

The impact of sanctions on cross-border transactions: evidence following the 2022 Russian invasion of Ukraine

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Abstract

Questions around the design, implementation and impact of economic sanctions raise a number of theoretical and analytical challenges for academics and policy makers. In the post-February 2022 phase of the Russian invasion of Ukraine, for instance, debates have mainly focused on the timing, scale, and effectiveness of sanctions, in particular from a foreign policy perspective.

A gap in the empirical literature to date relates to the direct impact of sanctions on the banking activities of sanctioned banks, individuals and companies. This paper draws on a dataset consisting of a subset of transactions where for each transaction the originator/beneficiary country or the country of the originator/beneficiary's financial institution is Russia.

The transactions range from late 2021 to late 2022. In addition to Russia this dataset has an exposure to 173 unique jurisdictions in the period July 2021-November 2022. The data is drawn from a sample of transactions provided by a network of banks to a financial crime risk assessment agency for the purposes of a "lookback" exercise to assess the network's exposure to sanctions risk.

In the weeks following the 2022 invasion of Ukraine, authorities in major jurisdictions placed a significant number of entities and individuals on existing and new sanctions lists. Taking advantage of the February 2022 structural break, the paper provides an empirical analysis of the impact of sanctions on the cross-border transactions of recently sanctioned entities.

We find that in aggregate, banks in the sample are effective in reducing cross-border flows to newly sanctioned entities. However, these flows do not fall to zero, indicating that gaps in sanctions implementation remain. In addition, the data shows a significant impact of carve outs and exemptions for payments related to oil and gas, and evidence of a displacement effect through which Russian beneficiaries and originators maintain access to the financial system through transactions across a range of jurisdictions.

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1. Introduction

Already before the 2022 phase of the Russian invasion of Ukraine, the field of research on economic sanctions was rapidly expanding.

Multiple strands of sanctions-related research include: the effectiveness of sanctions as a foreign policy tool²; attempts to measure the economic impact of sanctions on individual countries³; the impacts of sanctions on particular sectors such as healthcare⁴; the humanitarian impact of sanctions⁵; the role of domestic politics in the use of sanctions as a foreign policy⁶; the unintended consequences of sanctions⁷; the practical policy challenges of freezing and seizing assets⁸; and the environmental impacts of sanctions⁹, among others.

However, limited empirical research has been conducted on the impact of sanctions on the banking sector itself. Among recent examples are Dizaji (2021), who establishes a link between sanctions and the operating costs of banks in Iran.¹⁰

As the administrative units often charged with the implementation of economic sanctions, the policies and practices of banks are potentially highly consequential for the ultimate impact and effectiveness of sanctions as policy tools. In part due to a lack of research access and data, the systems inside individual banks to a significant extent remain a black box from a research perspective. Previous approaches have included “mystery shopping” exercises to assess the effectiveness of customer due diligence systems, concluding that banks “show remarkably little sensitivity to customer risk”.¹¹

How do banks actually go about implementing sanctions in practice? How quickly are systems updated to put sanctions in place? How thoroughly are sanctions implemented? To what extent does being placed on sanctions lists affect the actual capacity of individuals and entities to transact through the involved institutions?

This paper is written from the practitioner perspective of a data science company working with financial institutions to assess their exposure to financial crime risk, and introduces empirical estimates that allow a first approximation to these questions.

² [Peksen, 2019](#): When Do Imposed Economic Sanctions Work? A Critical Review of the Sanctions Effectiveness Literature

³ [Davis, 2016](#): The Ukraine conflict, economic–military power balances and economic sanctions

⁴ [Setayesh & Mackey, 2016](#): Addressing the impact of economic sanctions on Iranian drug shortages in the joint comprehensive plan of action: promoting access to medicines and health diplomacy

⁵ [Gordon, 2011](#): Smart Sanctions revisited

⁶ [Morgan & Schwebach, 2008](#): Economic sanctions as an instrument of foreign policy: The role of domestic politics

⁷ [Keatinge & Saiz, 2022](#): Afghanistan Under the Taliban: The Unintended Consequences of Sanctions

⁸ [Keatinge & Nizzero, 2022](#): From Freeze to Seize: Creativity and Nuance is Needed

⁹ [Hakim & Makuch, 2022](#): Conflicts of Interest: The Environmental Costs of Modern War and Sanctions

¹⁰ [Dizaji, 2021](#): The impact of sanctions on the banking system: new evidence from Iran

¹¹ [Findley, Gullo, Haberly, Nielsen and Sharman, 2022](#): Does Changing the Rules Change Behaviour? Comparing Regulatory Reform and Behavioral Outcomes in Shell Company Transparency

In the weeks following the 2022 phase of the invasion of Ukraine, authorities in major jurisdictions placed a significant number of entities and individuals on existing and new sanctions lists. Additional measures included the disconnection of selected Russian banks from the SWIFT messaging service used to facilitate cross-border payments.¹² Financial institutions found themselves needing to integrate multiple sanctions lists into their onboarding and compliance systems in a short period of time.

Many financial institutions, in particular those with extensive cross-border relationships, engaged external data analytics providers to support them in this process.

The data for this paper is drawn from a sample of transactions provided by a network of banks with extensive correspondent banking relationships to a financial crime risk assessment agency for the purposes of a “lookback” exercise to independently assess the network’s exposure to sanctions risk. Rather than focusing on the onboarding processes for new clients, this type of analysis assesses banks’ risk exposure through its existing customer portfolio, for example identifying instances where previous compliance processes may have failed.

The dataset consists of a subset of transactions where for each transaction the originator/beneficiary country or the country of the originator/beneficiary’s financial institution is Russia. The transactions range from late 2021 to late 2022. In addition to Russia this dataset has an exposure to 173 unique jurisdictions in the period July 2021-November 2022. The 560721 transactions present in this dataset have a coverage of 3926 unique Bank Identification Codes (BICs).

As a result, the dataset allows for the analysis of the banking network’s exposure to sanctioned financial institutions. At a more granular level, it also allows us to identify the country of the individual originator or beneficiary, i.e. the country where the originator or beneficiary is registered with the respective bank.

In this dataset, the names, BICs, and addresses of the transacting banks are available but all personal identifier information e.g. names, addresses, and account numbers have been encrypted using a hashing algorithm. Due to client confidentiality, there are also limitations in the presentation and analysis of findings e.g. individual banks are not identified.

The analysis in the paper looks primarily at a) transactions linked to sanctioned financial institutions that were placed on official sanctions lists by major jurisdictions after February 2022, and b) transactions to and from Russian banks (including their subsidiaries abroad).

Given that the data was obtained from an international network of banks sufficiently concerned about their potential exposure to sanctioned entities to engage an external data analytics provider, the representativeness of our findings regarding the broader financial sector should be

¹² [Green, 2022](#): How Sanctions on Russia Will Alter Global Payments Flows

taken with caution. In particular for banks that are dependent on a small number of correspondent banking relationships for continued access to the international market, there is likely higher than average sensitivity to international developments such as sanctions.

The next section (section 2) introduces findings regarding the speed and effectiveness of sanctions implementation; section 3 looks at the impact of carve outs and exemptions for the oil & gas sector; section 4 presents findings regarding inflows and outflows for the Russian banking sector as a whole; and section 5 concludes.

2. Findings regarding speed and effectiveness of sanctions implementation

This section focuses on the transactional flows in and out of newly sanctioned financial institutions post-February 2022, in the context of Russia's ongoing Ukraine invasion.

The sanctioned banks assessed for this paper are banks and their subsidiaries sanctioned by the Office of Foreign Assets Control (OFAC) in the U.S, the U.K, and the E.U. from 24th February 2022 to 6th April 2022.^{13 14}

The sanctions were to be implemented in the four to six weeks following their announcement. For example, OFAC set 26th March 2022 as the date of implementation for the sanctions announced on 24th February 2022.

The transaction flows to banks in the dataset that were newly sanctioned after February 2022 decreased by more than 85% comparing early February to late March. The metric used for this finding is the percentage of total transactional flows directed to sanctioned banks in the dataset from which our data is derived.

As shown in Figure 1, there is a steep decline in the incoming transaction flow to these recently sanctioned institutions in the weeks following these sanctions being implemented. Additionally, there is no indication of a significant subsequent rise in incoming transactions into these institutions until the end of the time period for which data is available (October 2022).

At the same time, the value of transactions to sanctioned banks does not drop to zero, oscillating between 0.15% and 0.01% of the transactions in the dataset from April 2022 to October 2022. From a risk management perspective, for the banks involved the identification of these previously undetected transactions was one of the primary goals of the exercise, as they can represent significant risk exposure to future regulatory or law enforcement action.

¹³ See for example [OFAC sanctions announcement on 24th February 2022](#).

¹⁴ For example [UK sanctions announcement on 24th February 2022](#).

Figure 1

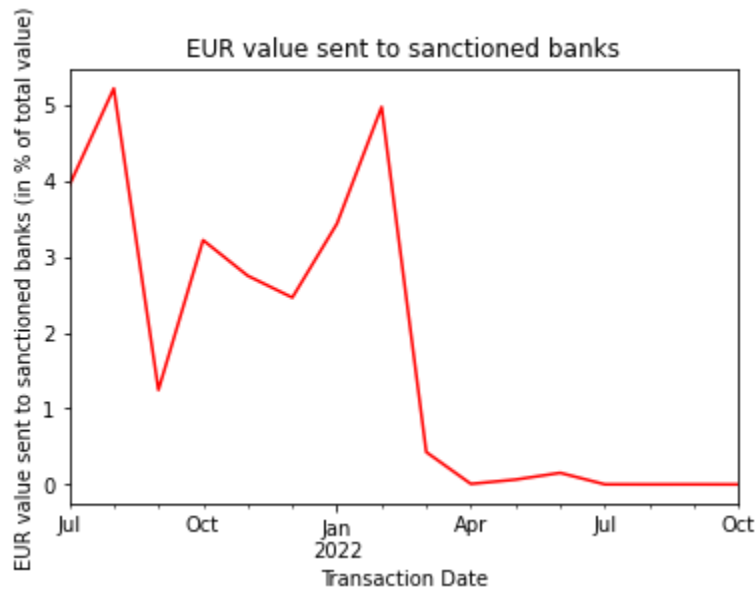


Figure 1: Transactional flows to sanctioned banks before and after the implementation of sanctions due to the Russian invasion of Ukraine. The vertical axis represents funds sent to sanctioned banks in terms of the percentage of total transactions in the dataset, expressed in value (EUR).

In contrast, as shown in Figure 2, the total volume of outgoing transactions originating from recently sanctioned banks and flowing to other banks in the sample shows a more variable pattern over time.

Following a decline in transactional flows originating from these sanctioned institutions in the first two months following February, we observe a rise in outgoing transactional flows from May to July 2022, with flows again falling in August-October 2022.

Figure 2

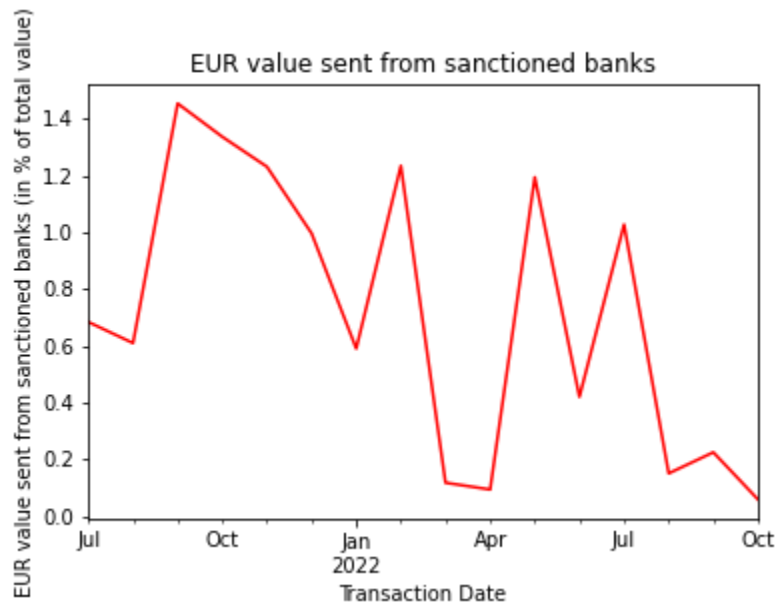


Figure 2: Transactional flows from sanctioned banks before and after the implementation of sanctions due to the Russian invasion of Ukraine. The vertical axis represents flows sent from sanctioned banks in terms of the percentage of global transactional flow in Dataset 1 in value.

It is important to note that the sanctions packages aim to disrupt the overall ability of banks to operate in the international financial system, and do not specify whether affected transactions are inflows or outflows.

For example, U.S. OFAC sanctions on Sberbank require “all U.S. financial institutions to close any Sberbank correspondent or payable-through accounts and to reject any future transactions involving Sberbank or its foreign financial institution subsidiaries.”¹⁵ The third package of E.U. sanctions in March 2022 “excluded seven Russian banks from SWIFT. This will ensure that these banks are disconnected from the international financial system and harm their ability to operate globally”.¹⁶

With this in mind, initial hypotheses to explain the discrepancy on the impact of sanctions on incoming versus outgoing transactions in the sample were related to potential differences within banks’ compliance systems. Was there a reason to assume that banks could more effectively use their own compliance systems to prevent their own customers from sending transactions to sanctioned banks, than control the origins of incoming transactions from sanctioned banks, for example?

¹⁵ See <https://home.treasury.gov/news/press-releases/jy0608>

¹⁶ See <https://www.consilium.europa.eu/en/policies/sanctions/restrictive-measures-against-russia-over-ukraine/story-restrictive-measures-against-russia-over-ukraine/>

From an empirical perspective, upon further research the explanation for the discrepancy was ultimately found to be linked to carve outs and exemptions for payments related to oil and gas, as outlined in the next section.

3. The impact of carve outs and exemptions for energy payments

In order to prevent or mitigate the disruption of energy flows from Russia, both the U.S. and E.U. sanctions included carve outs or exemptions for transactions and banks related to energy payments.

For example, specific Russian banks handling oil and gas payments were not included in the group of banks removed from the SWIFT messaging system at the request of the E.U. in March of 2022. Because the SWIFT messaging system does not allow for differentiating between types or purposes of payment, exemptions were applied to selected “oil and gas” banks as a whole, essentially allowing them to continue operating in the international financial system.¹⁷

While other sanctions did apply to these “oil and gas” banks, which is why we initially marked them as “sanctioned” in the dataset, upon further inspection these exemptions drive the majority of the continued payment flows from sanctioned banks to other banks in the network covered by our dataset.

For the spikes in May and July 2022, in which the total volume of payments from sanctioned banks returned to pre-February 2022 levels, over 90% of the total value of transactions sent from sanctioned banks in the dataset are directed to a single Russian exempted bank operating in the oil and gas sector. Before February 2022, this bank was on average receiving 18% of the total flows in the network.

4. Transactional flows involving Russian banks

Given that sanctions were not applicable to the whole Russian market, we also analysed the effect of sanctions on general transaction flows for all banks in the sample located in Russia.

We observe that the transactional flow into banks in Russia decreased by 83% from February to March 2022, and further decreased by 16% in the month of April. In subsequent months, we observe a slight rise in inward flow to Russian banks, to an average of 16% of pre-February 2022 flows.

For assets flowing out of Russian banks, we also observe a decline after the announcement of the sanctions. The transactional flow dropped by 95% from February to April. But, similar to the finding in the previous section (as seen in Figure 2), we subsequently see a significant rise in

¹⁷ [Blenkinsop, 2022](#): EU bars 7 Russian banks from SWIFT, but spares those in energy

outgoing transactions from Russian banks. By October 2022, outgoing transactions are back up to 66% of the value of transactions sent in February 2022.

As mentioned above, given the privacy restrictions (hashed personal identifying data) in the dataset, we had limited options to analyse the flows at a more granular level.

Despite these restrictions, for outflows from Russian banks we do find substantial differences in the destinations of flows when comparing the declared country of location of the beneficiaries and the country of the financial institutions involved in these outgoing transactions. The discrepancy indicates that individuals in various locations continue to be able to use both domestic and cross-border financial systems to receive funds from Russian banks.

Table 1

<i>Top 5 countries where the beneficiary's financial institution is located for transaction flows out of Russian banks</i>	<i>% of EUR value outflows</i>	<i>Top 5 countries where the beneficiary is located for transaction flows out of Russian banks</i>	<i>% of EUR value outflows</i>
Austria	42%	Turkey	21%
Germany	18%	Cyprus	11%
Turkey	7%	Russia	9%
Cyprus	4%	Armenia	8%
Armenia	3%	United Arab Emirates	7%

Table 1: This table compares the top 5 countries whose financial institutions received the highest value transaction from Russian banks versus the top 5 beneficiary countries (country of origin of beneficiary) which received the highest value transaction from Russian banks from 24th February 2022 to 30th November 2022. The numbers depict the percentage of total EUR value transactions that were sent to these countries.

It is also important to note the shift in both the composition of top destination countries and the volumes transacted. In the two months prior to February 2022 the top 5 countries whose financial institutions received the highest amount of transactions (in value) from Russian banks are Cyprus (64%), Czech Republic (16%), Austria (8%), Latvia (3%), and Moldova (2%). A comparison to the countries listed in Table 1 shows the extent to which destination countries and volumes change.

When we filter the data further to assess transactions from Russian banks where the country of origin of the originator is outside Russia (non-resident originator), we observe a similar discrepancy between the country of the beneficiary's financial institution and the country of the beneficiary's location. This is depicted in Table 2.

Table 2

Top 5 countries where the beneficiary's financial institution is located for transaction flows out of Russian banks by non-resident customers	% of EUR value outflows	Top 5 countries where the beneficiary is located for transaction flows out of Russian banks by non-resident customers	% of EUR value outflows
Austria	56%	United Arab Emirates	66%
Germany	29%	Russia	7%
United States	4%	Hong Kong	5%
Czech Republic	3%	Armenia	4%
Belarus	2%	Czech Republic	3%

Table 2: This table compares the top 5 countries whose financial institutions received the highest value transaction from Russian banks from non-resident customers versus the top 5 beneficiary countries (country of origin of beneficiary) which received the highest value transaction from Russian banks from 24th February 2022 to 30th November 2022. The numbers depict the percentage of total EUR value transactions that were sent to these countries.

Again the data shows a marked shift in destination jurisdictions pre and post February 2022. In December 2021 and January 2022, the top jurisdictions to whose addresses such non-resident customers directed transactions from Russian banks were Singapore (30%), United Arab Emirates (25%), and Cyprus (18%).

Of particular note is that overall we see a 40% rise in transactions from non-resident originators using Russian banks to beneficiaries having addresses in United Arab Emirates. Non-resident originators of transactions flowing out of Russian banks are located mostly in United Arab Emirates (56%) and Cyprus (14%).

5. Analysis and conclusions

In aggregate, financial institutions in the sample show the capacity to implement sanctions relatively swiftly and to a high degree of effectiveness for transactions related to their existing customer portfolios. This can particularly be seen in the scale of the fall in flows from non-sanctioned banks in the data set towards recently sanctioned banks after February 2022.

As mentioned, there is likely selection bias in that the banks in the dataset have extensive correspondent banking networks and high sensitivity to international risks that may affect their cross-border access to the financial system.

At the same time, transaction flows to sanctioned banks do not fall to zero, indicating that outstanding gaps related to sanctions implementation in banks' compliance systems can remain.

Taking a broader sanctions effectiveness perspective, the findings also suggest the potentially high negative impact on overall effectiveness of sector-specific exemptions, such as those for banks handling payments for the oil and gas sectors. When combined with additional factors such as rising oil prices, these exemptions result in substantial inflows to the Russian economy.

The continued use of cross-border transactions across a range of jurisdictions by both originators and beneficiaries with links to Russian banks highlights the importance of a cohesive international approach to effective anti-money laundering and sanctions implementation. Given the generally low country-level effectiveness scores found in FATF Mutual Evaluation Reports, continued international policy efforts will be required to address these challenges.

Overall, this paper shows the potential value of using bulk banking transaction data analysis to understand the dynamics of sanctions implementation in practice in the financial sector. When combined with additional data sources e.g. Suspicious Activity Reports for particular countries of interest, this type of approach could yield useful insights for policy practitioners as well as regulatory and law enforcement authorities.