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Abstract

Are sanctions bypassed by hiding money offshore? Using bilateral data on bank deposits, we compare how offshore deposits from sanctioned versus non-sanctioned countries develop after the U.S. and the EU impose financial sanctions. Sanctions targeting individuals increase offshore deposits, as (potential) targets attempt to hide their funds. Broader financial sanctions reduce offshore (and other foreign) deposits, as money is repatriated. A synthetic control case study of Russia following the annexation of Crimea confirms our main findings, showing a 15% post-sanction increase in offshore deposits. These findings highlight the limits of symbolic sanctions and the need for secondary sanctions and financial surveillance.

Keywords: Sanctions, tax havens, illicit financial flows

JEL Classification: F51, H12, K42

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1 Introduction

Economic sanctions have become an increasingly popular tool of foreign policy. In recent decades, both the United States and the European Union have expanded the use of financial sanctions, often targeting specific individuals, companies, or sectors to apply pressure without resorting to military force (Morgan *et al.*, 2023). Yet, sanctions frequently fail to achieve their stated political goals. According to empirical assessments, success rates remain at around one-third, even for targeted or "smart" sanctions (Morgan *et al.*, 2014; Felbermayr *et al.*, 2020). One potential reason for this limited effectiveness is that sanctions may be circumvented. Individuals and firms subject to financial restrictions often have both the means and the incentives to move assets to jurisdictions beyond the reach of enforcement. Offshore financial centers, in particular, offer secrecy, flexibility, and legal insulation. However, systematic evidence on whether and how sanctions trigger evasive offshore activity remains scarce.

This paper investigates whether targets of financial sanctions use offshore tax havens to bypass restrictions. Specifically, we ask whether individuals and entities from sanctioned countries shift assets into tax havens following the imposition of sanctions. Such responses may reflect both attempts to bypass sanctions already imposed and anticipatory behavior by those who fear becoming targets in the next sanctions wave. To address this question, we combine data on cross-border bank deposits from the Bank for International Settlements (BIS) with information on financial sanctions imposed by the United States and the European Union between 1996 and 2015. Our empirical strategy consists of two parts: a difference-in-differences (DiD) analysis exploiting variation in the timing of sanctions across countries, and a synthetic control case study of Russia following the annexation of Crimea in 2014.

In the first part of our analysis, we exploit cross-country and time variation in the imposition of financial sanctions to estimate their effects on offshore deposits using a staggered difference-in-differences approach. Our outcome variable is the stock of foreign deposits held by residents of a given country in tax havens, reported quarterly by the BIS. We focus on financial sanctions imposed by the U.S. and the EU, and distinguish between sanctions targeting individuals and those aimed at entire countries or sectors ("major" sanctions). Our identifying assumption is that, absent sanctions, the deposit trajectories of sanctioned countries would have evolved similarly to those of non-sanctioned countries, conditional on a set of control variables.

The results show that sanctions on individuals lead to an increase in offshore deposits. When the U.S. imposes sanctions against individuals, deposits held by residents

of the sanctioned country in tax havens rise by roughly 18%. In particular, deposits in Switzerland rise—by more than 20% in the case of U.S. sanctions, and by more than half in the case of EU sanctions. Event studies support the parallel trends assumption and show that most of the increase in deposits occurs in the quarters immediately following the imposition of individual sanctions. These patterns suggest that offshore deposits rise after sanctions on individuals. By contrast, major financial sanctions lead to a significant decline in offshore deposits: about 30% in the case of U.S. sanctions, with even stronger reductions when both the U.S. and the EU act jointly. Major sanctions constrain cross-border capital movements and may force individuals to repatriate their funds.

To complement the broad panel analysis, we zoom in on a single high-profile case: the financial sanctions imposed on Russia following its annexation of Crimea in 2014. Russia is a particularly salient example, as its elites have long relied on offshore structures to shield wealth, and the sanctions in 2014 largely targeted individuals. Using the synthetic control method, we compare the trajectory of Russian deposits in tax havens to a weighted combination of countries that were not sanctioned. The results mirror our main findings: after the sanctions were imposed, Russian offshore deposits rose by approximately 15%. The gap between Russia and its synthetic counterpart persists for several years.

To shed light on the mechanisms behind these deposit flows, we draw on leaked data from the Panama Papers and U.S. sanctions on individuals. In the relatively few cases where we can find sanctioned individuals in the leaked data, we largely find that sanctioned individuals (or their relatives & close associates) set up offshore structures years before sanctions are imposed. This is consistent with individuals using offshore accounts that were set up for other purposes (such as tax evasion) to circumvent sanctions. This pattern may also reflect that sanctions enforcement is stricter when individuals attempt to open new accounts compared to transfering money to existing ones.

Our findings have important implications for the design and enforcement of financial sanctions. While targeted sanctions aim to isolate individuals from the international financial system, they often fail to account for the tools and infrastructure that enable capital mobility, especially through offshore jurisdictions. Symbolic restrictions alone are unlikely to succeed unless accompanied by credible enforcement mechanisms. Policymakers seeking to close these loopholes should consider strengthening secondary sanctions on financial intermediaries or enhancing international transparency frameworks. Current tax transparency initiatives, such as the Common Reporting Standard

(CRS), fall short in this context, as they typically share information only with the country of residence, not with sanctioning authorities.

We contribute to two strands of literature: the empirical analysis of economic sanctions and the study of offshore financial flows.

A large literature studies the economic effects of sanctions. It has shown that sanctions can have substantial macroeconomic effects: they reduce GDP growth, suppress consumption, and deter foreign direct investment (Neuenkirch and Neumeier, 2015; Mirkina, 2018; Ghomi, 2022; Gutmann *et al.*, 2023; Baqaee and Malmberg, 2025). Sanctions also worsen humanitarian conditions: sanctioned countries often face rising poverty and declining health and life expectancy (Allen and Lektzian, 2013; Gutmann *et al.*, 2023; Neuenkirch and Neumeier, 2016). To minimize harm to the general population, policymakers have increasingly shifted toward targeted sanctions against specific firms or individuals. Ahn and Ludema (2020) show that Russian firms hit by the 2014 U.S. and EU sanctions experienced large drops in revenue, assets, and employment. However, the Russian government cushioned the blow for strategic firms by granting them preferential access to state support, leaving non-strategic firms more exposed. Keerati (2022) documents similar credit reallocation patterns, finding that sanctioned firms ended up shrinking less than comparable non-sanctioned firms, as they absorbed a disproportionate share of domestic financing.[1]

When sanctions are effective, they create leverage: sanctioning countries can offer to lift them in exchange for policy concessions (Draca *et al.*, 2022). But this strategy loses power if the targets find ways to circumvent sanctions. Based on 35 formal interviews with compliance professionals and 35 informal interviews with sanction evaders, Teichmann (2021) concludes that financial sanctions against individuals often fail to work.[2] Interviewees described the use of offshore bank accounts as a key evasion tool. Our paper complements this interview-based evidence by using observational data to quantify sanction evasion on a broader scale.

In a similar vein to our paper, a concurrent working paper by Kavakli *et al.* (2023) shows that sanction targets reduce their deposits in sanctioning countries while increasing their deposits in tax havens by 31%. Moreover, they find that financial sanctions lead to a 60-80% rise in the incorporation of offshore entities by the residents of sanctioned countries at the aggregate country level. Their primary explanatory variable is

[1] Reactions on financial markets confirm this: Dovbnya (2020) shows that the stock prices of targeted firms drop substantially following sanction announcements.

[2] In a similar vein, Dragomirescu-Gaina and Elia (2022) study misinvoicing in international trade in connection to sanctioning episodes. They show that sanctions increase misinvoicing, especially in the natural resource sector, leading to higher deposits in tax havens.

a continuous measure of sanction severity, defined as the ratio of the GDP of sanctioning countries to world GDP.[3] Compared to their work, we make several distinct contributions. First, we disaggregate financial sanctions into major versus individual sanctions and show that these have opposing effects. Second, we use quarterly data, which offers more granular insights into the timing of responses. Third, we complement the panel analysis with a synthetic control case study of Russia. Fourth, we match each individual who incorporates an offshore shell company to their corresponding entry in official sanction lists, providing micro-level evidence.

The second strand of literature to which we contribute investigates the determinants and uses of offshore financial flows. Zucman (2013) estimates that in 2008, households held around 8% of global financial wealth—roughly US$6 trillion—in tax havens. Since then, a series of transparency initiatives have aimed to curtail offshore tax evasion. These include bilateral Tax Information Exchange Agreements (TIEAs) (Johannesen and Zucman, 2014; Heckemeyer and Hemmerich, 2020), the EU Savings Directive (Johannesen, 2014), the U.S. Foreign Account Tax Compliance Act (FATCA) (de Simone *et al.*, 2020), and the OECD's Common Reporting Standard (CRS) (Menkhoff and Miethe, 2019; Casi *et al.*, 2020). These reforms have significantly reduced offshore tax evasion: before 2013, most offshore wealth went undeclared, but by 2024, only about 25% of offshore assets remain hidden from tax authorities, even though the amount of wealth in tax havens (relative to global GDP) has not declined (Alstadsæter *et al.*, 2024).

This shift suggests that motivations for using tax havens have diversified. While tax evasion has become more difficult due to global transparency initiatives, individuals and elites continue to move substantial sums offshore. Several studies focus on the origins of these funds: for example, Andersen *et al.* (2017) show that autocrats channel a portion of petroleum rents to tax havens, and Andersen *et al.* (2022) document how political elites divert World Bank aid offshore. These flows highlight the broader use of offshore financial centers as vehicles for hiding wealth and escaping institutional scrutiny, even beyond tax avoidance. Our paper adds to this literature by identifying the evasion of individual financial sanctions as a further motive for holding assets offshore—one that has gained importance as the use of targeted sanctions has proliferated.

The remainder of the paper is organized as follows. Section 2 briefly discusses some background information on economic sanctions. Section 3 introduces the data on cross-border deposits and sanctions, and describes key patterns in the raw data. Sec-

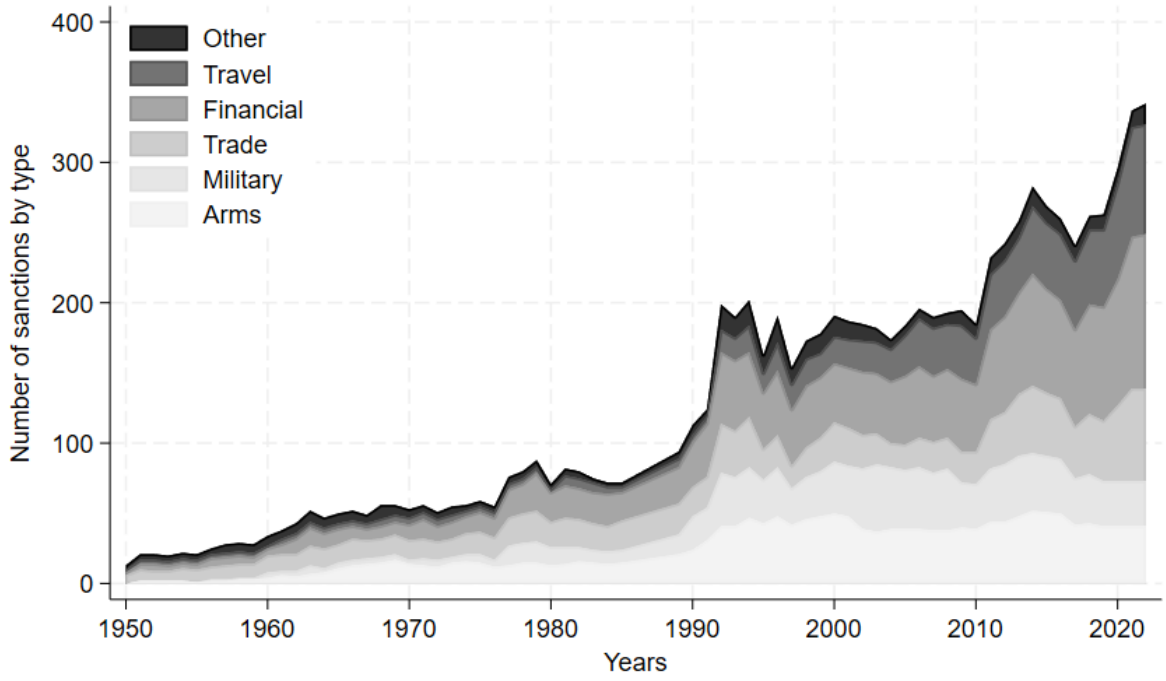
[3]This means that variation in their explanatory variable partly reflects variation in GDP, not just sanction incidence. In contrast, we use binary indicators for whether a country is under sanctions, which allows for a cleaner interpretation.

tion 4 presents the main empirical analysis using a difference-in-differences approach. Section 5 zooms in on the 2014 sanctions against Russia using a synthetic control case study. In Section 6, we explore possible mechanisms behind these patterns using leaked offshore data and information on sanctioned cryptocurrency wallets. Section 7 concludes with some policy implications.

2 Institutional Background

Since the end of World War II, economic sanctions have become a central tool of foreign policy. Syropoulos *et al.* (2024) count 1,325 sanction cases between 1950 and 2022, defined as country-year combinations in which a sanction is active. Figure 1 illustrates their evolution by type.

Figure 1: Sanctions by Type Over Time



Note: This figure displays the evolution of the number of active sanctions for each type (i.e., trade, financial, military sanctions...) over the period 1950–2022. The figure is based on the third release of the Global Sanctions Data Base (Syropoulos *et al.*, 2024).

The number of sanctions has steadily increased since the 1950s, driven by three main waves: the late 1970s, the early 1990s, and the post-2010 period (Felbermayr *et al.*, 2021). While trade sanctions dominated in the 1950s, financial and travel sanctions have since gained prominence.

Sanctions that target individuals or specific entities (so-called "smart sanctions") are designed to avoid harming the general population while still exerting pressure on decision makers (e.g. Drezner, 2011). These typically combine financial restrictions with travel bans, yet these restrictions do not automatically stop capital from moving to jurisdictions outside the sender's reach. Individuals may react to such sanctions by moving money offshore, or take preemptive action if they fear they could become targets.

The U.S. and the EU are by far the most important senders of economic sanctions. Both regularly use sanctions as instruments of foreign policy, and together account for around 80% of all sanction cases globally (Hufbauer and Jung, 2020). Other countries, such as Australia and Canada, rarely initiate sanctions independently. Instead, they typically align themselves with U.S.-led sanction efforts. In contrast, Russia and China tend to use sanctions more selectively, usually as retaliatory measures. Their approach aims to counter Western influence and increase the costs of collective action by sanctioning foreign individuals or institutions in response to Western measures (Weber and Schneider, 2022).[4]

How do financial sanctions actually work in practice? U.S. individual financial sanctions are designed to target specific individuals, entities (such as banks), and financial activities within the jurisdiction of the United States. As a result, only U.S. banks are legally required to comply. For instance, if the U.S. imposes sanctions on Afghanistan but European countries do not, a French bank is legally allowed to open an account for an Afghan individual or entity.[5]

An important exception to this jurisdictional limitation is the use of secondary sanctions, which aim to deter third-country actors from doing business with sanctioned entities. These measures allow the U.S. to penalize foreign banks or firms that facilitate transactions involving primary sanctions targets, effectively extending the reach of U.S. sanctions beyond its borders. Secondary sanctions were first actively used in 2010 under the Comprehensive Iran Sanctions, Accountability, and Divestment Act (CISADA), and remain relatively uncommon. The vast majority (68%) target Iran, with Iran- and North Korea-related measures together accounting for around 90% of all such secondary sanctions (Bartlett and Ophel, 2021). The EU does not impose secondary sanctions.

[4]Regional organizations such as the African Union, the Economic Community of West African States, or the League of Arab States also impose sanctions at times. However, these efforts tend to be less formalized, with fewer procedural safeguards and more limited enforcement capacity compared to U.S. or EU regimes.

[5]In practice, European banks may still decline such clients. This can reflect fears of future U.S. secondary sanctions, or the high compliance costs of servicing clients from high-risk jurisdictions. As a result, legal permissibility does not always translate into access.

The financial sanctions imposed on Russia after the annexation of Crimea in March and April 2014 illustrate the growing complexity of modern sanction regimes. These measures included asset freezes and travel bans on selected individuals and companies. In addition, the sanctions prohibited lending to major Russian oil firms and to several (mostly state-owned) banks. The U.S. went further by introducing severe financial restrictions on Russia's largest bank, while the EU and other countries imposed limitations on Russian access to bond and equity markets (Syropoulos *et al.*, 2024). In contrast to the broader sanctions adopted after 2022, the 2014 sanctions were narrowly targeted at individuals and companies. In response, the Russian government adopted countermeasures, including sanctions on individuals from the U.S. and Canada. In Section 5, we return to the 2014 sanctions to examine their impact in more detail using a synthetic control approach.

3 Data

To investigate how financial sanctions affect the use of offshore financial centers, we rely on multiple datasets. The key outcome variable—foreign bank deposits—is drawn from the Locational Banking Statistics (LBS) compiled by the Bank of International Settlements (BIS) (2024). This dataset provides bilateral, aggregate cross-border deposit data from 30 reporting countries—including 10 tax havens and 20 non-havens—capturing deposits held in these countries by residents of approximately 200 partner countries.

For each quarter from 1996 to 2018, we observe, for instance, the total deposits held by Russian residents in Swiss banks.[6] For each reporting quarter there are up to 30×200 country-pair observations.

The BIS data has several important features. First, it reports the country of residence of the *immediate* owner of the account, but not the ultimate beneficial owner. Many accounts are held through shell companies—often incorporated in tax havens—which obscures the true origin of the funds. If a sanctioned individual holds assets through such a company, the deposit will be attributed to the jurisdiction where the shell company is registered rather than to the sanctioned country. This means our estimates likely understate the full extent of offshore deposits linked to sanctioned countries. Second, the data aggregates deposits by non-bank holders, individuals are not reported separately. This prevents us from isolating individuals, but the broad

[6]For our main difference-in-differences analysis, we use data only through 2015 to match the coverage period of the EUSANCT database. We use the full period until 2018 when studying the 2014 sanctions on Russia.

non-bank category remains appropriate for our goal of capturing the total impact of sanctions on privately-held offshore wealth. Third, the BIS data reflects only bank deposits and similar fixed-income assets.[7] It does not include portfolio securities, which represent about 75% of global offshore wealth (Alstadsæter *et al.*, 2018). Finally, not all reporting countries disclose information for all partner countries in every quarter. Coverage varies, and countries may begin or end publication of bilateral data at different points in time. For example, in 2016, 25 out of 30 reporting countries published data on Russian deposits, covering roughly 80% of Russia's total cross-border deposits (Pradhan and Wooldridge, 2016). As the data reports stocks of deposits, there are very few zeros in the data.[8] Observations with missing deposit data are true missings, not zeros, and typically reflect the absence of reporting rather than the absence of deposits.

For financial sanctions, we rely on the EUSANCT database (Weber and Schneider, 2022), which documents both sanction threats and imposed sanctions by the two most important senders: the U.S. and the EU, covering the period from 1989 to 2015. A *threat* is recorded when sanctions are first initiated in the relevant institution, while the *imposition* refers to the point at which the sanction becomes legally effective. Not all threats result in actual sanctions; we return to this distinction in Section 4.1.

The dataset provides precise dates for both initiation and imposition, allowing us to fully exploit the quarterly information from the deposit data. Sanctions in the database are categorized by type—financial, trade, or diplomatic. Out of the 326 sanction cases, 56 are classified as financial sanctions.[9]

Our analysis focuses exclusively on financial sanctions imposed by the U.S. and the EU. These are further subdivided into two categories. *Major financial sanctions* include partial or complete asset freezes of the target state's assets under the jurisdiction of the sender, bans on investment, or restrictions on financial transactions intended to affect the entire economy of the sanctioned country. In contrast, *individual financial sanctions* target specific persons, typically through asset freezes and prohibitions on financial dealings.

Table 1 provides summary statistics for the sanctions variables. These variables equal one if a country is under sanction in a given quarter. Once a sanction is imposed,

[7]The BIS category used includes not only deposits, but also loans and similar instruments. It encompasses transferable deposits, interbank positions, installment loans, hire-purchase credit, loans to finance trade, financial leases, and repurchase agreements (Bank for International Settlements, 2019).

[8]We nevertheless tested a Poisson Pseudo Maximum Likelihood (PPML) estimation, which yields similar results.

[9]Only seven financial sanction threats did not result in actual impositions. Due to this low number of threats, we cannot analyze threats separately from imposed sanctions.

Table 1: Summary Statistics Sanctions

	Sanctioned Observations (%)	Sanctioned Countries (%)
U.S. sanctions against individuals	4.37	9.39
EU sanctions against individuals	1.54	7.04
thereof: individual sanctions by U.S. & EU	1.53	5.63
U.S. major sanctions	4.84	6.57
thereof: also against individuals	2.10	5.16
EU major sanctions	0.73	2.82
thereof: also against individuals	0.63	2.82
thereof: major sanctions by U.S. & EU	0.73	2.82

Note: Table 1 presents summary statistics for the sanctions variables. The variables take the value one if a country is sanctioned at a given point in time. We distinguish between major financial sanctions and financial sanctions against individuals. A major financial sanction includes partial or complete asset freezes of the target state's assets under the jurisdiction of the sender, investment bans, or bans on financial transactions. A financial sanction against individuals includes asset freezes and bans on financial transactions for explicitly specified individuals. "U.S. & EU" indicates simultaneous sanctions by both senders. Data: EUSANCT database 1996–2015 (Weber and Schneider, 2022).

the corresponding treatment variable remains switched on.[10] All sanction indicators refer to the partner (i.e., origin) country in each country-pair.

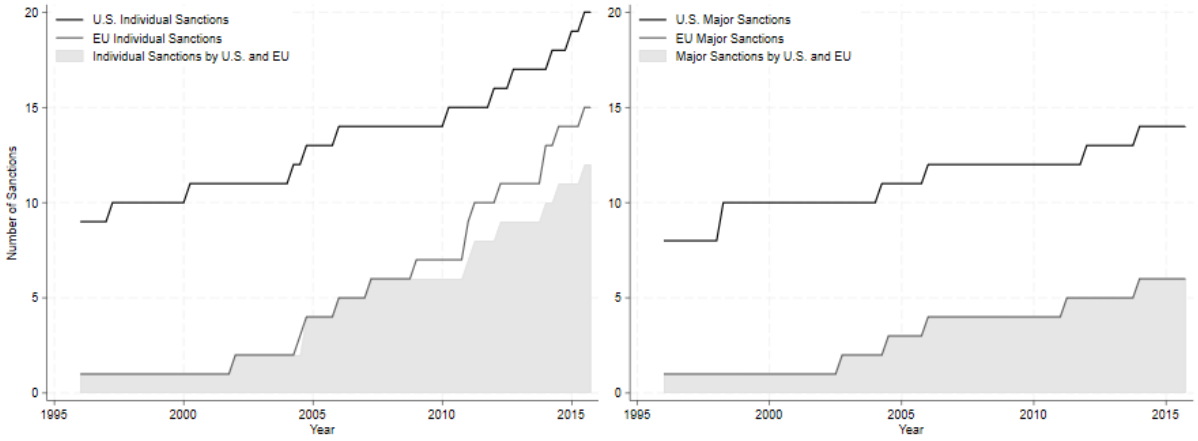
In 4.4% of all reporting-country–partner-country–quarter observations, we observe financial sanctions against individuals imposed by the U.S. Joint sanctions by both the U.S. and the EU occur in 1.5% of observations. Major financial sanctions originating from the EU are rare and always coincide with major U.S. sanctions. Looking at the country level, 9.4% of all partner countries in our sample were ever sanctioned by the U.S., and 7.0% by the EU.

Figure 2 shows how the use of financial sanctions has developed over time. It distinguishes between different types of sanctions and between the two main senders, the U.S. and the EU. It shows that financial sanctions have become more frequent over time. Sanctions against individuals started to become more relevant in the early 2000s.

We now present two complementary empirical strategies to examine how financial sanctions affect offshore deposits held in tax havens. We begin with a difference-in-differences (DiD) approach that exploits variation in the timing of sanctions across countries in a broad panel setting. However, as sanctions are often imposed under very

[10] Only in six cases sanctions end without follow-up sanctions. In Ukraine and Guinea-Bissau, sanctions expire at the very end of our observation period (2015). In the case of Yugoslavia, sanctions ended when the country ceased to exist. Sanctions against Afghanistan were replaced in 2002 by measures targeting the Taliban.

Figure 2: Financial Sanctions Over Time



Note: Figure 2 shows the evolution of financial sanctions from 1996 until 2015 using the EUSANCT database (Weber and Schneider, 2022).

different circumstances, we also complement this broad analysis with a more focused case study. Therefore, in the second part, we turn to the 2014 sanctions against Russia and apply a synthetic control method to analyze their effect in greater detail.

4 Cross-Country Evidence from Panel Data

Financial sanctions can influence offshore deposits in different ways. On the one hand, they may prompt an *increase* in deposits held in tax havens: Sanctioned individuals may move assets to tax havens in an attempt to shield assets from seizure, or retain access to liquid funds when other accounts are frozen, especially when travelling abroad. Individuals from sanctioned countries who are not yet targeted may also act preemptively, moving assets offshore out of fear that they could be included in future sanctions.[11] These considerations are particularly salient for high-net-worth individuals and oligarchs, who frequently appear on sanctions lists and lead internationally mobile lives. Offshore accounts offer flexibility in spending and investment, which becomes even more valuable when sanctions disrupt access to other financial services. In such cases, offshore deposits may represent the only readily available liquid wealth for personal expenses such as travel or medical treatment abroad.

On the other hand, sanctions may lead to a *decrease* in offshore deposits: Individuals might repatriate funds to stabilize distressed domestic firms or cover expenses

[11]Because BIS data do not identify the beneficial owner of each account, the analysis that follows captures the net change in haven deposits and cannot isolate whether it stems from sanctioned individuals or from others who anticipate being listed.

during periods of economic instability. In addition, financial institutions in tax havens may preemptively close accounts associated with sanctioned countries or individuals to reduce compliance risks or to avoid reputational damage.

Which of these effects dominates is an empirical question. We now turn to a difference-in-differences approach to provide systematic evidence across countries and over time.

4.1 Empirical Strategy: Difference-in-Differences Framework

Difference-in-Differences Specification. To estimate the causal effect of financial sanctions on offshore deposits, we compare sanctioned countries to a control group of non-sanctioned countries. Specifically, we estimate the following model:

$$\ln(\text{Deposits})_{ijt} = \beta\, \text{Sanct}_{it} + \gamma_{ij} + \delta_t + X'_{it}\lambda + \varepsilon_{ijt}, \tag{1}$$

where $\ln(\text{Deposits})_{ijt}$ denotes the natural logarithm of deposits held by residents of origin country i in reporting country j at the end of quarter t. The treatment variable Sanct_{it} is a dummy equal to one if country i is under financial sanctions in quarter t. The model includes country-pair fixed effects γ_{ij} to control for time-invariant bilateral factors, and time fixed effects δ_t to account for global shocks affecting all countries simultaneously. Our coefficient of interest is β, which captures the average treatment effect of financial sanctions on offshore deposits from sanctioned countries.

The vector X_{it} contains time-varying controls that capture macroeconomic conditions and political risks in the origin country. These include nominal quarterly GDP and GDP per capita (both in USD) (Weber and Schneider, 2022), the tax rate on income, profits, and capital gains (UNU-WIDER, 2023), the existence of tax information exchange agreements (Menkhoff and Miethe, 2019), and a measure of capital account openness (Chinn and Ito, 2006, 2008). We also control for political conditions that may be related to sanction risk, including indicators for human rights violations, political stability, and civil conflict (Weber and Schneider, 2022). These variables help account for both capital flight incentives and the likelihood of sanction imposition.

Among the 30 countries that report bilateral deposit data to the BIS, ten are classified as tax havens, following the definition of Johannesen and Zucman (2014). We exclude EU tax havens from our sample, as they are obliged to enforce EU sanctions.[12]

[12]Crown Dependencies do not directly follow EU sanctions but implement UK sanctions through their legislative systems, resulting in a time lag and potential modifications.

The remaining tax havens in our analysis are Hong Kong, Macao, Guernsey, Isle of Man, Jersey, Switzerland, and Chile.[13]

Treatment Timing. Determining when a country becomes treated is not straightforward. Sanctions often follow a two-step process: political actors first propose the measure, and it only later comes into legal force. The EUSANCT database captures both steps, labeling the proposal date as the "threat" and the effective date as the "imposition." The announcement may already influence expectations and behavior.

To assess this, we examine the time gap between threat and imposition in the EUSANCT data. In about 75% of cases, both dates fall within the same quarter. In the remaining cases, the gap ranges from one to eight quarters.[14] These patterns suggest that using the imposition date does not introduce significant timing error in our quarterly setup.[15] We also formally test for potential anticipation effects in the event study analysis presented at the end of this section.

Estimation and Inference. Our setting involves staggered treatment adoption, as countries are sanctioned at different times. In such cases, standard two-way fixed effects (TWFE) estimators can produce biased estimates, particularly when treatment effects vary over time. This bias arises because already-treated units are used as controls for later-treated units, leading to problematic weighting and potentially misleading average treatment effects (Goodman-Bacon, 2021; de Chaisemartin and D'Haultfœuille, 2020; Sun and Abraham, 2021).

To address these concerns, we adopt the estimator developed by Borusyak *et al.* (2024). This approach handles staggered treatment and heterogeneous effects effectively, and avoids the negative weighting issues inherent in traditional TWFE models.

[13] A further issue concerns the construction of a suitable counterfactual. In our analysis, we compare foreign deposits held by individuals from sanctioned countries to those held by individuals from non-sanctioned countries. The decision of where to place money offshore is made at the individual level. We assume that individuals facing similar circumstances (such as high-net-worth individuals exposed to political or economic risks) make similar decisions regardless of their country of origin. For example, the deposit behavior of a Russian millionaire likely does not fundamentally differ from that of a French millionaire. Under this assumption, it is reasonable to include all available countries in the analysis as potential controls.

[14] The average time between the threat and imposition is approximately 0.9 quarters, driven upward by three outliers with delays of seven and eight quarters.

[15] A second timing issue arises from the fact that BIS data are reported quarterly, while sanctions take effect on specific calendar dates. We classify a country as treated in a given quarter if the sanction is imposed at any point during that quarter. This definition fits our context: depositors can react quickly, and even a sanction enacted late in the quarter can affect the reported balance. In our data, the latest sanction in any quarter was imposed on the 16th day of the last month, leaving sufficient time for depositors to respond.

The Borusyak *et al.* (2024) estimator is also designed to accommodate unbalanced panels and facilitates transparent estimation of dynamic effects. For robustness, we also report results using the traditional TWFE estimator, the interaction-weighted estimator by Sun and Abraham (2021), and the correction proposed by de Chaisemartin and D'Haultfœuille (2024).

As an additional robustness check, we implement a gravity-style model using Poisson pseudo-maximum likelihood (PPML) estimation as proposed by Correia *et al.* (2019). While gravity models are often used in the sanctions literature, our context is less suited for this setting. Firstly, we analyze stocks of deposits with very few zeros, thus diminishing the advantage of using PPML. Secondly, our main empirical specification already incorporates country-pair fixed effects, thereby implicitly controlling for stable bilateral characteristics such as distance. Additionally, tax havens typically exert financial influence disproportionate to their GDP, meaning that explicitly accounting for their GDP contributes little in our setting. Nevertheless, we present gravity-based results as an additional robustness check. There, we additionally control for bilateral distance (Conte *et al.*, 2022), the GDP of the tax haven (World Bank, 2025; The Government of Jersey, 2024; The States of Guernsey, 2019), and the wealth of both the tax haven and the partner countries (World Inequality Lab, 2025).[16]

Another concern is the correct estimation of standard errors. Given our panel structure and long time horizon, it is important to account for serial correlation and within-cluster dependence. Ignoring these features can result in severely biased inference in difference-in-differences designs (Bertrand *et al.*, 2004). We therefore cluster standard errors by partner country i, allowing for arbitrary correlation over time within each cluster. As Angrist and Pischke (2009) recommend at least 42 clusters for reliable inference, our sample of over 130 clusters comfortably satisfies this criterion.

Event Study Specification. To explore dynamic effects and test the parallel trends assumption, we estimate an event study specification by replacing the treatment indicator with a set of leads and lags around the imposition of a sanction:

$$\ln(\text{Deposits})_{ijt} = \sum_{q=-\underline{q}}^{\overline{q}} \beta_q \, \text{Sanct}_{itq} + \gamma_{ij} + \delta_t + X'_{it}\lambda + \varepsilon_{ijt}, \tag{2}$$

where Sanct_{itq} is a set of binary indicators equal to one if country i is q quarters away from the imposition of a sanction. The indicator for $q = -1$ is omitted and serves

[16]For most tax havens, GDP data are available. For Jersey, however, we rely on Gross Value Added (GVA) as a proxy due to data limitations.

as the reference category. Leads ($q < 0$) allow us to test for pre-treatment trends, while lags ($q \geq 0$) capture post-treatment dynamics. This setup allows us to visualize both the plausibility of the common trend assumption and the temporal evolution of the treatment effect.

4.2 Main Results

Table 2 presents the results of our main difference-in-differences analysis as specified in eq. (1) using the estimator introduced by Borusyak *et al.* (2024). Panel A focuses on financial sanctions targeting individuals, and Panel B reports the results for major financial sanctions with broader restrictions.

Panel A shows estimates for three samples. Column (1) includes all tax havens defined in Section 4.1; Column (2) restricts the sample to Switzerland, the world's most important tax haven according to Zucman (2013); and Column (3) includes only non-haven jurisdictions, serving as a placebo test.[17]

We estimate the impact of financial sanctions on individuals imposed by the U.S., by the EU, and jointly by both countries. U.S. sanctions are associated with an 18% increase in offshore deposits in tax havens (Column 1), a result that is statistically significant at the 1% level. This effect corresponds to an increase of approximately 0.3 billion U.S. dollars, which represents about 1.4% of the total volume of offshore bank deposits in our sample of tax havens. When focusing exclusively on Switzerland, the estimated effect is even larger—U.S. sanctions are linked to a statistically significant 23% increase in offshore deposits, corresponding to roughly 0.5 billion U.S. dollars or 3% of Switzerland's total offshore deposits.

EU sanctions, on the other hand, are associated with a 14% increase in offshore deposits across all tax havens, although this estimate is not statistically significant. However, when narrowing the focus to Switzerland, the estimated effect of EU sanctions becomes both economically and statistically substantial. Here, EU sanctions are associated with a 59% increase in offshore deposits—an effect significant at the 1% level—which translates to about 1.0 billion U.S. dollars, or approximately 7% of the

[17]Non-havens in the data are Australia, Brazil, Canada, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Japan, Netherlands, Philippines, South Africa, South Korea, Spain, Sweden, Taiwan, the United Kingdom, and the United States.

Table 2: Effect of Financial Sanctions on Offshore Deposits

Panel A: Sanctions Against Individuals (BJS)

	All Havens	Switzerland	All Non-Havens
U.S. Sanctions	0.183***	0.230***	0.097
	(0.072)	(0.084)	(0.128)
EU Sanctions	0.140	0.587***	-0.095
	(0.370)	(0.044)	(0.176)
U.S. & EU Sanctions	-0.321	-0.647***	-0.326*
	(0.312)	(0.048)	(0.173)
Observations	14,525	7,446	37,783

Panel B: Major Sanctions (BJS)

	All Havens	Switzerland	All Non-Havens
U.S. Sanctions	-0.346***	-0.295***	-0.373*
	(0.061)	(0.065)	(0.193)
U.S. & EU Sanctions	-0.412***	-0.400***	-0.444***
	(0.077)	(0.062)	(0.152)
Observations	14,164	7,302	36,467

Note: Table 2 presents results from a difference-in-differences (DiD) analysis using the estimator proposed by Borusyak *et al.* (2024) (BJS). The dependent variable is the natural logarithm of foreign deposits. All models include country-pair and year fixed effects and control for GDP per capita, GDP growth rate, capital account openness, tax policy, human rights indicators, and level of democracy. "All Havens" includes Hong Kong, Macao, Guernsey, Isle of Man, Jersey, Switzerland, and Chile. Sample period from 1996:Q1 to 2015:Q4. Robust standard errors clustered by origin country are shown in parentheses. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Data: BIS Locational Banking Statistics and sources described in Section 3.

total offshore deposits in Switzerland.[18]

In contrast, joint U.S.–EU sanctions are associated with a decline in offshore deposits. The estimated effects are negative across all subsamples and statistically significant for both Switzerland and non-haven countries. In Switzerland, joint sanctions correspond to a 65% reduction in deposits, suggesting that coordinated action by both sanctioning powers substantially raises the reputational and legal risks of using offshore financial centers. The negative effect in non-havens (33%) may reflect the direct implementation of EU sanctions in many of these countries.

These effects may be explained by the fact that individual sanctions jointly imposed by the U.S. and the EU often precede or accompany broader economic sanctions. Anticipation of escalating restrictions may prompt sanctioned individuals to withdraw or repatriate assets before further enforcement actions take hold. Taken together, the results in Panel A suggest that while unilateral sanctions are associated with increased offshore holdings, coordinated sanctions act as a credible signal of tighter enforcement, effectively curbing offshore activity.

This pattern becomes even clearer when we turn to Panel B, which presents results for major financial sanctions, i.e., measures that target the broader economy rather than specific individuals. As in Panel A, Column (1) includes all tax havens, Column (2) focuses on Switzerland, and Column (3) reports results for non-haven countries. As described in Section 3, the EU imposes major sanctions only in conjunction with the U.S., so we do not include a separate indicator for EU-only major sanctions.

The results show a stark contrast to those in Panel A. Major sanctions consistently lead to large and statistically significant reductions in offshore deposits held by residents of sanctioned countries. In Columns (1) and (2), U.S. major sanctions alone reduce offshore deposits by around 30%. When both the U.S. and the EU impose major sanctions jointly, the decline exceeds 40%. The pattern is similar for non-haven countries, with joint sanctions again leading to a significant drop in deposits.

These findings suggest that major financial sanctions exert substantial economic pressure on sanctioned countries. The particularly sharp decline in offshore deposits under joint major sanctions likely reflects their heightened credibility and comprehensiveness. One plausible mechanism is that individuals move assets back home to

[18]In other major offshore jurisdictions, the estimated effects imply similar magnitudes relative to local deposit volumes. For the British Crown Dependencies (Jersey, Guernsey, and the Isle of Man), the increase in offshore deposits associated with U.S. sanctions represents approximately 1.5% of the total offshore deposits held in these jurisdictions, while the corresponding figure under EU sanctions is about 0.6%. In Asian financial centers such as Macao and Hong Kong, the increase amounts to roughly 1.2% of regional offshore deposits for U.S. sanctions and 1.0% for EU sanctions.

stabilize domestic firms or prepare for further restrictions. In contrast to sanctions targeting individuals, major sanctions deter offshore wealth accumulation and even prompt repatriation of previously offshored funds.

4.3 Event Study and Alternative Estimation

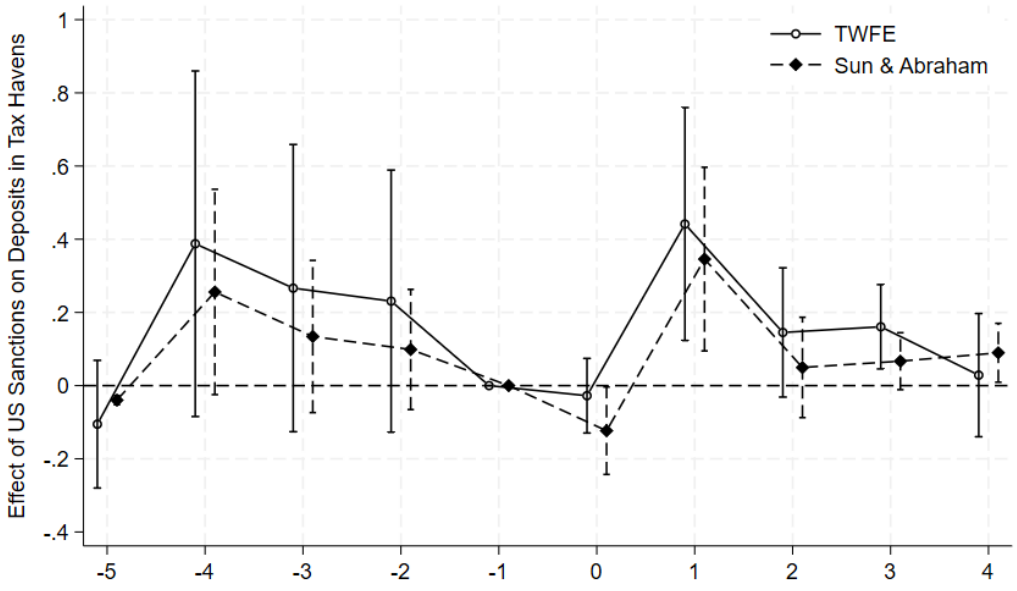
To explore the dynamics of the effect, we estimate an event study specification as described in eq. (2) using a) the estimator introduced by Sun and Abraham (2021) (SA) and b) the traditional TWFE estimator. Figure 3 plots the estimated coefficients for the quarters before and after the imposition of financial sanctions against individuals by the U.S. (Panel A) and the EU (Panel B), along with 90% confidence intervals. The quarter prior to the sanction serves as the reference period, and the endpoints are binned. The sample includes the tax havens defined in Section 4.1.

The results support the identifying assumption of parallel trends. All lead coefficients except the binned ones of the SA estimator are statistically insignificant, suggesting that deposit behavior evolved similarly prior to treatment. Following the imposition of sanctions, we observe a slightly delayed increase in deposits held in tax havens for U.S. sanctions, a pattern recognizable in both estimation procedures. Both estimators show a positive and statistically significant effect after one quarter. The effects become smaller but are still positive for both estimators later on. For EU sanctions on the other hand, we observe a positive and significant effect starting in the quarter in which the sanctions are imposed when using the traditional two-way fixed effects estimator. When using SA, the effect is only significant two quarters later.

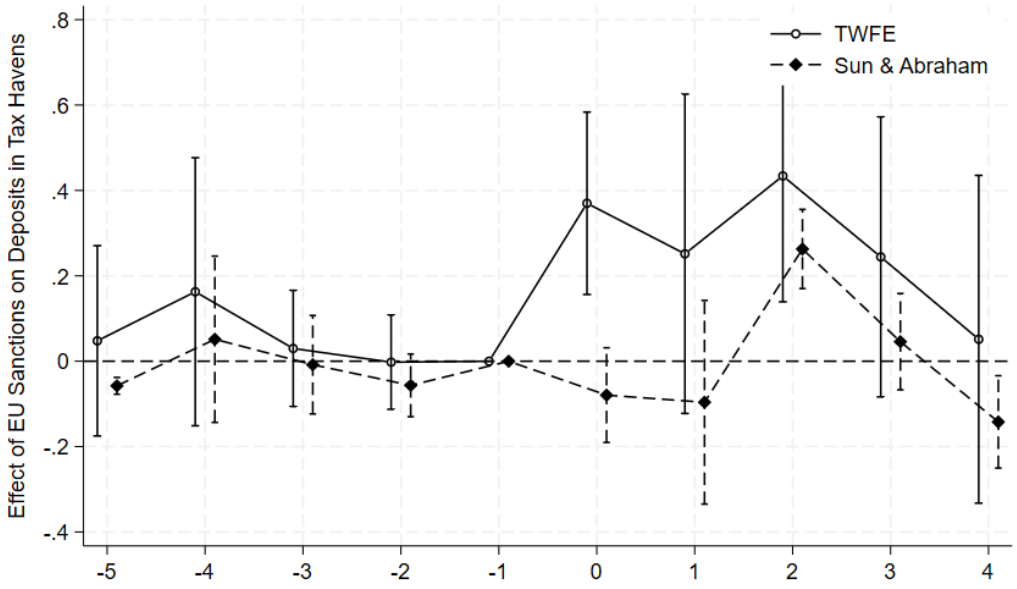
Appendix Figure A.2 shows the dynamic effects of major financial sanctions imposed by the U.S. (Panel A) and the EU (Panel B) on deposits in tax havens using SA and TWFE. Again, almost all pre-treatment coefficients are statistically insignificant supporting the common trends assumption. For U.S. sanctions, SA and TWFE show a very similar development. A notable decline in deposits appears after two quarters. For the case when both the U.S. and the EU impose major financial sanctions, SA and TWFE show slightly different trajectories. The general pattern again is very similar with the SA estimator being shifted upwards. The TWFE estimator shows an immediate negative and statistically significant effect.

Table 3 presents estimation results for the effect of financial sanctions against individuals using alternative DiD estimators. We report results based on the canonical two-way fixed effects (TWFE) estimator using two specifications: one with time and country-pair fixed effects, and another that includes haven–time and country-pair fixed

Figure 3: Effect of Financial Sanctions on Offshore Deposits in Tax Havens Over Time



(a) Sanctions by the U.S.



(b) Sanctions by the EU

Note: Figure 3 presents event study results for the imposition of financial sanctions against individuals by the U.S. (a) and the EU (b), using the estimation procedure introduced by Sun and Abraham (2021) and TWFE. The dependent variable is the natural logarithm of foreign deposits. The figures plot estimated coefficients for leads and lags relative to the quarter before the sanction, along with 90% confidence intervals. Standard errors are clustered at the partner-country level. Endpoints are binned. Tax havens include Guernsey, Hong Kong, Isle of Man, Jersey, Macao, Switzerland, and Chile. Sample period from 1996:Q1 to 2015:Q4.
Data: BIS Locational Banking Statistics and sources described in Section 3.

effects to absorb haven-specific time trends. We also include estimates based on the methods proposed by de Chaisemartin and D'Haultfœuille (2020); de Chaisemartin and D'Haultfœuille (2024) (CD) and Sun and Abraham (2021) (SA).

Panel A focuses on the effect of sanctions against individuals on deposits in all tax havens. All estimators yield positive coefficients for U.S. sanctions, consistent with the main results based on Borusyak *et al.* (2024). Although magnitudes vary (from 0.15 using TWFE to 0.38 using CD), all estimates are statistically significant. Estimates for EU sanctions are more mixed: The two TWFE specifications and SA produce positive and significant effects, while CD yields an insignificant negative estimate. This variation suggests some sensitivity to estimator (and therefore control group) choices. Joint U.S.–EU sanctions are associated with negative coefficients under TWFE and CD, but only the TWFE coefficients are signficiant. The SA estimator shows a small positive and insignificant effect in the short run. However, when aggregating long-run effects, joint sanctions lead to a statistically significant 15% decline in offshore deposits ten quarters after implementation.

Panel B reports results for major sanctions, again using the full set of tax havens. In both specifications the TWFE estimates replicate the sharp negative effects observed in the main specification: U.S. major sanctions reduce offshore deposits by 35%, and joint sanctions by 69%, both highly significant. In contrast, the CD estimator yields small and statistically insignificant coefficients. The SA estimator confirms the main findings, although with smaller magnitudes. However, the coefficients do not fully capture the effect, as it unfolds over several quarters (see Figure A.2 in the appendix).

Also the gravity model results reported in Table A.1 in the appendix confirm our main findings. Sanctions against individuals by the U.S. and the EU significantly increase offshore deposits, consistent across various measures of bilateral distance. Specifically, U.S. individual sanctions raise deposits by approximately 32%, and EU sanctions by around 61%. Conversely, joint sanctions by the U.S. and the EU substantially decrease offshore deposits, with reductions of approximately 45%. For major sanctions, only joint U.S.-EU sanctions significantly affect deposits, reducing them by about 78% when controlling for GDP, although the effect disappears when additionally controlling for wealth.

Overall, the robustness checks in Table 3, together with the gravity-based PPML estimates reported in Table A.1, support the conclusions drawn from our preferred specification. While some variation exists across estimation methods, there is in total strong evidence for positive effects of unilateral sanctions on individuals and negative effects of joint or major sanctions on offshore deposits.

Table 3: Alternative estimation methods: Sanctions and offshore deposits

	TWFE (Standard)	TWFE (jt FE)	CD	SA
Panel A: Sanctions against Individuals in all Havens				
U.S. Sanctions	0.155**	0.148**	0.384**	0.236***
	(0.073)	(0.073)	(0.182)	(0.072)
EU Sanctions	0.343***	0.337***	-0.195	0.144***
	(0.068)	(0.071)	(0.205)	(0.048)
U.S. & EU Sanctions	-0.135*	-0.142**	-0.339	0.069
	(0.069)	(0.068)	(0.423)	(0.074)
Panel B: Major Sanctions in all Havens				
U.S. Sanctions	-0.359***	-0.354***	-0.013	-0.095**
	(0.092)	(0.091)	(0.019)	(0.039)
U.S. & EU Sanctions	-0.690***	-0.675***	0.073	-0.033
	(0.108)	(0.107)	(0.063)	(0.049)

Note: Table 3 presents results from a difference-in-differences (DiD) analysis using four estimation methods: TWFE (two-way fixed effects; first with country-pair and time FE; then with country-pair and haven j–time fixed effects), CD (de Chaisemartin and D'Haultfœuille, 2020; de Chaisemartin and D'Haultfœuille, 2024), and SA (Sun and Abraham, 2021; Sun, 2021). The dependent variable is the natural logarithm of foreign deposits. All models include country-pair and time (haven j–time in col. 2) fixed effects and control for GDP per capita, GDP growth rate, capital account openness, tax policy, human rights indicators, and level of democracy. "All Havens" includes Hong Kong, Macao, Guernsey, Isle of Man, Jersey, Switzerland, and Chile. Sample period from Q1:1996 to Q4:2015. Robust standard errors are clustered at the origin-country level. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Data: BIS Locational Banking Statistics and sources described in Section 3.

5 Zooming In: Evidence from Russia

To better understand the effects of financial sanctions, we zoom in on the case of Russia following its annexation of Crimea in March 2014. Russia provides a particularly relevant case study due to both the scale of its residents' offshore wealth and the scope of sanctions imposed. The amount of wealth held by Russian residents in tax havens is exceptionally large—roughly equivalent to the total recorded financial assets of Russian households held domestically (Novokmet *et al.*, 2018). Alstadsæter *et al.* (2018) estimate that Russians' offshore wealth amounts to around 85% of national income or 60% of GDP, compared to a global average of about 10%. The sanctions imposed after 2014 were extensive and targeted a large number of individuals, but did not reach the broadness of "major" sanctions. Thus, Russia from 2014 onwards presents a compelling setting to study the impact of financial sanctions on individuals on offshore holdings.

5.1 Empirical Strategy: Synthetic Control

To analyze the effect of financial sanctions on Russian offshore wealth, we apply the synthetic control method (see Abadie *et al.*, 2010, 2015). This approach allows us to compare the evolution of foreign deposits held by Russian residents in tax havens to a weighted combination of control countries that did not experience similar sanctions.

The annexation of Crimea in March 2014 triggered coordinated sanctions by the U.S. and its allies. This event serves as our treatment, with the second quarter of 2014 marking the start of sustained and intensifying financial sanctions. Because the annexation was decided secretly by a small group of senior Russian officials (Korovkin and Makarin, 2023; Plokhy, 2023), it constitutes a plausibly exogenous shock from the perspective of offshore depositors. The synthetic control method is well suited to this case, given the sharp onset of treatment and the availability of a large donor pool of unaffected countries.

The synthetic control method allows to construct a counterfactual for Russia's offshore deposits in the absence of sanctions. The goal is to approximate the deposit trajectory Russia would have experienced had it not been sanctioned. The synthetic Russia is created as a weighted average of countries from a donor pool, with weights chosen so that the synthetic Russia matches the real Russia as closely as possible in the pre-treatment period. The matching is based on the pre-treatment values of the outcome variable.[19] To improve robustness and avoid overfitting, we follow Kaul

[19]When we add the control variables to the matching process, the results do not change.

et al. (2022) and include only every other lag of the outcome variable rather than all pre-treatment values. We construct the synthetic control over a symmetric nine-year (36-quarter) window centered on the second quarter of 2014, when sanctions began.

The outcome variable is the total value of foreign deposits held by each country across all tax havens, normalized by the country's nominal GDP in the fourth quarter of 2013. This adjustment allows us to account for country size and ensure comparability across units, consistent with evidence that offshore wealth scales roughly with national income (Alstadsæter *et al.*, 2018). Moreover, as noted by Abadie (2021), synthetic controls with weights summing to one are appropriate only when variables are rescaled to account for size differences between units. Since we aggregate Russian deposits across havens, we restrict the analysis to those havens with balanced deposit reporting from 2010 to 2018. As a result, we have to exclude Chile, Guernsey, Hong Kong, and Macao. We also drop EU tax havens because the EU participated in sanctioning Russia, leaving Switzerland, Jersey, and the Isle of Man in our haven sample.

To construct a valid donor pool, we exclude all countries that were subject to financial sanctions between 2005 and 2018, based on the Global Sanctions Database (Syropoulos *et al.*, 2024).[20] We also drop four countries—French Polynesia, New Caledonia, and São Tomé and Príncipe —from the dataset due to missing data. Finally, after excluding 33 tax havens based on the classification by Johannesen and Zucman (2014), we are left with 82 countries in the final donor pool. Figure A.3 in the appendix shows the countries included in the donor pool.

A number of events around the time of the sanctions could confound our results. In particular, the sharp decline in global oil prices in the second and third quarters of 2014 and the simultaneous depreciation of the Russian ruble may have independently affected offshore deposit behavior. Lower oil revenues reduce the resources available for offshore transfers. Andersen *et al.* (2017) estimate that about 15% of oil revenue shocks are diverted to tax havens in autocratic countries, suggesting that falling oil prices would suppress such flows. The ruble lost nearly half of its value in the second half of 2014, further reducing the amount of foreign currency available for offshore transfers. Several studies (e.g., Dreger *et al.*, 2016; Fedoseeva, 2018) link most of the ruble's depreciation to the oil price collapse. Since both of these shocks would be expected to reduce rather than increase offshore deposits, our positive estimated treatment effect should be interpreted as a conservative estimate, i.e., a lower bound of the true effect of the sanctions.

[20] We use the Global Sanctions Database for this analysis instead of EUSANCT because it provides longer coverage (till 2018 vs 2015). We do not use it for the main analysis because it lacks exact sanction dates and provides only annual data.

5.2 Results

Table 4 lists the five countries with the largest weights in synthetic Russia. Most countries share key characteristics with Russia, such as natural resource dependence, geography, political and economic instability post-World War II, and corruption levels. Most importantly, they closely track Russia's offshore deposit trends in the pre-treatment period.

Table 4: Country Weights in Synthetic Russia

Country	Weight
Ethiopia	0.231
Georgia	0.103
Estonia	0.085
Angola	0.081
Azerbaijan	0.040

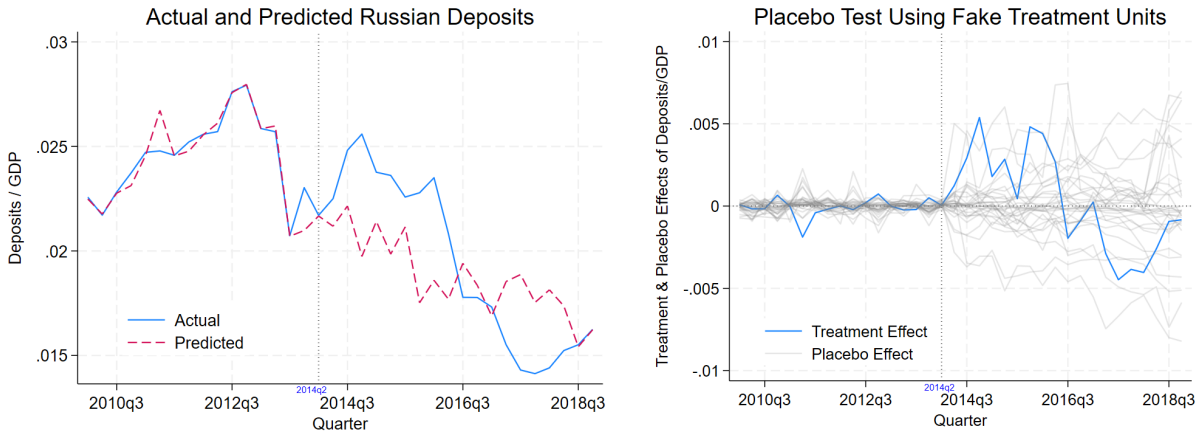
Note: The synthetic Russia is formed by the countries in Table 4 (five largest weights shown). The weights are estimated by the synthetic control method for total deposits in Switzerland, the Isle of Man, and Jersey combined.
Data: BIS Locational Banking Statistics.

Figure 4 presents the main results. The left panel compares the actual deposit-to-GDP ratio for Russia with the synthetic control. The two lines track closely before the second quarter of 2014, indicating a very good pre-treatment fit. After the imposition of sanctions in the second quarter of 2014, the lines diverge sharply. Russian deposits increase and remain elevated for several quarters. The right panel shows the gap between Russia and its synthetic control (blue line) alongside placebo gaps for the other countries from the donor pool (gray lines).

Following the onset of sanctions, we observe a sustained and economically meaningful treatment effect. In 2014–2016, Russian deposits in tax havens increased by an average of 15% relative to their synthetic control. Based on a median deposit level of $15 billion, this corresponds to an increase of approximately $2.25 billion. This increase persists for several quarters before tapering off after 2016. When we only consider deposits in Switzerland (which did not impose restrictions on Russian accounts during the sample period), the effect is substantially larger (29%).[21]

[21] One may worry that our main analysis may underestimate the true treatment effect, as many wealthy Russians are known to hold Cypriot citizenship and may appear as Cypriot in the BIS data (see also Langenmayr and Zyska, 2023). To approximate the impact of such reclassification, we conduct a robustness check in which we add 50% of Cyprus's foreign deposits to Russia's deposits in each period. However, the resulting estimated effect is slightly smaller: an average increase of 11.5% following the sanctions, compared to 15% in the baseline analysis.

Figure 4: Synthetic control: A case study of Russia 2014



Note: **Left:** The figure plots total offshore deposits (as a share of GDP) for Russia (solid blue) and its synthetic control (dashed red), estimated using synthetic control method over 2010–2018. The vertical line at 2014q2 marks the start of sanctions. **Right:** The treatment effect for Russia (blue) is compared to placebo effects for donor countries (gray). Countries with pre-treatment MSPEs more than twice Russia's are excluded from the placebo test. Sample period from 2010:Q1 to 2018:Q4.
Data: BIS Locational Banking Statistics and sources described in Section 3.

To evaluate statistical significance, we follow Abadie *et al.* (2010) and conduct permutation-based inference. Each donor country is temporarily reassigned the treatment, and placebo effects are calculated using the same synthetic control procedure. The right panel of Figure 4 shows that the treatment effect for Russia exceeds nearly all placebo gaps, particularly in the quarters immediately following the sanctions. The associated p-values are below 10% for all quarters till 2016, except for the third quarter of 2015, confirming the robustness of the observed effect.

Taken together, these results suggest that the 2014 financial sanctions caused a substantial and statistically significant increase in offshore deposits by Russian residents. The response was strongest in Switzerland, which remained outside the EU's sanctioning framework during this period.

5.3 Robustness Checks

We conduct several robustness checks to assess the credibility of the treatment effect identified by the synthetic control method.

First, we apply the bias-corrected estimator for the synthetic control method proposed by Ben-Michael *et al.* (2021), which adjusts for potential overfitting to pre-treatment outcomes. Figure A.4 in the appendix shows that the estimated treatment effect remains nearly unchanged, both in magnitude and in statistical significance.

Second, we implement a leave-one-out procedure following Abadie (2021), in which each donor country is excluded one at a time from the synthetic control. The resulting estimates (Figure A.5 in the appendix), remain positive and broadly consistent across post-treatment quarters. This confirms that our results are not driven by any single control unit.

Third, we examine whether a similar effect appears when analyzing Russian deposits in non-haven countries that report to the BIS. As shown in Figure A.6 in the appendix, the estimated treatment effect in these countries is smaller, around 12%, with insignificant p-values for almost all quarters. This supports our interpretation that the observed effects are specific to tax havens, where secrecy and asset protection are more attractive to sanctioned individuals.

Lastly, as Cyprus has long played a central role in Russian offshore finance—serving as both a conduit for wealth transfers and a legal home for shell companies linked to Russian oligarchs and political elites—it is a particularly relevant jurisdiction to examine. Unfortunately, Cyprus does not report bilateral deposit data to the BIS, so we cannot directly observe Russian deposits there. We therefore examine the evolution of household deposits by non-EU residents in Cypriot banks as reported by the Central Bank of Cyprus. As Russian depositors were the largest non-EU group in Cyprus at the time, this trend likely reflects Russian capital. Figure A.7 in the appendix shows that non-EU household deposits in Cyprus increased by 16% following the 2014 annexation of Crimea. This rise occurred despite EU sanctions, suggesting weak enforcement or the continued use of Cypriot legal structures to circumvent restrictions. The upward trend flattens only after the introduction of the Common Reporting Standard (CRS) in early 2016, which tightened reporting obligations and likely reduced the attractiveness of Cyprus as a secrecy jurisdiction.

Together, the Russian case and its robustness checks reinforce the main findings, confirming that U.S. and EU financial sanctions on individuals were followed by increased deposits in tax havens.

6 Mechanisms: Shell Company Incorporations Before Sanctions

Why do financial sanctions on individuals increase offshore deposits? In this section, we explore two plausible mechanisms behind this effect: First, sanctioned individuals themselves may move funds offshore in response to the sanction, attempting to shield

wealth from asset freezes or maintain liquidity. Second, other individuals in the same country may react preemptively, fearing that they could soon be sanctioned as well. To examine these possibilities, we draw on leaked offshore data.

To assess whether sanctioned individuals set up offshore structures in response to sanctions or in anticipation of them, we examine the timing of shell company incorporations relative to sanction dates. We focus on individuals sanctioned by the U.S. or the EU and matched to entries in the Panama Papers, a large leak of documents from the offshore provider Mossack Fonseca (International Consortium of Investigative Journalists, 2019).

We begin by compiling individual names from the U.S. and EU sanction lists, covering more than 30,000 names from the U.S. Treasury's SDN list (U.S. Department of the Treasury OFAC, 2024) and over 3,500 from the EU consolidated list (EU Commission, 2024). We then use data from Joaristi *et al.* (2019), who identify in the Panama Papers and other offshore leaks 265 persons linked to sanctioned entities based on various sanction lists. By cross-referencing these names with the U.S. and EU sanctions lists, we identify 31 individuals sanctioned by either the U.S. or the EU for whom both the sanction date and incorporation date of a shell company are available.

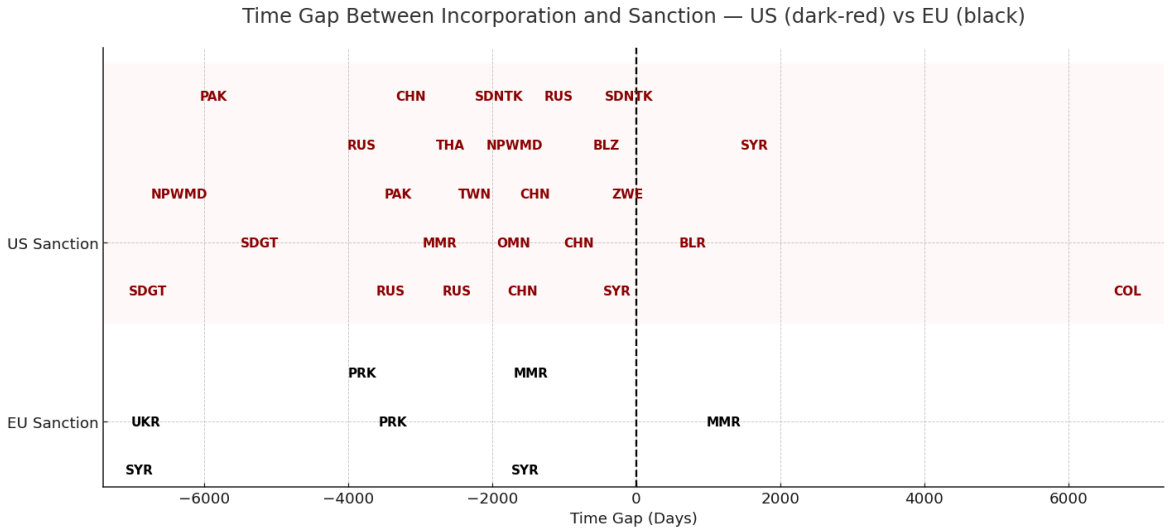
Figure 5 shows the distribution of the time gap between the incorporation of a shell company and the date on which the individual was sanctioned. The majority of incorporations occur years before the individual is sanctioned. Thus, they likely opened offshore accounts for other reasons, such as tax evasion, and then later re-used it to circumvent sanctions. It is also possible that individuals set up offshore accounts with the plan to be able to circumvent future sanctions, anticipating that their actions and political connections made them possible targets in the future.[22]

Since sanctioned individuals typically do not incorporate shell companies in tax havens after sanctions are imposed, this may suggest that tax havens are, to some

[22]To test whether this anticipatory pattern extends beyond the sanctioned individuals themselves, we examine the relatives and close associates of sanctioned politically exposed persons (PEPs), using data from the OpenSanctions database (OpenSanctions Datenbanken GmbH, 2025). In the dataset, there are approximately 600,000 PEPs, out of which 3000 are sanctioned by different sanctioning authorities worldwide. Among 671 relatives of the 3000 sanctioned PEPs, we identify 22 individuals in the ICIJ Offshore Leaks Database. As with the directly sanctioned individuals, their incorporation dates also precede the imposition of sanctions by several years.

extent, complying with sanctions, at least when it comes to opening new accounts.[23] Still, it is possible that sanctioned individuals rely on intermediaries or more complex structures to set up offshore entities. At the same time, tax havens do not appear to enforce sanctions by thoroughly scrutinizing transfers to existing accounts.

Figure 5: Shell Company Incorporation Dates



Note: The figure shows the distribution of time differences (in days) between the incorporation of shell companies and the date of sanctions for 31 individuals with their country of origin who appear in both the Panama Papers and the U.S. or EU sanctions lists. Some individuals do not have country; hence indicated with the sanction type: NPWMD (weapons of mass destruction), SDGT (global terrorism), and SDNTK (narcotics trafficking). Negative values indicate that the shell company was incorporated before the individual was sanctioned. The U.S. has significantly more sanctions than the EU. Sample period from 1994 to 2015.
Data: Incorporation dates are sourced from the Panama Papers; sanction dates are taken from the U.S. Treasury SDN list and the EU consolidated list.

We conclude that in many cases, the offshore structures used by sanctioned individuals are set up well before the imposition of individual sanctions. Likely, the observed increase in offshore deposits occurs because sanctioned individuals move additional funds to tax havens after the sanctions are in place. It is also possible that other individuals who fear that they will be sanctioned in future sanction waves open offshore accounts and move money there preemptively. In line with this mechanism, Kavakli

[23] We also explore cryptocurrencies as an alternative for offshore deposits. Using data on wallets sanctioned by the U.S. Office of Foreign Assets Control (OFAC) and their history in blockchain (Zola *et al.*, 2024), the vast majority of wallet activity occurs well before the formal imposition of sanctions. This pattern mirrors our findings from company incorporations. Additionally, crypto activity drops significantly following country-specific sanctions (e.g., targeting Russia, Iran, or North Korea), but not after sanctions related to transnational crimes such as drug trafficking or cybercrime. Most sanctioned wallet owners had not previously been individually sanctioned and rarely appear in leaked offshore data, suggesting they typically act as facilitators rather than primary targets.

et al. (2023) find that financial sanctions lead to a 60-80% rise in the incorporation of offshore entities by the residents of sanctioned countries at the aggregate country level, but cannot link the individuals setting up these entities to sanction lists.

7 Conclusion

This paper investigates how financial sanctions affect the offshore wealth held by individuals from sanctioned countries. Using quarterly BIS data on cross-border deposits, we show that sanctions targeting individuals lead to an increase in deposits held in tax havens. When the U.S. imposes such sanctions, offshore deposits rise by around 18%. The effects are larger for deposits in Switzerland. In contrast, major financial sanctions that target a country's economy as a whole reduce offshore deposits substantially—by about 35% when imposed by the U.S., and even more when coordinated with the EU.

We complement this cross-country analysis with a synthetic control case study of Russia after the annexation of Crimea in 2014. Russian offshore deposits increased by about 15% in the years following the imposition of individual sanctions. The case study thus confirms the pattern found in the broader panel analysis.

To better understand these dynamics, we examine additional data sources. Leaked records from the Panama Papers suggest that many sanctioned individuals had established shell companies several years before they were added to sanctions lists. A similar pattern holds for their relatives and close associates. While these data sets cover only a small subset of cases, they are consistent with a mix of anticipatory and reactive behavior. Sanctioned individuals may use pre-existing offshore structures, perhaps originally set up for other purposes such as tax evasion. Others may open new offshore accounts because they anticipate that they will be on future sanction lists.

Our findings have important policy implications. Individual sanctions appear to be porous and prompt individuals to shield wealth by shifting assets to tax havens. In contrast, major sanctions reduce the ability to transfer capital abroad and appear more effective in restricting offshore activity. These differences highlight the importance of targeting not only the individuals themselves but also the financial infrastructure that enables illicit financial flows.

Moreover, existing transparency initiatives (such as the Common Reporting Standard (CRS), which was developed to combat tax evasion) do not effectively support the enforcement of financial sanctions. Under the CRS, information on offshore holdings is automatically shared with the account holder's country of residence. This means that

in the case of Russian individuals, it is the Russian authorities (and not the sanctioning governments) who receive the relevant financial information. While this may deter tax evasion, it does little to prevent sanctions evasion, as the sanctioned country itself has no interest in enforcement. However, the available data could, in principle, also be used for sanction enforcement.

Policymakers aiming to close these loopholes must consider strengthening secondary sanctions, improving international transparency standards, and investing in financial intelligence capacities to monitor evasive flows. More broadly, our results suggest that effective sanctions require a coordinated approach that targets not only individuals but also the financial networks and institutions that enable capital mobility in the shadows.

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A Appendix

Table A.1: Alternative Estimation Method: Gravity Model

Panel A: Sanctions Against Individuals in All Havens

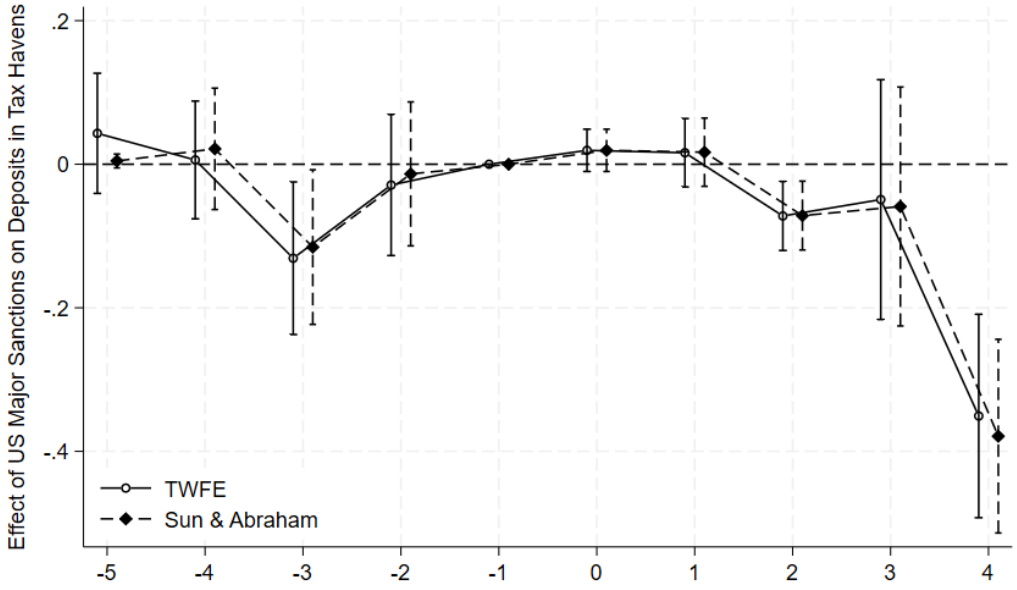
	Distance (GDP)	Distance (GDP+Wealth)	Weighted Distance (GDP)	Weighted Distance (GDP+Wealth)
U.S. Sanctions	0.320**	0.322**	0.316**	0.318**
	(0.160)	(0.159)	(0.160)	(0.159)
EU Sanctions	0.617***	0.611***	0.614***	0.609***
	(0.117)	(0.115)	(0.118)	(0.116)
U.S. & EU Sanctions	-0.461***	-0.461***	-0.450***	-0.454***
	(0.167)	(0.165)	(0.162)	(0.161)
Observations	13,465	13,465	13,465	13,465

Panel B: Major Sanctions in All Havens

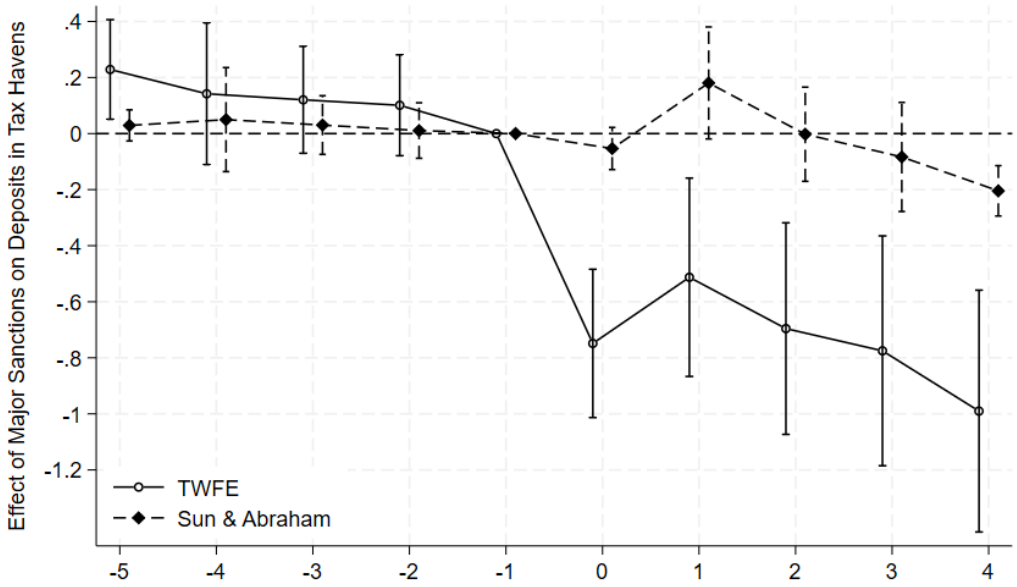
	Distance (GDP)	Distance (GDP+Wealth)	Weighted Distance (GDP)	Weighted Distance (GDP+Wealth)
U.S. Sanctions	-0.114	-0.123	-0.121	-0.134
	(0.133)	(0.129)	(0.155)	(0.150)
U.S. & EU Sanctions	-0.782***	-0.048	-0.776***	-0.058
	(0.272)	(0.258)	(0.272)	(0.252)
Observations	13,956	13,956	13,956	13,956

Note: Table A.1 presents results from a difference-in-differences (DiD) analysis using a gravity style model using Poisson Estimation with High-Dimensional Fixed Effects provided by Correia *et al.* (2019). "Distance" refers to a simple distance measure between the most populated cities; "Weighted Distance" refers to a population-weighted distance between the most populated cities. The dependent variable are foreign deposits. All models include country-pair and year fixed effects and control for GDP growth rate, capital account openness, tax policy, human rights indicators, and level of democracy. "All Havens" includes Hong Kong, Macao, Guernsey, Isle of Man, Jersey, Switzerland, and Chile. Sample period from Q1:1996 to Q4:2015. Robust standard errors are clustered at the origin-country level. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.
Data: BIS Locational Banking Statistics and sources described in Sections 3 and 4.

Figure A.2: Effects of Major Financial Sanctions on Offshore Deposits Over Time



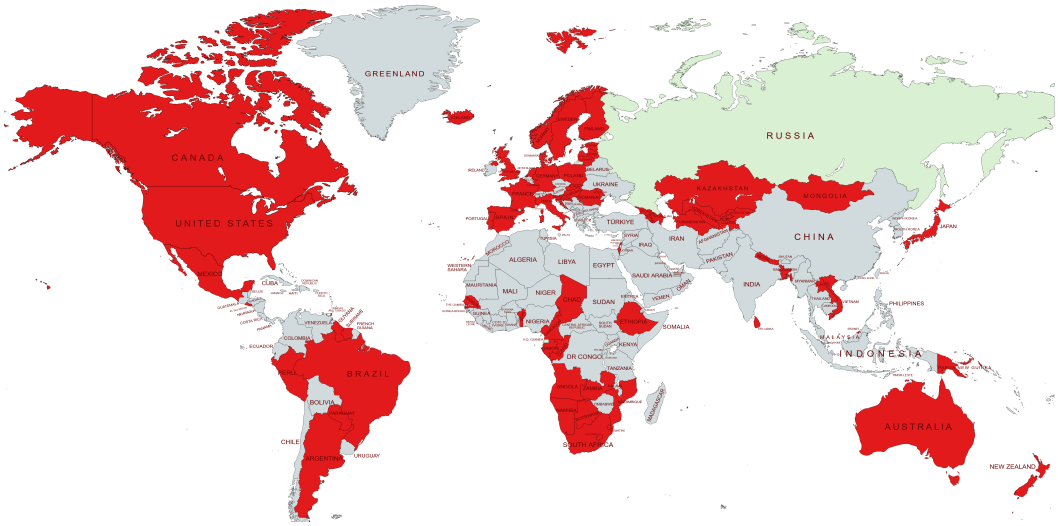
(a) Sanctions by the U.S.



(b) Sanctions by the U.S & the EU

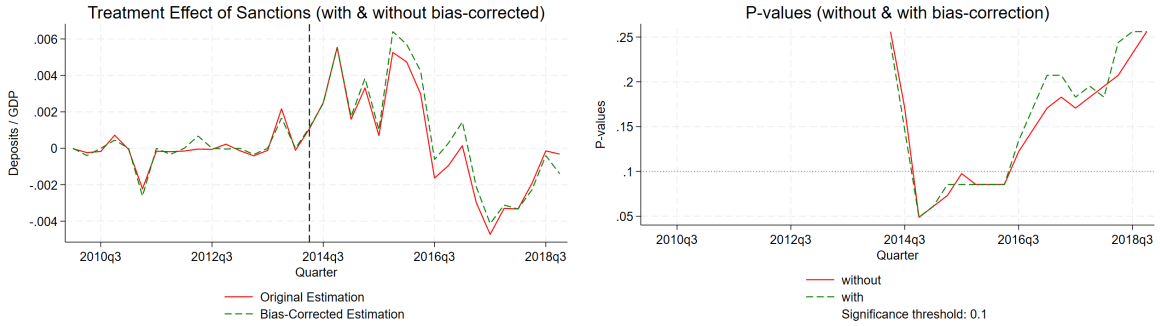
Note: Figure A.2 presents event study results for the imposition of major financial sanctions by the U.S. (Panel A) and by the U.S. & EU (Panel B), using the estimation procedure introduced by Sun and Abraham (2021) and TWFE. The dependent variable is the natural logarithm of foreign deposits. The figures plot estimated coefficients for leads and lags relative to the quarter before the sanction, along with 90% confidence intervals. Standard errors are clustered at the partner-country level. Endpoints are binned. Tax havens include Guernsey, Hong Kong, Isle of Man, Jersey, Macao, Switzerland, and Chile. Endpoints are binned. Sample period from 1996:Q1 to 2015:Q4.
Data: BIS Locational Banking Statistics and sources described in Section 3.

Figure A.3: Potential Donor Pool



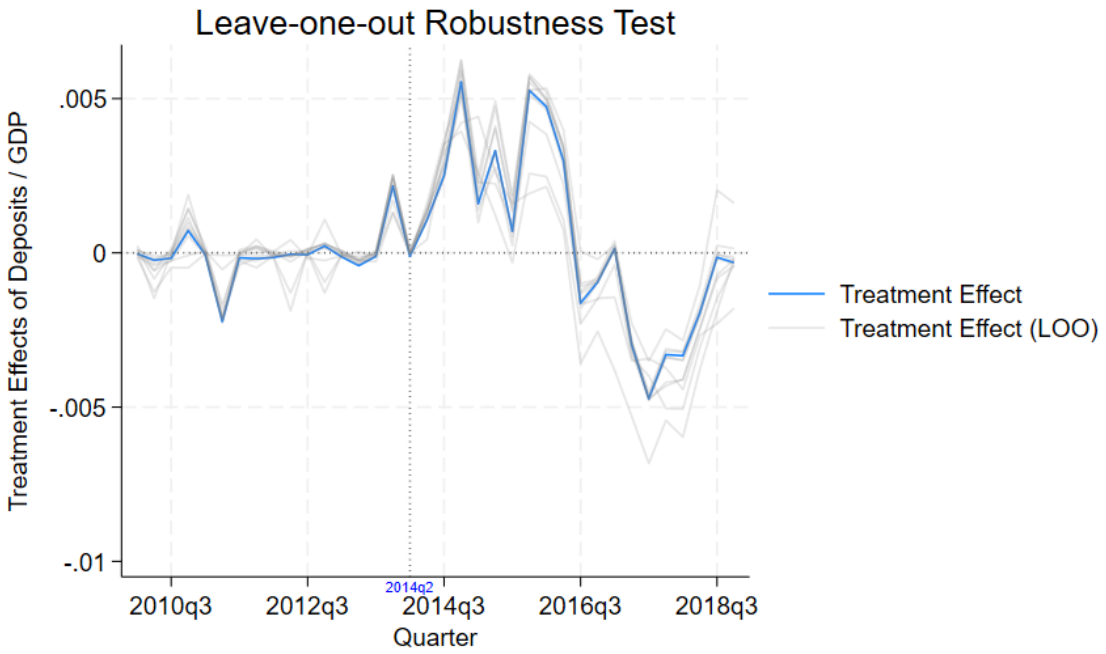
Note: Figure A.3 shows the countries used in the synthetic control donor pool (in red), as well as Russia (in light green). Countries in red were never targeted by financial sanctions between 2005 and 2018. These 82 countries serve as untreated potential controls in the synthetic control analysis of Russian deposit behavior. Sample period from 2005 to 2018.
Data: The Global Sanctions Database (Syropoulos *et al.*, 2024).

Figure A.4: Synthetic Control: Bias-Corrected Treatment Estimates



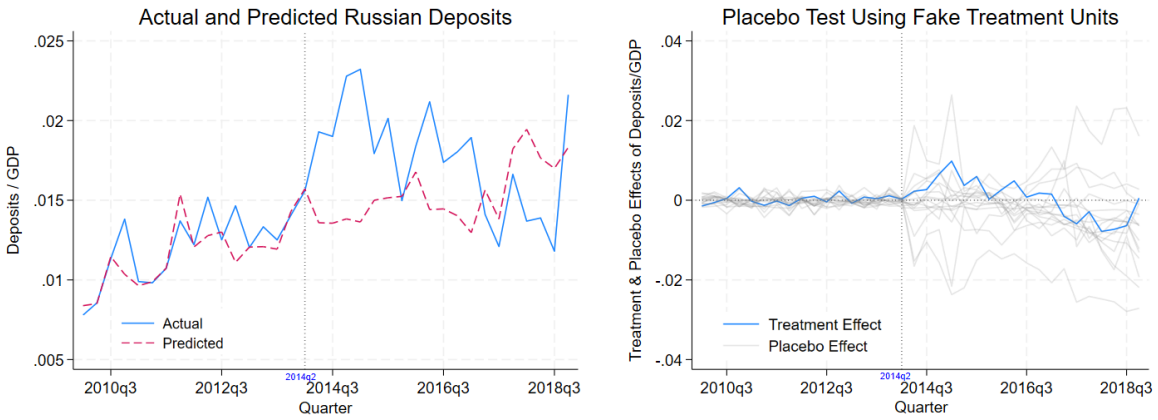
Note: Figure A.4 compares the original and bias-corrected synthetic control method estimates for the effect of 2014 sanctions on Russian offshore deposits. **Left panel:** Treatment effects estimated using the standard SCM (solid red line) and the bias-corrected method proposed by Ben-Michael *et al.* (2021) (dashed green line). **Right panel:** Corresponding placebo p-values for each approach. The vertical dashed line marks the onset of sanctions in the second quarter of 2014. The bias correction has little effect on either the magnitude or significance of the results. Sample period from 2010:Q1 to 2018:Q4.
Data: BIS Locational Banking Statistics and sources described in Section 3.

Figure A.5: Synthetic Control: Leave-One-Out



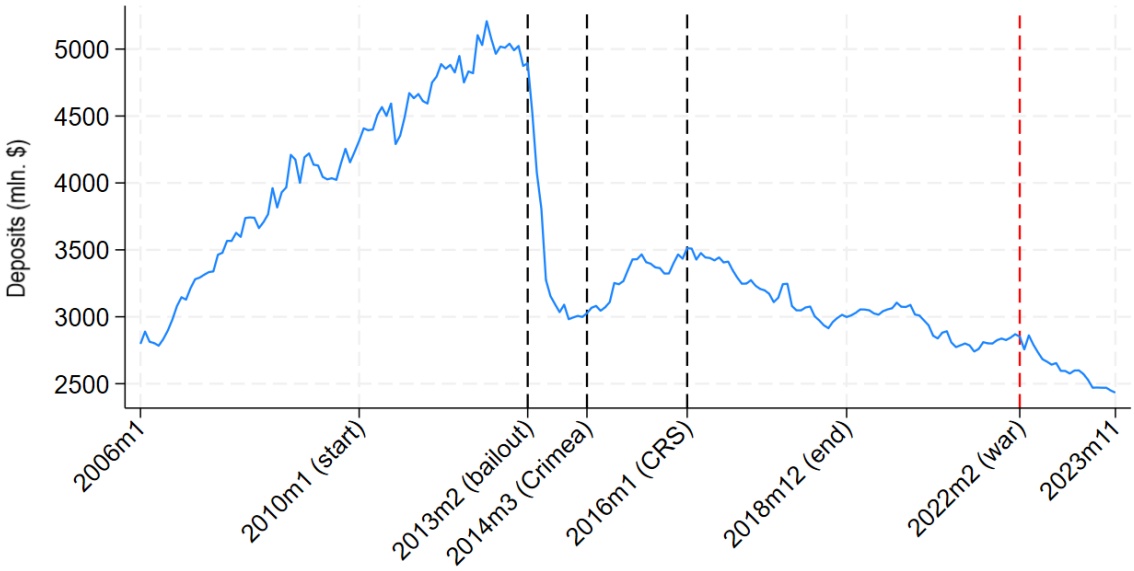
Note: Figure A.5 shows the robustness of the synthetic control method results to the exclusion of individual donor countries. The solid blue line represents the main estimated treatment effect for Russia. Each gray line shows the effect when one donor country is removed from the donor pool. The vertical line at the second quarter of 2014 indicates the onset of financial sanctions. The treatment effects remain consistently positive, indicating that the main result is not driven by any single control country. Sample period from 2010:Q1 to 2018:Q4.
Data: BIS Locational Banking Statistics and sources described in Section 3.

Figure A.6: Synthetic Control: Russian Deposits in Non-Havens



Note: Figure A.6 shows the effect of financial sanctions on Russian deposits held in ten non-haven countries. **Left panel:** Actual Russian deposits (solid blue line) versus synthetic Russia (dashed red line), constructed using the SCM approach. **Right panel:** Treatment effect (blue line) and placebo effects (gray lines) based on reassigning the treatment to control units. We discard countries with pre-sanction mean squared prediction error more than twice that of Russia. Countries included: Australia, Chinese Taipei, Denmark, Finland, France, Ireland, Korea, South Africa, the UK, and the U.S. Sample period from 2010:Q1 to 2018:Q4.
Data: BIS Locational Banking Statistics and sources described in Section 3.

Figure A.7: Deposits in Cyprus



Note: Figure A.7, based on monthly data from the Central Bank of Cyprus, shows deposits (in million U.S. dollars) by non-EU residents (households only) in Cypriot banks from 2010 to 2018. A sharp decline in 2013 reflects Cyprus's bailout-driven deposit-to-equity conversion. After the 2014 Crimea annexation and EU sanctions, deposits rose rather than declined. Only after the Common Reporting Standard (CRS) came into force in early 2016 did deposits begin to fall. Sample period from 2006:M1 to 2023:M12.
Data: Central Bank of Cyprus, Monetary and Financial Statistics.