are different types of financial sanctions. They may involve freezing the target's funds and assets or restricting their access to financial markets. They can be targeted (i.e. imposed against an individual, a corporate entity or a sector), or comprehensive (i.e. targeting a whole country). A classic example of comprehensive financial sanctions is the United States' refusal to allow the UK access to IMF funds

¹ These estimates do not include non-financial wealth such as yachts, houses, or diamonds kept offshore.

to prevent a run on sterling in the midst of the 1956 Suez Crisis (Boughton 2001). Recent examples of targeted sanctions are the measures against Russian oligarchs after the invasion of Ukraine, which include asset freezes and prohibitions on transacting with them and their companies. In short, financial sanctions hurt their targets by restricting their ability to move or spend funds, buy and sell services, or obtain credit and investment.

Financial sanctions can be devastating for their targets, especially when applied by a large economic power like the United States. Take, for instance, Oleg Deripaska, who was among the Russian oligarchs hit with US sanctions in 2018 for supporting the Russian government's malign activities worldwide. The sanctions froze Deripaska's assets in the United States and prohibited all US and non-US persons from dealing with Deripaska and his companies (US Department of the Treasury 2018). Almost overnight his companies lost their Western buyers, suppliers, and investors. Deripaska's two most valuable companies, Rusal and EN+, lost more than 50 per cent of their value and (despite offers of financial aid from the Kremlin) came close to collapse. Ultimately, to save his companies Deripaska was forced to give up control of them (Verdier 2020: 109–10). According to his Forbes profile, that year Deripaska's net worth fell from US\$6.7 billion to US\$3.6 billion (Forbes 2022).

Actors targeted by financial sanctions can use essentially three methods to protect their funds and assets (JMLIT 2022): (1) sell them at a loss before sanctions take effect; (2) transfer them to trusted proxies such as relatives or employees; and (3) transfer them to jurisdictions where sanctions are not in place. This third method has significant advantages over the other two. A hasty sell-off can be undesirable if the expected price is low or the funds from the sale may be blocked as well. Transferring one's wealth to others requires a high level of trust in the proxies and the belief that the ruse will not be discovered by the sanctioning authorities. On the other hand, transferring wealth offshore requires the availability of jurisdictions that are not participating in sanctions (or those willing to turn a blind eye to sanction evasion).

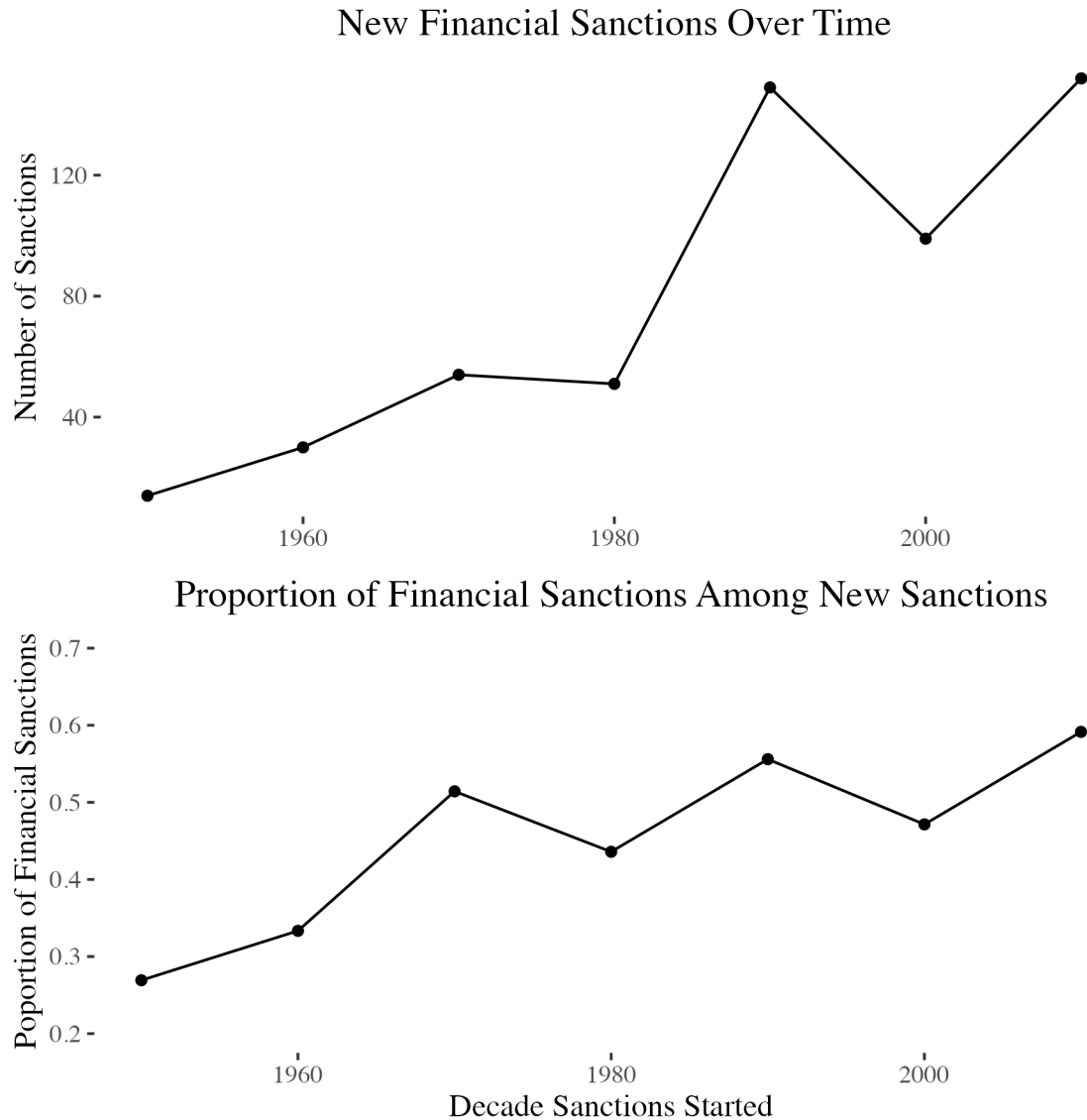
Offshore shell companies play a key role in sheltering individuals from the authorities. Shell companies do not conduct any substantive business and usually simply consist of an address. They may have legitimate business functions, such as providing limited liability, but they are also one of the most common means for busting sanctions, laundering money, committing bribery, tax evasion and financing terrorism (Findley et al. 2014: 3). Although shell companies are required by law to identify the name of the owner, this requirement can be evaded easily by, for example, assigning the company's legal ownership to a puppet individual while the real owner remains hidden (Findley et al. 2014). Offshore shell companies established in high-secrecy jurisdictions can hinder sanction enforcement even further. Besides not collecting ownership information, offshore jurisdictions may refuse to share existing information about who owns shell corporations and thereby provide additional cover to sanctioned actors.

3 Data and descriptive evidence

3.1 Data on sanctions

We obtain sanction data from the GSDB (Felbermayr et al. 2020), which lists 1,101 sanctions between 1950 and 2019, 549 of which are financial sanctions. The top panel of Figure 1 shows that financial sanctions have steadily become more common over time. Often they are bundled with other types of sanctions; only 42 per cent of financial sanctions are not linked with other types of sanctions. They are most often combined with trade sanctions (26 per cent of the time) and military sanctions (24 per cent of the time). The lower panel of Figure 1 plots the proportion financial sanctions among all new sanctions. It shows that financial sanctions represent a majority of new economic sanctions today.

Figure 1: The increasing use of financial sanctions



Note: this figure plots the total number of financial sanctions contained in the GSDB over time (top panel) and the share of financial sanctions among newly imposed sanctions over time (bottom panel).

Source: authors' compilation based on data from Felbermayr et al. (2020).

Sanctions vary greatly in severity; while some are imposed by a few countries that make up a small percentage of the world economy, others are imposed by almost all countries in the world. To capture this fact, we calculate our primary explanatory variable, *Sanction Severity*, as the total GDP of the countries sanctioning a specific country in a specific year, over the world GDP.²

3.2 Entities in tax havens

We obtain data about new entities opened in offshore tax havens through the Offshore Leaks Database, provided by the International Consortium of Investigative Journalists (ICIJ). This database combines several leaks and provides information about the ownership of offshore shell companies.

² Appendix Figure A1 presents the distribution of *Sanction Severity*.

In 2013, the ICIJ began to publish information on more than 100,000 offshore entities incorporated by Portcullis Trustnet and Commonwealth Trust Limited, two law firms based in Singapore and the British Virgin Islands (BVI), respectively. In 2016 the ICIJ published the dates, names and beneficiaries of more than 200,000 entities incorporated by Mossack Fonseca, a law firm based in Panama and specializing in offshore entity incorporation. According to the *Economist* (2016) the firm covered 5–10 per cent of the global shell company market in 2016 and, according to the ICIJ, had relationships with customers all over the world. In 2017 the ICIJ further extended the database with information on Appleby, a law firm headquartered in Bermuda. Like Mossack Fonseca, Appleby served a widely international market, with its 700 employees located across more than 19 tax havens. In October 2021, ICIJ published the ‘Pandora Papers’, information on 20,000 offshore entities incorporated by firms in the BVI, Monaco, Panama, Singapore, and Switzerland. These four leaks (from Portcullis, Mossack Fonseca, Appleby and the Pandora Papers) make up the Offshore Leaks Database.

For each entity listed in the Offshore Leaks Database we observe: the name of the single or multiple beneficiaries (legal or natural person) and the date on which the entity was incorporated. Crucially for our analysis, for a subset of the entities we observe the country of their beneficiaries and we can therefore attribute a nationality to the company. In most of the cases the country where the entity is incorporated differs from that of the beneficiary. About 10 per cent of the 740,000 entities included in the three leaks report a ‘bearer’ as a beneficiary,³ therefore limiting our ability to assign a country to the beneficiary. When the beneficiary’s country is not reported, we use information from a different variable: the address linked to the office. For 121,000 observations, however, the variable is not evaluated. Following Alstad-sæter et al. (2019), we exclude beneficiaries linked to more than ten addresses as these are likely to work as intermediaries too, thus their nationality may not reflect that of the ultimate beneficiary. Following this criterion, we disregard about 70,900 observations. We also disregard officers linked to more than ten entities because they are highly likely to be intermediaries and not the actual beneficiary.⁴

We exclude from the analysis beneficiaries that report a tax haven as their location, as they are more likely to be nominees and their nationality is not informative of the country of the actual beneficiary. Suppose, for example, that a corrupt politician from Angola incorporates an entity in Bermuda and nominates an officer from Bermuda as a nominee. It would be incorrect to attribute the entity to Bermuda as the person who disposes of the wealth if the company is actually located in Angola. In cases in which the beneficiary of an entity is linked to more than one country, we impute the entity to each country separately. Ultimately, we are able to identify the country of a beneficiary for about 124,000 entities for a total of about 281,000 unique entity–beneficiary pairs (the same entity may be linked to multiple beneficiaries). Our main outcome variable is the number of entities incorporated in a given month in a given country standardized per million inhabitants in the country. We divide the number of entities by a country’s population to net out the variable from a country/size effect—that is, the fact that more populous countries may also show higher numbers of shell companies.

3.3 Bilateral deposits

The Offshore Leaks Database allows us to observe the number of entities incorporated as reported in multiple leaks. The information draws on the leaks that affected notable law firms (among which are Mossack Fonseca, Portcullis and Appleby) active in the business of shell company incorporation and mainly focused in the Caribbean. The Offshore Leaks Database allows us to construct a measure of the intensity of activity in the tax havens as measured by the incorporation of new shell companies over time. The data does not provide information on the amounts of money those entities harbour. In order to complement our analysis including tax havens located also in Europe and Asia (such as Switzerland,

³ A bearer share is a piece of paper that entitles the person who shows it to dispose of the company reported on it.

⁴ The median number of entities per officer is 2, while the 75th percentile is 130.

Ireland, Isle of Man, Guernsey, Jersey, Singapore and Hong Kong) and to obtain a proxy of the amount of funds countries deposited there, we rely on a different database: the Locational Banking Statistics of the BIS (Andersen et al. 2017, 2022; Johannesen and Zucman 2014). Countries adhering to the BIS report cross-country bilateral positions at a quarterly frequency. Data on sanctions is available only at the yearly level, so we convert BIS data to yearly by averaging the quarterly values. BIS makes publicly available only a subset of the information it collects. This publicly available dataset includes 49 reporting countries and 209 counterparties. Of the 49 reporters, 30 report bilateral data and these are the ones we use in our analysis.

Eight of the reporting countries are tax havens: Hong Kong, Ireland, Macao, Guernsey, Isle of Man, Jersey, Luxembourg, and Switzerland.⁵ Although our sample does not include all tax havens in the world, our estimates can serve as a good proxy of capital flight towards tax havens as long as the flows towards in-sample tax havens are correlated to the ones directed towards unobserved ones. This is a plausible assumption that is also corroborated by recent work by Andersen et al. (2022).

The BIS data includes liabilities banks report towards both non-bank creditors and other banks. As suggested by the literature, we focus on the non-bank deposits as we aim at capturing the responses of targeted individuals to financial sanctions, rather than the movements across banks' balance sheets.

The appeal of the data lies on its reliability given that it is sourced directly from the banks' balance sheets. The accuracy of the data is testified by its wide usage by both central banks and academics. Central banks use this data to estimate capital accounts, and academics use it to measure net wealth positions and funds diversion, or to provide estimates of offshore tax evasion (Johannesen 2014; Johannesen and Zucman 2014; Lane and Milesi-Ferretti 2007; Zucman 2013). Given its wide coverage, the dataset well serves the aim of following capital flows in response to sanctions. Of the 49 reporting countries, we observe 25 imposing a financial sanction at least once and, among the 209 counterparties, 103 were the target of a financial sanction at least once between 1977 and 2020 (Figure A2).

The data presents three limitations that are worth discussing. The statistics report the net position towards the last depositor of the funds, which may not coincide with the ultimate owner. For instance, if Russian residents' funds in Switzerland are used to set up an offshore company in Panama, this would appear in the Locational Banks Statistics as a liability of Switzerland towards Panama, and not towards Russia. Second, the data refers to financial wealth (deposits and debt securities). However, it is worth remembering that residents could transfer their capital via other means; for example, investing in real estate or in other securities such as artwork or, more recently, virtual currencies. These investments are not included in the Locational Banking Statistics. However, as long as capital flow is correlated with investment in other securities, we could say that our measure provides an underestimate of the capital flow that a financial sanction may trigger. Ultimately, in the case of missing values in the deposits, it is not possible for the econometrician to distinguish between the two cases that countries did not deposit funds in the reporting country in the specific quarter (i.e. missing values are zeros) or the reporting country did not report a positive deposit in the specific quarter (i.e. the missing values would correspond to positive deposits). To avoid imputing data we are unsure of, we restrict our analysis to the non-missing values. Furthermore, we winsorize at 99 per cent the amount of deposits in a specific year. In an alternative approach we re-estimate our main specifications on a wider dataset, where we imputed zeros to the missing values. The results, available upon request, are similar to the results presented here.

⁵ Other tax havens that report to the BIS but whose data is not publicly available are: Bahamas, Bermuda, Cayman Islands, Netherlands Antilles, Panama, Bahrain, and Lichtenstein.

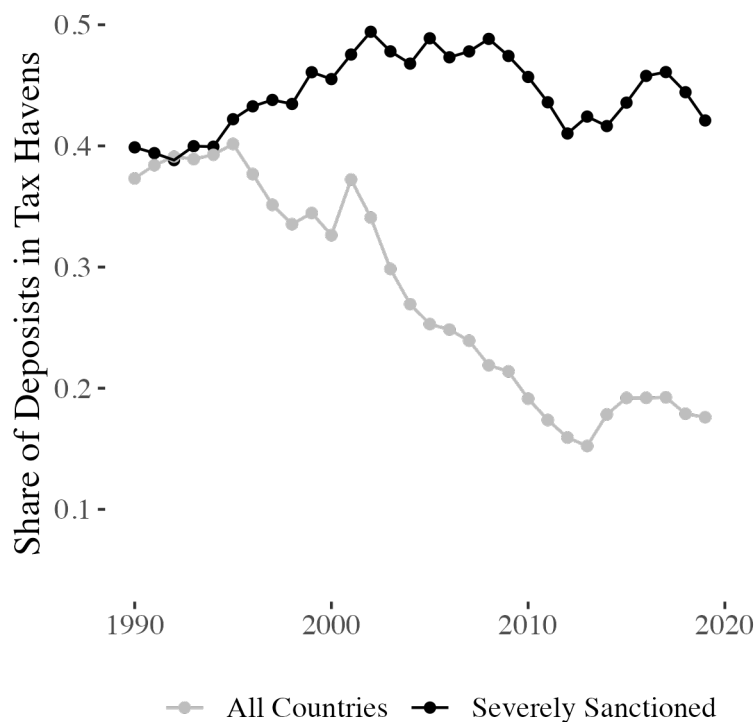
3.4 Additional data sources

We complement our analysis with additional data sources: data on countries' real GDP from the World Bank, information on countries' membership to the FATF and OECD respectively from the FATF and OECD websites, and data on conflicts and their intensity from the Uppsala Conflict Data Project (UCDP).

4 Methodology

Our goal is to causally identify the impact of financial sanctions on wealth stored in tax havens. Before our full battery of tests, we present Figure 2, which compares where 'severely sanctioned' countries (i.e. those that were ever sanctioned by a coalition of at least 50 per cent of the world economy) and other countries hold their foreign deposits. The former group holds on average 50 per cent of its foreign deposits in tax havens, whereas for the latter group this percentage is about 20 per cent. This pattern is consistent with the idea that tax havens are considered safe by sanction targets. We now proceed to our main statistical analysis.

Figure 2: Share of deposits in tax havens



Note: this figure plots the share of deposits held in tax havens for all countries, and the subset of 'severely sanctioned' countries. The latter are those countries that have ever been sanctioned with a financial sanction by at least 50 per cent of the world economy.

Source: authors' compilation based on data from Felbermayr et al. (2020).

For our purposes, the ideal experiment would randomly assign financial sanctions to countries and then test if sanctioned and non-sanctioned countries move their assets to tax havens in different ways. Unfortunately, this experiment is unfeasible because we cannot observe the wealth held by individuals in a given location, and financial sanctions are not randomly imposed. The events that trigger economic sanctions (e.g. wars) can compel individuals to transfer their wealth to tax havens even in the absence of sanctions.

We overcome these issues with two complementary identification strategies. First, we proxy for wealth held in tax havens by individuals from a specific country with leaked data about the incorporation of offshore shell companies. This approach allows us to test whether countries that incur financial sanctions are more likely to open new entities in tax havens. Second, we exploit information on countries' bilateral positions and test whether, when sanctioned, targeted countries: (1) reduce the deposits they hold in sanctioning countries; and (2) increase the deposits they hold in tax havens more than in non-havens. Crucially, this second approach will allow us to exploit country–year variation in deposits in other countries, allowing us to disentangle the effect of financial sanctions from any other shock that might affect a specific country at a specific time, such as a war.

4.1 Entities in tax havens

To evaluate the effect of financial sanctions on the incorporation of offshore shell companies, we estimate the following count data model through Poisson pseudo-maximum-likelihood (Head et al. 2010; Silva and Tenreyro 2006):

$$\text{New Entities Per Capita}_{cy} = \exp(\beta \text{Sanction Severity}_{cy} + \alpha_c + \delta_y + \text{Country Trend}_c + X_{cy}) + \varepsilon_{cy} \quad (1)$$

$$\quad \quad \quad \text{Country Trend}_c + X_{cy}) + \varepsilon_{cy} \quad (2)$$

where $\text{New Entities Per Capita}_{cy}$ represents the number of newly opened entities in tax havens by country c in year y divided by population (in millions) of country c . $\text{Sanction Severity}_{cy}$ represents the share of the world GDP that is sanctioning country c in year y . It is set to zero if a country is not under any financial sanctions.

Turning to the controls, α_c represents depositor country fixed effects, allowing us to control for all country-specific features that do not vary over time, and δ_y represents year fixed effects, allowing us to control for common shocks that affect all depositors in the same year. Finally, ε_{cy} represents an error term, clustered at the depositor country level. In some specifications we also include depositor country-specific linear trends (Country Trend_c). Finally, we control for the lag of the logarithmic transformation of GDP to account for systematic differences between richer and poorer depositor countries. We use a lagged term to mitigate the potential concerns about the endogenous relationship between sanctions and target GDP.

Our coefficient of interest is β , which represents the impact of moving from not being sanctioned at all to being sanctioned by 100 per cent of the world GDP. One can interpret β as a causal estimate if there is no other shock that can affect the number of new offshore entities by a country in the years that financial sanctions are imposed. This condition is unlikely to hold because sanction trigger events may affect individuals' propensity to open offshore shell companies independently from the sanctions. We address this issue using BIS data on bilateral financial positions.

4.2 Bilateral deposits

We use information provided by the BIS on countries' bilateral financial positions to check whether countries hit by a financial sanction reduce the deposits they hold in the sanctioning countries. A reduction in deposits held in sanctioning countries by sanctioned countries would corroborate the hypothesis that financial sanctions induce an outflow of funds from sanctioning countries. We test this hypothesis using the following count data model through Poisson pseudo-maximum-likelihood (Head et al. 2010; Silva and Tenreyro 2006):

$$\text{Foreign Deposits}_{ijt} = \exp(\beta \text{Sanction Severity}_{ijt} + \alpha_{ij} + \delta_{jt} + \text{year}_t) + \varepsilon_{ijt} \quad (3)$$

where $\text{Foreign Deposits}_{ijt}$ are the deposits residents from country j hold in country i in year t . $\text{Sanction Severity}_{ijt}$ is a variable that is equal to the share of the world GDP that is sanctioning country j if country

j is sanctioned by country i , and zero otherwise. α_{ij} and $year_t$ are countries' pair and year fixed effects. In our preferred specification we include non-parametric estimates of depositing country-by-year fixed effects, δ_{jt} . This set of fixed effects allows us to exploit within-sanctioned-country-by-year variation (i.e. we are only comparing the deposits that country j holds in sanctioning and non-sanctioning countries in a given year). This approach addresses the concern stated above, that target-country-specific events, such as wars, may cause a change in the capital outflows independent of the sanctions.

We then use information on countries' bilateral positions to test whether countries that are the target of financial sanctions prefer channelling their funds towards tax havens than to non-havens. For this purpose, in order to reduce the noise in the data, we aggregate the funds countries hold in tax havens and non-tax havens at a yearly frequency. In other words, we have a dataset with two observations for every country–year, one where we observe the amount of deposits the country holds in tax havens and one where we observe the amount of deposits it holds in non-tax havens. We then estimate the following count data model through Poisson pseudo-maximum-likelihood (Head et al. 2010; Silva and Tenreiro 2006):

$$\text{Foreign Deposits}_{iht} = \exp(\beta \text{Sanction Severity}_{it} \times \text{Tax Haven}_h + \alpha_{it}) + \varepsilon_{iht} \quad (4)$$

where, as before, $\text{Foreign Deposits}_{iht}$ are the deposits target country i holds in countries that are tax havens or non-tax havens h in quarter t . $\text{Sanction Severity}_{it}$ is the share of world GDP imposing a financial sanction on country i . TaxHaven_h is a dummy for the funds being deposited in tax havens. α_{it} are non-parametric country-specific trends. This equation allows us to test whether target countries increase the deposits they hold in tax havens more than they do in non-havens in the years in which they are targets of financial sanctions.

5 Results

5.1 Entities in tax havens

Table 1 presents the estimates from Equation 2. The estimates are stable across the models and range from 0.94 to 1.23, meaning that if the whole world places financial sanctions on a country, the number of entities (per million people) in tax havens attributable to that country is going to increase by 94–123 per cent, depending on the model specification.

We perform two placebo tests. To conserve space, we discuss those tests and their results here and present the numerical estimates in the Appendix. First, we re-run our analysis using only travel sanctions that are not combined with other types of sanctions. Travel sanctions are similar to financial sanctions in that they pursue political goals, but unlike the latter, travel sanctions limit the movement of people and not capital. For this reason, they should not be correlated with wealth stored in tax havens. Results confirm that travel sanctions are not significantly related to the number of entities opened in tax havens (Table A1). Second, we test whether financial sanctions had an effect on the number of newly opened entities in tax havens the year before they were imposed. A significant estimate would indicate an anticipation effect in storing wealth before sanctions are imposed. Again, we find no statistically significant effect (Table A2), which means that there is no evidence of anticipation effects.

Table 1: New entities established by sanction target states in tax havens

	(1)	(2)	(3)
Sanction Severity	0.9363** (0.3778)	0.9256** (0.4305)	1.225*** (0.2721)
No. obs	3,608	3,608	3,608
Mean DV	3.7206	3.7206	3.7206
Country	✓	✓	✓
Year		✓	✓
Country time trends			✓
Lag GDP	✓	✓	✓

Note: standard errors are clustered at the country level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the Offshore Leaks Database.

5.2 Bilateral deposits

Table 2 reports the estimates of Equation 3, where the dependent variable is the amount of yearly bilateral deposits for every country pair. The coefficient of *Sanction Severity* captures the percentage change in the deposits a targeted country holds in the sanctioning country during the period of a financial sanction, when the whole world is sanctioning the sanctioned country. The negative coefficient confirms the hypothesis that when hit by a financial sanction, target countries reduce their financial deposits in sanctioning countries.

Our preferred specification, column 3, includes both depositing and reporting country-by-year fixed effects to control for any events occurring in either country and may affect capital flows. Countries hit by a financial sanction that involves the whole world decrease their deposits in the sanctioning countries by about 40 per cent.

Table 2: Sanctioned states' deposits in sanctioning states

	(1)	(2)	(3)
Sanction Severity	-0.899*** (0.221)	-0.637*** (0.154)	-0.429* (0.247)
No. Obs	80,607	80,507	80,187
Mean DV	1,236.407	1,237.940	1,242.811
Year	✓	✓	
Reporting c. FE	✓		
Depositing c. FE	✓		
Pair FE		✓	✓
Depositing c. \times year			✓
Reporting c. \times year			✓

Note: standard errors are clustered at the country level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics.

5.3 Tax havens and bilateral deposits

To test whether sanction targets prefer depositing their assets in tax havens, we estimate Equation 4 on the aggregate funds that countries hold respectively in tax havens and non-tax havens. Table 3 presents the results.

Here our variable of interest is the interaction term *Tax Haven* \times *Sanction Severity*. Its estimate shows that tax havens indeed receive more funds from sanction targets relative to non-havens. According to column 3, when a country is not under financial sanctions it has 130 per cent lower deposits in tax havens than in non-tax havens. However, when financial sanctions are imposed this gap closes, and depending on sanction severity, may even reverse. When 50 per cent of the world applies sanctions on a target (i.e. *Sanction Severity* is 0.5), its deposits in tax havens and non-tax havens are similar. When 100 per cent

of the world applies sanctions, the target's deposits in tax havens are 150 per cent larger than in non-tax havens.

Table 3: Sanctioned states' deposits in tax havens vs non-tax havens

	(1)	(2)	(3)
Sanction Severity	-1.034*** (0.370)	-1.043*** (0.364)	
Tax Haven	-1.335*** (0.218)	-1.335*** (0.218)	-1.342*** (0.219)
Tax Haven \times Sanction Severity	2.573*** (0.606)	2.561*** (0.600)	2.870*** (0.750)
No. obs	12,976	12,976	12,468
Mean DV	7,214.750	7,214.750	7,504.695
Depositing c.	✓	✓	
Year		✓	
Depositing c. \times year			✓

Note: standard errors are clustered at the country level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics. The data is aggregated based on the nature of the reporters: tax havens vs non-tax havens.

5.4 Do tax havens enforce the sanctions they participate in?

So far we have shown evidence that tax havens may undermine sanctions by providing a refuge to the targets. To devise the best solution to this gap in enforcement we need to know how tax havens behave when they are included in the sanctioning coalition. If targets treat sanctioning tax havens like other sanctioning states and withdraw their funds from them, this means that the solution is to include more tax havens in the sanction coalition. However, if targets treat even tax havens in a sanctioning coalition as a safe location, then policy-makers should concentrate on ensuring that tax havens enforce the sanctions they commit to.

To study this question we distinguish between tax havens that are sanctioning a depositor country and those that are not. Table 4 presents our results. The estimates for *Tax Haven \times Sanctioning* and *Tax Haven \times Not Sanctioning* are both positive and statistically significant, and similar in magnitude. The likeliest explanation for this result is that tax havens fail to enforce the economic sanctions that they apply on paper.

5.5 Do international organizations reduce financial sanction evasion?

Although sanctions have a political purpose, enforcing them is costly. These costs can create incentives to free-ride; each sanctioning state may prefer if its partners enforce the sanctions more strictly while its own financial institutions continue to do business with the target. Scholars have argued that international organizations can ameliorate this problem by monitoring a state's compliance with financial rules (Bapat and Morgan 2009; Drury 1998).

Two international organizations that have the institutional capacity and mandate to combat financial wrongdoings are the OECD and FATF. The FATF is the leading international organization in the area of illicit finance (Nance 2018). It was established in 1989 and aims to tackle money laundering and terrorist and proliferation financing.⁶ If the OECD and FATF contribute to their members' ability to implement sanctions effectively, then targeted actors should withdraw a greater percentage of their funds from countries that belong to these organizations.

⁶ Although 200 countries and jurisdictions have committed to implementing its standards, the FATF itself has 39 members. We focus on these members' activities.

Table 4: Sanction target states' deposits: distinguishing between sanctioning and non-sanctioning tax havens

	(1)	(2)	(3)
Tax Haven Reporter	-1.369*** (0.219)	-1.369*** (0.219)	-1.369*** (0.219)
Sanctioning	-1.010*** (0.193)	-0.999*** (0.193)	
Tax Haven Reporter × Sanctioning	1.577*** (0.388)	1.575*** (0.387)	1.884*** (0.401)
Not Sanctioning	-0.381** (0.152)	-0.358** (0.170)	0.535** (0.243)
Tax Haven Reporter × Not Sanctioning	1.282*** (0.224)	1.279*** (0.223)	1.283*** (0.223)
No. obs	13,786	13,786	13,287
Mean DV	6,744.509	6,744.509	6,993.877
Depositing c.	✓	✓	
Year		✓	
Depositing c. × year			✓

Note: standard errors are clustered at the country level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics. The data is aggregated based on the nature of the reporters: tax havens vs non-tax havens.

In Table 5 we test whether targets withdraw more funds from a sanctioning country if it is a member of the OECD or FATF. For this purpose, in columns 1 and 2 we extend Equation 3 by adding a *FATF Member Reporter* dummy that is coded 1 if the reporting country is a FATF member in a specific year, and interact this dummy with *Sanction Severity*. In columns 3 and 4 we repeat this analysis with an *OECD Member Reporter* variable.

Table 5: Sanctioned states' deposits in FATF/OECD member states

	(1)	(2)	(3)	(4)
Sanction Severity	1.605* (0.886)	-0.498 (0.764)	0.724 (0.512)	0.281 (0.488)
FATF Member Reporter	1.637*** (0.459)			
FATF Member Reporter × Sanction Severity	-2.277** (0.897)	0.073 (0.761)		
OECD Member Reporter			0.176 (0.130)	
OECD Member Reporter × Sanction Severity			-1.362** (0.534)	-0.710* (0.430)
No. obs	80,507	80,187	80,507	80,187
Mean DV	1,237.940	1,242.811	1,237.940	1,242.811
Year	✓		✓	
Pair FE	✓	✓	✓	✓
Depositing c. × Year		✓		✓
Reporting c. × Year		✓		✓

Note: *FATF Member Reporter* is a dummy equal to 1 for the years following the entrance of a reporting country to the FATF. Similarly for *OECD Member Reporter*. Standard errors clustered at the country/pair level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics.

The results show that target countries are more likely to withdraw their funds from sanctioning countries that are members of the FATF or the OECD. *Sanction Severity*, which indicates the estimated change in funds in non-member sanctioners, is positive in most columns (and significant in column 1). This means that there is no evidence of target countries withdrawing funds from a sanctioner outside of the FATF or the OECD. In contrast, *FATF Member Reporter × Sanction Severity* and *OECD Member Reporter*

\times *Sanction Severity* are negative and significant in most models, which suggests that targets withdraw their funds from FATF and OECD member states, especially when sanctions are more severe.⁷

5.6 Are US sanctions different?

Experts have observed that the United States, besides its economic size, has a privileged position in global financial networks and this privileged position gives it an exceptional advantage in imposing sanctions. For instance, Farrell and Newman (2019) note that the US dollar's dominance in international finance, combined with the dollar clearing system, gives the US government the ability to observe dollar transactions all around the world even among non-US actors. Zarate (2013), a former US Treasury official, describes how the United States has used this advantage to detect and punish actors who violate US sanctions. Based on these ideas, we expect sanction coalitions that include the United States to be more effective in enforcing sanctions and, consequently, more effective in compelling target countries to move their funds from the sanctioning states to tax havens.

We first test this hypothesis using Offshore Leaks data on new entities established in tax havens. We interact our treatment variable—the share of the world GDP that is sanctioning a specific country—with a dummy variable that takes value 1 if the United States is among the sanctioning countries. We estimate the following count data model through maximum likelihood:

$$\text{New Entities Per Capita}_{cy} = \exp(\beta \text{Sanction Severity}_{cy} \times \text{US Sanctioning}_{cy} + \quad (5)$$

$$\gamma \text{Sanction Severity}_{cy} + \varphi \text{US Sanctioning}_{cy} + \quad (6)$$

$$+ \alpha_c + \delta_y + \text{Country Trend}_c + X_{cy}) + \varepsilon_{cy} \quad (7)$$

where β is the marginal effect of US sanction participation when the whole world is sanctioning the target country, γ is the effect of the whole world sanctioning the target country without US participation, and φ can be interpreted as the average effect of the United States sanctioning a country. The linear combination of the coefficients β , γ , and φ can then be interpreted as the average impact of the whole world (including the United States) imposing financial sanctions on the target.

Table 6 reports estimates for our key variables along with their linear combination. The results show that there is indeed a significant difference between sanctions that involve the United States and those that do not. According to the estimate of *Sanction Severity* in column 3, a hypothetical sanction involving 100 per cent of the world economy except the United States is associated with a significant decrease in funds in tax havens. In contrast, the linear combination tells us that if the United States is involved in those sanctions, then we expect about a 110 per cent increase in deposits in tax havens. In Table 7 we repeat the analysis on the BIS dyadic data. We observe that the participation of the United States in the sanctioning coalition exacerbates the outflow of funds by the target countries from the sanctioning ones.

⁷ In column 2 the interaction term with the FATF dummy is close to zero. We attribute this result to the highly restrictive model specification with both depositing and reporting country-by-year fixed effects.

Table 6: New entities established by sanction target states: effects of US participation in sanctions

	(1)	(2)	(3)
US Sanctioning	-0.7135*** (0.1617)	-0.7892*** (0.1749)	-0.3090 (0.2470)
Sanction Severity	-2.011 (1.586)	-2.263 (1.621)	-2.517** (1.148)
US Sanctioning \times Sanction Severity	3.550** (1.594)	3.855** (1.641)	3.944*** (1.207)
<i>Linear combination</i>	<i>0.826*** (0.189)</i>	<i>0.803*** (0.211)</i>	<i>1.119*** (0.209)</i>
No. obs	3,608	3,608	3,608
Mean DV	3.7206	3.7206	3.7206
Country	✓	✓	✓
Year		✓	✓
Country time trends			✓
Lag GDP	✓	✓	✓

Note: * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the Offshore Leaks Database.

Table 7: Sanctioned states' foreign deposits; effects of US participation in sanctions

	(1)	(2)	(3)
US Sanctioning	0.608*** (0.236)	0.162* (0.087)	
Sanction Severity	-0.539 (1.306)	0.947** (0.379)	1.659*** (0.602)
US Sanctioning \times Sanction Severity	-0.842 (1.399)	-1.755*** (0.428)	-2.135*** (0.656)
No. obs	80,607	80,507	80,187
Mean DV	1,236.407	1,237.940	1,242.811
Year	✓	✓	
Depositing c.	✓		
Reporting c.	✓		
Pair FE		✓	✓
Depositing c. \times year			✓
Reporting c. \times year			✓

Note: *US Sanctioning* is a dummy equal to 1 when the United States is participating in the financial sanctions against the depositor country. Standard errors clustered at the country/pair level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics.

6 Robustness checks

We report three sets of robustness checks. First, we discuss the coding of dependencies (e.g. Isle of Man, a UK dependency) in the sanctions data and show that our results are robust to recoding them as joining their parent country's sanctions. Second, we address the possibility that violent conflict events in target countries could bias our results and show that our results are robust to excluding sanction targets with an ongoing war. Third, we address the sudden increase in BIS coverage in 1992 and show that limiting our BIS analysis to the post-1992 period does not change the results.

6.1 Dependencies

Some of the reporting countries included in the BIS data are dependencies of other countries. For example, Macao was a dependency of Portugal until 1998 and became a Chinese dependency afterwards. It is therefore unclear whether these countries enjoy autonomy in their choice to implement sanctions or not. Although the GSDB collects all sanctions imposed by actors with an International Organization for Standardization (ISO) code (including these dependencies), the dependencies' semi-sovereign status and small footprint in world affairs may make it hard for the GSDB team to code them correctly. For

instance, although the GSDB does not ever code the Isle of Man (a UK dependency) as a sanctioning country, the Isle of Man government has implemented all EU sanctions before Brexit and continues to implement all UK sanctions.⁸

To ensure that such discrepancies are not driving our results, here we re-run our analysis on BIS data assuming that each dependency fully adopts the economic sanctioning policy of its parent country. Table 8 shows that the new estimates are very close both in magnitude and statistical significance to the baseline results reported in Table 2.

Table 8: Sanctioned states' foreign deposits: dependencies' sanction participation recoded

	(1)	(2)	(3)
Sanction Severity of parent c.	−0.919*** (0.211)	−0.635*** (0.151)	−0.451 (0.312)
No. bs	80,607	80,507	80,187
Mean DV	1,236.407	1,237.940	1,242.811
Year	✓	✓	
Reporting c. FE	✓		
Depositing c. FE	✓		
Pair FE		✓	✓
Depositing c. × year			✓
Reporting c. × year			✓

Note: standard errors clustered at the country/pair level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics.

6.2 The role of conflicts

Financial sanctions are often imposed as a consequence of internal or external conflict. This feature of financial sanctions could confound our estimates. If conflicts can cause individuals to store their wealth in tax havens, and the imposition of financial sanctions is highly correlated with the presence of conflict in a specific country, our estimates could incorporate both the effect of conflict and of financial sanctions. To address this potential issue we estimate our main specifications after removing all observations where the sanctioned country was undergoing a conflict.⁹

Table 9 shows estimates of Equation 2 that are obtained after excluding observations where a country is undergoing a conflict and where we consider the number of entities opened in tax havens as our dependent variable. Table 10 shows estimates of Equation 3 that are obtained after excluding observations where a country is undergoing a conflict and where we consider bilateral deposits as our dependent variable. Both in the case of bilateral deposits and entities opened in tax havens, our results are unaffected by removing countries that are experiencing deadly conflicts.

⁸ Personal communication with the Isle of Man government's Financial Intelligence Unit. See also its web page on 'Sanctions and Export Control' at <https://www.gov.im/categories/tax-vat-and-your-money/customs-and-excise/sanctions-and-export-control/>.

⁹ We use information from the UCDP conflict database. We exclude country–year pairs that experienced conflicts with at least 1,000 deaths (an intensity of 2 in the UCDP database).

Table 9: New entities established in tax havens and sanctions: conflict-ridden countries excluded

	(1)	(2)	(3)
Sanction Severity	1.133*** (0.4332)	1.093** (0.4796)	1.408*** (0.2924)
No. obs	3,442	3,442	3,442
Mean DV	3.8482	3.8482	3.8482
Country	✓	✓	✓
Year		✓	✓
Country time trends			✓
Lag GDP	✓	✓	

Note: standard errors are clustered at the country level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations.

Table 10: Sanctioned states' foreign deposits: conflict-ridden countries excluded

	(1)	(2)	(3)
Sanction Severity	-0.902*** (0.239)	-0.614*** (0.159)	-0.532* (0.290)
No. obs	77,403	77,288	76,984
Mean DV	1,269.292	1,271.142	1,276.092
Year	✓	✓	
Reporting c. FE	✓		
Depositing c. FE	✓		
Pair FE		✓	✓
Depositing c. \times year			✓
Reporting c. \times year			✓

Note: standard errors clustered at the country/pair level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics.

6.3 Limiting BIS analysis to post-1992

The coverage of BIS data increases significantly after 1992 as more countries begin to report foreign deposits in their financial institutions. This expansion in coverage results in a sudden increase in foreign deposits, both in tax havens and non-tax havens (Appendix Figure A3). To ensure that our results are not driven by the pre-1992 period, we re-run our analyses on BIS data to the post-1992 period. Our main results continue to hold in this subsample, both in terms of reductions of deposits in sanctioning countries (Table 11) and in terms of increase in aggregate deposits in tax havens (Table 12).

Table 11: Sanctioned states' foreign deposits: sample restricted to post-1992

	(1)	(2)	(3)
Sanction Severity	-0.795*** (0.199)	-0.554*** (0.139)	-0.428** (0.200)
No. obs	54,355	54,114	54,018
Mean DV	1,393.689	1,399.847	1,402.320
Year	✓	✓	
Reporting c. FE	✓		
Depositing c. FE	✓		
Pair FE		✓	✓
Depositing c. \times year			✓
Reporting c. \times year			✓

Note: standard errors clustered at the country/pair level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics.

Table 12: Sanction target states' foreign deposits: sample restricted to post-1992

	(1)	(2)	(3)
Tax Haven \times Sanction Severity	2.757*** (0.645)	2.746*** (0.639)	3.029*** (0.790)
Sanction Severity	-1.054*** (0.381)	-1.041*** (0.375)	
Tax Haven	-1.346*** (0.216)	-1.346*** (0.215)	-1.352*** (0.216)
No. obs	9,721	9,721	9,588
Mean DV	9,126.050	9,126.050	9,252.436
Depositing c. FE	✓	✓	
Year		✓	
Depositing c. \times Year			✓

Note: standard errors clustered at the country/pair level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics. The data is aggregated between tax haven reporting countries and non-tax haven reporting countries.

7 Conclusions

In this paper we investigate whether financial sanctions can be undermined by shifting wealth to tax havens. To this end, we compare financial movements by members of sanctioned and non-sanctioned countries and uncover new results. We find strong evidence that financial sanctions cause sanctioned countries' foreign assets to be relocated but not put out of their owners' reach. More specifically, when a country is sanctioned, we see a reduction in that country's deposits in the sanctioning countries. However, at the same time, we observe a rise in deposits and new entities belonging to the sanctioned country in tax havens.

Our research has important implications for researchers and policy-makers. Academically, we contribute to literatures on illicit finance and economic sanctions by demonstrating how to employ novel data and explore difficult-to-observe phenomena. We provide the first systematic data on how the global financial system is employed to evade financial sanctions.

Policy-wise, our results provide novel evidence on the role that tax havens play in sanction evasion. Although the debate on financial secrecy mostly focuses on tax evasion, corruption, and criminality, our research suggests that there are also geopolitical reasons to reduce such secrecy and regulate offshore financial centres. Recently, the war in Ukraine has highlighted the importance of these issues. For instance, the United Kingdom's Joint Money Laundering Intelligence Taskforce (JMLIT) recently issued a red alert where it suggests tips for identifying sanction evaders, including the sale of assets previously belonging to targeted individuals that are then distributed offshore through secrecy jurisdictions or transferring ownership to companies based in offshore jurisdictions (JMLIT 2022). Our findings suggest that tax havens constitute an important gap in sanction enforcement and more careful and broader reforms are needed to address this problem.

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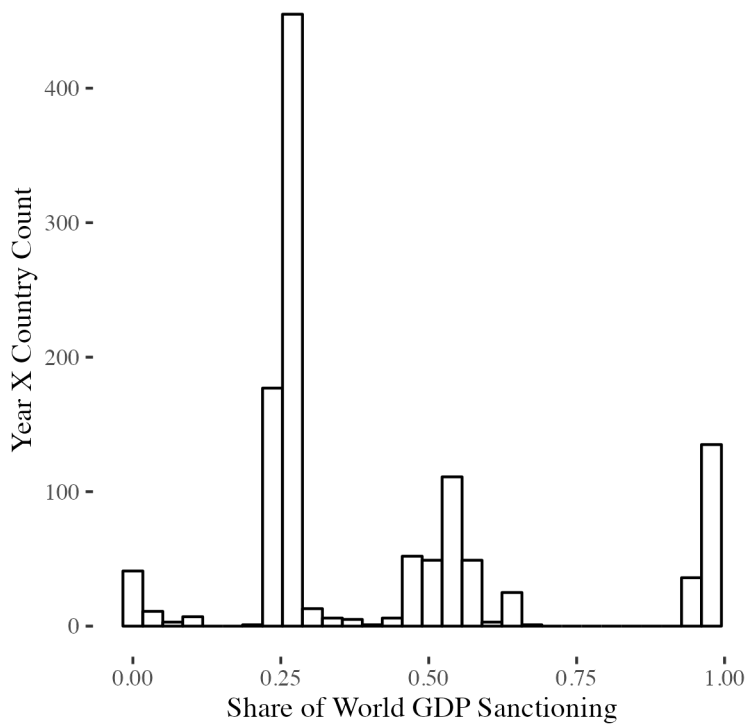
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Appendix

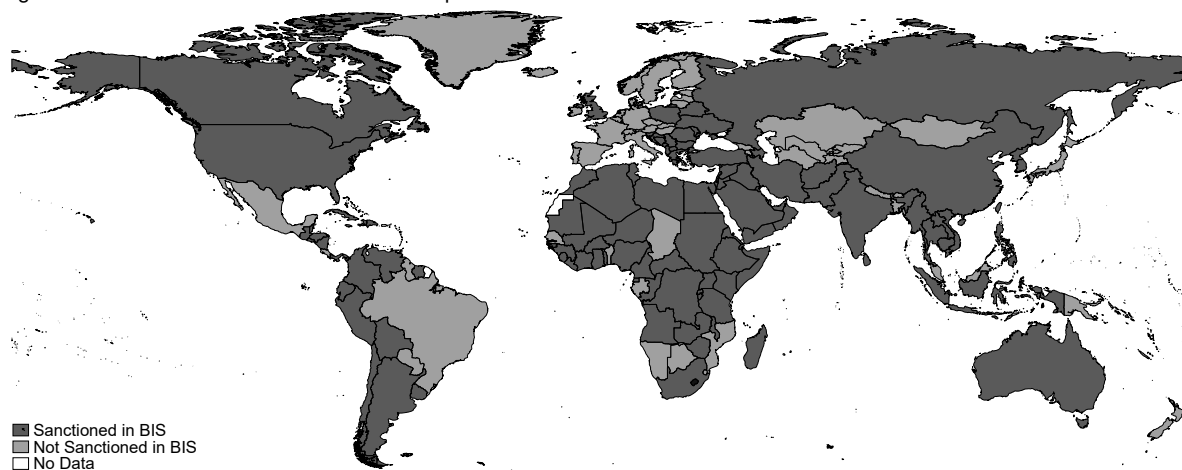
Figure A1: Histogram of *Sanction Severity*



Note: this figure plots the histogram of *Sanction Severity*, which is calculated as the share of the world GDP that is sanctioning a country in any given year, if a financial sanction is in place.

Source: authors' compilation.

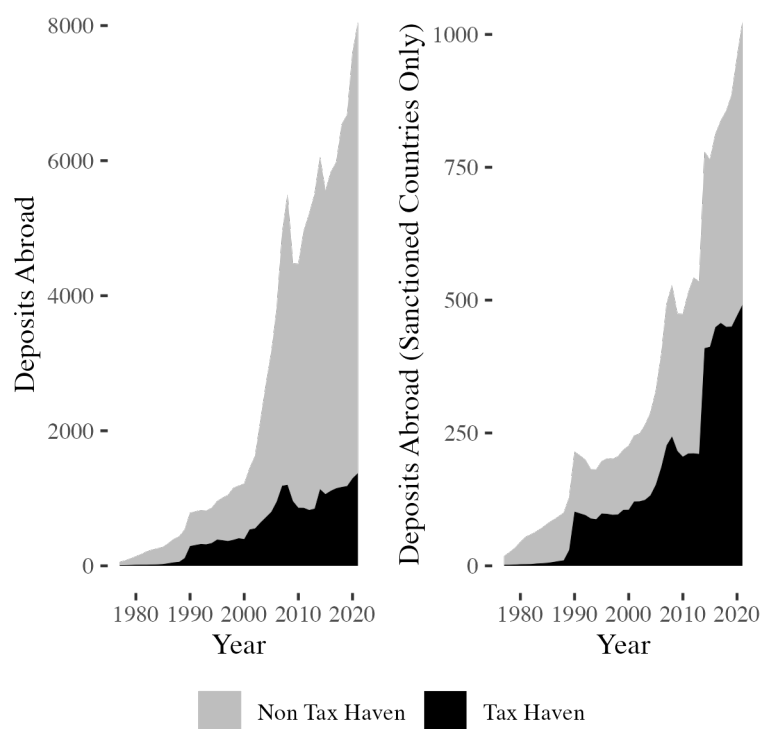
Figure A2: Countries in the BIS dataset that experienced a financial sanction



Note: this map distinguishes between countries on the basis of their inclusion in the Locational Banking Statistics (BIS) database and whether they were targeted by financial sanctions.

Source: authors' compilation.

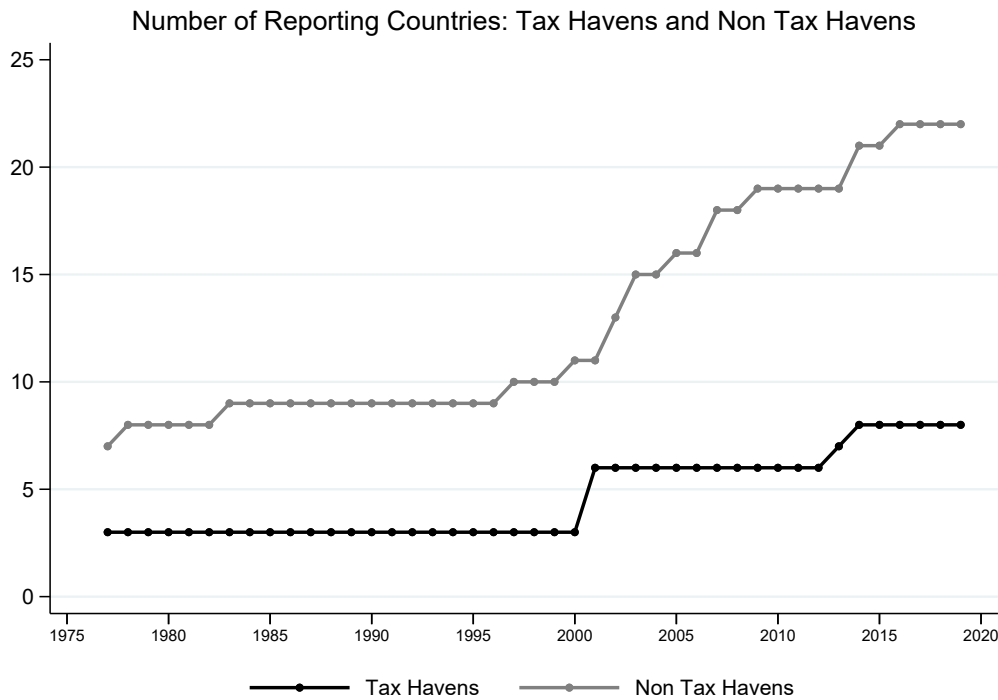
Figure A3: Total foreign deposits over time in BIS



Note: this figure plots the total amount of deposits in foreign countries. Deposits in tax havens are depicted in black and deposits in non-tax havens are depicted in grey. The left panel reports foreign deposits for all countries in our dataset, whereas the right panel reports deposits for countries that experienced at least one 'severe' financial sanction over the sample period. A 'severe' sanction is one in which at least 50 per cent of the world economy has joined those sanctions.

Source: authors' compilation.

Figure A4: Number of reporters over time



Note: this figure plots the number of reporting countries (tax havens and non-tax havens) in the BIS dataset over time.
Source: authors' compilation.

Table A1: Placebo analysis: effect of travel sanctions on entities in tax havens

	(1)	(2)	(3)
Sanction Severity	1.158 (1.213)	1.126 (1.192)	0.8622 (1.391)
No. obs	3,608	3,608	3,608
Mean DV	3.7206	3.7206	3.7206
Country	✓	✓	✓
Year		✓	✓
Country time trends			✓
Lag GDP	✓	✓	✓

Note: this table shows estimates of our coefficient of interest in Equation 2, when considering only travel sanctions (i.e. those sanctions that are travel sanctions only). Standard errors are clustered at the country level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.
Source: authors' calculations based on data from the Offshore Leaks Database.

Table A2: Placebo analysis: new entities in tax havens in the year before sanctions

	(1)	(2)	(3)
Sanction Severity	-0.1948 (0.6588)	-0.1501 (0.6533)	-0.6018 (0.9098)
No. obs	3,474	3,474	3,474
Mean DV	3.8293	3.8293	3.8293
Country	✓	✓	✓
Year		✓	✓
Country time trends			✓
Lag GDP	✓	✓	✓

Note: this table shows estimates of our coefficient of interest in Equation 2, when assigning the sanction severity to the year before a sanction was imposed. Standard errors are clustered at the country level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.
Source: authors' calculations based on data from the Offshore Leaks Database.

Table A3: Sanctioned states' deposits in tax havens vs non-tax havens: reanalysis using dyadic data

	Full (1)	Full (2)	No CHE (3)	No IRL (4)	No Lux (5)
Sanctioning countries' Sanction Severity	-0.651*** (0.191)	-0.999** (0.433)	-0.750 (0.477)	-0.998** (0.433)	-0.999** (0.436)
Other countries' Sanction Severity	1.129** (0.573)				
Sanctioning countries' Sanction Severity × Tax Haven Reporter	0.305 (0.235)	0.640*** (0.173)	1.000*** (0.226)	0.642*** (0.174)	0.597*** (0.186)
Other countries' Sanction Severity × Tax Haven Reporter	-0.852 (0.633)	-0.570 (0.410)	-0.475 (0.482)	-0.560 (0.410)	-0.548 (0.418)
No. bs	80,507	80,187	73,255	76,823	73,493
Mean DV	1,237.940	1,242.811	1,231.032	1,266.317	1,296.285
Year	✓				
Pair FE	✓	✓	✓	✓	✓
Depositing c. × year		✓	✓	✓	✓
Reporting c. × year		✓	✓	✓	✓

Note: *Sanction Severity*, *Non-Sanctioning Reporter* codes the sanction severity against a depositing country in dyads where the reporter country is not among the sanctioning countries. Columns 3, 4, and 5 exclude Switzerland, Ireland, and Luxembourg, respectively. Standard errors clustered at the country/pair level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics.

Table A4: Sanctioned states' deposits in tax havens vs non-tax havens: dependencies recoded based on parent country

	Full (1)	Full (2)	No CHE (3)	No IRL (4)	No Lux (5)
Parent country's Sanction Severity	-0.651*** (0.191)	-0.975** (0.453)	-0.630 (0.544)	-0.975** (0.451)	-0.982** (0.454)
Other countries' Sanction Severity	1.130** (0.573)				
Parent country's Sanction Severity × Tax Haven Reporter	0.315 (0.228)	0.633*** (0.166)	0.782*** (0.188)	0.636*** (0.167)	0.593*** (0.177)
Other countries' Sanction Severity × Tax Haven Reporter	-0.667 (0.642)	-0.600 (0.416)	-0.750 (0.617)	-0.589 (0.416)	-0.573 (0.427)
No. obs	80,507	80,187	73,255	76,823	73,493
Mean DV	1,237.940	1,242.811	1,231.032	1,266.317	1,296.285
Year	✓				
Pair FE	✓	✓	✓	✓	✓
Depositing c. × year		✓	✓	✓	✓
Reporting c. × year		✓	✓	✓	✓

Note: Other countries' Sanction Severity codes sanction severity against a depositing country in dyads where the reporting country is not among the sanctioning countries. Columns 3, 4, and 5 exclude Switzerland, Ireland, and Luxembourg, respectively. Standard errors clustered at the country/pair level. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations based on data from the BIS Locational Banking Statistics.

Table A5: Effect of sanctions on entities in tax havens: heterogeneity by FATF and OECD membership

	(1)	(2)	(3)	(4)
Sanction Severity	200.5*** (18.07)	145.4*** (14.11)	0.3417 (1.199)	0.5412 (0.7002)
FATF member among sanctioning	-0.7098*** (0.1854)	-0.2957 (0.2280)		
Sanction Severity × FATF member among sanct.	-199.0*** (18.08)	-143.9*** (14.17)		
OECD member among sanctioning			-0.5232* (0.2676)	-0.3588 (0.2433)
Sanction Severity × OECD member among sanct.			1.166 (1.304)	0.9925 (0.7608)
No. obs	3,608	3,608	3,608	3,608
Mean DV	3.7206	3.7206	3.7206	3.7206
Year	✓	✓	✓	✓
Country	✓	✓	✓	✓
Country time trends		✓		✓
Lag GDP	✓	✓	✓	✓

Note: this table reports the results of estimating Equation 2. In columns 1 and 2, we add an interaction between *Sanction Severity* and a FATF dummy, which is coded 1 if the sanctioning coalition includes at least one FATF member. In columns 3 and 4, we do the same with an OECD dummy. * $p < 0.1$; ** $p < 0.05$; *** $p < 0.01$.

Source: authors' calculations.