Examining the Impact of 2014 International Sanctions on Russian Foreign Direct Investment

by

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Abstract

This study utilizes an Autoregressive Integrated Moving Average (ARIMA) model to conduct an intervention analysis, examining the impact of sanctions imposed on Russia after the annexation of Crimea on Russian Foreign Direct Investment (FDI). Its objective is to assess the influence of sanctions on FDI inflows in three key industries: agri-mining, manufacturing, and services. Data for the study is obtained from several sources, including the Bank of Russia, UNCTAD, the Global Sanction Database, the World Bank, and Trading Economics.

The research reveals that economic sanctions imposed in 2014 had a negative impact on FDI inflows in Russia's major industries. However, as more sanctions were imposed over time, a positive relationship emerged between the number of sanctions and FDI. The actual change in FDI after the 2014 sanctions differed from expectations. Particularly, the tertiary industry experienced a significant decline in FDI compared to pre-2014 levels. This indicates that despite Crimea's annexation and stricter sanctions, Russian industries still attracted foreign investment, albeit at a slower pace.

Based on the opportunity and risk aversion arguments, it is concluded that the risk associated with sanctions led to reduced investment in Russia in 2014. However, this decline in investment created an opportunity for non-sanctioning countries to increase their investments in Russia. As a result, despite the increased number of sanctions, the inflow of FDI into Russia continued to increase after 2014. Thus, these arguments help unravel the puzzle of Russia's FDI and economic sanctions relationship.

Keywords: *Economic Sanctions, Russia, Foreign Direct Investment, Primary Industry, Secondary Industry, Tertiary Indust*

Introduction

Over the past eighty years, countries have employed sanctions not only as a foreign policy tool but also as a substitute for military action. During this period, numerous countries across the globe have encountered various forms of sanctions, resulting in limitations on cross-border engagements, including trade, arms imports, military connections, and financial transactions (Felbermayr et al. 2020; Hufbauer et al. 2016). Economic sanctions have predominantly gained prominence in the last two decades of the twentieth century due to their frequent use. Sajjad Bagheri and Hamid Reza Akbarpour (2016, 90) define economic sanctions as intentional policy measures undertaken by one country to restrict or halt trade and economic interactions with another specific country. These sanctions can be imposed unilaterally or with the support of multilateral institutions.

Despite the frequent use of economic sanctions and the extensive literature on the subject, their impact on other economic instruments remains a topic of contention (Baldwin and Pape 1998; Barber 1979; Drury 1998; Dashti-Gibson, Davis, and Radcliff 1997; Pape 1997; Drezner 2011; Kaempfer and Lowenberg 1988; Hufbauer et al. 2016). Gaining a better understanding of this mechanism is crucial to determine the extent of the impact of economic sanctions on the target country.

This paper aims to examine the case study of Russia to investigate the impact of economic sanctions, specifically those related to finance and/or trade, on the inflow of foreign direct investment (FDI) in Russia. It is because, since 2014, Russia has faced substantial sanctions from several influential countries, including the United States, the United Kingdom, Australia, Canada, Japan, and member states of the European Union. These sanctions were imposed in response to Russia's annexation of Crimea in 2014 and its involvement in the conflict in eastern Ukraine. The targeted sectors of these sanctions targeted trade, finance, defence, and energy, recognizing their significant contributions to Russia's economy (Vatansever 2020, 2–3).

Furthermore, additional sanctions were implemented, such as travel restrictions and limitations on access to bank accounts in the sanctioning countries for individuals, as well as restrictions on investments by certain entities, based on the belief of their association or support for the Kremlin (see Table 1.1-1)

Table 1.1-1: Sanctions imposed on Russia between 2010 – 2017 (Felbermayr et al. 2020)

Sanctioning State	**Begin**	**End**	**Trade**	**Financial**
Georgia	2008	2011	1	0
Australia	2014	Ongoing	1	1
Canada	2014	Ongoing	1	1
EU	2014	Ongoing	1	1
EU, Montenegro, Iceland, Albania, Liechtenstein, Norway, Ukraine	2014	Ongoing	1	1
Japan	2014	Ongoing	1	1
New Zealand	2014	Ongoing	0	1
Switzerland	2014	Ongoing	1	1
United States	2014	Ongoing	1	1
United States	2017	Ongoing	1	1

The primary objective of this paper is to address the following research inquiries: (1) To what extent did the economic sanctions imposed on Russia in 2014 affect the influx of foreign direct investment (FDI) into the country? (2) Were there any observable alterations in the inflow of FDI across various industries after the implementation of these economic sanctions in 2014?

The objective of this paper is to examine the relationship between the economic sanctions imposed on Russia in 2014 and their impact on the inflow of foreign direct investment (FDI) in three major industries within Russia. The study reveals that Russia experienced a decline in the momentum of FDI inflows following the imposition of economic sanctions. However, despite the increasing number of sanctions between 2014 and 2019, the country continued to receive FDI, and over time, the inflow increased across all three industries but not to the rate of pre-2014 years. Furthermore, the findings indicate that the tertiary industry, predominantly composed of the service sector, was the most affected in terms of receiving FDI after the imposition of economic sanctions in the years following the annexation of Crimea.

The thesis is organized as follows: Section I presents a comprehensive literature review on the relationship between foreign direct investment (FDI) and economic sanctions, focusing specifically on the opportunity and risk aversion arguments. It also discusses existing research, highlights the research gap, and emphasizes the significance of this study. Section II introduces the model specification, provides a detailed description of the data and data sources, and presents descriptive statistics of the final dataset used in the study.

Moving on to Section III, it is divided into two subsections. Subsection I presents and discusses the results of the Unit Root Test and the implementation of the ARMA model for the intervention analysis. Subsection II further divides into four sub-subsections, presenting the obtained results related to the two primary research questions: the impact of sanctions on FDI and the variations in investment across three industries following the economic sanctions of 2014 compared to the period from 2010 to 2013. These results are analyzed in the context of the opportunity and risk aversion arguments.

In Section IV, the study concludes by summarizing the findings, acknowledging limitations, and providing recommendations for future research. Lastly, Section V offers a set of policy recommendations based on the study's findings.

1. Literature Review

This section builds upon the existing scholarship on the relationship between sanctions and foreign direct investment (FDI) by presenting two potential pathways that illustrate how sanctions can affect the flow of FDI. The first pathway focuses on the expansion of investment opportunities for international businesses in a sanctioned state, known as the opportunity argument. The second pathway involves the perception of increased risk associated with investing in a sanctioned country, known as the risk aversion argument. These contrasting perspectives lead to two different predictions regarding changes in FDI flows when economic sanctions are imposed on recipient countries.

According to the opportunity argument, stricter sanctions imposed by the sanctioning country on the sanctioned country can potentially create greater profit opportunities for circumventing the sanctions, thereby attracting more FDI. Conversely, the risk aversion argument suggests that when tightened sanctions are imposed and the sanctioning countries express their distrust of the sanctioned country and its market, international firms become more cautious or choose to refrain from investing. As a result, this would lead to a reduction in the inflow of FDI.

These divergent viewpoints provide insight into the potential effects of economic sanctions on FDI flows. The subsequent sections will delve deeper into these arguments and examine the empirical evidence to shed light on the impact of sanctions on FDI for different case studies.

1.1. Theoretical Arguments

Two theoretical arguments help explain the impact of economic sanctions on foreign direct investment (FDI). Firstly, the risk aversion argument posits that investing countries are discouraged from engaging in FDI due to the uncertainties and risks associated with sanctions. These risks can be political, financial, legal, regulatory, or geopolitical (JaeBin Ahn et al. 2023), and they can also affect a firm's reputation if it chooses to operate in a sanctioned country (Weber and Stępień 2020). Risk-averse multinational companies tend to prioritize stability and

predictability in their investment decisions, which are often lacking in sanctioned countries characterized by increased volatility and uncertainty (Cohen 2007).

On the other hand, the opportunity argument presents a different perspective on the impact of sanctions on FDI. According to this approach, sanctioned countries can be perceived as attractive investment destinations for various reasons. They offer strategic market entry opportunities, access to cost-effective resources, and potential profits arising from factors such as weakened market positions, reduced competition, or market disruption (Nguyen and Ahmed 2023). The core premise of the opportunity argument is based on the idea that the harsher the sanctions imposed by the sanctioning country, the greater the potential for benefiting from them. In sanctioned countries, local companies may experience economic setbacks, leading to reduced competition and a potential decline in the market. This creates an opportunity for investors to enter the market, acquire assets at lower costs compared to non-sanctioned countries, face less disruption, and expand their market share.

As a result, the opportunity argument suggests a positive relationship between sanctions and the inflow of FDI, in contrast to the risk aversion argument. These two theoretical perspectives provide valuable insights into understanding the complex dynamics between economic sanctions and FDI.

1.2. Sanction-FDI Nexus

Several scholars have examined the association between two theoretical arguments to explain the impact of sanctions on foreign direct investment (FDI) and trade. In the literature review, I will briefly discuss the impact of sanctions on trade, as well as their relation to FDI in the context of merger and acquisition investments, which are crucial to this thesis. Caruso (2005, 57) suggests that extensive sanctions have a significantly negative effect on bilateral trade, whereas limited and moderate sanctions do not yield the same level of impact. This finding can

be attributed to the existence of negative "network effects," which contribute to a reduction in trade when different types of sanctions are imposed concurrently.

On the other hand, Bryan R Early (2009) argues that companies from the sanctioning countries are motivated to continue their business activities in the sanctioned country by leveraging intermediary nations with close alliances. Firms from the sanctioning countries employ various strategies to circumvent the adverse effects of sanctions and compensate for the decline in trade between the sender and the target country (Smeets 2018; Besedeš, Goldbach, and Nitsch 2021). For instance, investors seek to establish themselves in third-party states that are not subject to sanctions. These third-party states, also known as "Sanction Busters," become more attractive to investors because they may provide access to the market of the sanctioned country. In other words, firms from the sanctioning country perceive this as an opportunity to access better investment prospects while mitigating risks, rather than simply distancing themselves from the sanctioned country due to the imposed sanctions. Similarly, firms from the sanctioned country also explore markets in non-sanctioning countries that could grant them access to the sanctioning countries.

Numerous scholars have extensively examined the relationship between economic sanctions and foreign direct investment (FDI), utilizing the aforementioned theoretical argument. Their research has provided valuable insights into various aspects of the sanction-FDI nexus. David Lektzian and Glen Biglaiser (2013) argue that US-imposed sanctions do not effectively deter foreign capital flow. Instead, global investors perceive sanctions as an opportunity to gain market access. This highlights the influential role of the opportunity aspect in determining the effectiveness of sanctions.

Furthermore, Glen Biglaiser and David Lektzian (2011) find that US multinational corporations (MNCs) tend to disinvest before the imposition of sanctions, primarily due to perceived risks and uncertainties. However, once sanctions are implemented and the debates surrounding their

scope and associated risks are resolved, US investments often resume. Analyzing the difference in the impact of the threatened and actual imposition of international sanctions on the trade of the target country, Afesorgbor (2019) discovered that imposing sanctions has a negative effect on trade flow between the threatening/sanctioning country and the threatened/sanctioned state. Moreover, the implementation of sanctions leads to a decrease in trade between the sanctioning and sanctioned countries. This can be attributed to the uncertainty that may arise from the imposition of sanctions.

Moreover, Yang et. Al (2004) demonstrated a negative relationship between sanctions imposed on China and the inflow of foreign direct investment (FDI). Similar findings were observed in the study conducted by Gurvich and Prilepskiy (2015), which examined the impact of Russian sanctions on FDI inflow. Additionally, Biglaiser and Lektzian (2011) found that FDI from the United States decreases towards sanctioning states when the country is either a threat or under sanctions. However, once the sanctions are imposed, FDI gradually returns to previous levels. It is worth noting that the decline in FDI from the sanctioning country may be compensated by non-sanctioning countries (Lektzian and Biglaiser 2013). Similarly, in the case of Iran, Heydarian et al. (2022) found a negative relationship between FDI inflow and multilateral financial sanctions, but a positive relationship between financial sanctions[1] and capital outflow from Iran.

However, the comprehensive study conducted by Shin, Choi, and Luo (2016) presents contrasting findings to most individual case studies. Their research concludes that economic sanctions are unlikely to have a negative impact on international trade, FDI, or any other form of investment in the sanctioned country. They empirically demonstrate that this conclusion holds regardless of the specific type of sanctions employed. The contradiction among studies may arise from the measurement of variables, mostly using net variables such as net FDI (FDI

[1] In this paper, trade and financial sanction are termed together as economic sanctions.

inflow minus FDI outflow) and net trade (exports minus imports). It is crucial to emphasize that such measurements might obscure the impact on FDI due to the effects resulting from reduced FDI outflows and lower imports caused by countersanctions and declining purchasing power. Hence, more focused case studies are necessary to gain a deeper understanding of the dynamics at play.

Scholars have made additional discoveries regarding the impact of economic relations on the imposition and effectiveness of sanctions. It has been found that countries with strong economic ties to the United States, characterized by a high proportion of foreign direct investment (FDI) relative to the recipient country's GDP, are less likely to face US sanctions. Moreover, a decline in US FDI has a significant influence on the success of imposed sanctions. However, if non-US companies step in to fill the void created by the reduction in US FDI, the effectiveness of the sanctions is weakened (Lektzian and Biglaiser 2014).

Furthermore, global-level studies have revealed that multinational corporations do not necessarily align their actions with the political positions of their home countries during times of sanctions. Instead, these corporations tend to continue their regular business operations with sanctioned countries. It appears that profit-driven motives, rather than political considerations, govern the behaviour of these corporations (Shin, Choi, and Luo 2016).

1.3. Economic Sanctions and Industry-wise FDI

A few scholars have specifically investigated the different types of foreign direct investments (FDI) and the cost of economic sanctions on the flow of FDI. One of them is Dong-Hun Kim (2013), who conducted a study that examined the costs associated with various types of FDI and found that joint ventures tend to be more costly for investment-receiving countries, whereas firms with complete ownership are more expensive for investment-providing countries. As a result, during periods of sanctions, foreign firms tend to pursue cost-effective options for their FDI activities.

A recent study conducted by Le and Bach (2022) utilized data from the Global Sanction Database (GSDB) to analyse the impact of sanctions on FDI flows. Their findings indicate a negative relationship between sanctions and FDI. Additionally, they suggest that "global value chains and bank linkages play a moderating role" in shaping this relationship.

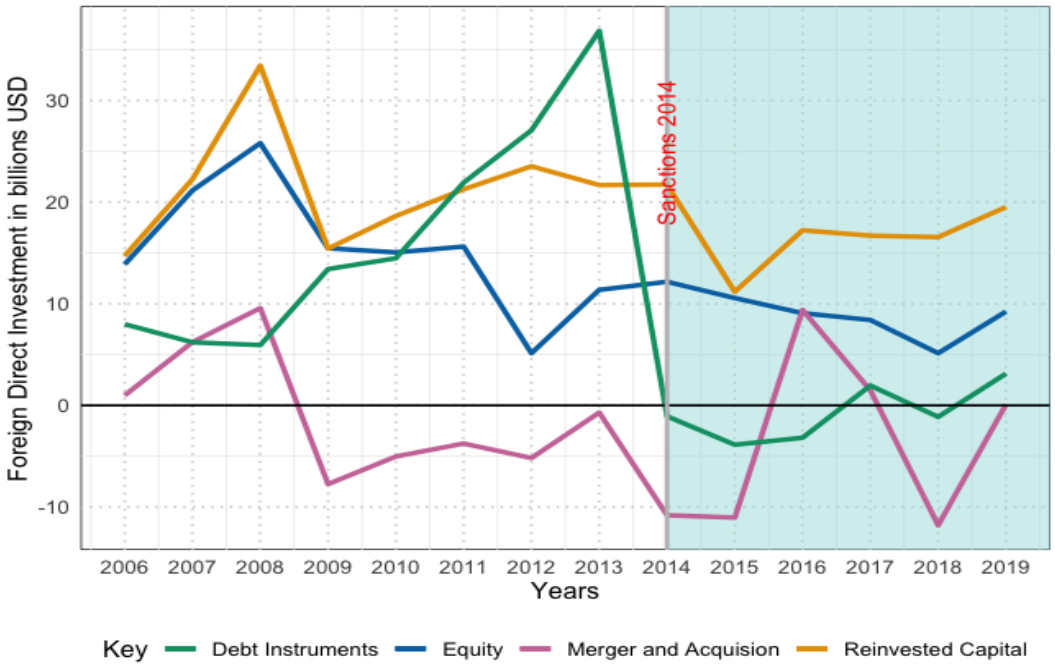
Expanding upon Le and Bach's work, Nguyen and Ahmed (2023) employed data from various databases, including UNCTAD, GSDB, and the World Bank, and applied Panel Ordinary Least Square with fixed effects estimators to examine the impact of economic sanctions on greenfield investments and cross-border mergers and acquisitions (M&A). Their study further confirmed a negative relationship between economic sanctions and FDI. Specifically, the research revealed that military and trade sanctions have limited or negligible effects on greenfield investments, while they exert stronger and more detrimental effects on cross-border M&A.

1.4. Research Gap and Contribution

The existing literature provides valuable insights into the effects of economic sanctions on various factors, including the inflow of foreign direct investment (FDI). However, the findings in this area are diverse and inconclusive. Building on the research conducted by Nguyen and Ahmed (2023), which examined the global impact of sanctions on greenfield investments and mergers and acquisitions (M&A), the present study aims to further investigate the influence of economic sanctions on FDI inflows in different industries within Russia.

As depicted in Figure 1, there has been a noticeable shift in the inflow of foreign direct investment across different forms since 2014 in Russia. Therefore, this paper will explore the changes that occurred following the economic sanctions imposed in 2014 and examine the differences observed in the various industries.

Figure 1: Inflow of Different forms of FDI into Russian (Compiled by the Author using data published by the United Nations Conference on Trade and Development 2016, 59)



This research aims to address the existing gap concerning the impact of economic sanctions on the inflow of foreign direct investment (FDI) in different industries, focusing on the case of Russia. By employing the ARIMA model as suggested by Eaders et al., (1990), this study seeks to determine whether the imposition of economic sanctions on Russia in 2014 resulted in any changes in FDI inflows in three key sectors: primary (agricultural and mining), secondary (manufacturing), and tertiary (service industry). To my knowledge, the impact of economic sanctions on these FDI in Russian industries has not been studied before, hence this is the major contribution to the existing body of literature related to sanction-FDI nexus.

The examination of the impact of economic sanctions on FDI in Russia is of particular importance due to the adverse financial consequences faced by the country as a result of these sanctions (Besedeš, Goldbach, and Nitsch 2021). Furthermore, there is a consensus in the literature regarding the significance of studying the effects of sanctions on Russia. The repercussions for Russia encompassed a reduction in access to international financing, limited capital market opportunities, increased reliance on state funding (Pak and Kretzschmar 2016,

577), and disconnection from the global stock market (Castagneto-Gissey and Nivorozhkin 2016, 82).

2. Data Methodology

This study utilizes the methodology proposed by Enders, Sandler, and Cauley (1990, 266; Enders 2014), which employs an Autoregressive Moving Average (ARMA) model for intervention analysis. The primary focus of this paper is to examine the impact of economic sanctions imposed on Russia in 2014 by a limited number of countries on the inflow of foreign direct investment (FDI) into different industries of Russia. With the above-mentioned methodology, we will be answering these questions related to the impact of 2014's economic sanctions on FDI inflow into Russia. It is worth noting that this model has also been utilized by Heydarian et al. (2022) to investigate the effects of financial sanctions on capital inflows in Iran.

The general model equation used in this research is presented as follows:

$$\boldsymbol{Yt} = \boldsymbol{\alpha_0} + \mathbf{A_1}(\boldsymbol{L})\boldsymbol{Y_{t-1}} + \boldsymbol{c_0 Z_t} + \boldsymbol{\varepsilon_t} \quad |\boldsymbol{a_1}| < \mathbf{1} \qquad \textit{2.1}$$

In equation 3.1, Z_t represents the intervention variable, which, in the context of this study is the number of economic sanctions imposed on Russia These sanctions include restrictions or bans on access to capital, trade, banks, and assets. The intercept is denoted as, $\boldsymbol{\alpha_0}$, and the lagged operator is represented by L. The term $\boldsymbol{\varepsilon_t}$ represents the white noise component (Enders 2014, chap. 5). A(L) is the polynomial that incorporates lagged variables.

Additionally, the model includes the incorporation of lagged operators, as demonstrated in the equation below:

$$A(L)\left[1 + \alpha_1 L_1 + \alpha_2 L_2 + \ldots + a_p L_p\right]$$

The impact of the intervention depends on whether FDI exhibits a unit root. The methodology employed in this study assists in constructing the intervention function and estimating the model.

2.1. Model Specification

The study aims to examine the impact of the economic sanctions imposed in 2014 on the inflow of foreign direct investment (FDI) into Russia, specifically focusing on the changes in FDI inflow across different industries. The industries are categorized based on their nature of work: the primary industry includes agriculture and mining, the secondary industry comprises manufacturing-based sectors, and the tertiary industry consists of service-based sectors.

To apply the previously introduced model (see equation **2.1**), each variable is analyzed during two periods: pre-2014 sanctions and post-2014 sanctions. This approach enables us to observe the pattern of FDI inflow in Russia, both overall and within each industry. The general equation (see equation **2.2**) aims to determine how the inflow of FDI into Russia changed after the imposition of economic sanctions in 2014 compared to the pre-2014 FDI inflow. The equations already incorporate the lag that best suits the model for both pre-and post-2014 periods.

$$\boldsymbol{FDI_t = \gamma_{FDI} + a_{FDI}(L)FDI_{t-2} + c_{FDI}S_t + \varepsilon_t} \qquad \textit{2.2}$$

The equation for pre-2014 (see equation **2.3**) and post-2014 economic sanction (see equation **2.4**) include subscript of the time t' and t*, respectively. The equations are:

$$\boldsymbol{FDI_{t'} = \gamma_{FDI} + a_{FDI}(L)FDI_{t'-2} + c_{FDI}S_{t'} + \varepsilon_{t'}} \qquad \textit{2.3}$$

$$\boldsymbol{FDI_{t*} = \gamma_{FDI} + a_{FDI}(L)FDI_{t*-2} + c_{FDI}S_{t*} + \varepsilon_{t*}} \qquad \textit{2.4}$$

Similarly for primary industry FDI inflow (Pri_ind) **2.5**, secondary industry (Sec_ind) **2.6** and tertiary industry **2.7**, I have used the same subscripts in the equations

$$\boldsymbol{Pri\_ind_t = \gamma_{PI} + a_{PI}(L)Pri_{ind_{t-2}} + c_{PI}S_t + \varepsilon_t} \qquad \textit{2.5}$$

$$\boldsymbol{Sec\_ind_t = \gamma_{SI} + a_{SI}(L)Sec_{ind_{t-3}} + c_{SI}S_t + \varepsilon_t} \qquad \textit{2.6}$$

$$\boldsymbol{Ter\_ind_t = \gamma_{TI} + a_{TI}(L)Ter_{ind_{t-3}} + c_{TI}S_t + \varepsilon_t} \qquad \textit{2.7}$$

To determine the best model, I employed a systematic approach. Firstly, I examined the graphs and correlograms of each variable within the specified time frames of the study. Then, I conducted a unit root test to verify the stationarity of the variables.

In selecting the optimal model, I considered multiple factors including the Akaike Information Criterion (AIC) and Schwarz Criterion (SBC), aiming for the model with the lowest values. Additionally, I sought the model with the highest R-squared (R^2) value, as recommended by Lloyd (1993, 451), as it indicates a model that generates the smallest residuals, thereby minimizing white noise.

For each variable, I determined the appropriate lag based on the AIC, and SC, and adjusted R-squared values within the specified intervals. Furthermore, I ensured that the selected model met the diagnostic criteria outlined by Enders (2014) and Heydarian (2022) for their respective case studies on financial sanctions. These criteria included the statistical significance of all coefficients and the presence of a sequence of co-integration facilitated by the autoregressive coefficients. Lastly, I evaluated the model by examining the residuals to confirm that they exhibited minimal white noise.

2.2. Data and Data Sources

The variable FDI represents quarterly data obtained from the Trading Economics database (Trading Economics 2023). on the inflow of foreign direct investment (FDI) into Russia. The same data for the period 2013Q1 to 2022Q4 is also available on the OECD website ("FDI Flows" 2023). All variables in the study are measured in millions of USD.

To determine the FDI inflow for each industry, I aggregated the data by summing the values for all sectors that fall under each industry category I defined. Table 3.2.2-1 provides a list of all sectors included in each industry category. The data for each industry was obtained from the Bank of Russia database, and the available quarterly data covers the period from 2010Q1 to 2021Q2. Due to the uncertainties caused by the COVID-19 pandemic in 2020, I excluded the years 2020 and 2021 from the analysis. Therefore, the data used in this study spans the period from 2010Q1 to 2019Q4 at a quarterly frequency.

The data on economic sanctions (referred to as *sanctions*) was compiled based on various sources. Sultonov (2020) provided data on total economic sanctions imposed by the European Union (EU) and the United States (US) from 2014 to 2018. For other countries, I consulted the Global Sanction Database (Felbermayr et al. 2020) and reviewed official press releases to count the number of economic sanctions imposed. This process allowed me to develop a comprehensive sanctions data series.

Table 2.2-1: Description of the data and the data sources

Variables	**Description and Measurement**	**Frequency**	**Data Source**
Sanctions *(sanctions)*	Number of economic sanctions imposed on Russia	2010Q1-2019Q4	(Sultonov 2020), official documents[2], and Global Sanctions Database (Felbermayr et al. 2020)
Foreign Direct Investment (FDI)	The inflow of FDI into Russia in million USD	Quarterly (2010Q1 – 2019Q4)	(Trading Economics 2023)
Primary Industry *(pri_ind)*	FDI inflow into the agriculture and mining Industry in millions of USD (Appendix)	Quarterly (2010Q1 – 2019Q4)	(Bank of Russia 2023)
Secondary Industry *(Sec_ind)*	FDI inflow into the Manufacturing Industry in millions of USD (Appendix)	Quarterly (2010Q1 – 2019Q4)	(Bank of Russia 2023)
Tertiary Industry (ter_*ind*)	Service Sector Industry in millions of USD (Appendix)	Quarterly (2010Q1 – 2019Q4)	(Bank of Russia 2023)

2.3. Descriptive Statistics

Table 2.3-1: Descriptive Statistics of all the variables

Variable	**Obs**	**Mean**	**Std. dev.**	**Min**	**Max**
Sanctions	40	54.325	50.53275	0	120
Foreign Direct Investment	40	40655.22	11256.81	18354	68360
Primary Industry	40	6006.925	3537.564	2029	20080
Secondary Industry	40	8249.231	3359.113	3804.553	22387.14
Tertiary Industry	40	25741.76	9863.642	12120.14	50294.27

Source: Author's calculation

[2] (Sultonov 2020; Martin Russell 2016; "Press Release: Switzerland Adopts EU Sanctions against Russia" 2022; Australian Government Federal Register of Legislation 2022; Australian Government Department of Foreign Affairs and Trade 2022; Rachel Nicolson 2015; Gutterman and Grojec 2018; "EPRS-Briefing-579084-Sanctions-over-Ukraine-Impact-Russia-FINAL.Pdf" n.d.; Canada 2015)

3. Results and Discussion

3.1. Unit Root Test

The unit root test was conducted using the Augmented Dickey-Fuller test with the Schwarz Information Criterion (SIC) for automatic lag length selection. Both the intercept and trend were considered in the Unit Root Test. The results from the ADF test (see Table 3.2.2-2) indicate that all the variables examined in this study exhibit stationarity in both the pre-sanctions and post-sanctions periods. Despite limited access to extensive time series data prior to 2014, the significance of the unit root test results is still evident, with p-values below 0.05 at a 5% significance level. Therefore, based on these results, we can proceed with the ARMA analysis of the variables under investigation.

3.2. Economic Sanctions and Inflow of FDI into Russia

This section presents four intervention models. The first model is a linear intervention model that examines the relationship between the number of economic sanctions and the inflow of FDI in Russia. The results for Equation **2.2** are provided below. The subsequent three models explore the impact of sanctions on the inflow of FDI in different industries: primary, secondary, and tertiary. These models are represented by Equations **2.5**, **2.6**, and **2.7**, respectively.

3.2.1. Economic Sanctions of 2014 and the Inflow of FDI into Russia

Table 3.2.1-1 presents the results of FDI inflow during two periods: before the 2014 economic sanctions and after the 2014 economic sanctions. The intervention models specified in Equations 3.3 and 3.4 were finalized by selecting the models with the lowest AIC and SC values, while also considering other criteria of ARMA.

During the period from 2010 to 2013, when Russia faced trade restrictions imposed by Georgia, the results indicate a negative relationship between sanctions and the inflow of FDI. The coefficient for economic sanctions is -89.28, indicating that with an additional number of economic sanctions during the first period, on average, FDI inflow decreases by USD 89.28

million. However, after the imposition of sanctions in 2014 following the annexation of Crimea, the coefficient for economic sanctions shows a positive effect of 22.8 on the inflow of FDI into the country. The coefficient of economic sanctions in the second period can be interpreted as an additional number of economic sanctions on Russia between 2014 and 2019 would on average rise the FDI inflow into the country by 22.88 million.

Following the imposition of economic sanctions in 2014, there was a noticeable shift in the FDI dynamics for Russia. Initially, the FDI inflow was negatively impacted, reflecting the repercussions of the sanctions. However, over time, despite the imposition of additional economic sanctions by the sanctioning countries, a positive trend in the FDI inflow emerged. Various sources, such as The Economist (2022), the Euroasian Development Bank (2022), Borisov and Popova (2019) and Garcia-Herrero and Xu (2019), have discussed the changing dynamics of investors in Russia after the 2014 sanctions.

In 2014, Russia witnessed a decline in FDI, indicated by a lower rate of change (constant) compared to the pre-2014 period. However, Russia experienced an upward trend in FDI inflow from the initial fall in 2014 onwards, particularly driven by increased investment from countries like China (Borisov and Popova 2019). This increase in investment can be attributed to the potential offered by the Russian manufacturing market.

The decline in FDI inflow immediately after the imposition of sanctions in 2014 by Western countries can be explained by a risk aversion argument. Initially, investors faced restrictions and hesitations due to the market risks associated with the economic sanctions, including trade barriers, asset freezes, and banking bans. However, as time passed, the FDI inflow gradually increased, despite the mounting number of sanctions imposed on Russia.

This subsequent increase in FDI, primarily originating from China, can be attributed to an opportunity argument presented by Borisov and Popova (2019). Despite the escalating

sanctions between 2014 and 2019, Russia's positive FDI trend indicates the attractiveness of investment opportunities that emerged in the country.

Overall, these findings suggest a complex relationship between economic sanctions, risk aversion, and investment opportunities. Despite an initial decline, the FDI inflow into Russia exhibited resilience and rebounded in the face of increasing sanctions.

Table 3.2.1-1: Results of intervention models for FDI inflow in two different periods

	First period	**Second period**
	2010Q-2013Q4 FDI	2014Q1-2019Q4 FDI
Estimation Method	LS	LS
Model Parameter	(1,1)	(1,1)
C	11249.47 (3820.37)**	7420.88 (5863.80)
sanctions	-89.288 (44.4)**	22.829 (58.46)
$FDI_{(t-2)}$	-0.053 (0.343)	0.188 (5863.8)
Adj. R^2	0.211	0.15
Akaike Information Criterion	20.06	20.73
Schwartz Criterion	20.31	20.98

Note: significance * P <0.10, ** P <0.05, and *** p<0.01
Source: Author's calculation

3.2.2. The Inflow of FDI into Primary Industry in Russia

From 2010 to 2013, the results demonstrate a robust positive relationship between sanctions and the inflow of FDI. The coefficient for economic sanctions during this period is estimated at 1584.28, indicating an average increase of USD 1584.16 million in FDI inflow into the primary industry following the imposition of an additional number of economic sanctions. However, after the 2014 sanctions, the inflow of FDI into the primary industry significantly decreased, as evidenced by the lower intercept (constant) in the second period. Despite the subsequent increase in the number of sanctions, the inflow of FDI into the primary industry displayed a positive momentum, albeit at a much lower rate compared to the pre-2014 period. On average, each additional economic sanction resulted in a smaller increase of approximately USD 71.1

million in FDI inflow into the primary industry, whereas the first period anticipated an average increase of $1.5 million for each additional sanction.

Multiple factors contribute to this decline in FDI inflow. One significant reason is that many countries that imposed sanctions on Russia in 2014 were its European trading partners, who were major importers of Russian agricultural and metal products. Following the sanctions, the trade of metals experienced a sharp decline, and even after five years, metal exports failed to reach the levels seen during 2010-2013 (World Integrated Trade Solution, 2014). (World Integrated Trade Solution 2014). This change can be explained by the risk aversion argument. The decline in the export of agricultural and mining products, coupled with the EU's less receptive stance toward diplomatic and trade relations due to the 2014 sanctions, might have discouraged investors from making robust investments.

Furthermore, the imposition of sanctions by Russia's primary market for these goods, namely EU countries, likely discouraged investors from engaging in the primary industry. Despite the decline in FDI inflow into the primary industry compared to previous years (Liefert and Liefert 2020), the estimates still indicate a positive FDI flow. One possible explanation is that the EU and other sanctioning countries did not impose trade sanctions on agricultural or heavy metals, which are major exports of Russia. Consequently, there remained some potential for the primary industry, although not as robust as before.

Table 3.2.2-1 Results of the intervention model for FDI inflow into the Primary Industry in two different periods

	First period	**Second period**
	2010Q1-2013Q4 Primary Industry	2014Q1-2019Q4 Primary Industry
Estimation Method	LS	LS
Model Parameter	(1,1)	(1,1)
Constant	205.88 (3284.43)	-349.26 (2683.55)
sanctions	1584.162 (882.78)*	71.099 (35.43) **
$Pri\_ind_{(t-2)}$	0.090463 (0.553)	0.115 (0.272)

Adj. R^2	0.812	0.38
Akaike Information Criterion	12.111	19.29
Schwartz Criterion	17.067	19.35

Note: significance * P <0.10, ** P <0.05, and *** p<0.01
Source: Author's calculation

3.2.3. The inflow of FDI into Secondary Industry in Russia

In the secondary industry, the FDI inflow experienced a decrease of less than half compared to the first period after the 2014 sanctions. However, similar to the primary industry, there was a positive momentum in the inflow of FDI after the 2014 decline, despite the additional economic sanctions imposed between 2014 and 2019. Based on these findings, it is estimated that each additional economic sanction imposed on Russia during the post-2014 period resulted in an average increase of 28 million USD in FDI inflow into the secondary industry.

Although the coefficient of sanctions for FDI inflow in the first period is not statistically significant, the negative sign suggests that based on the pre-2014 data, it was expected that an increase in the number of economic sanctions would lead to a decrease in FDI inflow. However, during the second period, an opposite response was observed in the secondary industry, with the FDI inflow increasing despite the growing number of economic sanctions. The intervention model for FDI inflow into the secondary industry indicates that, on average, each additional economic sanction imposed on Russia leads to a 23 million USD increase in FDI inflow into the secondary industry, holding all other factors constant. This coefficient is statistically significant at a 95% confidence interval.

Since the relationship between sanctions and FDI before 2014 is not statistically significant, a direct comparison between the two variables cannot be established. However, the results reveal that despite the decrease in FDI inflow in 2014, there was a positive flow of FDI into the manufacturing industry during the second period, despite the increasing number of stringent economic sanctions. It has been reported that since the annexation of Crimea, Chinese FDI into Russia has been growing significantly, compensating for the impact of economic sanctions

imposed by the EU and the US on Russia's FDI inflow. This positive relationship can be attributed to increased Chinese investment in the manufacturing sector in Russia. (The Economist 2022; Euroasian Development Bank 2022; Borisov and Popova 2019; Garcia-Herrero and Xu 2019).

Scholars have also observed that in response to extensive sanctions on Russia, the country implemented restrictions on European nationals and companies, affecting their ability to invest in financial instruments, energy companies, defence companies, and energy-related technology exports (Veebel and Markus 2015). These actions led to a change in the countries investing in Russia. Therefore, the increased Chinese investment in the manufacturing industry of Russia can be seen as a strategy to expand the market and mitigate the impact of sanctions (Garcia-Herrero and Xu 2019).

Table 3.2.2-2: Results of intervention model for FDI inflow into the Secondary Industry in two different periods

	First period	**Second period**
	2010Q1-2013Q4 Secondary Industry	2014Q1-2019Q4 Secondary Industry
Estimation Method	LS	LS
Model Parameter	(1,1)	(1,1)
Constant	12525.94 (4109.39)**	5158.76 (1507.44)***
Sanctions	-4700.80 (3740.73)	23.840 (9.039) **
$Sec\_ind_{(t-3)}$	-0.219 (0.349)	0.120 (0.246)
Adj. R^2	0.47	0.47
Akaike Information Criterion	19.88	17.82
Schwartz Criterion	20.09	18.07

Note: significance * P <0.10, ** P <0.05, and *** p<0.01
Source: Author's calculation

3.2.4. The inflow of FDI into Tertiary Industry in Russia

The service-dominated industry, referred to as the tertiary industry in this study, experienced a significant decline following the imposition of economic sanctions in 2014, as indicated by intercept (constant) for the second period, which was approximately 40 billion USD lower than

the intercept of the first period. However, after this substantial decline, the FDI inflow started to grow at a positive rate, although not as strongly as in the first period. Despite the additional economic sanctions imposed during the second period, the FDI inflow consistently increased every quarter. The coefficient of economic sanctions in both periods is positive, but there is a notable difference in magnitude.

Before 2014, each additional economic sanction, on average, contributed to an estimated increase of 19 billion USD in FDI inflow into the tertiary industry, while holding all other factors constant. The coefficient of economic sanctions before 2014 is statistically significant at a 99% confidence level. However, in the second period, when most Western countries imposed sanctions on Russia, the coefficient is smaller, indicating a disruption in the rate at which the tertiary industry received investment. The imposition of sanctions by Western countries made investing in Russia's tertiary industry appear less attractive.

The coefficient of the intervention regression analysis after the imposition of sanctions in 2014 suggests that, on average, with each additional economic sanction imposed on Russia, the FDI inflow into the Russian tertiary industry increases by approximately 298 million USD. This figure is approximately 1.5 billion USD lower than the expected trajectory based on the pre-2014 period. When comparing both periods, it becomes evident that the FDI inflow into the tertiary industry was negatively affected by the sanctions. Although there is still an inflow of FDI, it is not as robust as before. This decline can be explained by the risk aversion argument. The steepness of the decline can be attributed to the restrictions imposed by Russia on the countries that imposed sanctions, which include not only Russia's trading partners but also strong economies in the surrounding region. Additionally, the UNCTAD investment report (2016, iv) mentions that investments from scratch have decreased since 2014 due to geopolitical risks and policy uncertainties. The combination of sanctions and the worsening economic crisis made the tertiary industries less attractive to investors, resulting in decreased

investment compared to the first period. Given that the service industry is more dependent on political stability and susceptible to volatility, the risk aversion attitude of investors may have contributed to the relatively lower increase in FDI compared to earlier periods.

Table 3.2.2-3: Results of intervention model for FDI inflow into the Tertiary Industry in two different periods

	First period	Second period
	2010Q1-2013Q4 Tertiary Industry	2014Q1-2019Q4 Tertiary Industry
Estimation Method	LS	LS
Model Parameter	(1,1)	(1,1)
Constant	30916.78 (5420.73)***	-11377.47 (14546.62)
Sanctions	19623.67 (3088.9)***	298.585 (118.70) **
$Ter\_ind_{(t-3)}$	0.101562 (0.14363)	-0.0196 (0.204)
Adj. R^2	0.96	0.18
Akaike Information Criterion	18.46	19.70
Schwartz Criterion	18.66	19.94

Note: significance * P <0.10, ** P <0.05, and *** p<0.01
Source: Author's calculation

When comparing the impact of economic sanctions on three industries in Russia, Figure 2 reveals that the tertiary, service industry was the most affected. Following the imposition of sanctions, the industry experienced a decrease in the inflow of FDI. However, over the years since 2014, despite the increasing number of sanctions, the coefficient of sanctions on FDI inflow remains positive, indicating a slight increase. It can be concluded that the inflow of FDI into the tertiary industry has slightly improved, although not to the extent anticipated.

On the other hand, in the case of the primary industry, I utilized the coefficient from the first period of Table 3.2.2-1, to forecast the expected relationship between sanctions and FDI inflow. However, the results contradicted the forecast, showing that the primary industry received a relatively low amount of FDI inflow. This discrepancy is evident in Figure 3, which depicts the disparity between the forecasted and actual data.

Figure 2: FDI inflow in three industries of Russia (Compiled by the Author using the data acquired from the Bank of Russia Statistics)

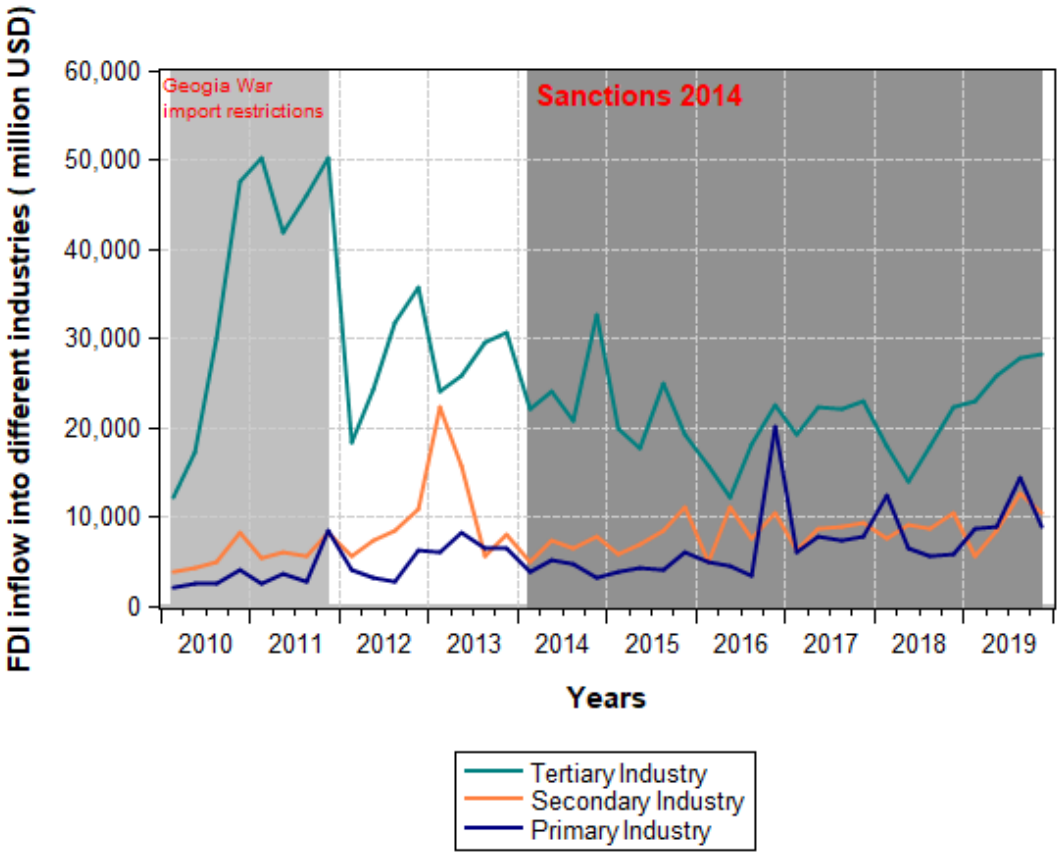
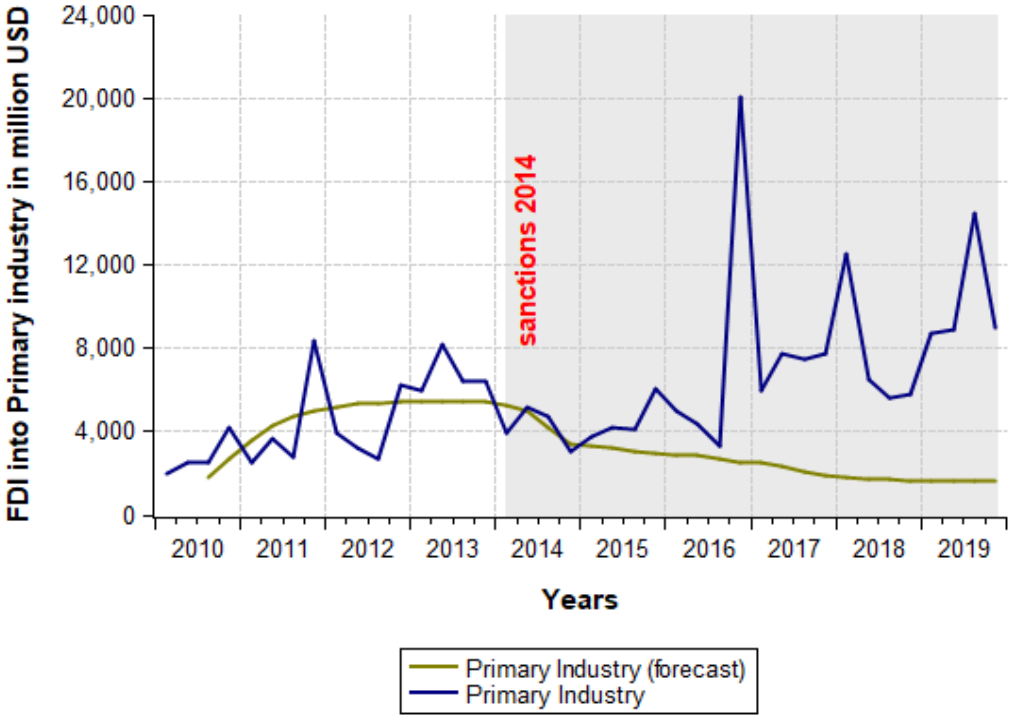


Figure 3: Primary Industry forecasted FDI inflow in comparison with the actual FDI inflow into the Primary Industry



4. Conclusion

The study's findings indicate that the imposition of economic sanctions on Russia in 2014 initially led to a decrease in the inflow of foreign direct investment (FDI). However, as time passed, despite the continuation and addition of further sanctions, the FDI inflow started to recover, albeit at a slower pace compared to the period before 2014. This trend was observed across all industries analyzed in this study.

Utilizing the ARIMA model, it was determined that the relationship between sanctions and FDI inflow into the primary industry was positive both before and after the 2014 economic sanctions. However, the strength of this relationship weakened after 2014 in comparison to the pre-sanction period. In contrast, the secondary industry exhibited a different pattern. While the pre-2014 data suggested that an increase in economic sanctions would significantly reduce FDI inflow, this was not found to be the case. Despite the increase in sanctions after 2014, the secondary industry continued to attract FDI at a positive rate due to the market opportunities it presented. The deceleration in the pace of FDI inflow can be attributed to the risk aversion argument.

The tertiary industry, which encompasses the service sector, experienced a substantial impact from the sanctions and witnessed a significant decline in momentum compared to the period before the 2014 sanctions. This can be attributed to the risk aversion argument, which posits that the service sector is influenced not only by political stability but also by the geopolitical situation.

However, it is important to note that this study has certain limitations, primarily stemming from the available data, which restricted the ability to establish causal claims. To address this limitation, future research could explore alternative approaches such as web scraping to directly obtain data from Russian sources. Language limitations also hindered access to the data due to the lack of proficiency in the Russian language. Additionally, examining the evolution of

investor patterns and preferences over time would provide valuable insights and present an intriguing avenue for further exploration.

5. Policy Recommendation

Based on the findings of this study, I would like to provide some suggestions and policy recommendations on how to enhance the effectiveness of economic sanctions in response to Russia's military aggression. Firstly, it is crucial to prioritize and strengthen multilateral cooperation and coordination efforts. By aligning the actions of multiple countries and implementing coordinated sanctions, the impact of economic sanctions can be maximized.

Secondly, it is important to target specific sectors with sanctions that may be directly or indirectly supporting Russia's aggression. By focusing on sectors that have significant involvement in supporting such activities, the sanctions can effectively deter and hinder the aggressor's capabilities.

Thirdly, stricter measures should be implemented to address the financial loopholes that allow Russian entities to bypass or circumvent sanctions. This can be achieved through enhanced monitoring and enforcement mechanisms to detect and prevent illicit financial transactions, money laundering, and the use of offshore accounts or other financial channels to evade sanctions.

Furthermore, strengthening information-sharing systems and intelligence cooperation among countries can greatly contribute to identifying and understanding the methods used to circumvent economic sanctions. This will enhance the accuracy and effectiveness of the sanctions and minimize unintended consequences.

It is also important for countries to prioritize raising awareness and maintaining transparency regarding the objectives and implementation of sanctions. This will enhance the credibility and trust of policymakers and ensure a more cooperative international response.

Lastly, continuous monitoring of the situation and proactive adjustments to policies are essential. By staying vigilant and adapting to changing circumstances, countries can effectively respond to evolving challenges and maintain the efficacy of their sanction strategies.

Overall, implementing these recommendations can help make economic sanctions more effective in responding to Russia's military aggression while minimizing unintended consequences and maximizing the desired impact.

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Appendix

Table 3.2.2-1: An Extensive Description of the Variables: Primary industry, Secondary industry, tertiary industry (Source: Bank of Russia, Compiled by the Author)

Variables	Description
Primary Industry *Agri and Mining*	1. Agriculture, Forestry and Fishing, 2. Mining and Quarrying
Secondary Industry *Manufacturing*	1. Food products, beverages, and tobacco products 2. Textiles and wearing apparel. 3. Leather and related products 4. Wood and products of wood and cork, except furniture; articles of straw and plaiting materials 5. Paper and paper products; printing and reproduction of recorded media 6. Coke and refined petroleum products 7. Chemicals and chemical products 8. pharmaceutical products and pharmaceutical preparations 9. Rubber and plastic products 10. Other non-metallic mineral products 11. Basic metals and fabricated metal products, except machinery and equipment 12. Computer, electronic and optical products; electrical equipment 13. Machinery and equipment 14. Manufacture of motor vehicles, trailers and semi-trailers and other transport equipment 15. Other manufacturing; repair and installation of machinery and equipment
Tertiary Industry *Service Sector Industry*	1. Electricity, Gas, 2. Steam and Air Conditioning Supply 3. Water Supply; 4. Sewerage, Waste Management and Remediation Activities 5. Construction 6. Wholesale and Retail Trade 7. Repair of Motor Vehicles and Motorcycles 8. Transportation and Storage 9. Accommodation and Food Service Activities 10. Information and Communication 11. Financial and Insurance Activities 12. Real Estate Activities 13. Professional, Scientific and Technical Activities 14. Administrative and Support Service 15. Activities Public Administration and Defence. 16. Compulsory Social Security 17. Education Human Health and Social Work Activities 18. Arts, Entertainment and Recreation 19. Other Service Activities

Table 3.2.2-2: Unit Root Test Results

	Before Sanctions		After Sanctions	
	2010Q1-2013Q4		2014Q1-2019Q4	
	t-Stat	Prob*	t-Stat	Prob*
FDI	-1.98174	0.036	-2.6349	0.049
Primary Industry	-4.36128	0.020	-5.4977	0.000
Secondary Industry	-3.79236	0.048	-3.7433	0.000
Tertiary industry	-3.18588	0.046	-2.8161	0.019

*MacKinnon (1996) one-sided p-values

(Source: Result findings)