QUANTIFYING THE IMPACT OF SANCTION ON RUSSIAN ECONOMIC RESILIENCE: USING SYNTHETIC CONTROL METHOD

By Valeriia Dmitrieva

Submitted to Central European University – Private University
Department of Public Policy

In partial fulfilment of the requirements for the degree of Master of Public Policy

Supervisor: Professor Lajos Bokros

Vienna, Austria
2024

Author's Declaration

I, the undersigned, Valeriia Dmitrieva, candidate for Master of Public Policy, declare herewith that the present thesis is exclusively my own work, based on my research.

All sources have been properly credited in the text, notes, and the bibliography. I declare that no unidentified and illegitimate use was made of the work of others, and no part of the thesis infringes on any person's or institution's copyright. Furthermore, I declare that no part of this thesis has been generated using Large Language Models.

I also declare that no part of the thesis has been submitted in this form as coursework for credits or to another institution of higher education for an academic degree.

Date: 03.06.2024
Name: Valeriia Dmitrieva

Signature: _____

Abstract

The research paper investigates the impact of economic sanctions on Russia's economic resilience following the events of 2022. The study examines the effectiveness of sanctions as a policy tool and assesses Russia's capacity to adapt to external economic pressures. By utilizing the Synthetic Control Method, the research creates a synthetic unit to provide a reliable comparison, enhancing the robustness of the findings. The analysis focuses on some macroeconomic indicators as a measurement of economic resilience, offering a view of the short-term and long-term economic consequences of sanctions. The study seeks to contribute insights into economic resilience in conditions of international strategic deterrence as sanctions.

Table of Contents

List of Figures

List of Tables

Introduction

The imposition of economic sanctions against Russia, particularly in response to geopolitical tensions and conflicts, has caused serious debate about their effectiveness and long-term consequences. As an instrument of international diplomacy and economic coercion, sanctions aimed at changing the behaviour of targeted countries by creating economic difficulties.

The modern history of sanctions against Russia began in the post-Cold War era, significantly intensifying after Russia annexed Crimea in 2014 and then the conflict in Eastern Ukraine. The sanctions were imposed by the United States, the European Union, and other Western allies. Moreover, these sanctions targeted a broad range of sectors, including finance, energy, defense, and technology. The primary goal of these sanctions is to weaken Russia's economic potential and put pressure on its political leadership to cease violence.

Following the invasion of Ukraine on February 24, 2022, a new wave of sanctions commenced, characterized by their breadth and depth. These measures encompass a wide range of actions, from Russia's exclusion from the SWIFT financial messaging service to the imposition of oil price ceilings. Despite the relatively short period since these events unfolded, researchers have already initiated analyses to understand the impact of the war and subsequent sanctions on various sectors of the Russian economy and the global economy as a whole.

Researchers have already examined the impact of Russia's invasion of Ukraine on the risks associated with trade disruptions within the global value chain (GVC). Additionally, they have evaluated the vulnerability of countries dependent on Russia as an exporter of raw materials.[1] In addition, there is a study in which it was investigated the side effect of EU economic sanctions on Russia on oil prices and the share prices of energy companies from third countries.[2] In addition, the analysis also examined the impact of financial sanctions on individual bank

[1] Winkler, Deborah, and Lucie Wuester, "Implications of Russia's Invasion of Ukraine for Its Value Chains." In Global Economic Consequences of the War in Ukraine: Sanctions, Supply Chains and Sustainability, ed. Luis Garicano, Dominic Rohner, and Beatrice Weder di Mauro, CEPR Press, 2022.
[2] Li, Ming, Zaixu Zhang, Xiaoyu Wang, and Rui Guo, "Dynamic spillover effects between EU economic sanctions against Russia, oil prices, and share prices of energy companies in third countries: evidence from China and the USA.", *Environmental Science and Pollution Research* (2024).

accounts by utilizing data from the Eurosystem's real-time gross settlement system, TARGET2.[3] Furthermore, there is a research utilizing a CGE model to analyze the impact of energy sanctions and counter-sanctions between the EU and Russia during 2022.[4]

However, despite the existing research, the impact of sanctions on the domestic economic resilience of the sanctioned country remains a subject of ongoing study and analysis. This is because an assessment of how sanctions affect the sanctioned country's economic system's ability to adapt to new circumstances is crucial for policy implementation. Therefore, my research seeks to investigate *how sanctions against Russia influence economic resilience following the events of 2022.*

Nevertheless, the resilience of the Russian economy in the face of sanctions can be evaluated from various perspectives, including macroeconomic indicators, sectoral shifts, and the implementation of structural reforms. Key indicators such as GDP growth, inflation, foreign exchange reserves, and fiscal policy provide insights into both the immediate and long-term economic consequences of sanctions. Moreover, examining Russia's adaptation mechanisms, such as import substitution, diversification of trading partners, and the expansion of domestic production capacity, is crucial in mitigating the adverse effects of these punitive measures.

The research paper seeks to offer a thorough analysis of the economic impacts of sanctions on Russian economic resilience, aiming to foster a deeper comprehension of economic resilience in conditions of international economic coercion. By examining the effectiveness of sanctions as a policy tool and assessing countries' capacity to withstand and adjust to external economic pressures, the research aims to provide insights in this area. Through an in-depth examination of the Russian experience, this study endeavours to inform future policy decisions and strategies concerning the utilization of sanctions in international relations.

From a methodological perspective, this research offers another advantage by employing the Synthetic Control Method. This approach facilitates the creation of a synthetic unit that closely resembles the characteristics of the unit of analysis, allowing for a determination of treatment effect. In situations where finding a perfectly matched comparison unit is challenging, this

[3] Constantin Drott, Stefan Goldbach, and Volker Nitsch, "The effects of sanctions on Russian banks in TARGET2 transactions data.", *Journal of Economic Behavior & Organization* 219 (2024).
[4] Yangyang Chen, Jiexin Jiang, Lei Wang, and Ruisong Wang, "Impact assessment of energy sanctions in geo-conflict: Russian–Ukrainian war.", *Energy Reports* 9 (2023).

method helps prevent erroneous conclusions resulting from the selection of an inappropriate comparative unit. This enhances the reliability and robustness of the study's findings by ensuring that the analysis is based on appropriate comparisons and avoids potential biases.

This study will start by examining the concept of economic resilience, examining its definition and methods of measurement. Subsequently, an exploration of the theory of sanctions will follow, accompanied by an overview of the historical background of sanctions imposed on Russia. The subsequent section will be dedicated to the methodology, offering detailed insights into the selection of variables for analysis and the approach adopted for conducting the analysis. Following the methodology, the study will present a comprehensive analysis of the results obtained. Furthermore, the limitations inherent in this study will be thoroughly discussed, providing transparency and context for the findings. In the final section, conclusions will be drawn, offering insights and interpretations based on the findings presented.

Literature Review

Economic Resilience

1. Definition of the term "Economic Resilience"

In academia, there are many proposed definitions of economic resilience. While these definitions share some similarities, they often emphasize different aspects of the term. It is important to note that the definition of a term always depends on the scientific context within which it is constructed. Therefore, it is crucial that the term is used correctly in public discourse; otherwise, the understanding and application of the concept will be imprecise. Many authors begin their consideration of this concept with the generic term "resilience", which is derived from the Latin verb "resilire", meaning "to leap back", "to spring back", or "to rebound".[5] This foundational meaning underscores the essence of resilience as the capacity to recover from difficulties and return to a stable state.

The concept of "resilience" was first defined by ecologist C.S. Holling in 1973. C. S. Holling proposed that resilience is "the ability or capacity of a system to absorb or cushion against damage or loss".[6] The concept of "resilience" encompasses two primary characteristics: engineering resilience and ecological resilience. Engineering resilience refers to the ability of a system to return to its original state and regain equilibrium in a short period of time. Ecological resilience, on the other hand, refers to a system's capacity to absorb shocks and undergo state changes while preserving its core functions.[7] While both characteristics can be combined into a single definition, they are fundamentally static, making them inadequate for describing socio-economic systems, which are inherently dynamic and continuously evolving.[8] Therefore, a more nuanced understanding of resilience is required to effectively address the complexities of socio-economic systems.

[5] Lino, Briguglio, Gordon Cordina, Nadia Farrugia, and Stephanie Vella, "Conceptualising and Measuring Economic Resilience." In *Pacific Islands Regional Integration and Governance*, ed. Satish Chand, ANU Press, 2005. http://www.jstor.org/stable/j.ctt2jbk3w.11.; Stefan, Kuhls, Kormann da Silva, Nicole, Memmen, Max, Schulze, Nico, Hafele, Jan, Tripathi, Rashi, Temory, Farid, Dirth, Ebba, and Barth, Johannes, "Defining Resilience in Economic Policymaking: Origins and Current Uses." Transformation Policy Brief no. 8 (June 2022). ZOE Institute for Future-fit Economies, Cologne.

[6] Adam, Rose, "Defining and measuring economic resilience to disasters." *Disaster Prevention and Management: An International Journal* 13, no. 4 (2004).

[7] Stefan, Kuhls, Kormann da Silva, Nicole, Memmen, Max, Schulze, Nico, Hafele, Jan, Tripathi, Rashi, Temory, Farid, Dirth, Ebba, and Barth, Johannes, "Defining Resilience in Economic Policymaking: Origins and Current Uses." Transformation Policy Brief no. 8 (June 2022). ZOE Institute for Future-fit Economies, Cologne.

[8] Martin, Ron, and Peter Sunley, "On the Notion of Regional Economic Resilience: Conceptualization and Explanation." Journal of Economic Geography 15, no. 1 (January 2015). https://doi.org/10.1093/jeg/lbu015.

In economics, the concept of "resilience" takes on a new characteristic known as adaptive resilience. This dimension entails the system's ability to adapt by altering its structure, thereby learning from past crisis situations.[9] This adaptive process draws an analogy to the evolutionary learning mechanisms observed in natural systems. This can be seen in businesses being better able to switch resources when needed or in markets becoming stronger through sharing information to help suppliers and customers work together.[10]

It is crucial that in the literature scholars examine the scope of economic resilience. Economic resilience operates at multiple levels within the economic system: microeconomic, mesoeconomic, and macroeconomic. At the microeconomic level, it involves individual behaviors of firms, households, or organizations, such as increasing conservation efforts or seeking alternative supplies during crises. At the mesoeconomic level, it pertains to specific economic sectors, individual markets, or cooperative groups, illustrating how particular industries respond to supply chain disruptions. At the macroeconomic level, it encompasses the entire economy, considering the aggregate effects of all individual units and markets, including the overall stability and recovery capability of the economy.[11] Therefore, this multi-level perspective underscores the multi-dimensional attributes of the concept of economic resilience. By examining economic resilience at microeconomic, mesoeconomic, and macroeconomic levels, we acknowledge that resilience is not a one-size-fits-all concept but rather a complex interplay of various factors operating across different dimensions.

The concept of economic resilience is increasingly integrated into the field of regional economic. Scholars are falling deeper into this concept, recognizing the need for definition that capture the dynamism and adaptability inherent in systems. Consequently, authors identify three primary elements: "ability of an economy to recover quickly", "ability to withstand shocks", "ability of an economy to avoid shocks".[12]

[9] Stefan, Kuhls, Kormann da Silva, Nicole, Memmen, Max, Schulze, Nico, Hafele, Jan, Tripathi, Rashi, Temory, Farid, Dirth, Ebba, and Barth, Johannes, "Defining Resilience in Economic Policymaking: Origins and Current Uses." Transformation Policy Brief no. 8 (June 2022). ZOE Institute for Future-fit Economies, Cologne.
[10] Adam Rose, "Defining and measuring economic resilience to disasters." *Disaster Prevention and Management: An International Journal* 13, no. 4 (2004).
[11] Adam Rose, "Defining and measuring economic resilience to disasters." *Disaster Prevention and Management: An International Journal* 13, no. 4 (2004): 307–314, 308.; Stephane, Hallegatte, "Economic Resilience: Definition and Measurement." *World Bank Policy Research Working Paper* 6852 (2014).
[12] Lino, Briguglio, Gordon Cordina, Nadia Farrugia, and Stephanie Vella, "Conceptualising and Measuring Economic Resilience." In *Pacific Islands Regional Integration and Governance*, ed. Satish Chand, ANU Press, 2005. http://www.jstor.org/stable/j.ctt2jbk3w.11.

The first part — ability to recover quickly, it means how flexible an economy is in bouncing back after a shock. Recovery is harder when there are ongoing issues like big fiscal deficits or high unemployment. However, it is easier when the economy has tools like a strong fiscal position that allows for spending or tax cuts to counteract shocks. This is called "shock-counteraction". The second part — the ability to withstand shocks, it refers to how well an economy can absorb or neutralize the impact of a shock, making its effects minimal. This happens when the economy has built-in mechanisms to respond to negative shocks, such as a flexible and multi-skilled workforce that can shift to sectors with higher demand. This is known as "shock-absorption". The third part — the ability to avoid shocks, this type of resilience is seen as inherent, meaning it naturally reduces economic vulnerability by minimizing exposure to potential shocks.[13]

Economic resilience is a multifaceted and dynamic concept that encompasses various levels and dimensions, highlighting the interconnectedness of different aspects of economic systems. Examining a comprehensive definition, it can be said that the concept includes exposure and sensitivity, which pertain to the likelihood of encountering a shock and the degree to which such a shock impacts the system. Exposure refers to the potential for a system to be affected by a crisis, while sensitivity measures the actual impact on the system's functions. Low sensitivity, or robustness, is achieved through redundancies that buffer the system against shocks, ensuring core functions remain unaffected. Economic resilience also involves recovery, flexibility, capacities, wellbeing, and sustainability. Recovery is not just about returning to a previous state but involves reorganizing to maintain or transition to new functional pathways. Flexibility is crucial for adapting to new circumstances post-crisis, enabling systems to respond creatively and effectively. Capacities refer to the abilities of individuals, communities, and economies to absorb, adapt, or transform in response to shocks, depending on the disturbance's length and intensity. Wellbeing is a central goal of resilience, emphasizing material living standards, health, education, and social connections. Resilient systems minimize negative effects during crises, enhancing overall societal wellbeing. Lastly, sustainability adds a future-oriented dimension, ensuring that current practices do not compromise future generations' ability to meet their needs. Reflecting on these dimensions, it becomes clear that economic resilience is not a static or singular attribute but a dynamic interplay of factors that ensure stability, adaptability, and growth in the face of adversity.[14]

[13] Ibid

[14] Stefan, Kuhls, Kormann da Silva, Nicole, Memmen, Max, Schulze, Nico, Hafele, Jan, Tripathi, Rashi, Temory, Farid, Dirth, Ebba, and Barth, Johannes, "Defining Resilience in Economic Policymaking: Origins and Current Uses." Transformation Policy Brief no. 8 (June 2022), ZOE Institute for Future-fit Economies, Cologne.

2. Indicators of Economic Resilience

The academic literature explores a wide range of indicators to evaluate economic resilience. While GDP is commonly used as a basic economic measure, relying solely on it can be misleading. Authors argue against this narrow approach, they emphasize that higher GDP does not necessarily equate to better resilience during crises. Assessing economic resilience solely through GDP overlooks other crucial factors that may be significantly impacted by crises,[15] such as the ability of households to cope with income losses, the effectiveness of social protection systems, the resilience of infrastructure, and the capacity to mobilize resources for recovery.[16]

Furthermore, GDP per capita also serves as an inadequate indicator for measuring economic resilience. While it provides insight into average economic output per person, it fails to account for critical factors such as income distribution, social inequalities, and overall societal well-being. Moreover, a high GDP per capita does not necessarily ensure resilience to external shocks, such as dependency on specific industries or volatile export markets. Environmental considerations, including natural disasters and climate change, are often disregarded in GDP per capita assessments. Additionally, the quality of governance and levels of social development, which significantly influence resilience, are not adequately represented by GDP per capita alone.[17] Therefore, a comprehensive evaluation of economic resilience demands the inclusion of diverse indicators demanding economic, social, environmental, and governance dimensions, transcending the limitations of GDP per capita analysis.

Examining the indicators utilized by various authors to evaluate economic resilience is necessary. Thus, these indicators include various dimensions, including income and consumption stability, employment resilience, diversification of economic activities, social protection coverage, financial inclusion, infrastructure resilience, resource mobilization capacity, risk management policies, GDP growth, innovation and adaptation, social capital and networks, employment dynamics, income distribution, environmental sustainability, macroeconomic stability, microeconomic market efficiency, good governance, social development, and market efficiency. In doing so, each indicator provides valuable information into different aspects of

[15] Ibid
[16] Stephane Hallegatte, "Economic Resilience: Definition and Measurement." *World Bank Policy Research Working Paper* 6852 (2014).
[17] Lino, Briguglio, Gordon Cordina, Nadia Farrugia, and Stephanie Vella, "Conceptualising and Measuring Economic Resilience." In *Pacific Islands Regional Integration and Governance*, ed. Satish Chand, ANU Press, 2005. http://www.jstor.org/stable/j.ctt2jbk3w.11.

economic resilience, ranging from the stability of income and employment to the strength of social connections and the sustainability of environmental practices. For instance, macroeconomic stability indicators such as fiscal deficit to GDP ratio and inflation rates shed light on a country's ability to manage its finances and stabilize its economy in times of crisis. Similarly, microeconomic market efficiency indicators like regulation of credit, labor, and business reflect the resilience of individual markets and their capacity to adapt to changing conditions. Moreover, social development indicators, such as education and healthcare access, play a crucial role in enhancing human capital and workforce productivity, thereby increasing economic resilience. Environmental sustainability indicators highlight the importance of sustainable resource management and environmental protection in building long-term resilience to environmental shocks.[18]

3. Economic Resilience Index

With the identification of key indicators, the groundwork is laid for constructing an index to measure economic resilience. This index serves as a comprehensive tool, combining diverse indicators to evaluate a country's capacity to endure and rebound from economic shocks and adversities. The process of developing the Economic Resilience Index entails carefully selecting pertinent indicators within each component, determining their relative significance through appropriate weighting, and combining them into a unified composite score.[19]

Various approaches exist for constructing such an index. One example is the European Commission's resilience dashboards, designed to evaluate indicators of economic resilience among EU members across four domains: socio-economic, environmental, digital, and geopolitical. However, this tool falls short in combined indicators into a unified composite measure. Additionally, it lacks a consistent definition of economics when assessing economic resilience, although, it is crucial to clarify which aspects of the economy require resilience.[20]

[18] Stephane Hallegatte, "Economic Resilience: Definition and Measurement." *World Bank Policy Research Working Paper* 6852 (2014).; Lino, Briguglio, Gordon Cordina, Nadia Farrugia, and Stephanie Vella, "Conceptualising and Measuring Economic Resilience." In *Pacific Islands Regional Integration and Governance*, ed. Satish Chand, ANU Press, 2005. http://www.jstor.org/stable/j.ctt2jbk3w.11.; Martin, Ron, and Peter Sunley, "On the Notion of Regional Economic Resilience: Conceptualization and Explanation.", Journal of Economic Geography 15, no. 1 (January 2015). https://doi.org/10.1093/jeg/lbu015.

[19] Lino, Briguglio, Gordon Cordina, Nadia Farrugia, and Stephanie Vella, "Conceptualising and Measuring Economic Resilience." In *Pacific Islands Regional Integration and Governance*, ed. Satish Chand, ANU Press, 2005. http://www.jstor.org/stable/j.ctt2jbk3w.11

[20] Jürgen Hafele, Lara Bertram, Nadia Demitry, Luc-André Le Lannou, Lucie Korinek, and Joachim Barth, The Economic Resilience Index: Assessing the Ability of EU Economies to Thrive in Times of Change (Cologne: ZOE Institute for Future-fit Economies, 2023).

The think tank "ZOE for Future-fit Economies" has developed an Economic Resilience Index, which defines a resilient system by its capacity to absorb, recover, and adapt to shocks. The index comprises six dimensions: Economic Independence, Education & Skills, Financial Resilience, Governance, Production Capacity, and Social Progress and Cohesion. In addition, each dimension encompasses several determinants and indicators (See Table 1). [21]

Table 1. The overview of Resilience Dimensions and Determinants[22]

Economic Independence	• Economic Complexity • Energy independence • Export market diversity • Supply chain vulnerability • Natural resources access
Education & Skills	• Skills • Reskilling • Education quality • Research & Development
Financial Resilience	• Corporate finances • Household finances • Public finances • Financial equality
Governance	• Government effectiveness • Institutional quality • International collaboration • Welfare state quality
Production Capacity	• Employment • ICT capacity • Innovation • Investment
Social Progress and Cohesion	• Economic participation • Employment quality • Gender equality • Social cohesion • Regional cohesion • Trust

For this study, I will adopt the definitions and indicators established by the think tank "ZOE for Future-fit Economies" as they offer a comprehensive coverage of the concept of economic

[21] Ibid
[22] Ibid

resilience. However, during the research process, I faced challenges with data collection, particularly due to the absence, scarcity, and inconsistency of data for the selected countries included in the donor pool. This issue will be further elucidated in the subsequent sections of this study, where I will provide detailed insights into the challenges encountered.

Sanctions as an international policy tool: historical background

4. Definition and types of sanctions

The definition of the term "sanctions" varies depending on the context. In one sense, sanctions can refer to economic and political measures imposed by one country or a group of countries against another country or entity. From an international legal perspective, sanctions are coercive measures taken in response to a violation of international law, implemented based on a decision by a competent public authority authorized to act on behalf of a governed community[23]. Sanctions are often used as a foreign policy tool to force a change in the behavior, policies, or actions of the target party. They can encompass a wide range of actions, including economic, financial, commercial, diplomatic, or military measures, aimed at achieving specific objectives. These goals may include ensuring compliance with international law, deterring certain behaviors, or promoting peace and security.[24]

The use of sanctions as an instrument of influence on states or organizations became more noticeable after World War II. Before the 1980s, the UN had imposed economic sanctions only twice. However, after the Cold War, the UN Security Council intensified its use of sanctions, particularly following Iraq's invasion of Kuwait in 1990, leading to the 1990s being termed the "decade of sanctions". Concurrently, non-UN sanctions, especially those from the United States and regional organizations such as the EU and the African Union, also became more prominent.[25]

Sanctions can be categorized based on various criteria, including the number of participating countries, the targeted areas, and their specific nature. Autonomous sanctions, also known as unilateral sanctions, are imposed by individual states, groups of states, or regional organizations without a mandate from the United Nations Security Council. These sanctions are grounded in

[23] Asada, Masahiko. "Definition and legal justification of sanctions." In *Economic sanctions in international law and practice*, pp. 3-23. Routledge, 2019.
[24] Ibid
[25] Ibid

domestic legislation and policies of the imposing entity and may not be universally binding.[26] Examples include U.S. sanctions on Cuba and EU sanctions on Russia for its actions in Ukraine. They have gained popularity in international relations as tools for addressing issues without waiting for UN action, reflecting a trend towards decentralized sanctions application.[27] While unilateral sanctions may lack broad international support, multilateral sanctions involve several countries or international organizations like the UN or the EU. They are based on collective decisions and have strong legal backing, ensuring greater international legitimacy.[28] Examples include UN sanctions on North Korea for its nuclear program and EU sanctions on Iran, enacted jointly with the United States to curb its nuclear activities. In addition, the EU's collaboration with international players such as the United States, ECOWAS, the African Union, and the Arab League often enhances the impact and global legitimacy of sanctions.[29]

As mentioned before, sanctions encompass a variety of measures, including economic, diplomatic, military, sporting, cultural, sectoral, smart, or targeted, and comprehensive approaches, each serving specific strategic goals aimed at enforcing compliance with international law, deterring undesirable behavior, and promoting peace and security.[30] Economic sanctions, for instance, scan range from export and import ban to severe financial restrictions and dual-use limitations. These measures disrupt regular economic exchanges between sender and recipient entities. Conversely, non-economic sanctions, such as travel bags and arms embargo, do not directly impact economic transactions but aim to restrict other activities or behaviors of the targeted party.

As earlier mentioned, one of the crucial classification of sanctions is the division into comprehensive and targeted categories. These types of sanctions differ significantly in scope, objectives, effectiveness, and political economy. Targeted sanctions focus on specific individuals, organizations, or sectors within a country to pressure key decision-makers or regime supporters to change their behavior or policies.[31] In contrast, comprehensive trade sanctions impose

[26] Ibid
[27] Ibid
[28] Thomas Biersteker, and Clara Portela, "EU Sanctions in Context: Three Types." European Union Institute for Security Studies (EUISS), 2015. http://www.jstor.org/stable/resrep06822.
[29] Ibid
[30] Katharina Meissner, "How to sanction international wrongdoing? The design of EU restrictive measures.", *The Review of International Organizations* 18, no. 1 (2023).
[31] Daniel W. Drezner, "Sanctions Sometimes Smart: Targeted Sanctions in Theory and Practice.", *International Studies Review* 13, no. 1 (2011). http://www.jstor.org/stable/23016144.; Daniel P. Ahn, and Rodney D. Ludema, "The sword and the shield: The economics of targeted sanctions.", *European Economic Review* 130 (2020).; Dan G. Cox, and A. Cooper Drury, "Democratic sanctions: Connecting the democratic peace and economic sanctions.", *Journal of Peace Research* 43, no. 6 (2006).

widespread restrictions on trade and economic activities with an entire country, impacting the general population. While targeted sanctions aim to minimize collateral damage by specifically targeting actors within the regime, comprehensive trade sanctions create economic hardship for the entire population with the hope of prompting political change.[32]

Thus, scholars examine the impact of economic sanctions on public health in target societies, comparing these effects to those of military conflict. They assess whether sanctions negatively impact the public health of target populations and argue for the introduction of reasonable sanctions and humanitarian exceptions to mitigate negative consequences and minimize harm to civilians.[33] However, some researchers indicate that while targeted sanctions may be more humane, they are often less effective at compelling concessions from the target government compared to comprehensive sanctions.[34]

Moreover, targeted sanctions are considered more appropriate for authoritarian regimes, where key elites can be targeted without harming the population.[35] Applying the Wintrobe's dictatorship model, which point out that an autocrat relies on repression and loyalty to maintain power, researchers suggest that if sanctions inadvertently increase the dictator's budget by altering trade terms, they can strengthen his position. Economic damage to society can weaken internal opposition and enhance the regime's ability to suppress dissent, lowering the cost of repression and substituting it for loyalty. However, if sanctions restrict the regime's access to repressive tools like police and military equipment or bolster opposition forces, the cost of repression may rise. The impact on loyalty depends on the response of internal interest groups. Pro-government groups may increase their support to capture sanctioned rents, reducing the cost of gaining loyalty. Conversely, opposition groups may resist more or withdraw support, raising the price of loyalty for the regime. Repression, by reducing overall well-being, affects the supply of loyalty through the income effect.[36] Conversely, comprehensive trade sanctions can have a distributional

[32] Daniel W. Drezner, "Sanctions Sometimes Smart: Targeted Sanctions in Theory and Practice.", *International Studies Review* 13, no. 1 (2011). http://www.jstor.org/stable/23016144.
[33] Susan Hannah Allen, , and David J Lektzian, "Economic Sanctions: A Blunt Instrument?", *Journal of Peace Research* 50, no. 1 (2013). http://www.jstor.org/stable/23441161.
[34] Daniel W. Drezner, "Sanctions Sometimes Smart: Targeted Sanctions in Theory and Practice.", *International Studies Review* 13, no. 1 (2011). http://www.jstor.org/stable/23016144.
[35] Daniel W. Drezner, "Sanctions Sometimes Smart: Targeted Sanctions in Theory and Practice.", *International Studies Review* 13, no. 1 (2011). http://www.jstor.org/stable/23016144..; William H. Kaempfer, and Anton D. Lowenberg, "The political economy of economic sanctions.", *Handbook of defense economics* 2 (2007).
[36] Kaempfer, William H., and Anton D. Lowenberg. "The political economy of economic sanctions." *Handbook of defense economics* 2 (2007): 867-911.

effect that benefits regime supporters and minimizes their overall impact on the target government.[37]

To sum up, "Smart" sanctions emerged as a response to the failures of previous sanctions episodes, leading to innovations in economic management and a more nuanced approach to their implementation. By balancing political incentives among stakeholders, "smart" sanctions have improved policy coordination and decision-making, ultimately aiming to achieve political goals while minimizing negative consequences for the general population.[38] In Libya, targeted sanctions compelled the country to abandon its support for terrorism and weapons of mass destruction programs through a multifaceted approach that included negotiations and the threat of invasion. Similarly, arms embargoes, such as those imposed on Angola from 1993 to 2003, successfully halted arms shipments, demonstrating the effectiveness of targeted sanctions during civil wars.[39]

5. **Impact of Sanctions on National Economies**

Sanctions wield a significant influence over both the economic stability and political dynamics of the targeted country. Their effectiveness depends on numerous factors, including the level of cooperation among the sanctioning nations and the resilience and countermeasures adopted by the targeted nation. However, determining the effectiveness of sanctions and their impact on the national economy remains complex due to the multitude of variables at play.

The researchers put forward two theoretical explanations regarding the effects of economic sanctions on the economies of target countries. One perspective points out that economic coercion through sanctions can cause substantial economic harm on the target nation, compelling its leaders to change their unfavorable foreign policy behaviour. According to this theory, imposing economic costs on the target can influence its decision-making process. However, an alternative viewpoint suggests that the flexibility of capital, goods, and the efficiency of global markets may mitigate the adverse impact of sanctions on target economies. This perspective argues that if there exists elasticity in the supply and demand for goods traded internationally,

[37] Daniel W. Drezner, "Sanctions Sometimes Smart: Targeted Sanctions in Theory and Practice.", *International Studies Review* 13, no. 1 (2011). http://www.jstor.org/stable/23016144.
[38] Daniel W. Drezner, "Sanctions Sometimes Smart: Targeted Sanctions in Theory and Practice.", *International Studies Review* 13, no. 1 (2011). http://www.jstor.org/stable/23016144.; Daniel P. Ahn, and Rodney D. Ludema, "The sword and the shield: The economics of targeted sanctions.", *European Economic Review* 130 (2020).
[39] Daniel W. Drezner, "Sanctions Sometimes Smart: Targeted Sanctions in Theory and Practice.", *International Studies Review* 13, no. 1 (2011). http://www.jstor.org/stable/23016144.

along with a high degree of substitution elasticity, the economic challenges stemming from sanctions can be restricted.[40]

Sanctions can have a profound impact on national economies, causing significant economic disruptions. These disruptions often manifest as reduced trade and restricted access to financial markets. Consequently, these factors contribute to slower economic growth, higher inflation rates, currency depreciation, and increased unemployment levels.[41] Furthermore, sanctions can result in capital outflows and a decrease in foreign investment and technological advancement. These outcomes can have adverse effects on the country's foreign exchange reserves and exchange rate stability.[42] For instance, researchers have examined the impact of different sanctions on the level of innovation activity in target countries. Economic sanctions are found to significantly prevent innovation activities by limiting international exchanges, trade flows, and technology imports, directly impacting the economy of the target country.[43]

Additionally, sanctions have a notable adverse effect on energy security in the target countries, resulting in increased energy imports and oil reserves. Furthermore, sanctions obstruct access to essential resources and markets, preventing job creation and sustainable development, particularly in crucial sectors like energy, agriculture, and manufacturing.[44] Sanctions targeting the military sector, like an arms embargo may weaken a country's armed forces, while sanctions can facilitate import-substituting industrialization, benefiting specific sectors but potentially at the expense of consumers and the overall economy.[45]

---

[40] Geiguen Shin, Seung-Whan Choi, and Luo, "Do Economic Sanctions Impair Target Economics?" *International Political Science Review / Revue Internationale de Science Politique* 37, no. 4 (2016). http://www.jstor.org/stable/44632320.

[41] Francesco Giumelli, "How Do Sanctions Work?" *How EU Sanctions Work: A New Narrative*. European Union Institute for Security Studies (EUISS), 2013. http://www.jstor.org/stable/resrep06969.6.; Anton Filipenko, Olena Bazhenova, and Roman Stakanov, "ECONOMIC SANCTIONS: THEORY, POLICY, MECHANISMS"., *Baltic Journal of Economic Studies* 6 (2), (2020). https://doi.org/10.30525/2256-0742/2020-6-2-69-80.; Wen, Jun, Xinxin Zhao, Quan-Jing Wang, and Chun-Ping Chang, "The impact of international sanctions on energy security." *Energy & Environment* 32, no. 3 (2021).; Risa A. Brooks, 2002. "Sanctions and Regime Type: What Works, and When?" *Security Studies* 11 (4): 1–50. doi:10.1080/714005349.

[42] Wen, Jun, Xinxin Zhao, Quan-Jing Wang, and Chun-Ping Chang, "The impact of international sanctions on energy security." *Energy & Environment* 32, no. 3 (2021): 458-480.; Risa A. Brooks, 2002. "Sanctions and Regime Type: What Works, and When?" *Security Studies* 11 (4): 1–50. doi:10.1080/714005349.

[43] Wen, Jun, Xinxin Zhao, and Chun-Ping Chang, "The impact of international sanctions on innovation of target countries." *Economics & Politics* (2022).

[44] Ibid

[45] Risa A. Brooks, 2002. "Sanctions and Regime Type: What Works, and When?" *Security Studies* 11 (4): 1–50. doi:10.1080/714005349.

Economic sanctions wield considerable influence over the global socio-economic landscape. They can prevent GDP growth and stop business sector development in targeted nations, resulting in unemployment and economic turbulence. Concurrently, political sanctions can destabilize the targeted country's political system, potentially inciting social unrest.[46] Although, sanctions can have varying impacts on different segments of the population. While the elites may find ways to shield themselves from the effects, the poorest strata often bear the brunt of the consequences.[47]

Also, sanctions influence the allocation of resources as businesses and individuals adjust to changing circumstances. The ripple effect extends globally, impacting international trade, investment, and financial markets.[48]

6. The imposition of sanctions against Russia: overview

Sanctions before 2014

One of the most significant waves of sanctions against Russia occurred in response to the annexation of Crimea in 2014, and the subsequent conflict in eastern Ukraine. These sanctions, imposed by the member states of the European Union and the United States in 2014, were extensive and multifaceted. They encompassed economic sanctions along with sectoral ones targeting key areas such as the financial sector and defense. Additionally, travel bans, and asset freezes were imposed on individuals and entities implicated in the events. Over time, other countries including Canada, Norway, and Australia also joined in imposing similar measures.[49]

The initial wave of sanctions in March 2014 comprised measures such as travel restrictions, asset freezes, and a ban on business dealings with specific individuals and entities, particularly those situated in Crimea and Sevastopol. Following the tragic crash of Malaysian Airlines flight MH-17, subsequent sanctions imposed in July and August 2014 escalated in severity. These included restrictions on debt financing for several major Russian companies, as well as bans on the export

[46] Anton Filipenko, Olena Bazhenova, and Roman Stakanov, "ECONOMIC SANCTIONS: THEORY, POLICY, MECHANISMS"., *Baltic Journal of Economic Studies* 6 (2), (2020). https://doi.org/10.30525/2256-0742/2020-6-2-69-80

[47] Risa A. Brooks, 2002. "Sanctions and Regime Type: What Works, and When?" *Security Studies* 11 (4): 1–50. doi:10.1080/714005349.

[48] Anton Filipenko, Olena Bazhenova, and Roman Stakanov, "ECONOMIC SANCTIONS: THEORY, POLICY, MECHANISMS"., *Baltic Journal of Economic Studies* 6 (2), (2020). https://doi.org/10.30525/2256-0742/2020-6-2-69-80

[49] Iikka Korhonen,"Economic sanctions on Russia and their effects." In *CESifo Forum*, vol. 20, no. 04, pp. 19-22. München: ifo Institut–Leibniz-Institut für Wirtschaftsforschung an der Universität München, 2019.

and import of weapons, dual-use military goods, and certain items associated with oil exploration and production.[50]

An important aspect of the sanctions was the curtailment of long-term financing for Russian companies not directly involved in the conflict in Donetsk and Luhansk regions. Investors from the EU and the United States were barred from providing long-term financing to specific Russian entities, including major banks like Sberbank and VTB, as well as companies in the oil and military sectors. In response, Russia enacted its own countersanctions, including restrictions on importing certain food products from sanctioned countries. These countersanctions aligned with Russia's pre-existing import substitution strategy, which was in place before the sanctions were imposed.[51]

Furthermore, the sanctions imposed by the EU and the United States have had a considerable adverse effect on Russia's trade with EU countries, impacting both exports and imports. However, the influence on Russia's trade with the United States was comparatively minor in comparison to its trade with the EU. Despite these disruptions, the structure of Russia's commodity exports and imports remained relatively stable between 2012 and 2019, with changes primarily observed in trade volumes rather than the composition of traded goods.[52]

The countersanctions imposed by the Russian Federation in response to economic sanctions also significantly impact its imports. According to the study, these countersanctions led to a decrease in the cost of importing agricultural products by 54.52% and a decrease in the cost of importing non-agricultural products by 20.86%. This indicates a notable effect of countersanctions on both the composition and volume of imports to the Russian Federation.[53]

Economic sanctions have resulted in a decrease in the value of exports from the Russian Federation by approximately 25.25%. Specifically, the sanctions have had a significant impact on the export of petroleum products, which decreased in value by about 36.56%.[54] Although the sanctions primarily targeted oil projects, they did not impact the development and production of natural gas. This decision was made to prevent a potential energy crisis in Europe causing from a

[50] Iikka Korhonen,"Economic sanctions on Russia and their effects." In *CESifo Forum*, vol. 20, no. 04, pp. 19-22. München: ifo Institut–Leibniz-Institut für Wirtschaftsforschung an der Universität München, 2019.
[51] Ibid
[52] Ibid
[53] Trung Thanh Nguyen, and Manh Hung Do, "Impact of economic sanctions and counter-sanctions on the Russian Federation's trade." *Economic Analysis and Policy* 71 (2021).
[54] Ibid

decrease in Russian natural gas supplies. Consequently, Russian gas supplies to Europe remained plentiful, with gas exports reaching record levels in 2016 and 2017.[55]

In response to these sanctions, Russia adopted a strategic approach known as the "turn East" strategy. This tactic aimed to diversify Russia's trade relations away from Western partners towards Eastern countries, with a particular emphasis on strengthening ties with China. While this strategy has demonstrated some progress in expanding trade and investment relations with Eastern partners, the study indicates that its full implementation has not met expectations.[56]

Sanctions after February 2022

The European Union has implemented sanctions targeting key sectors of the Russian economy aiming of undermining its economic foundation, limiting its military capabilities, and putting pressure on its political and economic elite. These sanctions notably affect the energy sector, where restrictions hinder technology transfer and investment in oil and gas exploration and production. Additionally, the financial sector faces constraints on transactions with Russian state-owned banks, trading in Russian sovereign bonds, and lending to major Russian corporations. Also, the military-industrial complex is impacted, with bans on dealings with select Russian state-owned military-industrial enterprises. Moreover, restrictions extend to the export of dual-use goods/technologies, weapons, civilian firearms, ammunition, military equipment, and paramilitary gear in the technology sector. Furthermore, certain exports in aviation, maritime, and technology domains are prohibited. Personalized sanctions, including asset freezes and travel bans, have been imposed on nearly 1,800 individuals and entities, encompassing Russian officials, elite figures, and propagandists.[57]

[55] Council, Atlantic, "IMPACT OF SANCTIONS ON RUSSIA'S ENERGY SECTOR." (2018).
[56] Olena, Sokolovska. "Economic sanctions against Russia: assessing the policies to overcome their impact." *Экономика региона* 16, no. 4 (2020).
[57] Anna, Caprile, and D. E. L. I. V. O. R. I. A. S. Angelos, "EU sanctions on Russia: Update, economic impact and outlook." (2023).

Table 2. The list of EU sanctions packages against Russia

First Sanctions Package (February 2022)[58]	**Targeted individuals undermining Ukraine's territorial integrity** **Financial restrictions on Russian transactions and Central Bank limitations** **Sectoral sanctions on specific technologies and services**
Second Sanctions Package (February 2022)[59]	Expanded individual sanctions SWIFT ban on certain Russian banks Asset freezes and increased scrutiny on oligarchs and politicians
Third Sanctions Package (March 2022)[60]	Ban on aerospace technology exports Prohibition on luxury goods exports to Russia Energy sector measures including restrictions on equipment and technology
Fourth Sanctions Package (March 2022)[61]	Additional SWIFT bans on Russian banks Sanctions on Russian state-owned media to prevent misinformation Expanded sectoral sanctions on sensitive dual-use goods
Fifth Sanctions Package (April 2022)[62]	Embargo on Russian coal imports Restrictions on Russian ship access to EU ports

[58] European Council. "Russian recognition of the non-government-controlled areas of the Donetsk and Luhansk oblasts of Ukraine as independent entities: EU adopts package of sanctions." Press release, February 23, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/02/23/russian-recognition-of-the-non-government-controlled-areas-of-the-donetsk-and-luhansk-oblasts-of-ukraine-as-independent-entities-eu-adopts-package-of-sanctions/.

[59] European Council. "Russia's military aggression against Ukraine: EU imposes sanctions against President Putin and Foreign Minister Lavrov and adopts wide-ranging individual and economic sanctions." Press release, February 25, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/02/25/russia-s-military-aggression-against-ukraine-eu-imposes-sanctions-against-president-putin-and-foreign-minister-lavrov-and-adopts-wide-ranging-individual-and-economic-sanctions/.

[60] European Council. "Russia's military aggression against Ukraine: Council imposes sanctions on 26 persons and one entity." Press release, February 28, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/02/28/russia-s-military-aggression-against-ukraine-council-imposes-sanctions-on-26-persons-and-one-entity/.

[61] European Council. "Russia's military aggression against Ukraine: Fourth EU package of sectoral and individual measures." Press release, March 15, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/03/15/russia-s-military-aggression-against-ukraine-fourth-eu-package-of-sectoral-and-individual-measures/.

[62] European Council. "EU adopts fifth round of sanctions against Russia over its military aggression against Ukraine." Press release, April 8, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/04/08/eu-adopts-fifth-round-of-sanctions-against-russia-over-its-military-aggression-against-ukraine/.

	Further financial restrictions on state-owned enterprises
Sixth Sanctions Package (May 2022)[63]	Phased embargo on Russian oil Ban on broadcasting certain Russian state media channels Extended financial sanctions on banking sectors
Seventh Sanctions Package (July 2022)[64]	Ban on Russian gold imports Strengthened controls on advanced technology exports Focused sanctions on Russian elites and families
Eighth Sanctions Package (October 2022)[65]	Expanded import prohibitions on steel products New export bans on electronic components and chemicals Price cap on Russian oil sold to third countries
Ninth Sanctions Package (December 2022)[66]	Bans on export of dual-use goods and advanced technology Expanded sanctions on individuals and entities
Tenth Sanctions Package (February 2023)[67]	Enhanced restrictions on advanced manufacturing technology Increased banking sanctions limiting SWIFT access

[63] European Council. "Russia's aggression against Ukraine: EU adopts sixth package of sanctions." Press release, June 3, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/06/03/russia-s-aggression-against-ukraine-eu-adopts-sixth-package-of-sanctions/.
[64] European Council. "Russia's aggression against Ukraine: EU adopts maintenance and alignment package." Press release, July 21, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/07/21/russia-s-aggression-against-ukraine-eu-adopts-maintenance-and-alignment-package/.
[65] European Council. "EU adopts its latest package of sanctions against Russia over the illegal annexation of Ukraine's Donetsk, Luhansk, Zaporizhzhia, and Kherson regions." Press release, October 6, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/10/06/eu-adopts-its-latest-package-of-sanctions-against-russia-over-the-illegal-annexation-of-ukraine-s-donetsk-luhansk-zaporizhzhia-and-kherson-regions/.
[66] European Council. "Russia's war of aggression against Ukraine: EU adopts 9th package of economic and individual sanctions." Press release, December 16, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/12/16/russia-s-war-of-aggression-against-ukraine-eu-adopts-9th-package-of-economic-and-individual-sanctions/.
[67] European Council. "One year of Russia's full-scale invasion and war of aggression against Ukraine: EU adopts its 10th package of economic and individual sanctions." Press release, February 25, 2023. https://www.consilium.europa.eu/en/press/press-releases/2023/02/25/one-year-of-russia-s-full-scale-invasion-and-war-of-aggression-against-ukraine-eu-adopts-its-10th-package-of-economic-and-individual-sanctions/.

	Specific restrictions on Russian vessels in EU ports
Eleventh Sanctions Package (May 2023)[68]	Additional bans on luxury goods and industrial products Further reduction in Russian energy imports Sanctions extended to cultural and scientific institutions
Twelfth Sanctions Package (July 2023)[69]	Broader prohibitions on military and technical goods Comprehensive asset freezes and travel bans Sanctions on third-country entities assisting Russia

In response to Russia's aggression, the United States has also implemented a series of stringent sanctions, targeting various aspects of Russia's financial systems, corporations, elite members, and pivotal sectors of its economy. These measures are designed to economically isolate Russia, dissuade further acts of aggression, and diminish its capacity to sustain the ongoing conflict.

Table 3. The overview of U.S. sanctions against Russia[70]

Financial and Banking Sanctions	• Asset Freezes and Restrictions: The U.S. froze assets of the Russian Central Bank held in the United States, severely limiting Russia's ability to access its international reserves and defend the ruble. • SWIFT Ban: In coordination with European allies, the US supported the removal of select Russian banks from the SWIFT international banking system, disrupting Russia's ability to conduct international financial transactions. • Sanctions on Major Banks: Comprehensive blocking sanctions were placed on major Russian financial institutions, including VTB,

[68] European Council. "Russia's war of aggression against Ukraine: EU adopts 11th package of economic and individual sanctions." Press release, June 23, 2023. https://www.consilium.europa.eu/en/press/press-releases/2023/06/23/russia-s-war-of-aggression-against-ukraine-eu-adopts-11th-package-of-economic-and-individual-sanctions/.

[69] European Council. "Russia's war of aggression against Ukraine: EU adopts 12th package of economic and individual sanctions." Press release, December 18, 2023. https://www.consilium.europa.eu/en/press/press-releases/2023/12/18/russia-s-war-of-aggression-against-ukraine-eu-adopts-12th-package-of-economic-and-individual-sanctions/.

[70] "International sanctions during the Russo-Ukrainian War." Wikipedia. Wikimedia Foundation, May 26, 2024. https://en.wikipedia.org/wiki/International_sanctions_during_the_Russo-Ukrainian_War.

	the second-largest bank in Russia, as well as others like Sberbank, Alfa Bank, and Gazprombank.
Sectoral Sanctions	• Energy Sector: The US targeted Russian energy producers and exporters with technology and service restrictions. In March 2022, the US banned all imports of Russian oil, natural gas, and coal to the United States. • Technology and Defense: Extensive export controls were placed on technology crucial to Russian military operations and high-tech industries. This included restrictions on semiconductors, telecommunications equipment, lasers, sensors, and other high-tech items.
Targeted Sanctions on Individuals and Entities	• Oligarchs and Elites: The US imposed visa restrictions and asset freezes on Russian oligarchs, government officials, and their families. These measures targeted those directly responsible for supporting the war effort or who had significant influence in the Russian government. • Corruption and Illicit Activities: The US Treasury also targeted companies and individuals involved in supporting Russian military activities, engaging in disinformation campaigns, or participating in corruption.
Comprehensive Trade Restrictions	• Export Bans: The US banned exports of specific goods and technology that could aid Russia's military capabilities, including advanced electronics, software, and aerospace components. • Import Restrictions: Besides energy products, the US also prohibited the import of Russian seafood, alcohol, and diamonds, further cutting off economic exchanges.

Methodology

7. Data and data collection

The data utilized for the research was collected from various databases, with the primary source being the International Monetary Fund (IMF) World Economic Outlook Database[71]. This comprehensive dataset encompasses a wide range of economic indicators. From this source, specific indicators were selected, focusing on key aspects of economic resilience.

The selected indicators include Gross Domestic Product (GDP) per capita, providing insight into the economic output per person in terms of current prices in U.S. dollars. Total investment and gross national savings, both presented as percentages of GDP, offer perspectives on investment and saving behaviors within the economy. In addition, it was taken inflation, measured as the average consumer price change. The volume of imports and exports of goods and services, presented as percentage changes, show the trade dynamics and external economic relationships. Additionally, the current account balance as a percentage of GDP provides an indication of the country's overall external balance. Government revenue and expenditure as percentages of GDP reflect fiscal policy and government financial management of the country. The general government's primary net lending/borrowing as a percentage of GDP offers insights into fiscal sustainability, while the general government's gross debt as a percentage of GDP indicates the level of government indebtedness.

Furthermore, data on the exchange rate in U.S. dollars, sourced from additional IMF database resources[72], was included. Moreover, external datasets were utilized to incorporate information on the Rule of Law from "Our World in Data" database[73] and the Economic Complexity Index[74], providing contextual factors influencing economic performance and development. Also, data on total natural resources rents (% of GDP) from World Bank was included.[75]

[71] International Monetary Fund. "World Economic Outlook Database." Accessed April 2024. https://www.imf.org/en/Publications/WEO/weo-database/2024/April.
[72] International Monetary Fund. "IMF Data Portal." Accessed 23 April 2024. https://data.imf.org/?sk=7a51304b-6426-40c0-83dd-ca473ca1fd52.
[73] Our World in Data. "Rule of Law Index." Accessed 23 April 2024. https://ourworldindata.org/grapher/rule-of-law-index.
[74] Center for International Development (CID), Harvard University. "Glossary." Accessed 23 April 2024. https://atlas.cid.harvard.edu/glossary.
[75] World Bank. "Total Natural Resources Rents (% of GDP)." Accessed 23 April 2024. https://data.worldbank.org/indicator/NY.GDP.TOTL.RT.ZS.

All data underwent preprocessing and cleaning procedures, ensuring accuracy and consistency. Additionally, it was reformatted to adhere to the required format for subsequent analysis. Furthermore, all the data was consolidated into a unified.

8. Synthetic Control Method

There are various quantitative methods to assess causal impact, such as Difference-in-Difference (DiD), Matching, and Regression Discontinuity Design. However, in this study, I used the Synthetic Control Method (SCM). SCM is a statistical technique used to evaluate the effect of an intervention or treatment when a randomized controlled trial is not feasible. It is particularly useful in fields like economics, political science, and public policy. In SCM, the synthetic version of the treatment unit is constructed by combining data from a weighted set of control units that did not receive the intervention. These weights are determined through optimization algorithms to ensure that the synthetic unit closely matches the pre-intervention characteristics of the treatment unit. The weighted set of control units serves as a reference group, providing a counterfactual scenario against which the impact of the intervention on the treatment unit can be evaluated.[76] By assigning weights to each control unit, SCM aims to create a synthetic unit that replicates the pre-intervention characteristics of the treatment unit as closely as possible, thereby enabling a reliable estimation of the intervention's causal effect.

When using any method for analysis that requires selecting specific cases for comparison, a crucial step is choosing the appropriate units. Inappropriate selection can lead to erroneous conclusions.[77] For instance, when using the Difference-in-Difference (DiD) method, it is essential to find comparison units that has similar trends prior to the intervention. However, this is often challenging, if not impossible. Consequently, any observed differences between the units may reflect inherent differences in their characteristics rather than the effect of the treatment.[78]

Advanced methods like Synthetic Control Method (SCM) can help mitigate these issues by creating a weighted combination of control units that closely match the treatment unit's pre-

[76] Alberto Abadie, Alexis Diamond, and Jens Hainmueller, "Comparative politics and the synthetic control method." *American Journal of Political Science* 59, no. 2 (2015).; Ashok Kaul, Stefan Klößner, Gregor Pfeifer, and Manuel Schieler, "Synthetic control methods: Never use all pre-intervention outcomes together with covariates." (2015).
[77] Alberto Abadie, Alexis Diamond, and Jens Hainmueller, "Comparative politics and the synthetic control method." *American Journal of Political Science* 59, no. 2 (2015).
[78] Ibid

intervention characteristics, thereby providing a more accurate counterfactual for assessing the intervention's impact.

The Synthetic Control Method (SCM) has been widely used to assess the impact of various economic and political interventions. For example, SCM was used to evaluate the impact of economic sanctions on oil exports and economic growth in Libya.[79] Similarly, researchers used SCM to measure the economic consequences of terrorism on the Basque Country by comparing its actual economic performance with a synthetic control region constructed from other Spanish regions. This approach helped quantify the impact of political terrorism on indicators such as per capita GDP.[80] Additionally, SCM has been applied to estimate the economic impact of the 1990 German reunification on West Germany.[81] In another study, Farzanegan used SCM to assess the effect of international banking and energy sanctions on Iran's military spending from 2012 to 2015.[82] Furthermore, Mirkina employed SCM to estimate how sanctions influence foreign direct investment (FDI) over time, considering factors like sanction costs, the primary sanction sender, and the decade in question. Mirkina's findings indicated that high-cost sanctions significantly decrease FDI in the short run, although they do not have a long-term effect.[83]

As previously stated, this study aims to evaluate the collective impact of sanctions imposed on Russia post-February 2022. These sanctions have been implemented by various entities, including the European Union (EU) and the United States. For the purposes of this analysis, the effects of EU and US sanctions will not be distinguished separately. Instead, the potential impact of sanctions will be examined cumulatively.

Previously, various approaches to understanding the concept of "Economic Resilience" were considered. It was proposed to use the understanding and measurement method from the think tank "ZOE for Future-fit Economies". The research center has suggested a set of indicators to help assess economic resilience. Many of these indicators will be used in this study; however, some will be excluded.

---

[79] Basem Ertimi, Basem, and Basem Oqab, "The Impact of Economic Sanctions on Oil Industry: A Case Study of Libya Using the Synthetic Control Method." *Journal of Pure & Applied Sciences* 21, no. 2 (2022).
[80] Alberto Abadie, and Javier Gardeazabal, "The Economic Costs of Conflict: A Case Study of the Basque Country." *The American Economic Review* 93, no. 1 (2003). http://www.jstor.org/stable/3132164.
[81] Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. "Comparative politics and the synthetic control method." *American Journal of Political Science* 59, no. 2 (2015): 495-510
[82] Mohammad Reza Farzanegan, "The effects of international sanctions on Iran's military spending: A synthetic control analysis." *Defence and Peace Economics* 33, no. 7 (2022).
[83] Irina Mirkina, "FDI and sanctions: An empirical analysis of short-and long-run effects." *European Journal of Political Economy* 54 (2018).

The Economic Complexity Index will not be taken as an indicator, since data is only available until 2021, making it impossible to measure the effect of recent sanctions. However, this indicator will be used as a covariate. Covariates are characteristics or features that are believed to influence the outcome of interest, and they are used to match the treatment unit with a weighted set of control units. By including relevant covariates, SCM aims to ensure that the synthetic unit closely resembles the treatment unit in terms of its pre-intervention characteristics.

Similarly, despite the availability of data on the Rule of Law until 2023, this indicator will not be used directly since the sanctions were not aimed at altering the Rule of Law in Russia. It will also be used as a covariate. Total natural resources rents will be another covariate. Additionally, when building the synthetic model, all the indicators not taken as primary indicators will also serve as covariates.

Given the scope of this study, seven selected indicators that significantly affect economic resilience will be considered. These indicators are:

Gross domestic product per capita, current prices in U.S. dollars.

Total investment, % of GDP.

Inflation, average consumer prices % change.

Volume of imports of goods and services % change.

Volume of exports of goods and services % change.

General government revenue % of GDP.

General government total expenditure % of GDP.

The employment rate, despite being an important indicator of economic resilience, will not be included in the analysis. Due to the ongoing war and the conscription of many individuals into the military, this event acts as a confounder. Consequently, it would be impossible to accurately determine the impact of sanctions on the employment rate.

For the Synthetic Control Method (SCM), it is necessary to select a set of donor countries to create a synthetic unit similar to Russia. I have selected 17 countries that are similar to Russia in terms of political and economic indicators. These countries are:

1) Brazil; 2) India; 3) South Africa; 4) Mexico; 5) Turkiye; 6) Argentina; 7) Colombia; 8) Egypt; 9) Chile; 10) China; 11) Malaysia; 12) Thailand; 13) Philippines; 14) Indonesia; 15) Saudi Arabia; 16) Iran; 17) United Arab Emirates.

In SCM, the training period refers to the timeframe during which historical data is used to construct the synthetic version of the treatment unit. It typically extends from the start of the available data until just before the intervention or treatment point. In this case, the training period spans from 2001 to 2021, capturing the pre-intervention period. The treatment point, in this instance, is set at 2021 to analyze the possible effects of sanctions imposed in 2022. By including data up to the treatment point, the analysis can assess the impact of sanctions on Russia's economic resilience during period of 2 years.

To accurately evaluate the impact of the treatment, it is crucial that the trends between the synthetic unit and the treatment unit are similar. However, in some cases, we cannot see these similarities in the trends. To address this, DiD estimation was conducted for each indicator before the treatment. This involved comparing the outcome variable between the control group and the treatment group for each year leading up to the treatment period. By calculating the difference in trends in the years preceding the treatment, bounds can be established to account for past fluctuations.

These bounds provide a range of possible values for the treatment effect. They help ensure that any observed effects post-treatment is attributable to the intervention rather than pre-existing trends or random fluctuations. The bounds are calculated based on the differences in trends observed in the pre-treatment period, providing a reference range within which the treatment effect is expected to fall. In my analysis, precise DiD estimator was calculated by comparing each post-treatment year to one pre-treatment year. Specifically, the year 2019 was selected as the pre-treatment reference year for comparison with post-treatment years.

The placebo check in the context of the SCM is a robustness test used to validate the causal inference drawn from the SCM analysis. By applying the same methodology to other units (countries or entities) that were not subjected to the treatment (sanctions, in this case), we can compare the results to determine if the effect observed for the treated unit is unusually large or just an artifact of the method.

To perform a placebo check, we create synthetic controls for each of the donor pool countries as if they had received the treatment (sanctions). This step helps us understand what would have happened to these countries if they had been treated similarly to the actual treated unit, Russia.

We then compare the synthetic control results of the treated unit with those of the placebo units. If the effect observed in the treated unit is significantly larger than the effects observed in the placebo units, it strengthens the causal inference that the treatment had an impact.

Results

1. Gross domestic product per capita, current prices U.S. dollars

As it already mentioned in the methodology section, various indicators of economic resilience are used to assess the impact of sanctions on Russian economic resilience. The weights of the control elements in the synthetic unit, as well as the weight of each covariant, are distributed using the SCM method. Table 4 provides information on the weights assigned to various countries in the construction of a synthetic unit for GDP per capita.

We can see that Brazil has a weight of 0.266, indicating a significant contribution to the synthetic unit. Colombia, with a weight of 0.509, is the largest contributor, accounting for over half of the synthetic GDP per capita. Saudi Arabia also plays a major role, with a weight of 0.224. In contrast, Argentina has a minimal weight of 0.001, suggesting a negligible contribution. All other countries do not contribute to the synthetic unit.

Table 4. Weights of control units in the synthetic unit for GDP per capita.

Country	Weight
Brazil	*0.266*
India	0.000
South Africa	0.000
Mexico	0.000
Turkiye	0.000
Argentina	*0.001*
Colombia	*0.509*
Egypt	0.000
Chile	0.000
China	0.000
Malaysia	0.000
Thailand	0.000
Philippines	0.000
Indonesia	0.000
Saudi Arabia	*0.224*
Iran	0.000
United Arab Emirates (UAE)	0.000

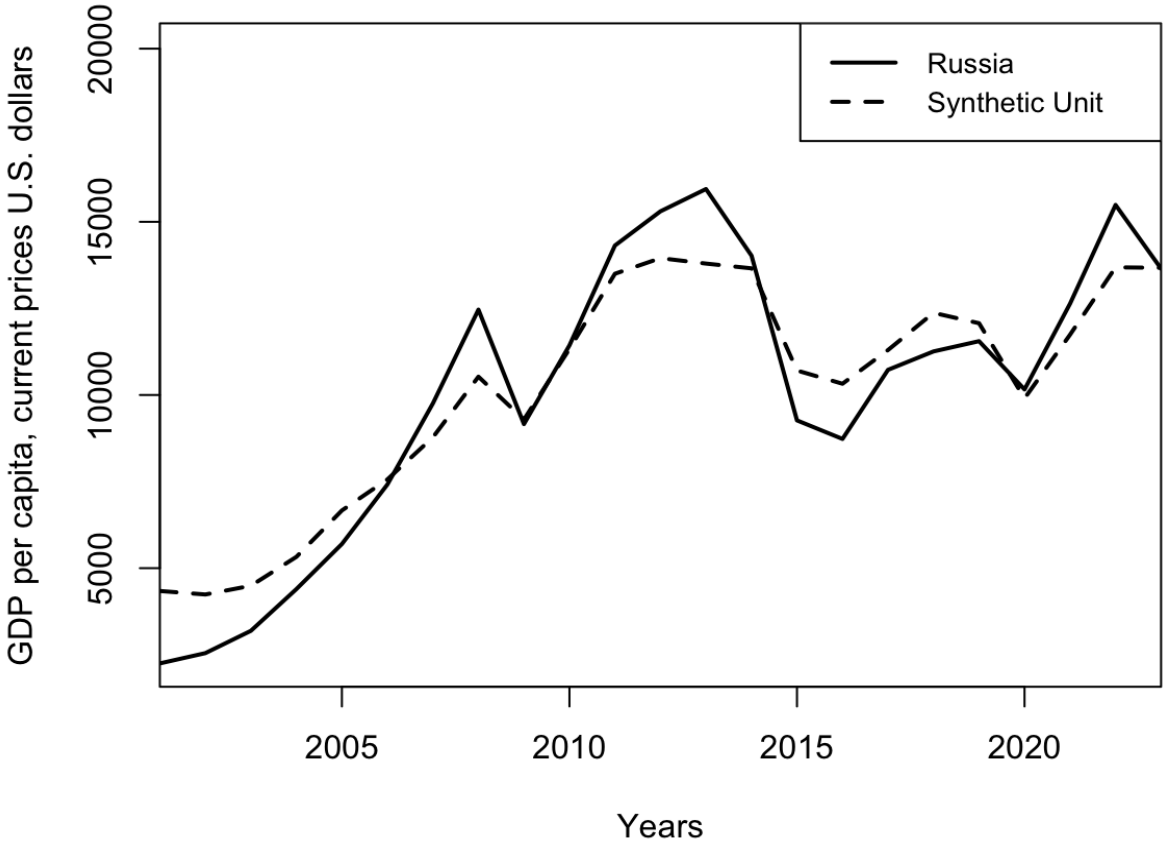
Table 5 represents the weights assigned to various economic covariates in the creation of a synthetic unit for GDP per capita.

Further, when analyzing the subsequent indicators, you can observe the weights of countries and covariates in the tables.

Table 5. Weights of covariates in making synthetic unit for GDP per capita.

Covariate	Weight
Total investment % of GDP	*0.147*
Gross national savings % of GDP	0
Inflation, average consumer prices % change	*0.02*
General government total expenditure % of GDP	*0.244*
Volume of imports of goods and services % change	*0.007*
Current account balance % of GDP	0
General government revenue % of GDP	*0.349*
General government primary net lending/borrowing % of GDP	0
Volume of exports of goods and services % change	*0.056*
General government gross debt % of GDP	0
Exchange Rate U.S. dollars	*0.058*
Economic Complexity Index (only till 2021)	*0.118*
Total natural resources rents % of GDP	0
Rule of Law Index	0

Figure 1. Gross domestic product per capita, current prices U.S. dollars for Russia and Synthetic unit in 2001-2023.



The introduction of the first sanctions against Russia in February 2022 marks the beginning of the treatment period in this analysis. Figure 1 depicts the comparison between the trends of the synthetic unit and the control group, composed of donor countries, and it reveals that the trajectories are quite similar before the treatment period. This similarity indicates that the synthetic unit is a valid counterfactual for assessing the impact of the sanctions on Russia's GDP per capita.

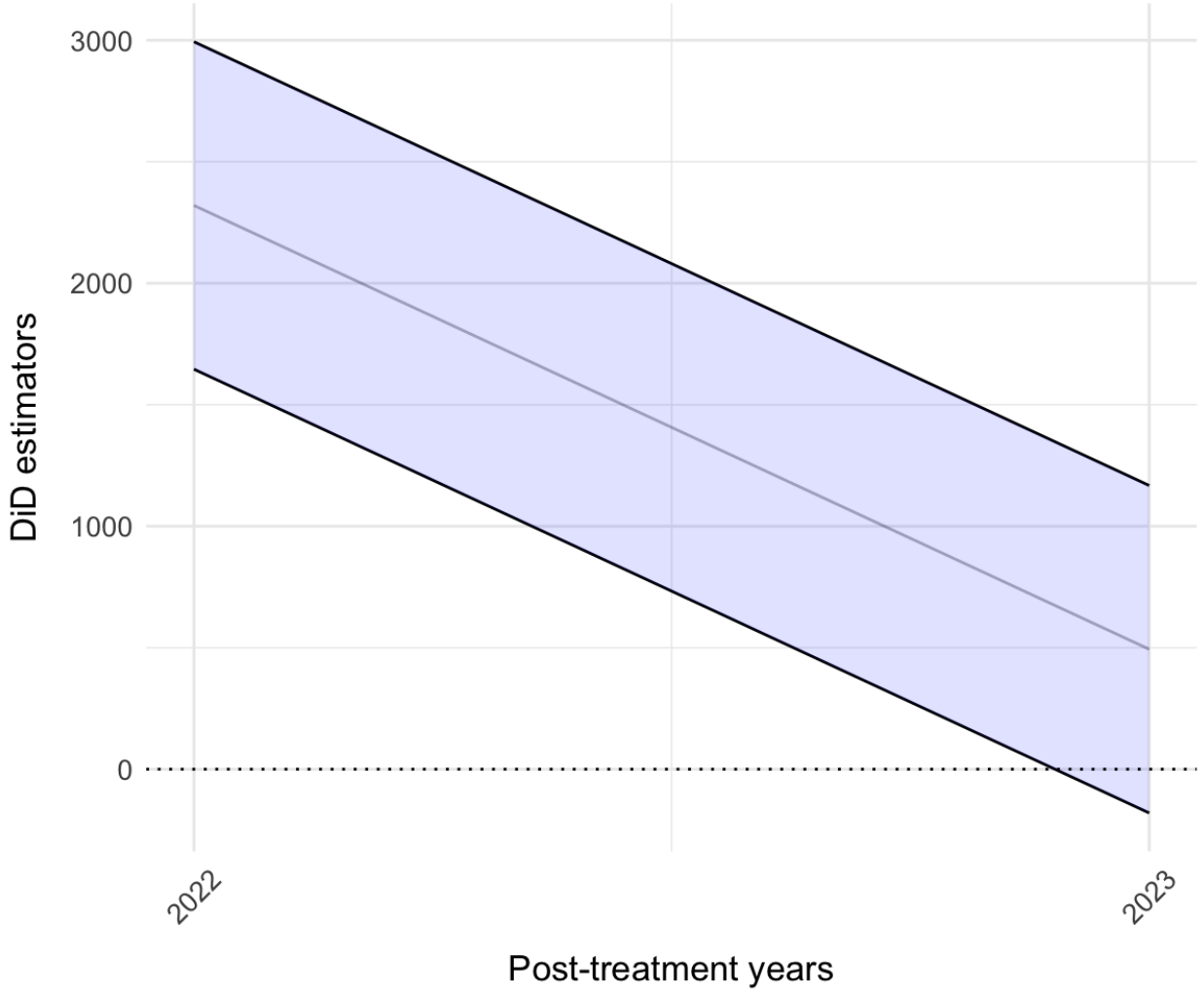
However, during different time periods post-treatment, there is a noticeable but small difference between the control unit and Russia's actual GDP per capita. This small discrepancy suggests that the immediate effect of the sanctions on Russia's GDP per capita might be minimal.

Figure 2. Every pre-treatment year DiD estimators for Russian GDP per capita.

Looking to the Figure 2 that represents DiD estimation for each year preceding the treatment period. It illustrates that the differences between the trends of Russia and the synthetic unit are generally insignificant over the years. However, there are several notable peaks where the divergence between Russia and the synthetic unit becomes more pronounced. The most significant peak occurs in 2009, where the difference exceeds $2,000 in current prices. Despite

these occasional peaks, the overall trend indicates that the differences are relatively minor. The similarity in trends prior to the treatment period strengthens the credibility of assessing the impact of sanctions.

Figure 3. Range of DiD estimators for Russian GDP per capita.

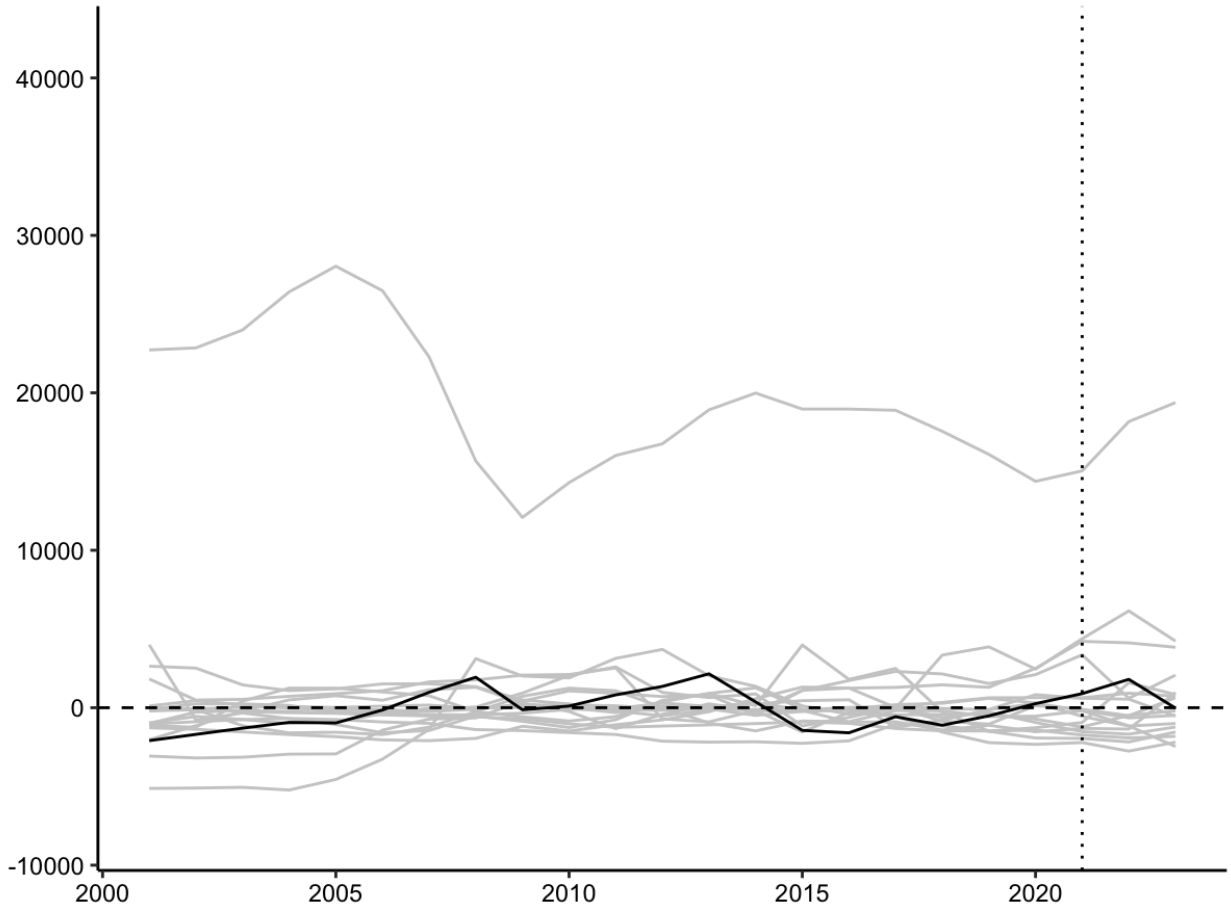


Given the visible differences in trends observed in the previous figure (Figure 2), I proceeded to define the bounds of the DiD estimate and calculate the average difference over the post-treatment period. As mentioned before, this approach helps in understanding the range of possible values of the DiD score for each year of treatment.

Figure 3 displays the range of potential DiD values for each year following the imposition of sanctions in 2022. The analysis reveals that the significant difference observed in 2022 diminishes by 2023. Notably, the lower bound of the DiD estimate in 2023 falls below 0, indicating the possibility of an insignificant or even absent effect of the sanctions on Russia's GDP per capita by that year.

This observed trend suggests that the estimated effect appears to weaken over the 2023.

Figure 4. Placebo check for Russian GDP per capita.



Previously, I have already said that placebo check is a robustness test to validate the causal inference drawn from the SCM analysis. Figure 4 generated from this analysis shows that after 2022, when the sanctions were imposed, there are no significant changes in the GDP per capita of Russia compared to any other units in the donor pool. This finding indicates that there is no noticeable effect (neither positive nor negative) from the sanctions on Russia's GDP per capita when compared to the synthetic controls of the placebo units. This lack of significant divergence suggests that the initial impact observed in the treated unit (Russia) might not be attributable to the sanctions themselves but could be due to other factors or inherent variability in the data.

In summary, the placebo check reveals that the sanctions did not produce a unique or significant effect on Russia's GDP per capita compared to the synthetic controls of other countries in the donor pool.

2. Total investment % of GDP

Table 6. Weights of control units in the synthetic unit for Total investment % of GDP.

Country	Weight
Brazil	*0.232*
India	0.000
South Africa	0.000
Mexico	0.000
Turkiye	*0.133*
Argentina	*0.284*
Colombia	0.000
Egypt	0.000
Chile	0.000
China	0.000
Malaysia	0.000
Thailand	0.000
Philippines	*0.072*
Indonesia	0.000
Saudi Arabia	*0.279*
Iran	0.000
United Arab Emirates (UAE)	0.000

Table 7. Weights of covariates in making synthetic unit for Total investment % of GDP.

Covariate	Weight
GDP per capita, current prices U.S. dollars	*0.079*
Gross national savings % of GDP	0
Inflation, average consumer prices % change	*0.375*
General government total expenditure % of GDP	*0.102*
Volume of imports of goods and services % change	*0.012*
Current account balance % of GDP	0
General government revenue % of GDP	*0.172*
General government primary net lending/borrowing % of GDP	*0.081*
Volume of exports of goods and services % change	*0.12*
General government gross debt % of GDP	0
Exchange Rate U.S. dollars	*0.001*
Economic Complexity Index (only till 2021)	*0.054*
Total natural resources rents % of GDP	*0.003*
Rule of Law Index	*0.001*

Figure 5. Total investment % of GDP for Russia and Synthetic unit in 2001-2023.

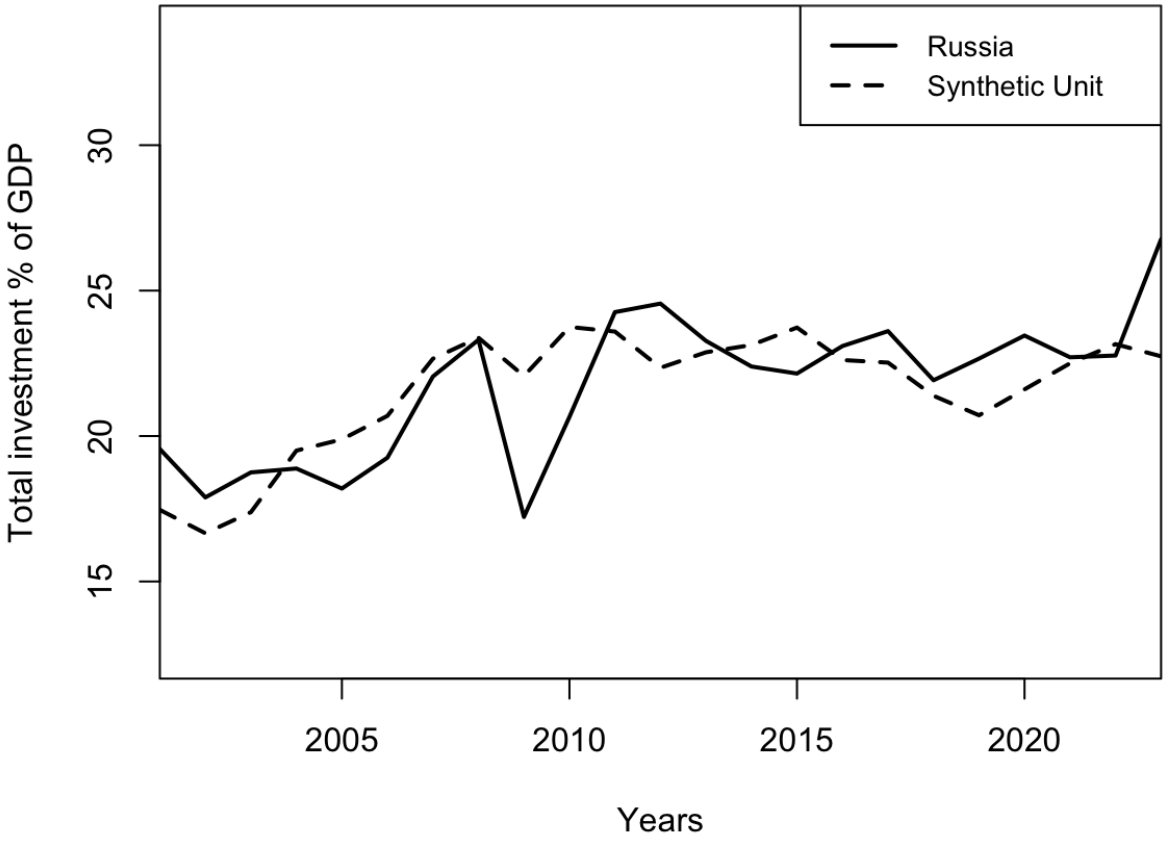


Figure 5 depicts the Total investment % of GDP for Russia and the Synthetic unit from 2001 to 2023. Overall, the figure illustrates that the trends of the synthetic unit and Russia exhibit similarities, indicating a parallel trajectory in investment patterns. However, a notable deviation occurs around 2008 when Russia experienced a significant decline in investment compared to the synthetic unit.

Figure 6. Every pre-treatment year DiD estimators for Russian Total investment % of GDP.

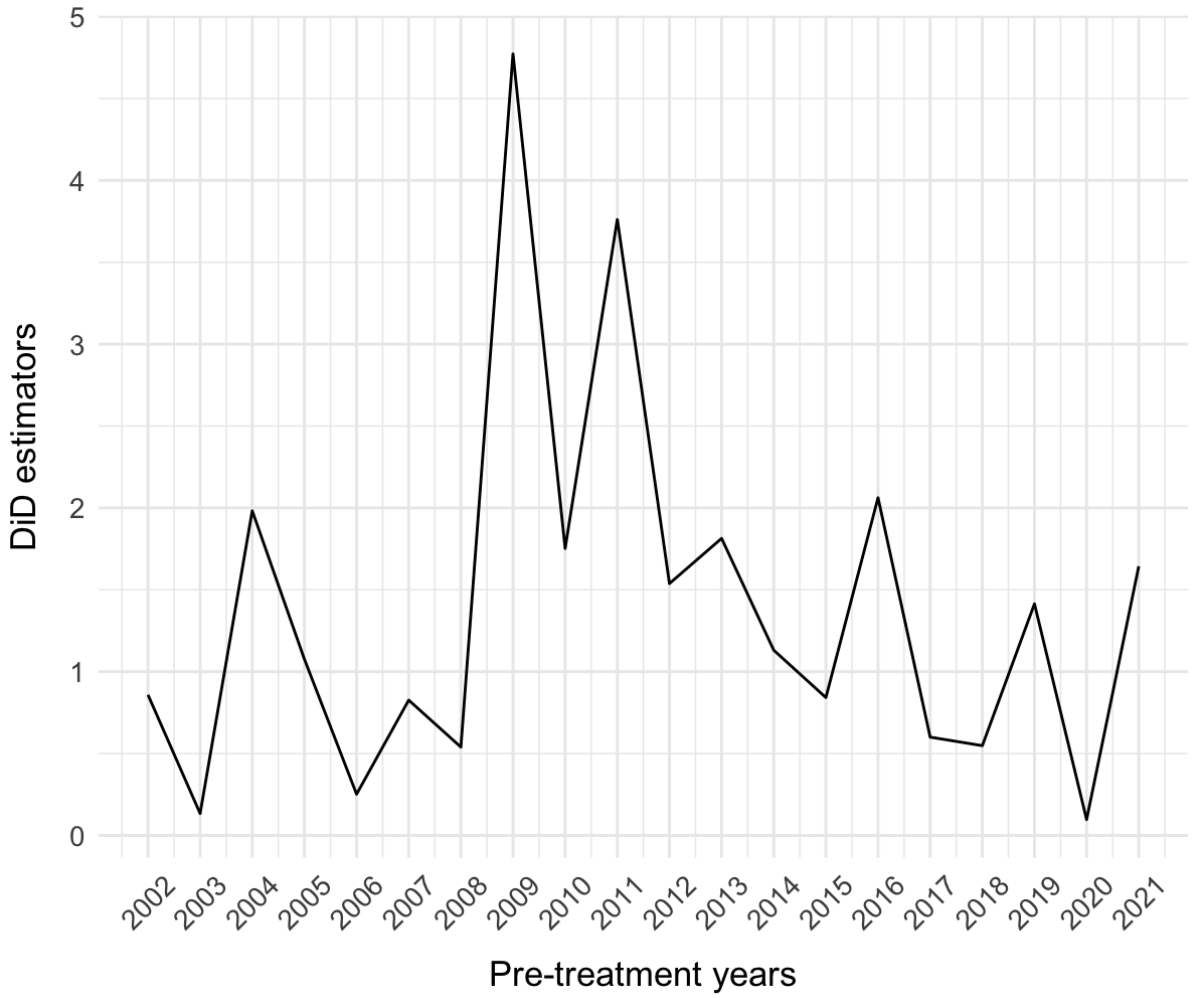
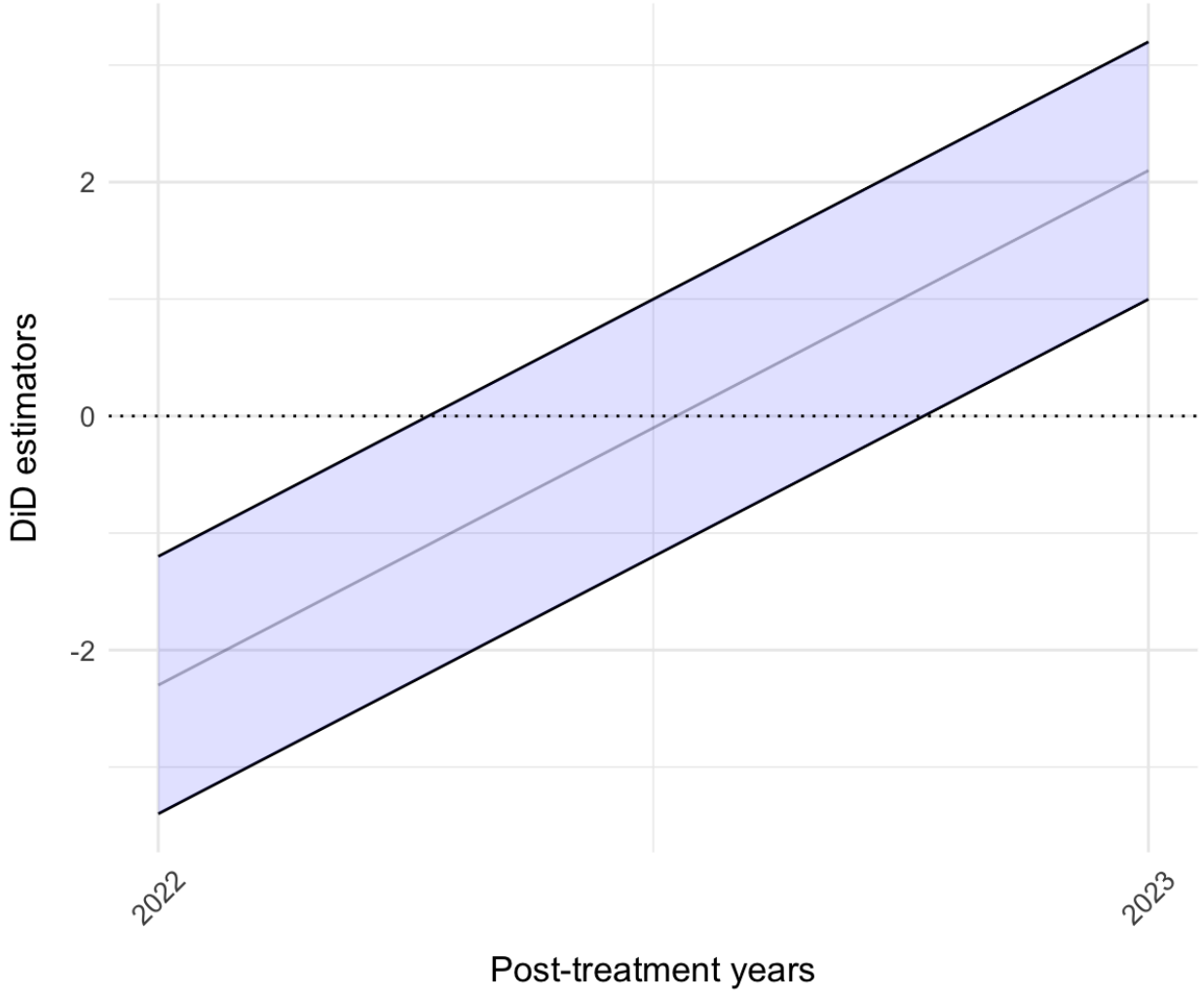


Figure 6 illustrates that the difference between Russia and the synthetic unit reaches its largest peak at 5% of GDP and slightly less at another peak, nearly 4%. Despite these notable peaks, the overall trend remains relatively stable, with most other fluctuations showing a difference of approximately 2% of GDP.

These peaks, while significant, do not overshadow the general alignment between Russia and the synthetic unit throughout the period under study. The relatively small differences in GDP observed during other times suggest that, overall, the synthetic unit provides a reasonable approximation of Russia's economic performance. This indicates that the synthetic control method effectively captures the main dynamics of Russia's Total investment, despite occasional deviations.

Figure 7. Range of DiD estimators for Russian Total investment % of GDP.



Having assessed the bound of the DiD estimate, it is evident from Figure 7 that the effect of the sanctions is ambiguous. In 2022, the first year of sanctions, the potential effect is predominantly negative, reflecting an adverse impact on the economy. However, by the following year, 2023, there appears to be a potential positive effect. This shift from a negative to a positive effect within a short timeframe suggests significant volatility.

These results may indicate that the initial impact of the sanctions led to down of investment, as expected, but subsequent adaptations or strategic responses by Russia could have mitigated some of the negative effects, leading to a rebound. This volatility could be attributed to various factors, such as the establishment of new trade partnerships, increased parallel imports, or internal economic adjustments made to counteract the sanctions' impact.

Figure 8. Placebo check for Russian Total investment % of GDP.

On the placebo check Figure 8, we can see that many control units do not replicate the dynamics of Russia by 2023, therefore we can cautiously say there is positive effect. However, it is crucial to acknowledge that side effects could influence this observation, because there are some control unites with similar trend as Russia. Nevertheless, the figure reaffirms the growth trend observed in Figure 7.

Other studies and assessments also confirm the growth dynamics. According to a study conducted by the analytical consulting company Frank RG, the share of capital in investments returns to the level of 2021.[84] This underscores the resilience and potential stability of investment patterns, despite the disruptive events surrounding the imposition of sanctions.

[84] Frank, R. G. "Private Banking 2024." Accessed 24 May 2024. https://frankrg.com/research/private-banking-2024.

3. **Volume of imports of goods and services % change**

Table 8. Weights of control units in the synthetic unit for Volume of imports of goods and services % change.

Country	Weight
Brazil	0.000
India	0.000
South Africa	0.000
Mexico	0.000
Turkiye	0.000
Argentina	0.000
Colombia	*0.026*
Egypt	0.000
Chile	*0.717*
China	0.000
Malaysia	0.000
Thailand	0.000
Philippines	0.000
Indonesia	0.000
Saudi Arabia	0.000
Iran	0.000
United Arab Emirates (UAE)	*0.257*

Table 9. Weights of covariates in making synthetic unit for Volume of imports of goods and services % change.

Covariate	Weight
GDP per capita, current prices U.S. dollars	0
Gross national savings % of GDP	*0.023*
Inflation, average consumer prices % change	0
General government total expenditure % of GDP	0
Total investment % of GDP	*0.01*
Current account balance % of GDP	*0.001*
General government revenue % of GDP	*0.006*
General government primary net lending/borrowing % of GDP	*0.289*
Volume of exports of goods and services % change	*0.123*
General government gross debt % of GDP	*0.175*
Exchange Rate U.S. dollars	*0.296*
Economic Complexity Index (only till 2021)	0
Total natural resources rents % of GDP	*0.076*
Rule of Law Index	0

Figure 9. Volume of imports of goods and services % change for Russia and Synthetic unit in 2001-2023.

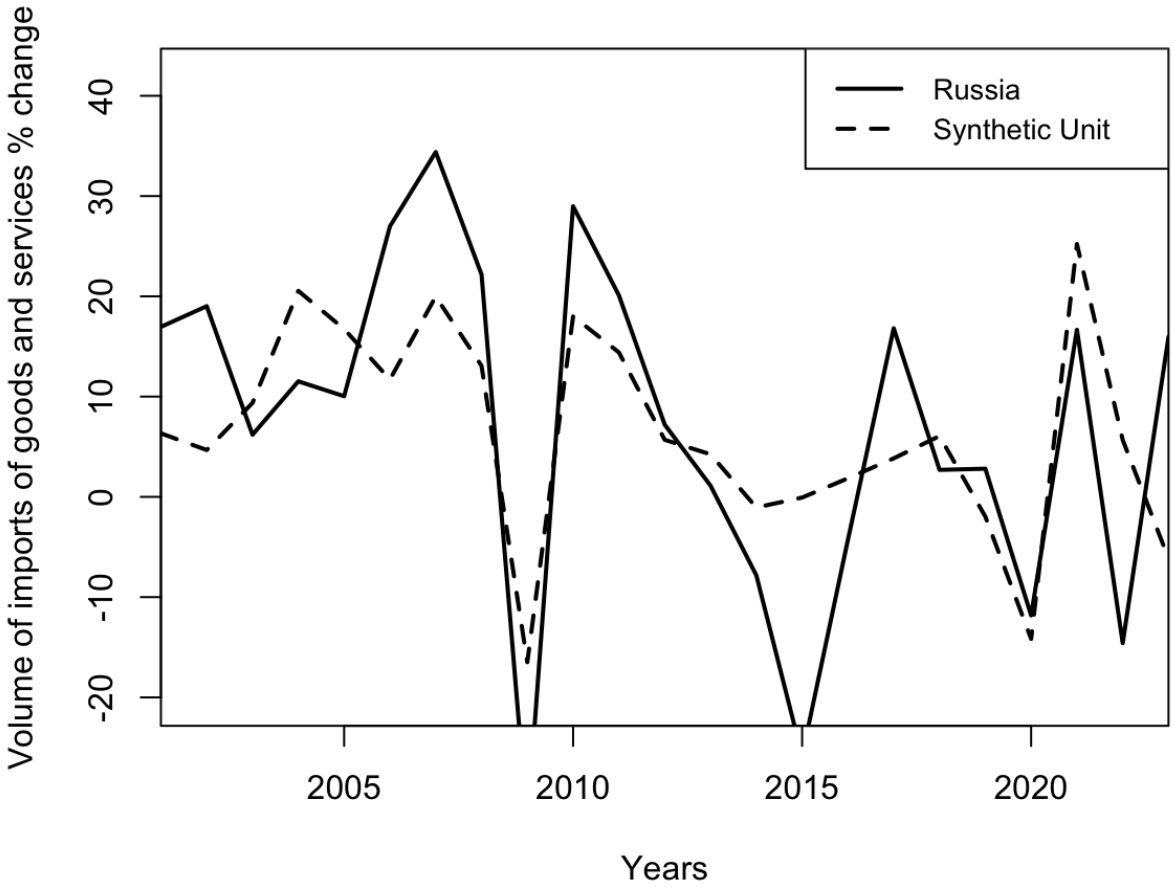


Figure 9 illustrates the Volume of imports of goods and services % change for Russia and the Synthetic unit from 2001 to 2023. The figure reveals notable dissimilarities in trends between the synthetic unit and Russia, with numerous deviations observed over the period. These discrepancies suggest a significant divergence between the treatment group (Russia) and the control group (synthetic unit), indicating that any interpreted effects must be approached with caution due to the likelihood of substantial differences between the two groups. The presence of such large deviations underscores the importance of considering potential confounding factors or external influences that may contribute to the observed differences.

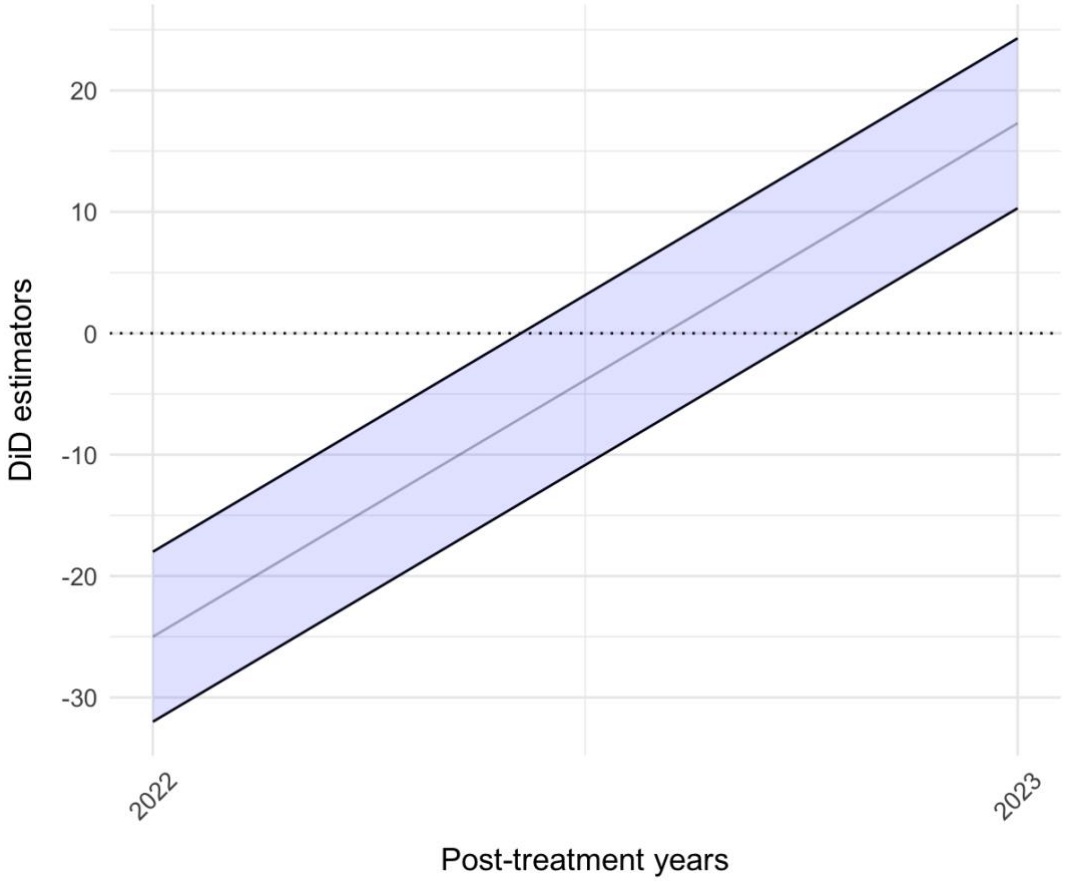
Figure 10. Every pre-treatment year DiD estimators for Volume of imports of goods and services % change.

Figure 10 depicts the difference in the volume of exports of goods and services % change between the control group and the treatment group (Russia). The graph reveals that these differences can reach over 25% at their highest point. Additionally, there are numerous peaks of difference observed across various time periods.

These significant deviations indicate considerable variability between the economic performance of Russia and the synthetic control unit over time. The frequent peaks suggest that there are periods where Russia's export dynamics diverge sharply from those of the synthetic unit.

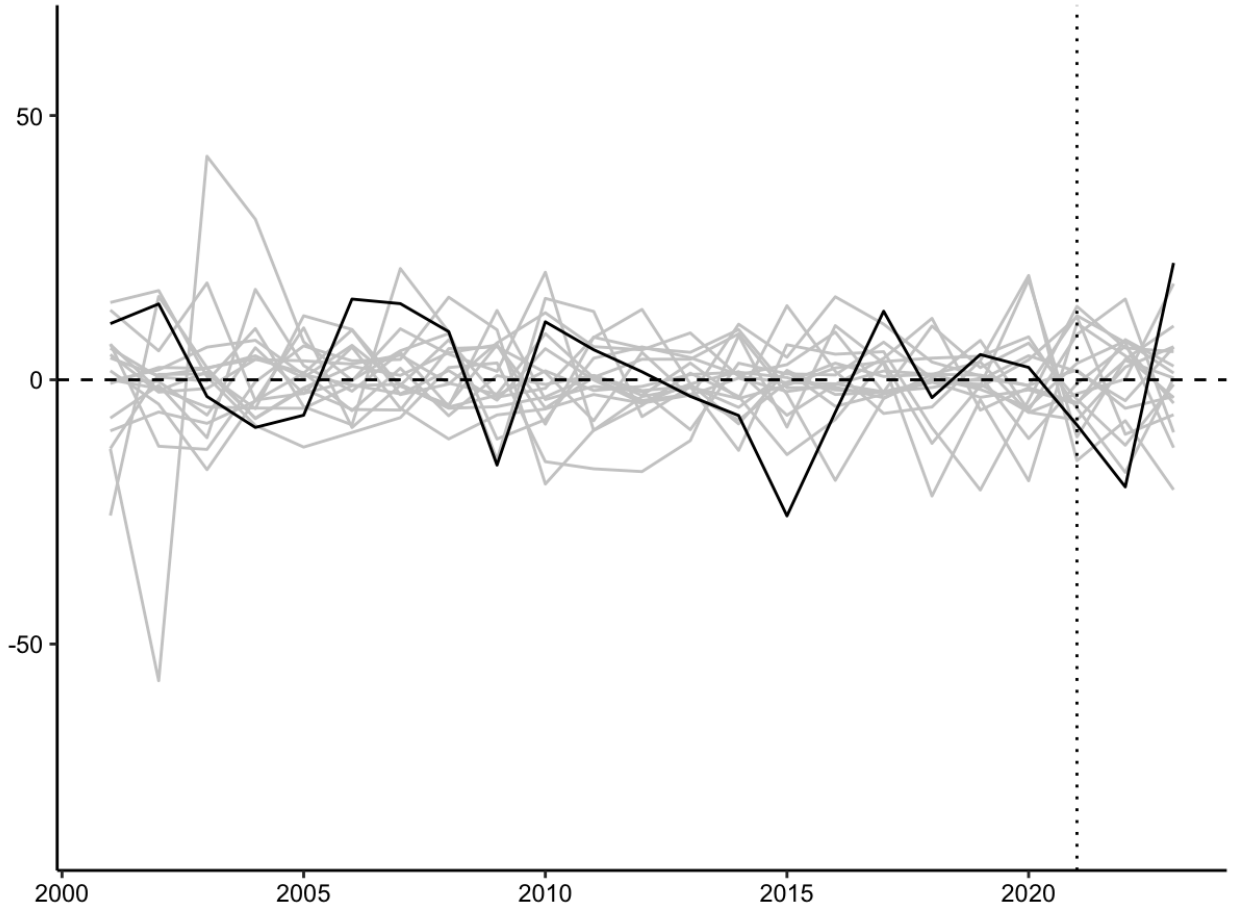
To sum up, the presence of such fluctuations emphasizes that we can be sure the observed changes were caused by implemented sanctions.

Figure 11. Range of DiD estimators for Russian Volume of imports of goods and services % change.



According to Figure 11, the estimated effect is unclear. In 2022, there was a negative effect, but by 2023, there appears to be positive effect. It is important to note that this indicator is measured as a percentage change. Therefore, a decrease in the level of imports by, for example, 2 points signifies a reduction in the growth rate of imports by 2 percentage points. Figure 11 shows that while the actual volume of imports may be increasing, the rate at which they are growing has slowed down in comparison with control unit.

Figure 12. Placebo check for Russian Volume of imports of goods and services % change.



According to the placebo test Figure 12, it reveals a significant downturn in imports for Russia in 2022, may attributed to reduced cooperation or partnership refusals amidst the sanction's environment. However, by 2023, Russia managed to establish new partnerships, leading to a resurgence in import growth. This rebound may also be facilitated by an increase in parallel imports, contributing to the overall growth trend.

Notably, the import growth dynamics in 2022 were lower for Russia compared to the control unit, indicating the initial adverse effects of the sanctions. However, the sharp increase in imports observed in Russia in 2023 stands out, suggesting a unique trend not mirrored in other control units.

4. **Volume of exports of goods and services % change**

Table 10. Weights of control units in the synthetic unit for Volume of exports of goods and services % change.

Country	Weight
Brazil	0.000
India	0.000
South Africa	0.000
Mexico	*0.021*
Turkiye	0.000
Argentina	0.000
Colombia	0.000
Egypt	0.000
Chile	0.697
China	*0.155*
Malaysia	0.000
Thailand	0.000
Philippines	0.000
Indonesia	0.000
Saudi Arabia	*0.043*
Iran	*0.084*
United Arab Emirates (UAE)	0.000

Table 11. Weights of covariates in making synthetic unit for Volume of exports of goods and services % change.

Covariate	Weight
GDP per capita, current prices U.S. dollars	*0.126*
Gross national savings % of GDP	*0.126*
Inflation, average consumer prices % change	*0.022*
General government total expenditure % of GDP	0
Total investment % of GDP	0
Current account balance % of GDP	0
General government revenue % of GDP	0
General government primary net lending/borrowing % of GDP	0
Volume of imports of goods and services % change	*0.067*
General government gross debt % of GDP	*0.241*
Exchange Rate U.S. dollars	*0.249*
Economic Complexity Index (only till 2021)	*0.096*
Total natural resources rents % of GDP	*0.071*
Rule of Law Index	*0.002*

Figure 13. Volume of exports of goods and services % change for Russia and Synthetic unit in 2001-2023.

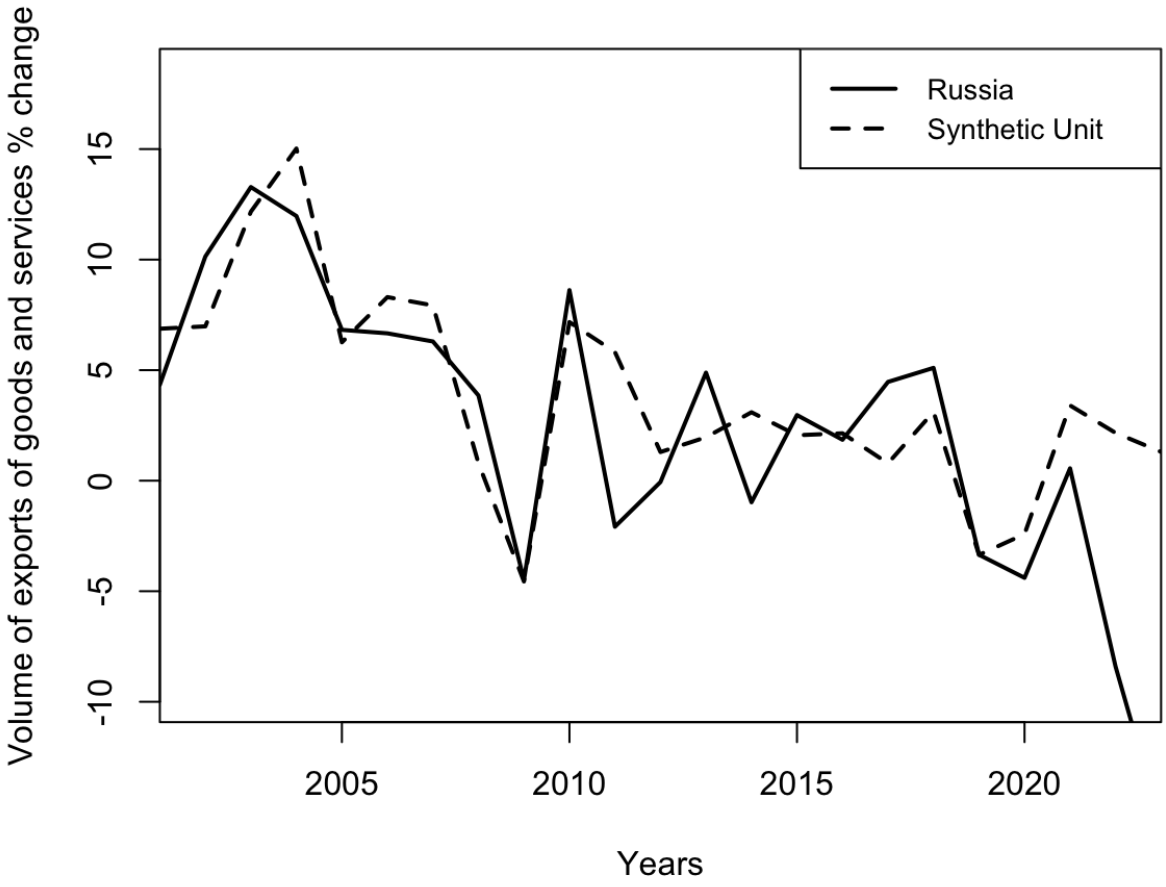
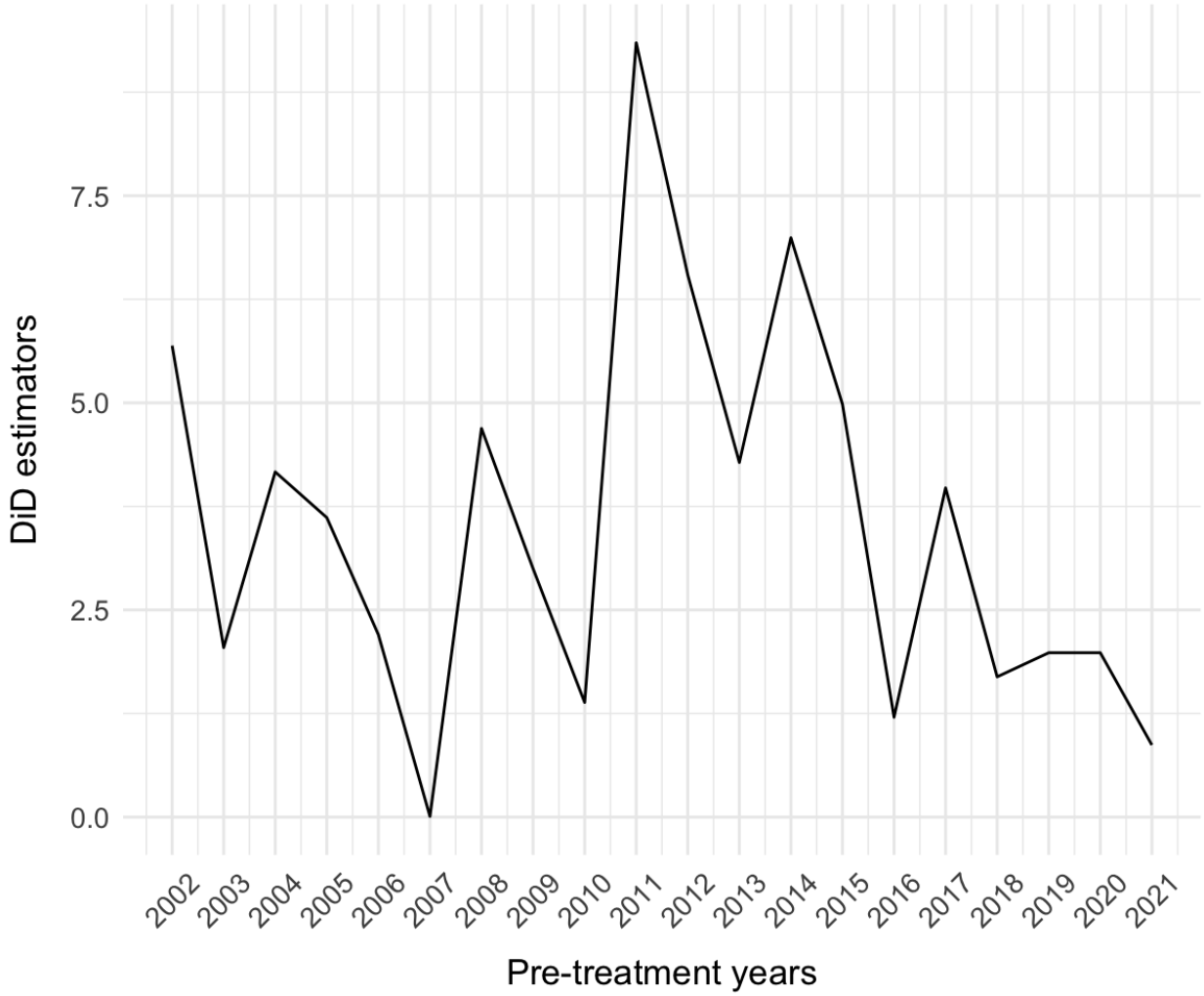


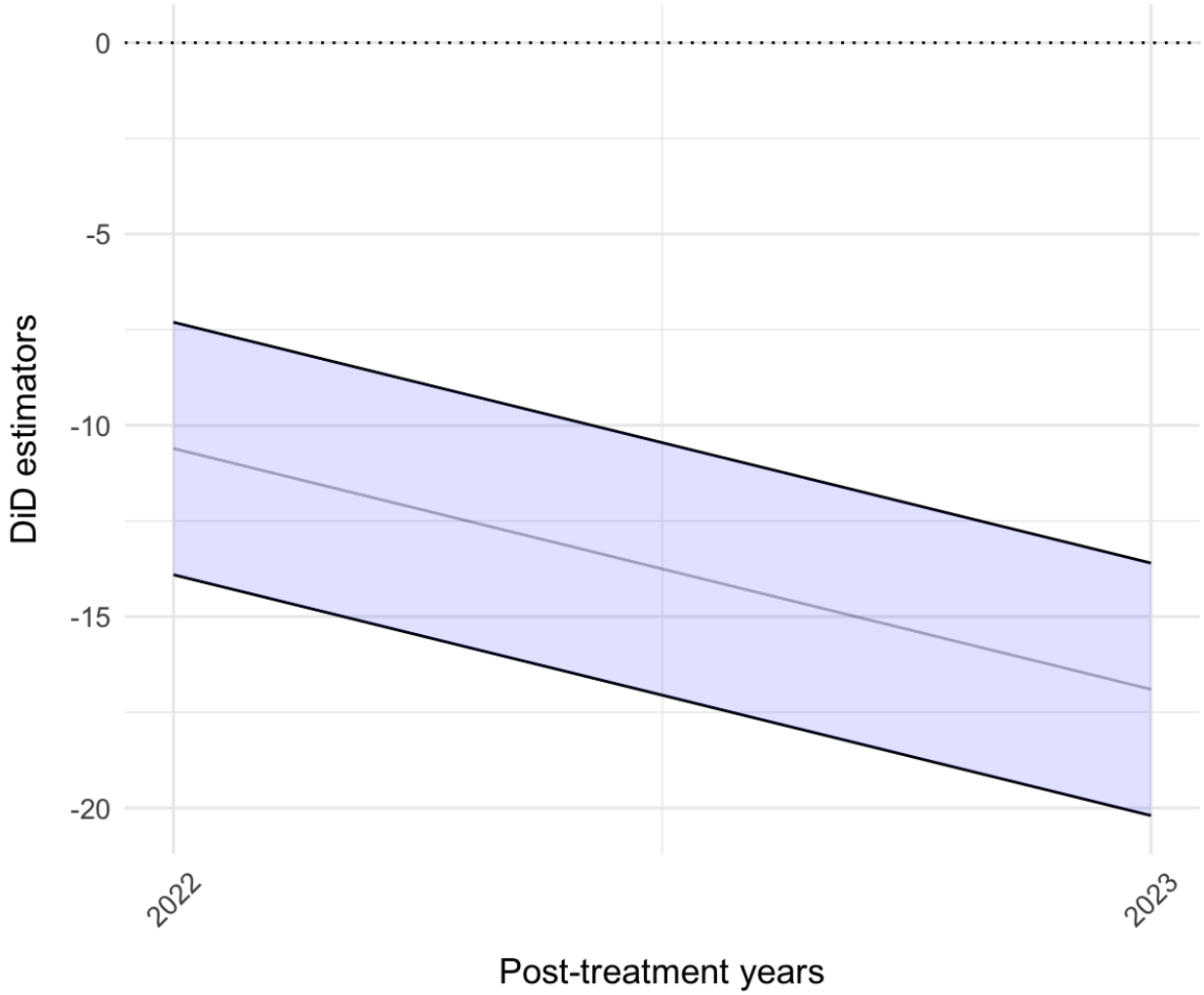
Figure 13 illustrates the Volume of export of goods and services % change for Russia and the Synthetic unit from 2001 to 2023. It shows that before 2010, the trends between the synthetic unit and Russia are similar. However, after 2010, the difference between the two becomes noticeable. It is saying that the estimated effect may be due to the difference between the control unit and Russia.

Figure 14. Every pre-treatment year DiD estimators for Russian Volume of exports of goods and services % change.



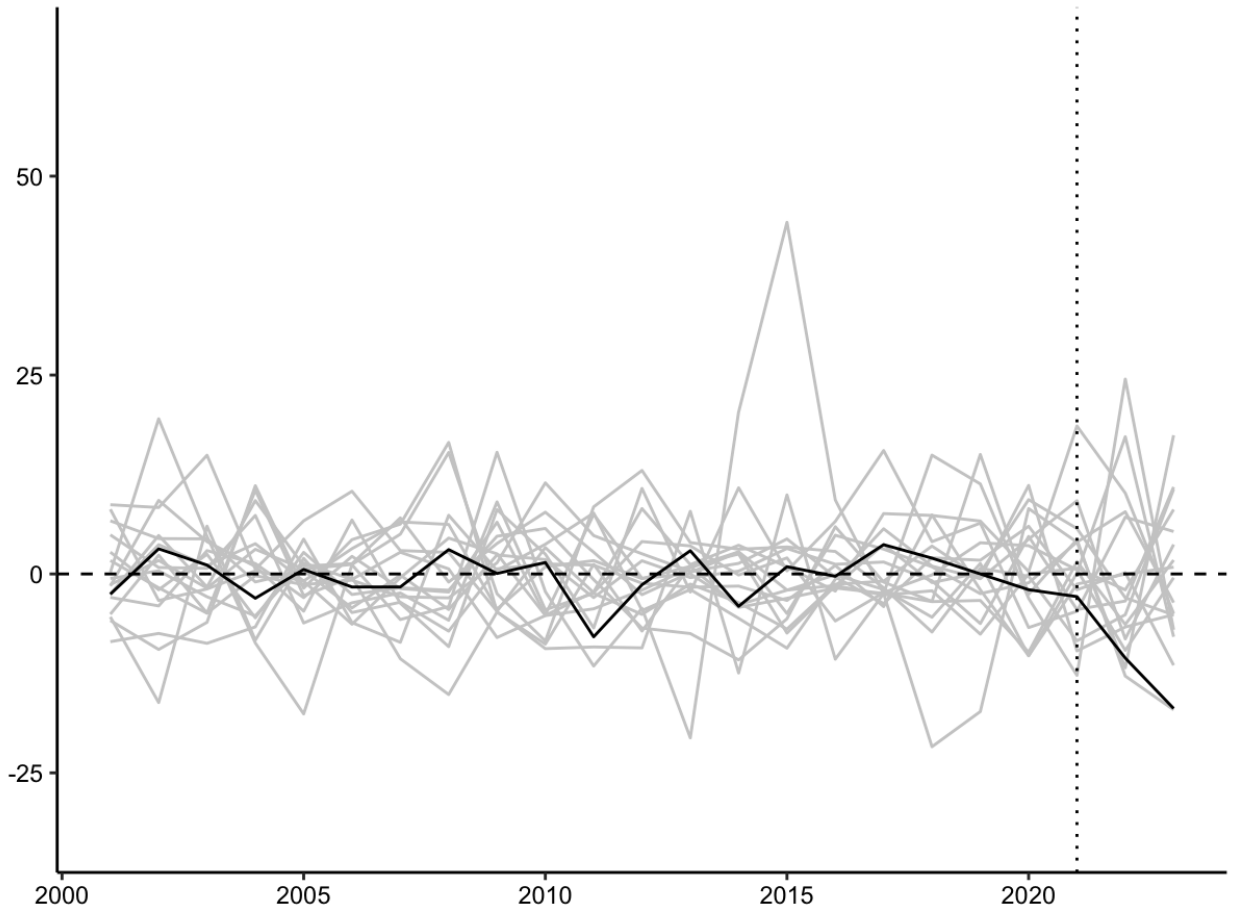
On Figure 14, we can see one significant peak that reaches more than an 8% change, which occurs in 2011. Additionally, there is a slightly lower peak observed in 2014. The significant deviations suggest notable variability in the economic performance between Russia and the synthetic control unit.

Figure 15. Range of DiD estimators for Russian Volume of exports of goods and services % change.



On Figure 15, we can see that the possible effect is purely negative and significant in both years under consideration.

Figure 16. Placebo check for Russian Volume of exports of goods and services % change.



On Figure 16 of the placebo test, we see that the trend line of Russia differs from that of the control units, confirming my earlier assumptions. Therefore, according to the figure of volume of export of goods and services, we can say that Russia has not been able to successfully enter new trading markets, which explains the observed results.

5. **General government total expenditure % of GDP**

Table 12. Weights of control units in the synthetic unit for General government total expenditure % of GDP.

Country	Weight
Brazil	*0.127*
India	0.000
South Africa	0.000
Mexico	0.000
Turkiye	*0.158*
Argentina	*0.194*
Colombia	0.000
Egypt	*0.123*
Chile	0.000
China	*0.007*
Malaysia	0.000
Thailand	*0.073*
Philippines	0.000
Indonesia	0.000
Saudi Arabia	*0.311*
Iran	*0.007*
United Arab Emirates (UAE)	0.000

Table 13. Weights of covariates in making synthetic unit for General government total expenditure % of GDP.

Covariate	Weight
GDP per capita, current prices U.S. dollars	*0.281*
Gross national savings % of GDP	*0.015*
Inflation, average consumer prices % change	*0.079*
Volume of exports of goods and services % change	*0.253*
Total investment % of GDP	*0.044*
Current account balance % of GDP	0
General government revenue % of GDP	*0.102*
General government primary net lending/borrowing % of GDP	*0.017*
Volume of imports of goods and services % change	*0.004*
General government gross debt % of GDP	*0.009*
Exchange Rate U.S. dollars	*0.007*
Economic Complexity Index (only till 2021)	*0.117*
Total natural resources rents % of GDP	*0.045*
Rule of Law Index	*0.028*

Figure 17. General government total expenditure % of GDP for Russia and Synthetic unit in 2001-2023.

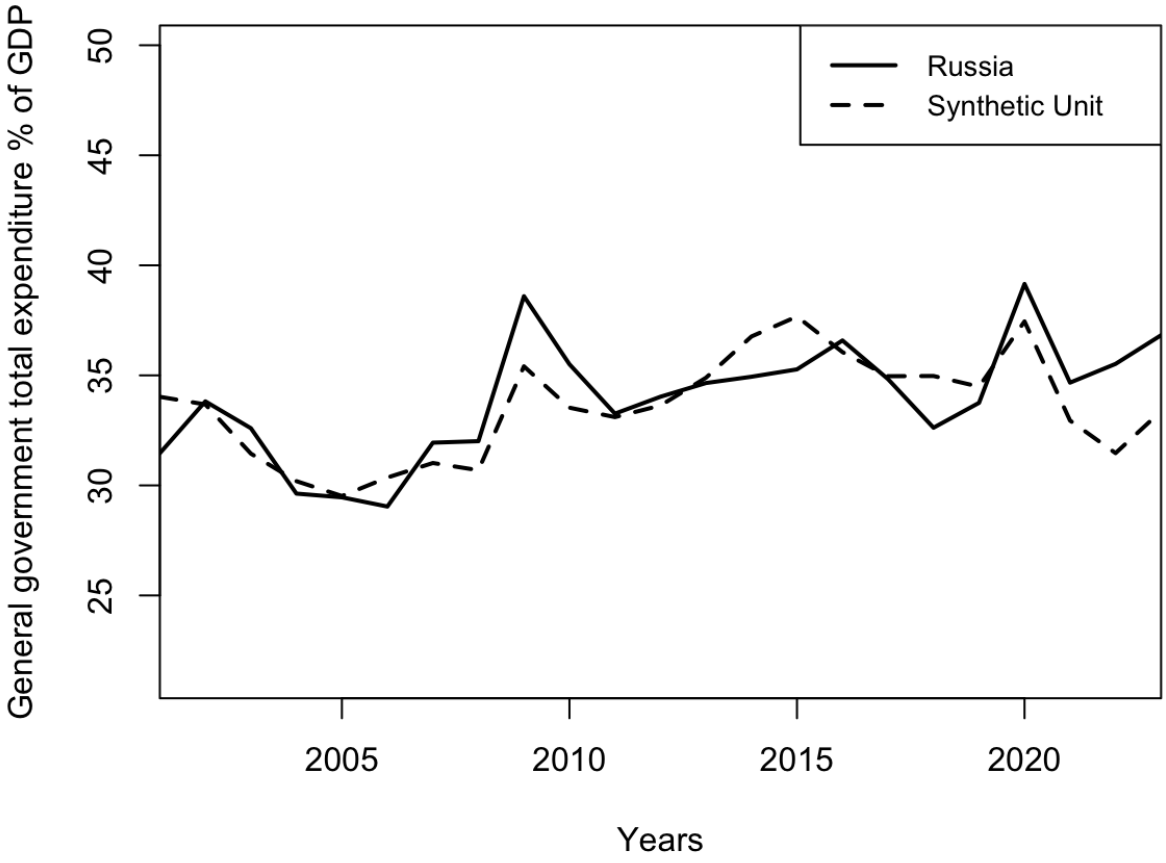


Figure 17 shows that the trends between the synthetic unit and Russia are quite similar up until 2022. In 2022, however, we can observe that the difference between the control group and the treatment group begins to grow. This divergence indicates a possible positive effect of sanctions on government expenditure in Russia.

This observation suggests that, despite the sanctions, or perhaps in response to them, the Russian government may have increased its expenditure. Such an increase could be aimed at stabilizing the economy, supporting affected industries, or mitigating the impact of international sanctions on the population. The rising difference in trends indicates that government expenditure in Russia has grown more than in the synthetic control unit, which did not face similar sanctions.

In conclusion, the results suggest that the sanctions may have indirectly led to increased government spending in Russia as a countermeasure to the economic pressures imposed by the sanctions.

Figure 18. Every pre-treatment year DiD estimators for Russian General government total expenditure % of GDP.

On Figure 18, we see that the difference between the control group and the treatment group is at most 3% of GDP. This confirms that the trends observed in the previous graph are indeed very similar. However, it is important to note that there is a significant amount of volatility present in the data.

Figure 19. Range of DiD estimators for Russian General government total expenditure % of GDP.

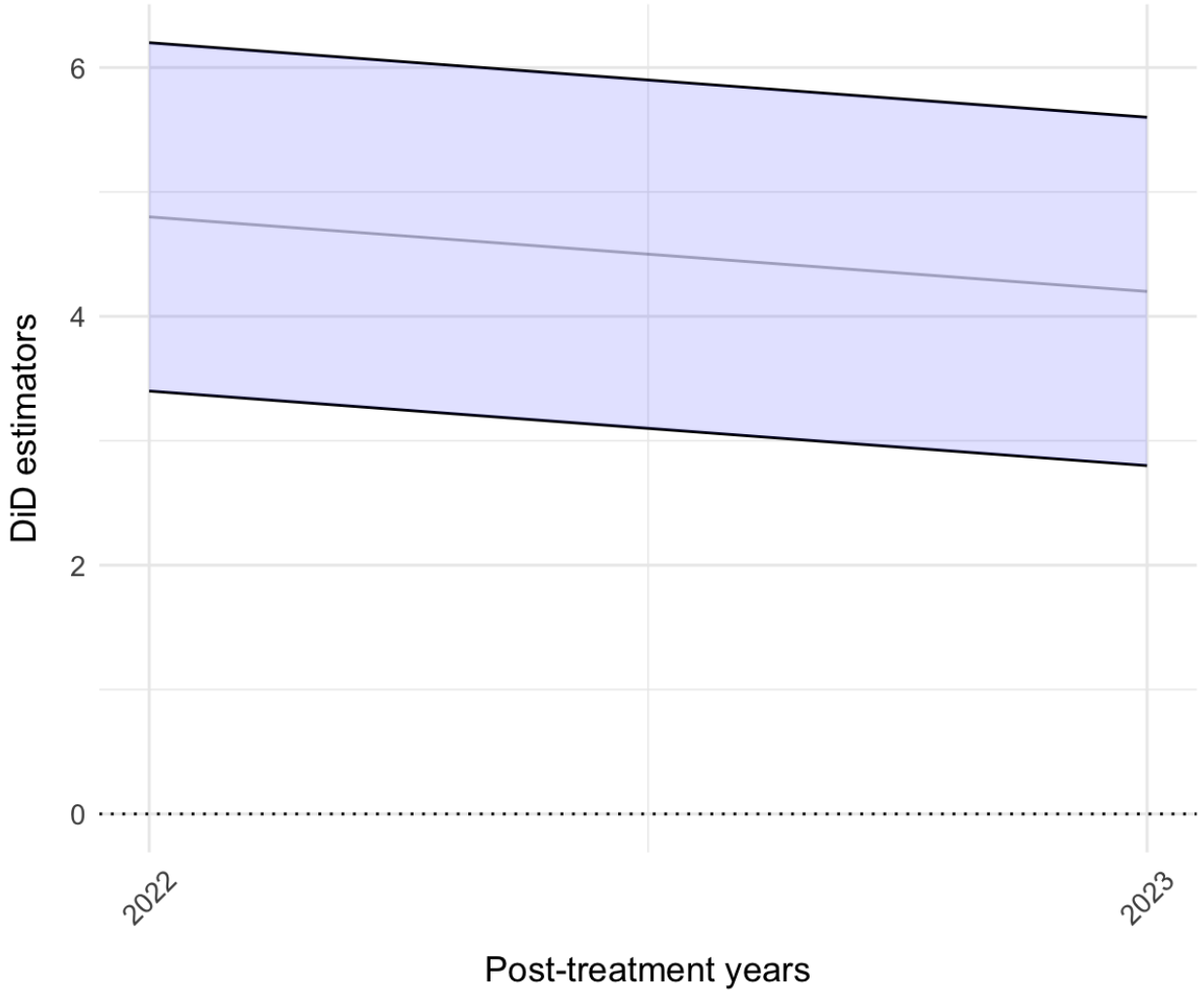
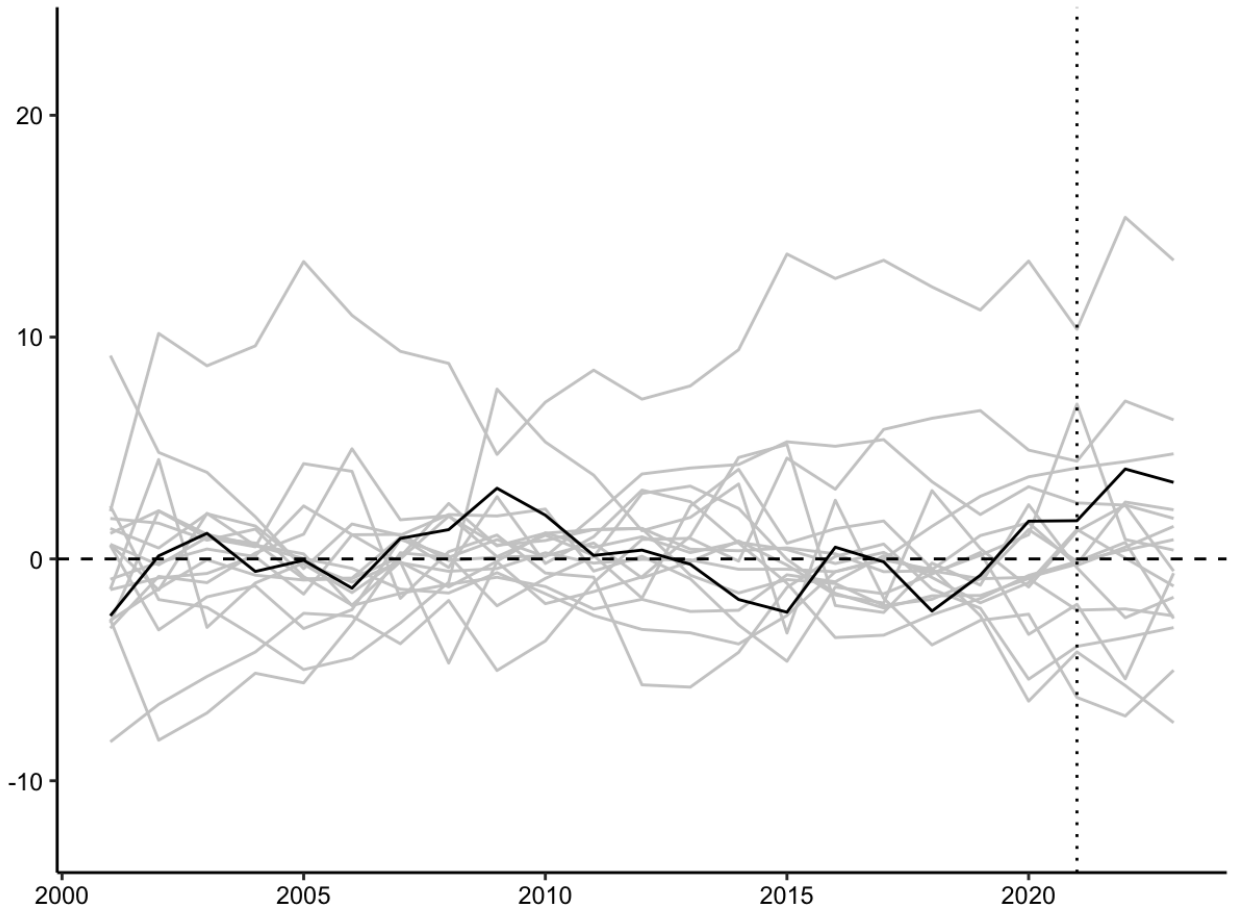


Figure 19 illustrates an increase in the values over time. However, it is crucial to bear in mind that this indicator is measured as a percentage of GDP, making it dependent on changes in GDP. As previously observed, GDP has not decreased; therefore, we can possibly say that government expenditure has also increased, but it is necessary to do placebo check.

Figure 20. Placebo check for Russian General government total expenditure % of GDP.



Despite observing an estimated effect post-treatment, it is noteworthy that similar dynamics are also evident in placebo control units. This suggests that the changes in this trend may not be directly attributable to the sanctions imposed against Russia. However, it is essential to acknowledge that the increase in state expenditure may be linked to Russia's response to the sanctions or measures aimed at mitigating their effects. Additionally, it is plausible that these changes are influenced by the ongoing conflict.

6. General government revenue % of GDP

Table 14. Weights of control units in the synthetic unit for General government revenue % of GDP.

Country	Weight
Brazil	*0.375*
India	0.000
South Africa	0.000
Mexico	*0.004*
Turkiye	0.000
Argentina	0.000
Colombia	*0.002*
Egypt	0.000
Chile	*0.092*
China	0.000
Malaysia	*0.059*
Thailand	0.000
Philippines	0.000
Indonesia	0.000
Saudi Arabia	*0.131*
Iran	0.000
United Arab Emirates (UAE)	*0.338*

Table 15. Weights of covariates in making synthetic unit for General government revenue % of GDP.

Covariate	Weight
GDP per capita, current prices U.S. dollars	*0.003*
Gross national savings % of GDP	*0.092*
Inflation, average consumer prices % change	*0.001*
Volume of exports of goods and services % change	*0.004*
Total investment % of GDP	*0.187*
Current account balance % of GDP	*0.009*
General government total expenditure % of GDP	*0.306*
General government primary net lending/borrowing % of GDP	*0.005*
Volume of imports of goods and services % change	*0.002*
General government gross debt % of GDP	*0.011*
Exchange Rate U.S. dollars	0
Economic Complexity Index (only till 2021)	*0.123*
Total natural resources rents % of GDP	*0.255*
Rule of Law Index	0

Figure 21. General government revenue % of GDP for Russia and Synthetic unit in 2001-2023.

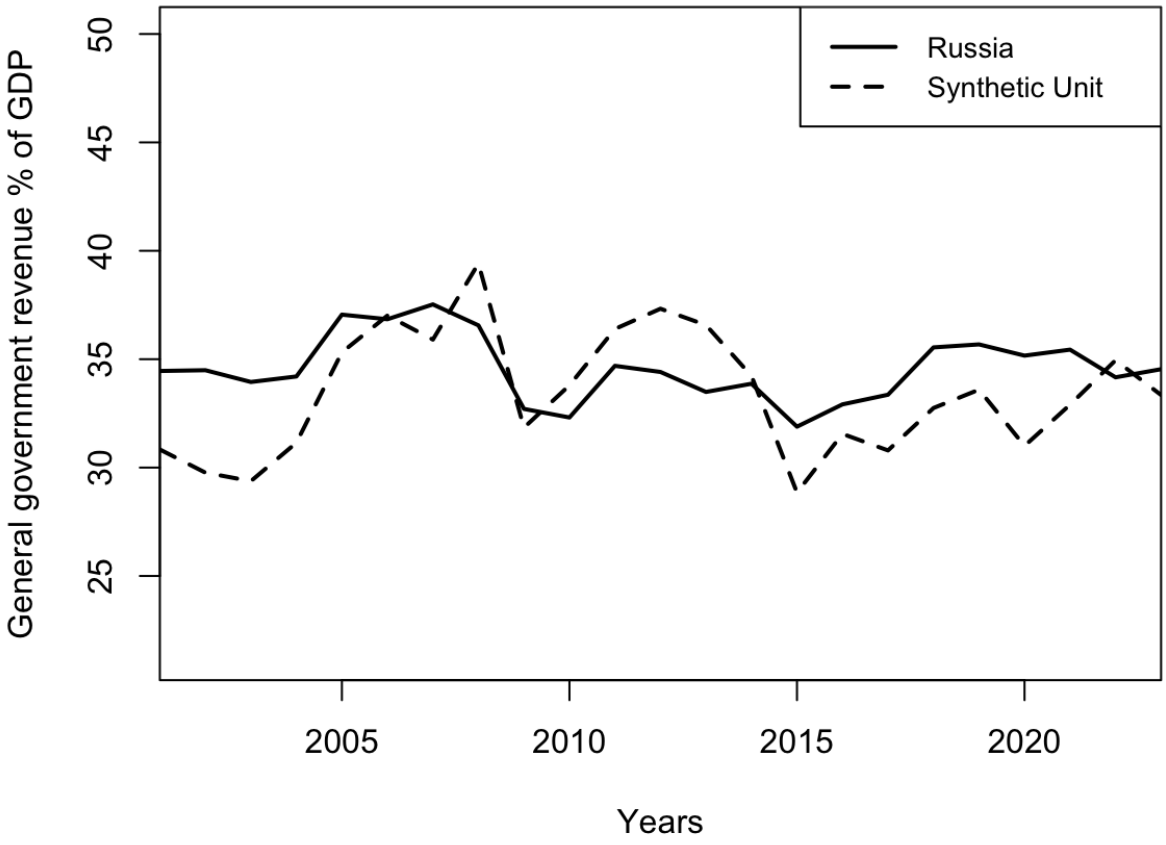
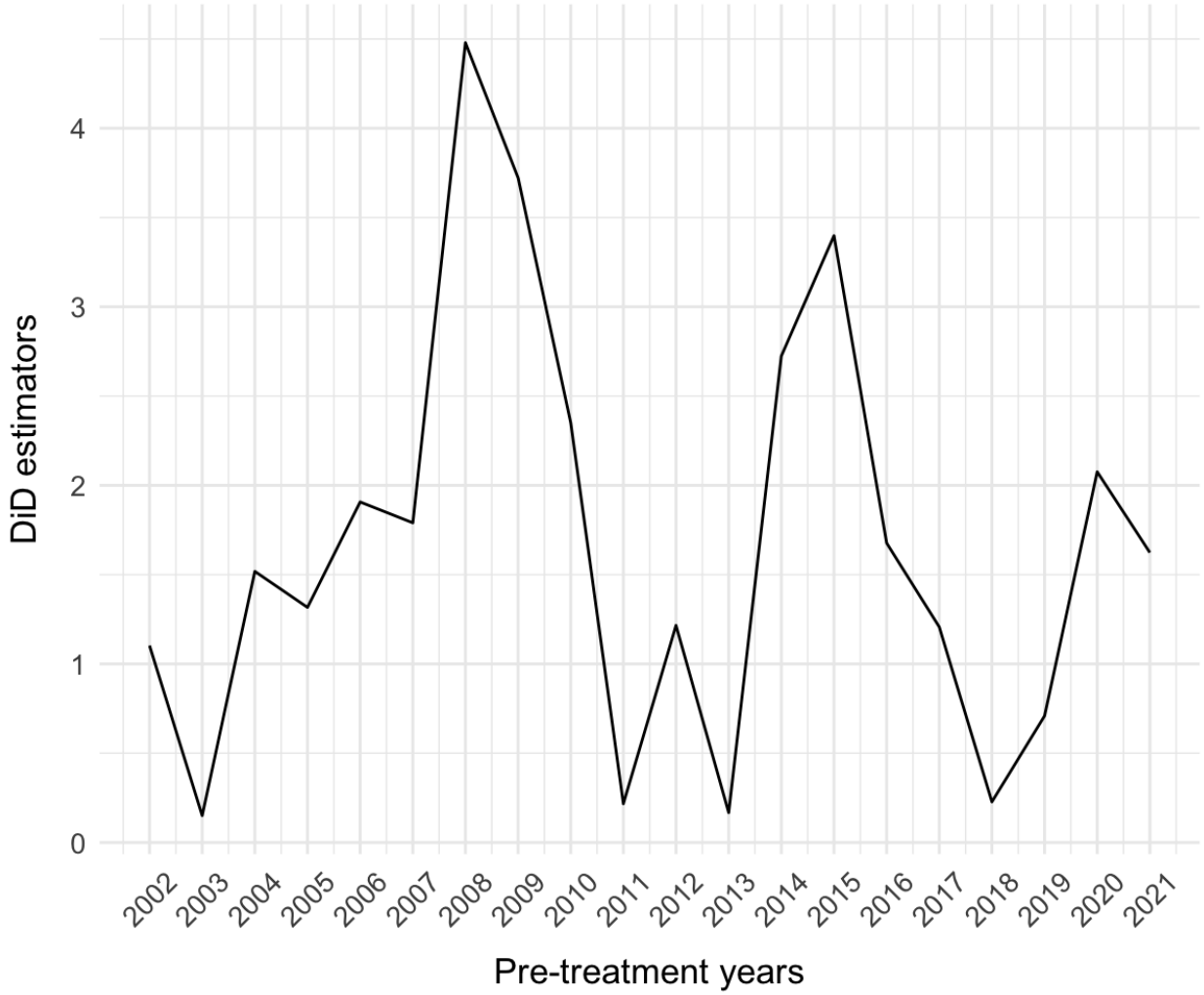


Figure 21 illustrates the General government revenue % of GDP for Russia and the Synthetic unit from 2001 to 2023. We can see that the trends are quite similar, although with some deviations present.

Figure 22. Every pre-treatment year DiD estimators for Russian General government revenue % of GDP.



On Figure 22, it is evident that the deviation between the trends of the synthetic unit and Russia reaches a difference of approximately 4% of GDP. However, it's notable that strong deviations start in 2014.

Figure 23. Range of DiD estimators for Russian General government revenue % of GDP.

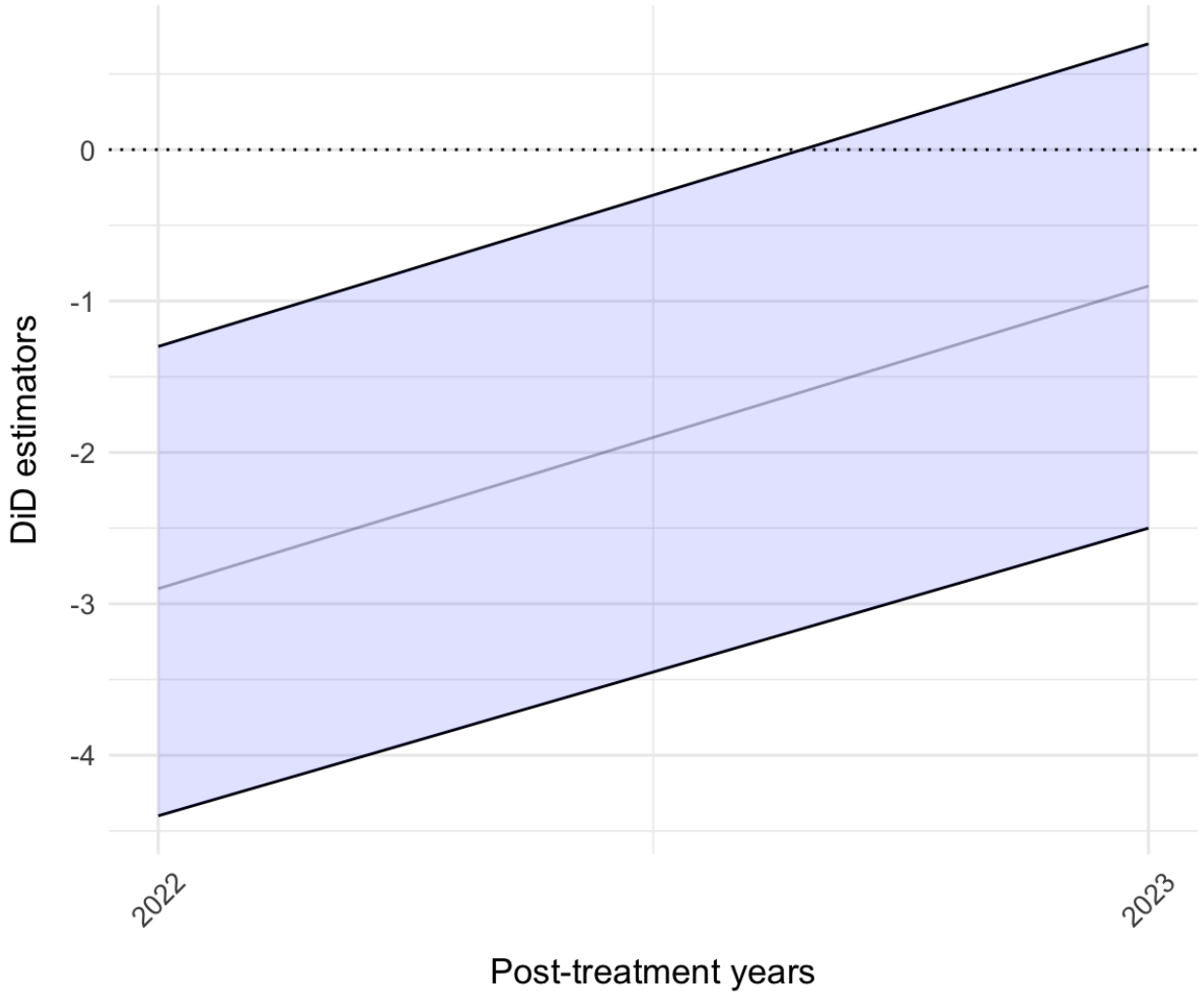
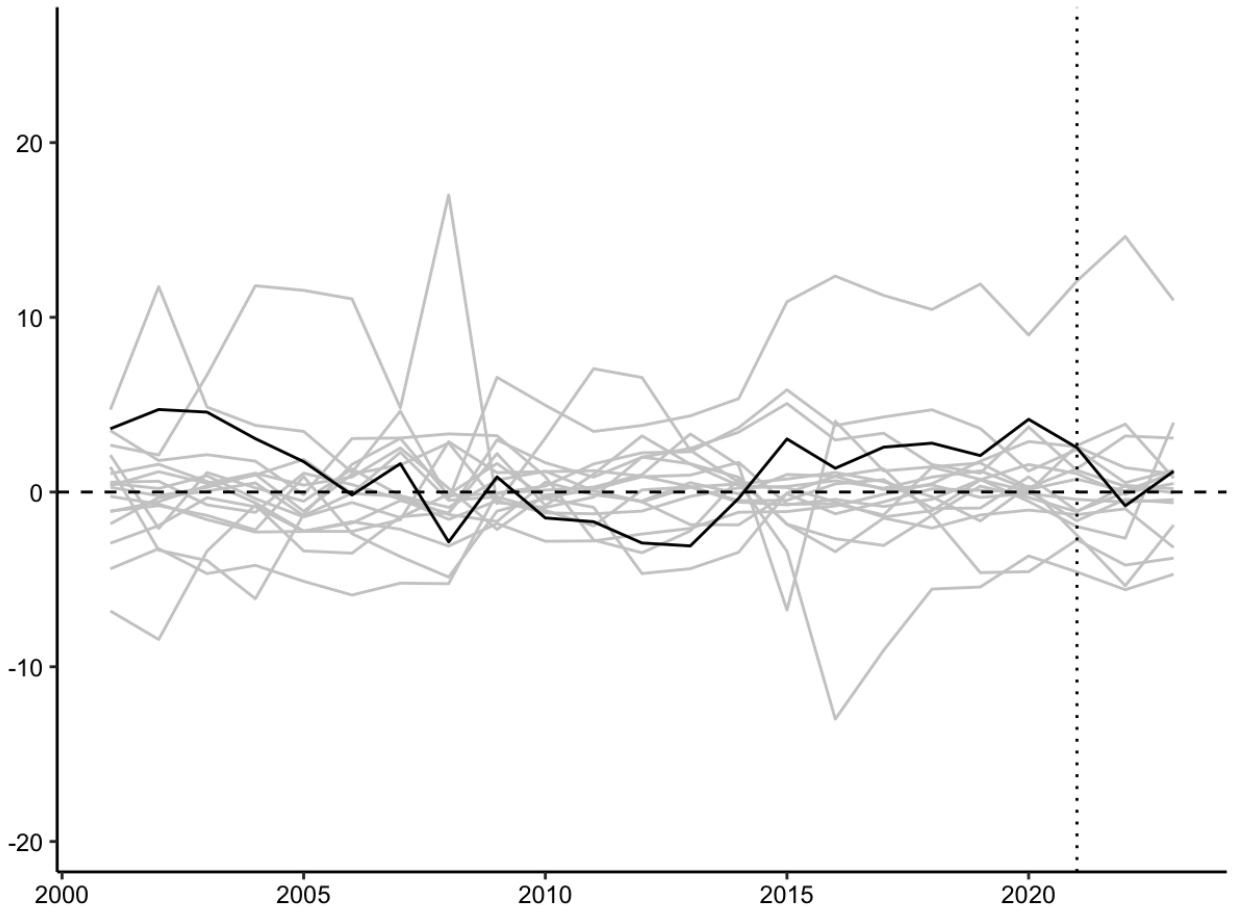


Figure 23 indicates that the possible effect is relatively insignificant. In 2023, the upper threshold crosses 0, which raises doubts about the existence of an effect. Therefore, it is necessary to do placebo check.

Figure 24. Placebo check for Russian General government revenue % of GDP.



After conducting a placebo test on Figure 24, it becomes apparent that there is no noticeable effect, as there is no significant difference in trends between the control units and the treatment unit. Consequently, we cannot confidently assert any impact of sanctions on government revenues. Therefore, any changes in government revenues observed in Russia may be attributed to factors other than the sanctions.

7. Inflation, average consumer prices % change

Table 16. Weights of control units in the synthetic unit for Inflation, average consumer prices % change.

Country	Weight
Brazil	0.000
India	0.000
South Africa	0.000
Mexico	0.000
Turkiye	0.000
Argentina	0.000
Colombia	*0.579*
Egypt	0.000
Chile	0.000
China	0.076
Malaysia	0.000
Thailand	0.000
Philippines	0.000
Indonesia	0.000
Saudi Arabia	*0.044*
Iran	*0.185*
United Arab Emirates (UAE)	*0.117*

Table 17. Weights of covariates in making synthetic unit for Inflation, average consumer prices % change.

Covariate	Weight
GDP per capita, current prices U.S. dollars	*0.172*
Gross national savings % of GDP	*0.111*
General government revenue % of GDP	0
Volume of exports of goods and services % change	*0.077*
Total investment % of GDP	*0.001*
Current account balance % of GDP	0
General government total expenditure % of GDP	0
General government primary net lending/borrowing % of GDP	*0.046*
Volume of imports of goods and services % change	*0.126*
General government gross debt % of GDP	*0.023*
Exchange Rate U.S. dollars	*0.331*
Economic Complexity Index (only till 2021)	0
Total natural resources rents % of GDP	*0.101*
Rule of Law Index	*0.011*

Figure 25. Inflation, average consumer prices % change for Russia and Synthetic unit in 2001-2023.

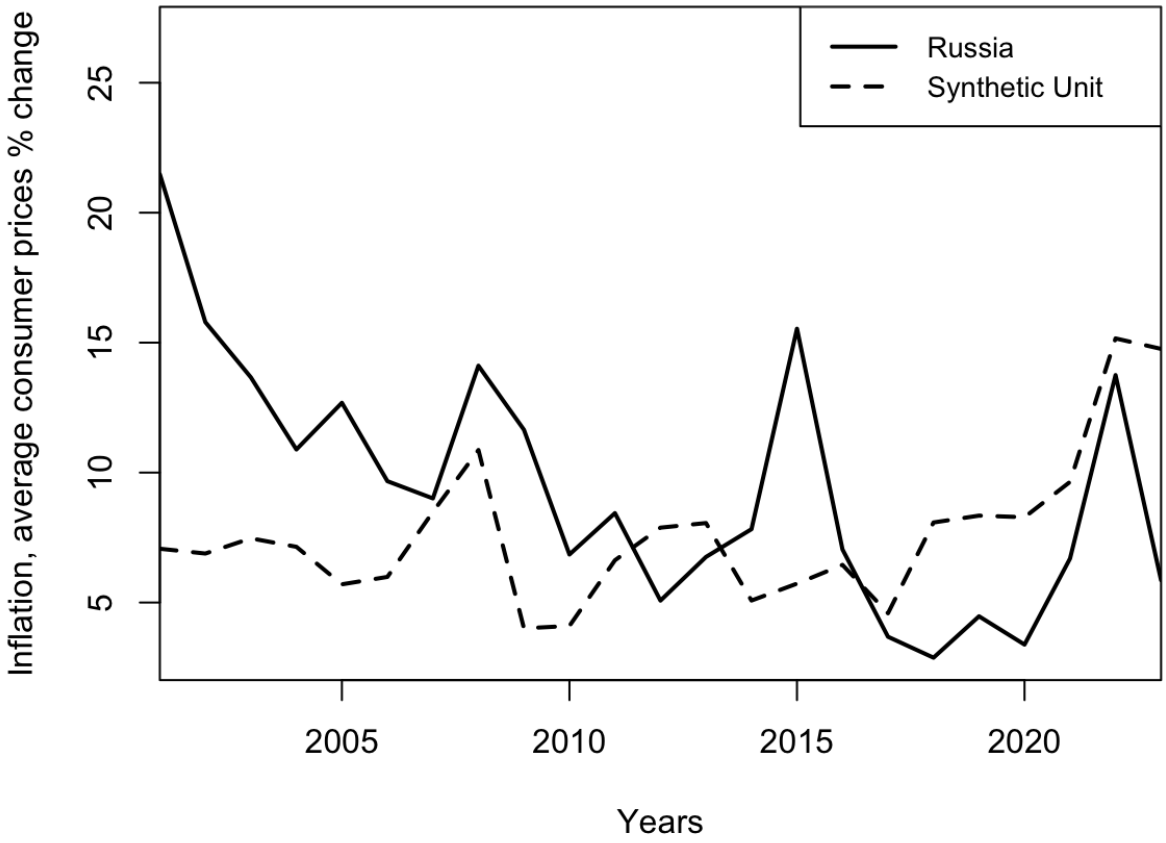
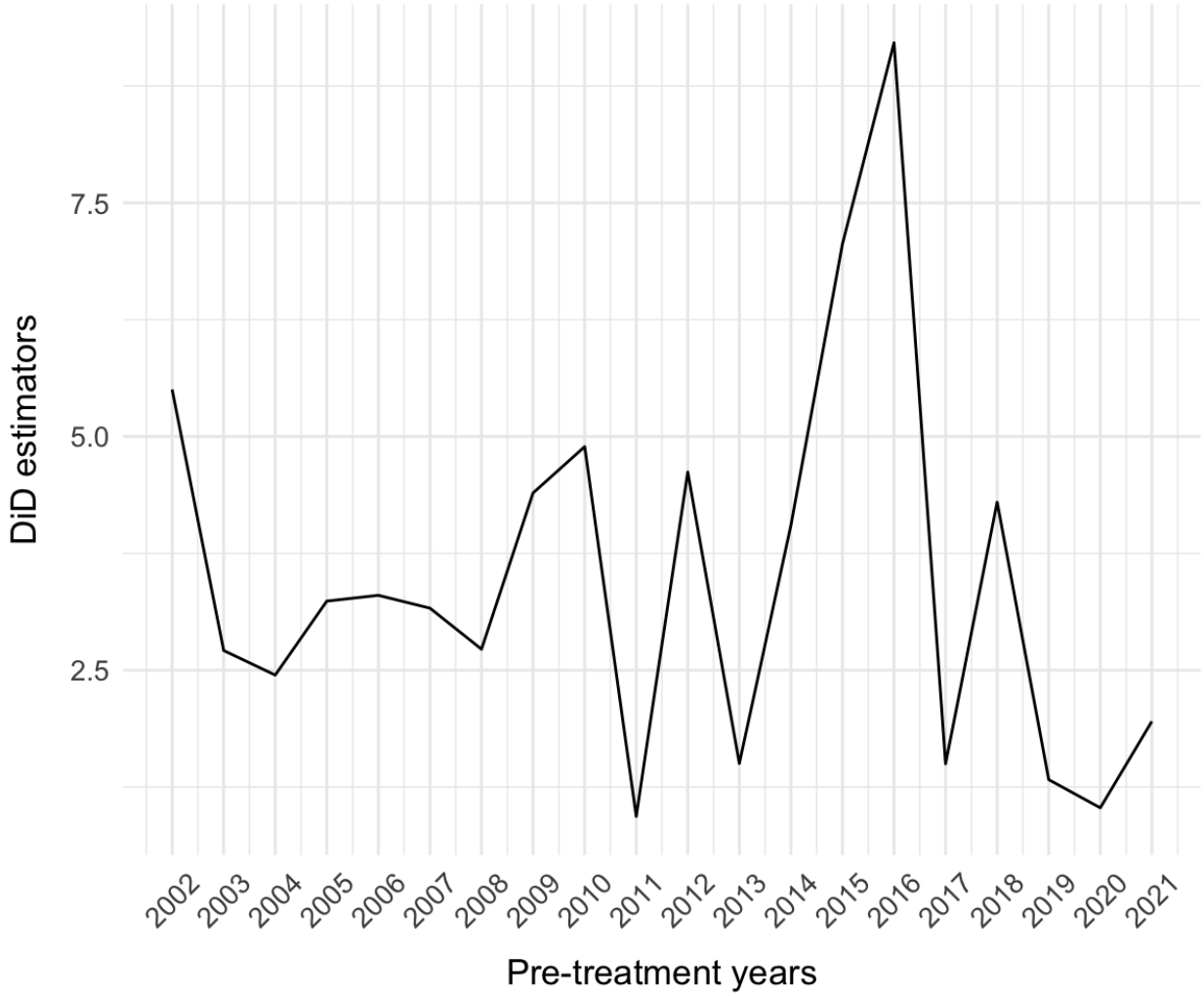


Figure 25 illustrates that the trends between the control and treatment groups are different, with numerous deviations observed. These deviations have the potential to distort the results, leading to a possible effect that is solely attributed to the differences between Russia and synthetic Russia.

Figure 26. Every pre-treatment year DiD estimators for Russian Inflation, average consumer prices % change.



On Figure 26, we can specifically observe that the difference between trends reaches, in some cases, more than 8.5% of the growth difference.

Figure 27. Range of DiD estimators for Russian Inflation, average consumer prices % change.

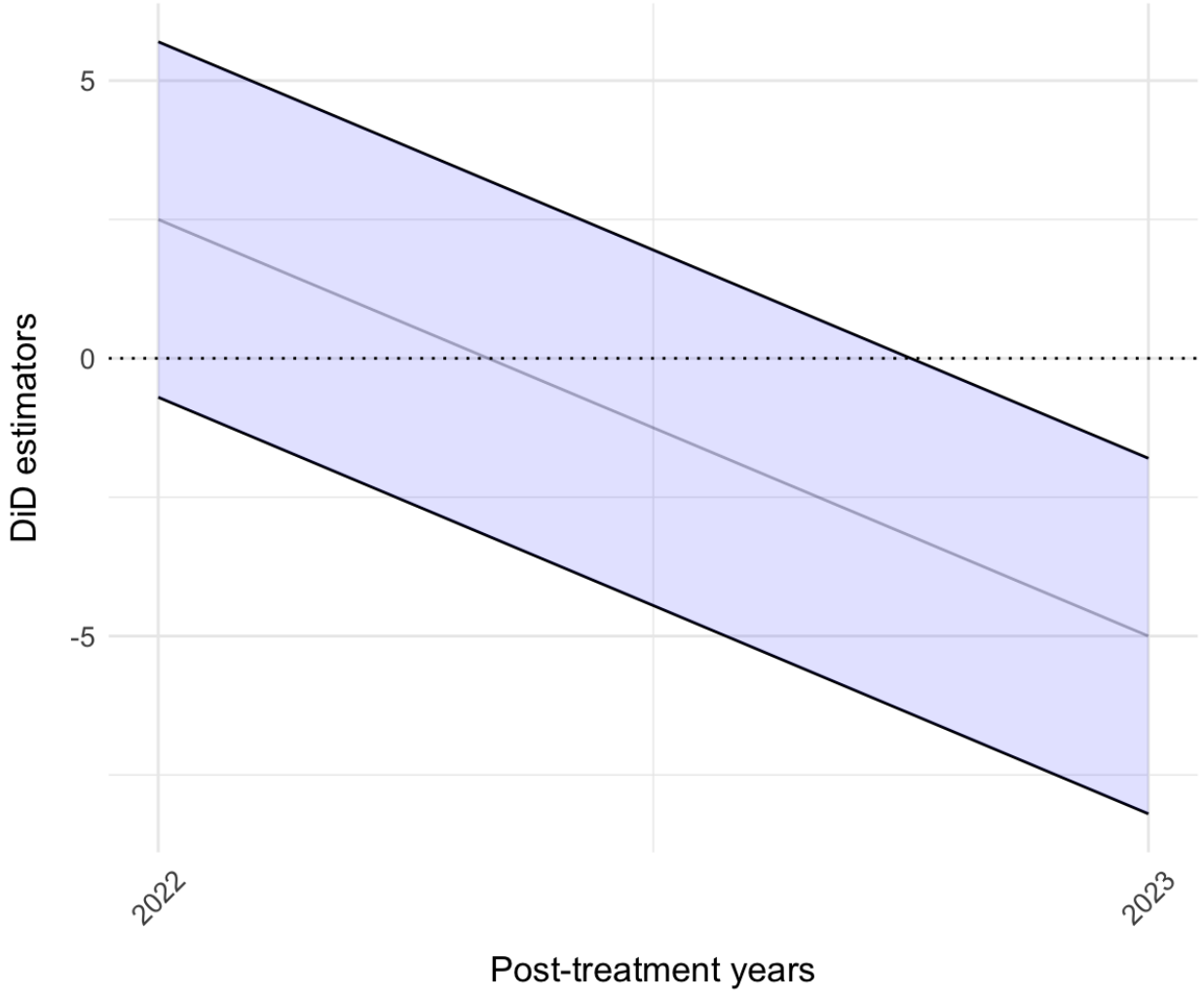


Figure 27 also indicates that the estimated effect may be insignificant. Since 2022, a decline has been observed, with a negative effect evident by 2023.

Figure 28. Placebo check for Russian Inflation, average consumer prices % change.

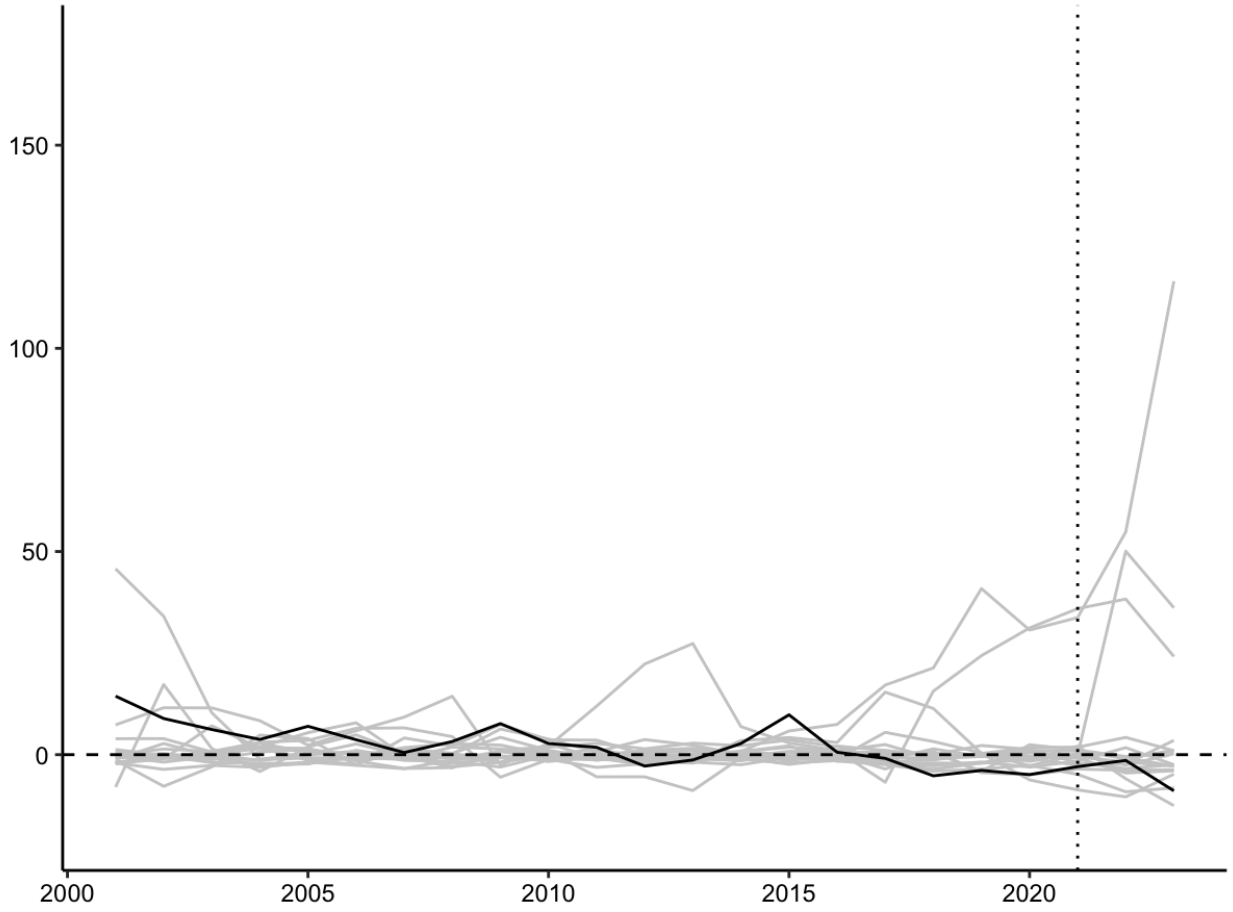


Figure 28 illustrates that following the point of treatment, the trends of the control units and Russia exhibit minimal differences. This suggests that changes in the level of inflation observed in Russia may not be directly attributable to the imposed sanctions. While sanctions could potentially impact inflation, the lack of distinctive differences in trends suggests that other factors are likely contributing to the observed changes.

Discussion

Summarizing the results, we can say that the sanctions imposed have had a discernible effect primarily on indicators such as imports and exports, and possibly on investments. These results were confirmed by a placebo test, which shows that the import indicator in 2022 exhibits a decrease in rate of growth compared to the control unit, but by 2023, there is an increase in rate of growth compared to the control units. This suggests that import growth in Russia is more significant than in the control units, possibly due to Russia finding new partners and increasing parallel imports.

Regarding exports, the effect is negative, indicating that the export growth rate is much lower than that of the control unit, and even declining by 2023. As for investments, caution is necessary in interpreting the results, as the placebo test showed that some control units have trends similar to Russia. Nonetheless, there is an estimated effect on investments, though other factors may also contribute to these results. Importantly, the estimated positive effect of sanctions on investments was not anticipated and is a crucial finding. Sanctions designed to discourage foreign investment in Russia may have led to an increase in domestic investment and the return of capital from abroad, also influencing the investment increase.

For the other indicators considered, we cannot attribute visible changes to the imposed sanctions since the placebo test showed similar trends in control units, indicating a global trend rather than a specific effect of sanctions.

Another significant result is that the possible effect of sanctions is only short-term, because further in 2023 there is changes of indicators observed. This suggests that Russia has implemented measures to mitigate the negative impact of the sanctions. The short-term changes of indicators also indicate Russia's economic resilience since Russian economy was able to mitigate negative effect of sanctions. Moreover, continuous monitoring and analysis are necessary to determine the long-term effects. The results may also suggest that the impact of sanctions on Russia's economic resilience may be mitigated by their insufficient force or targeting.

The political consequences are equally significant. If the target country maintains sufficient economic stability or has strategic alternatives, the effectiveness of sanctions as a political tool may be limited. The results show that sanctions alone are not sufficient to trigger a significant

economic downturn, indicating a need for a change in the sanctions strategy. Additionally, target countries can shift their partnerships, as Russia has done by establishing closer economic ties with China and India, potentially nullifying the sanctions' effects. Finally, the results highlight the importance of considering broader factors, such as global economic shifts and domestic policy adjustments, when formulating and enforcing sanctions.

Conclusion

The imposition of economic sanctions against Russia has generated substantial debate regarding their effectiveness and long-term consequences. This research paper aimed to evaluate the impact of these sanctions on the economic resilience of Russia following the events of 2022.

The analysis reveals that sanctions have had a possible impact primarily on Russia's import and export dynamics. Investment patterns also exhibited notable changes, with an unexpected positive effect on total investments. Moreover, the study highlights that the impact of sanctions appears to be primarily short-term. By 2023, several economic indicators showed changes, indicating Russia's ability to implement measures to mitigate the adverse effects of sanctions. This resilience points to the effectiveness of Russia's economic adaptation strategies, such as import substitution, diversification of trade partners, and expansion of domestic production capacity.

Furthermore, it is important to mention that the research has set of limitations, Firstly, one significant limitation is the exclusion of certain indicators of economic resilience due to the unavailability of data, especially about Russia. This omission may affect the comprehensiveness of the assessment of sanctions' impact. Secondly, many indicators used in the study can be influenced by other factors under current conditions, which could confound the results. Thus, the ongoing war in Ukraine is the primary confounder in assessing the impact of sanctions, as it is the root cause of their imposition. Consequently, it is challenging to separate the effects of the war from the effects of the sanctions, given their association. Also, the study might be influenced by Russia's responses to the sanctions or measures taken to mitigate their impact.

In conclusion, the sanctions imposed on Russia have had mixed effects. While they have disrupted certain economic activities, they have also prompted adaptive responses that highlight the resilience of the Russian economy. The findings suggest that sanctions alone are insufficient to induce significant economic downturns in a target country with substantial strategic alternatives. Continuous monitoring and analysis are essential to understanding the long-term effects of sanctions and informing future policy decisions.

Bibliography:

1. Abadie, Alberto, Alexis Diamond, and Jens Hainmueller. “Comparative politics and the synthetic control method.” *American Journal of Political Science* 59, no. 2 (2015): 495-510.
2. Abadie, Alberto, and Javier Gardeazabal. “The Economic Costs of Conflict: A Case Study of the Basque Country.” *The American Economic Review* 93, no. 1 (2003): 113–32. http://www.jstor.org/stable/3132164.
3. Ahn, Daniel P., and Rodney D. Ludema. “The sword and the shield: The economics of targeted sanctions.” *European Economic Review* 130 (2020): 103587.
4. Allen, Susan Hannah, and David J Lektzian. “Economic Sanctions: A Blunt Instrument?” *Journal of Peace Research* 50, no. 1 (2013): 121–35. http://www.jstor.org/stable/23441161.
5. Andermo, Erik, and Martin Kragh. “Sanctions and dollar dependency in Russia: resilience, vulnerability, and financial integration.” *Post-Soviet Affairs* 37, no. 3 (2021): 276-301.
6. Asada, Masahiko. “Definition and legal justification of sanctions.” In *Economic sanctions in international law and practice*, pp. 3-23. Routledge, 2019.
7. Biersteker, Thomas, and Clara Portela. “EU Sanctions in Context: Three Types.” European Union Institute for Security Studies (EUISS), 2015. http://www.jstor.org/stable/resrep06822.
8. Briguglio, Lino, Gordon Cordina, Nadia Farrugia, and Stephanie Vella. “Conceptualising and Measuring Economic Resilience.” In *Pacific Islands Regional Integration and Governance*, ed. Satish Chand, 26–49. ANU Press, 2005. http://www.jstor.org/stable/j.ctt2jbk3w.11
9. Brooks, Risa A. 2002. “Sanctions and Regime Type: What Works, and When?” *Security Studies* 11 (4): 1–50. doi:10.1080/714005349.
10. Caprile Anna, and D. E. L. I. V. O. R. I. A. S. Angelos. “EU sanctions on Russia: Update, economic impact and outlook.” (2023).
11. Chen Yangyang, Jiang, Lei Wang Jiexin, and Wang Ruisong. “Impact assessment of energy sanctions in geo-conflict: Russian–Ukrainian war.” *Energy Reports* 9 (2023): 3082–3095.
12. Council, Atlantic. “IMPACT OF SANCTIONS ON RUSSIA’S ENERGY SECTOR.” (2018).
13. Cox, Dan G., and A. Cooper Drury. “Democratic sanctions: Connecting the democratic peace and economic sanctions.” *Journal of Peace Research* 43, no. 6 (2006): 709-722.
14. Deborah Wilkler, and Wuester Lucie. “Implications of Russia’s Invasion of Ukraine for Its Value Chains.” In Global Economic Consequences of the War in Ukraine: Sanctions, Supply Chains and Sustainability, ed. Luis Garicano, Dominic Rohner, and Beatrice Weder di Mauro. CEPR Press, 2022.
15. Drezner, Daniel W. “Sanctions Sometimes Smart: Targeted Sanctions in Theory and Practice.” *International Studies Review* 13, no. 1 (2011): 96–108. http://www.jstor.org/stable/23016144.
16. Drott Constantin, Goldbach Stefan, and Nitsch Volker. “The effects of sanctions on Russian banks in TARGET2 transactions data.” *Journal of Economic Behavior & Organization* 219 (2024): 38-51.
17. Ertimi, Basem, and Basem Oqab. “The Impact of Economic Sanctions on Oil Industry: A Case Study of Libya Using the Synthetic Control Method.” *Journal of Pure & Applied Sciences* 21, no. 2 (2022): 156-161.
18. Farzanegan, Mohammad Reza. “The effects of international sanctions on Iran’s military spending: A synthetic control analysis.” *Defence and Peace Economics* 33, no. 7 (2022): 767-778.

19. Filipenko, Anton, Olena Bazhenova, and Roman Stakanov. 2020. "ECONOMIC SANCTIONS: THEORY, POLICY, MECHANISMS". *Baltic Journal of Economic Studies* 6 (2), 69-80. https://doi.org/10.30525/2256-0742/2020-6-2-69-80.
20. Giumelli, Francesco. "How Do Sanctions Work?" *How EU Sanctions Work: A New Narrative*. European Union Institute for Security Studies (EUISS), 2013. http://www.jstor.org/stable/resrep06969.6.
21. Hallegatte, Stephane. "Economic Resilience: Definition and Measurement." *World Bank Policy Research Working Paper* 6852 (2014).
22. Jürgen Hafele, Lara Bertram, Nadia Demitry, Luc-André Le Lannou, Lucie Korinek, and Joachim Barth, The Economic Resilience Index: Assessing the Ability of EU Economies to Thrive in Times of Change (Cologne: ZOE Institute for Future-fit Economies, 2023).
23. Kaempfer, William H., and Anton D. Lowenberg. "The political economy of economic sanctions." *Handbook of defense economics* 2 (2007): 867-911.
24. Kaul, Ashok, Stefan Klößner, Gregor Pfeifer, and Manuel Schieler. "Synthetic control methods: Never use all pre-intervention outcomes together with covariates." (2015).
25. Korhonen, Iikka. "Economic sanctions on Russia and their effects." In *CESifo Forum*, vol. 20, no. 04, pp. 19-22. München: ifo Institut–Leibniz-Institut für Wirtschaftsforschung an der Universität München, 2019.
26. Kuhls, Stefan, Kormann da Silva, Nicole, Memmen, Max, Schulze, Nico, Hafele, Jan, Tripathi, Rashi, Temory, Farid, Dirth, Ebba, and Barth, Johannes. "Defining Resilience in Economic Policymaking: Origins and Current Uses." Transformation Policy Brief no. 8 (June 2022). ZOE Institute for Future-fit Economies, Cologne.
27. Martin, Ron, and Peter Sunley. "On the Notion of Regional Economic Resilience: Conceptualization and Explanation." Journal of Economic Geography 15, no. 1 (January 2015): 1–42. https://doi.org/10.1093/jeg/lbu015.
28. Meissner, Katharina. "How to sanction international wrongdoing? The design of EU restrictive measures." *The Review of International Organizations* 18, no. 1 (2023): 61-85.
29. Ming Li, Zhang Zaixu, Wang Xiaoyu, and Guo Rui. "Dynamic spillover effects between EU economic sanctions against Russia, oil prices, and share prices of energy companies in third countries: evidence from China and the USA." *Environmental Science and Pollution Research* (2024): 1-15.
30. Mirkina, Irina. "FDI and sanctions: An empirical analysis of short-and long-run effects." *European Journal of Political Economy* 54 (2018): 198-225.
31. Nguyen, Trung Thanh, and Manh Hung Do. "Impact of economic sanctions and counter-sanctions on the Russian Federation's trade." *Economic Analysis and Policy* 71 (2021): 267-278.
32. Olena, Sokolovska. "Economic sanctions against Russia: assessing the policies to overcome their impact." *Экономика региона* 16, no. 4 (2020): 1115-1131.)
33. Rose, Adam. "Defining and measuring economic resilience to disasters." *Disaster Prevention and Management: An International Journal* 13, no. 4 (2004): 307–314, 308.
34. Shin, Geiguen, Seung-Whan Choi, and Luo. "Do Economic Sanctions Impair Target Economics?" *International Political Science Review / Revue Internationale de Science Politique* 37, no. 4 (2016): 485–99. http://www.jstor.org/stable/44632320.
35. Wen, Jun, Xinxin Zhao, and Chun-Ping Chang. "The impact of international sanctions on innovation of target countries." *Economics & Politics* (2022).
36. Wen, Jun, Xinxin Zhao, Quan-Jing Wang, and Chun-Ping Chang. "The impact of international sanctions on energy security." *Energy & Environment* 32, no. 3 (2021): 458-480.

Internet Resources:

1. "International sanctions during the Russo-Ukrainian War." Wikipedia. Wikimedia Foundation, May 26, 2024. https://en.wikipedia.org/wiki/International_sanctions_during_the_Russo-Ukrainian_War.
2. European Council. "EU adopts fifth round of sanctions against Russia over its military aggression against Ukraine." Press release, April 8, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/04/08/eu-adopts-fifth-round-of-sanctions-against-russia-over-its-military-aggression-against-ukraine/.
3. European Council. "EU adopts its latest package of sanctions against Russia over the illegal annexation of Ukraine's Donetsk, Luhansk, Zaporizhzhia, and Kherson regions." Press release, October 6, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/10/06/eu-adopts-its-latest-package-of-sanctions-against-russia-over-the-illegal-annexation-of-ukraine-s-donetsk-luhansk-zaporizhzhia-and-kherson-regions/.
4. European Council. "One year of Russia's full-scale invasion and war of aggression against Ukraine: EU adopts its 10th package of economic and individual sanctions." Press release, February 25, 2023. https://www.consilium.europa.eu/en/press/press-releases/2023/02/25/one-year-of-russia-s-full-scale-invasion-and-war-of-aggression-against-ukraine-eu-adopts-its-10th-package-of-economic-and-individual-sanctions/.
5. European Council. "Russia's war of aggression against Ukraine: EU adopts 9th package of economic and individual sanctions." Press release, December 16, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/12/16/russia-s-war-of-aggression-against-ukraine-eu-adopts-9th-package-of-economic-and-individual-sanctions/.
6. European Council. "Russia's aggression against Ukraine: EU adopts sixth package of sanctions." Press release, June 3, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/06/03/russia-s-aggression-against-ukraine-eu-adopts-sixth-package-of-sanctions/.
7. European Council. "Russia's aggression against Ukraine: EU adopts maintenance and alignment package." Press release, July 21, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/07/21/russia-s-aggression-against-ukraine-eu-adopts-maintenance-and-alignment-package/.
8. European Council. "Russia's military aggression against Ukraine: EU imposes sanctions against President Putin and Foreign Minister Lavrov and adopts wide-ranging individual and economic sanctions." Press release, February 25, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/02/25/russia-s-military-aggression-against-ukraine-eu-imposes-sanctions-against-president-putin-and-foreign-minister-lavrov-and-adopts-wide-ranging-individual-and-economic-sanctions/.
9. European Council. "Russia's military aggression against Ukraine: Council imposes sanctions on 26 persons and one entity." Press release, February 28, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/02/28/russia-s-military-aggression-against-ukraine-council-imposes-sanctions-on-26-persons-and-one-entity/.
10. European Council. "Russia's military aggression against Ukraine: Fourth EU package of sectoral and individual measures." Press release, March 15, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/03/15/russia-s-military-aggression-against-ukraine-fourth-eu-package-of-sectoral-and-individual-measures/.
11. European Council. "Russia's war of aggression against Ukraine: EU adopts 11th package of economic and individual sanctions." Press release, June 23, 2023. https://www.consilium.europa.eu/en/press/press-releases/2023/06/23/russia-s-war-of-aggression-against-ukraine-eu-adopts-11th-package-of-economic-and-individual-sanctions/.
12. European Council. "Russia's war of aggression against Ukraine: EU adopts 12th package of economic and individual sanctions." Press release, December 18, 2023.

https://www.consilium.europa.eu/en/press/press-releases/2023/12/18/russia-s-war-of-aggression-against-ukraine-eu-adopts-12th-package-of-economic-and-individual-sanctions/.
13. European Council. “Russian recognition of the non-government-controlled areas of the Donetsk and Luhansk oblasts of Ukraine as independent entities: EU adopts package of sanctions.” Press release, February 23, 2022. https://www.consilium.europa.eu/en/press/press-releases/2022/02/23/russian-recognition-of-the-non-government-controlled-areas-of-the-donetsk-and-luhansk-oblasts-of-ukraine-as-independent-entities-eu-adopts-package-of-sanctions/.
14. Frank, R. G. “Private Banking 2024.” Accessed 24 May 2024. https://frankrg.com/research/private-banking-2024.

Data sources:

1. International Monetary Fund. “World Economic Outlook Database.” Accessed 23 April 2024. https://www.imf.org/en/Publications/WEO/weo-database/2024/April.
2. Center for International Development (CID), Harvard University. “Glossary.” Accessed 23 April 2024. https://atlas.cid.harvard.edu/glossary.
3. World Bank. “Total Natural Resources Rents (% of GDP).” Accessed 23 April 2024. https://data.worldbank.org/indicator/NY.GDP.TOTL.RT.ZS.
4. Our World in Data. “Rule of Law Index.” Accessed 23 April 2024. https://ourworldindata.org/grapher/rule-of-law-index.
5. International Monetary Fund. “IMF Data Portal.” Accessed 23 April 2024. https://data.imf.org/?sk=7a51304b-6426-40c0-83dd-ca473ca1fd52.