

Czech University of Life Sciences Prague

Faculty of Economics and Management

Department of Economics



Master's Thesis

**Impact of Sanctions on the Volume of Import and
Export of Fish Products in Russian Federation**

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DIPLOMA THESIS ASSIGNMENT

Alina Degtiareva

Economics and Management

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Thesis title

Impact of Sanctions on the Volume of Import and Export of Fish Products in Russian Federation

Objectives of thesis

The main aim of the thesis is to assess the Russian fishing sector and the impact of sanctions on the volume of foreign trade in this industry, an analysis of the time period 2013-2020 and the assessment of the prospects for the development of the fishing sector in Russia.

Methodology

This thesis is presented in two parts – theoretical and practical. The theoretical part is represented by literature review and scientific works in the area under study, collecting of scientific knowledge, such as systematic approach, analysis of numerical data, method of comparison and analogies, as well as generalization, and so on. Practical part includes information on the selected sector of the economy, assessment of the impact of the sanctions imposed on the volumes of import and export of fish products in Russia, analysis of data on the volumes of foreign trade in the fish sector obtained from official sources using statistical methods for further analysis and analysis of calculated indices. The final part contains a discussion of the obtained results, in connection with which an appropriate conclusion is made.

The proposed extent of the thesis

60 – 80 pages

Keywords

Russia, fish industry, import, export, international trade, sanctions, impact of sanctions

Recommended information sources

Cleaver, T.: Understanding the World Economy. Fourth Edition. New York, Routledge, 2013. 268 s. ISBN: 9780415681303

Krugman, P. R., Obstfeld, M., Melitz, M. International Economics: Theory and Policy. 10th edition, Pearson, 2015. ISBN: 9781292074542

Pugel, T.: International Economics. McGraw-Hill, 17 edition, 2019. ISBN: 9781260484106

Samuelson, P. A., Nordhaus, W. D. Economics. 19th edition. New York, McGraw-Hill/Irwin, 2009. 744 s. ISBN: 9780073511290

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Declaration

I declare that I have worked on my master's thesis titled " Impact of Sanctions on the Volume of Import and Export of Fish Products in Russian Federation" by myself and I have used only the sources mentioned at the end of the thesis. As the author of the master's thesis, I declare that the thesis does not break any copyrights.

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Impact of Sanctions on the Volume of Import and Export of Fish Products in Russian Federation

Abstract

The goal of this diploma is to investigate the Western sanctions placed on Russia, the reciprocal Russian counter-sanctions, and the impact on the import and export of fish products. Because the fishing sector is so crucial to Russia's economy, it is critical to assess how much it has suffered between 2013 and 2020. Furthermore, some countries entered the Russian import market and were able to compensate for the amount of supply lost from countries that exited the market. Nevertheless, some argue that the sanctions had a good impact on the country's agricultural economy since Russia was forced to actively pursue import substitution, which finally yielded favorable outcomes.

The practical section focuses on analyzing the impact of sanctions and counter-sanctions on the amount of fish product imports and exports, as well as the value and direction of international trade. The key indicators are also computed, which aids in the formation of a full picture of the dynamics of fish product imports and exports. On the one hand, the current scenario in Russia limits the supply quantities of imported items to significant food markets, but on the other hand, it creates new chances for Russian manufacturers.

Keywords: Economy, Russia, Fish sector, import, export, international trade, sanctions, counter-sanctions, agriculture, analysis, import substitution.

Vliv sankcí na objem dovozu a vývozu rybích produktů v Ruské federaci

Abstrakt

Cílem této diplomové práce je prozkoumat západní sankce uvalené na Rusko, zpáteční ruské protisankce a jejich dopad na dovoz a vývoz rybích produktů. Vzhledem k tomu, že odvětví rybolovu má pro ruskou ekonomiku zásadní význam, je nutně posoudit, jak moc se v letech 2013 až 2020 změnila. Kromě toho některé země vstoupily na ruský dovozní trh a byly schopny kompenzovat objem ztracených dodávek ze zemí, které trh opustily. Někteří nicméně tvrdí, že sankce měly na zemědělskou ekonomiku země pozitivní dopad, protože by bylo Rusko nuceno aktivně usilovat nahrazející dovoz, což by nakonec přineslo příznivé výsledky.

Praktická část se zaměřuje na analýzu dopadu sankcí a protisankcí na objem dovozu a vývozu rybích produktů a na hodnotu a směr mezinárodního obchodu. Jsou rovněž vypočteny klíčové ukazatele, což pomáhá vytvoření úplného obrazu o dynamice dovozu a vývozu rybích produktů. Současný scénář v Rusku na jedné straně omezuje množství dodávek dovážených položek na významné potravinářské trhy, na druhé straně však vytváří nové šance pro ruské výrobce.

Klíčová slova: Ekonomika, Rusko, rybí sektor, dovoz, vývoz, mezinárodní obchod, sankce, protisankce, zemědělství, analýza, nahrazování dovozu.

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1. Introduction

The increasing use of non-military instruments by sovereign states or unions of states is a pattern in the evolution of contemporary international relations. This is due to international law's primacy, which recognizes the illegality of unilateral military force and the prohibition of armed aggression.

The globalization of international economic processes, characterized by an increasing degree of intensive integration of both goods and services markets and capital markets, establishes close economic ties between states. As a result, their interdependence grows, necessitating the maintenance of favorable economic ties with partner countries. Consequently, the termination or restriction of economic relations has a direct impact on the economy of the state with which trade relations have been severed or restricted, as well as the stability of the economies of those countries with which trade and financial transactions are directly linked. Thus, one of the most commonly used tools of influence on countries today is the imposition of trade, technological, and financial restrictions on any state.

The Ukrainian conflict, which resulted in Russia's annexation of Crimea, the sanctions war, and the freezing of successful bilateral relations, is widely regarded as the beginning of the deterioration of relations between Russia and the European Union.

Despite the end of the Cold War and the end of the confrontation between the socialist bloc countries and the United States, sanctions continue to be used as a tool of international pressure. In addition to the food embargo, other restrictive measures were implemented, including the suspension of the agreement with the US on the disposal of weapons-grade plutonium; visa restrictions for a number of US citizens; opposition to the "Nord Stream 2" pipeline construction; and restrictions on cooperation in the raw materials and energy sectors.

In turn, the Russian Federation employs the mechanism of special restrictive measures in its foreign policy. Russia employs restrictive measures not only in response to the introduction of the sanctions list against Russia, but also as an independent foreign policy mechanism.

Sanctions are now one of the most significant political risks for Russian and international business. They cause issues for foreign investors in the domestic economy, as well as

foreign partners and counterparties of Russian companies. There is still uncertainty about whether existing restrictive measures will be implemented or if new ones will emerge.

The study's topic is relevant because the imposition of sanctions has a significant impact on all areas of state activity, including the reduction of domestic production due to restrictions on foreign trade and the reduction of the country's GDP. It is also critical for Russia to establish friendly and trade relations with its neighbors, which will result in significant benefits for all parties. Furthermore, an assessment of the impact of sanctions on fish product production and import/export volumes will allow a general assessment of the scale of the impact of the restrictions on a specific sector of the agricultural sector.

With the global pandemic of Covid-19, a number of negative factors are combining to have a devastating effect not only on countries' agricultural sectors as a whole, but also on each of their individual industries. And, when combined with the current sanctions imposed on Russia, the implications for the fishing industry in question, as well as the agricultural sector as a whole can be enormous.

The main aim of this Thesis is to discuss the import and export of fish products in Russia. Given the length of time that sanctions have been in place, it is critical to assess their impact on the volume of foreign trade of a specific sector, which will allow us to draw a clear picture of the state of the fishing industry over the past 10 years.

The Diploma Thesis focused on the assessing of the Russian fisheries sector as well as the impact of sanctions on the volume of foreign trade in this industry.

The following goals must be met:

1. Revel the nature and essence of the sanctions;
2. Define impact of sanctions on the fish sector in Russia;
3. Analyze the current state of the Russian fish sector;
4. Estimate the impact of sanctions on import and export of fish products;
5. Investigate the effects of the sanctions imposed;
6. Analyze and predict the future consequences of the sanctions effect on the agricultural sector.

The practical importance of this work lies in the analysis of data obtained from the study of current sanctions affecting Russia's foreign trade, assessing the degree of impact of sanctions on the fishing industry, and understanding the positive or negative impact of imposed sanctions to the fish sector.

Theoretical basis of the study was based on the economic scientific works, official reports of the Russian Federation's government, official sources of Rosstat and the Russian Federation's Federal Agency for Fishery, scientific articles, official sources of the European Union, textbooks, Internet resources, data from international organizations, and other sources.

The research used methods of comparison and analysis of statistical indicators of foreign trade in the Russian fishing industry over the past 10 years. The main methods of research are also a collection of scientific knowledge, such as systematic approach, analysis of numerical data, method of comparison and analogies, as well as generalization, and so on.

2. Objectives and Methodology

2.1 Objectives

The main purpose of the thesis is to consider the impact of the sanctions imposed against Russia by the European Union on the volume of imports and exports of the Russian market. To narrow the breadth of the chosen topic, in particular we consider the volume of imports and exports of the Russian fishing industry.

The prime objective of this case is to analyze the import and export flows of fishery products in Russia from 2013 to 2020. Based on the analyses, it is necessary to assess the level of impact of the imposed sanctions on foreign trade flows. The time series were chosen primarily based on the year in which the European Union implemented the main package of sanctions and their impact thus far (up to 2020 due to the lack of data for 2021).

As we all know, the main set of sanctions was imposed in 2014.

The purpose of this thesis is to answer the following research questions:

1. What are the volume trends of import and export of fish products in 2013 – 2020?
2. Is there any impact of imposed sanctions on Russian import and export of fish products?
3. Have the primary import and export directions shifted with the advent of sanctions?

2.2 Methodology

For writing the thesis has been used comparative analysis, synthesis, grouping, deduction, generalization, numerical data analysis, a combination of qualitative and quantitative research methods. It is also necessary to analyze changes in the volume of imports and exports of fish products, as well as the impact of the sanctions imposed on them.

The official reports of the Russian Federation's government, official sources of Rosstat and the Russian Federation's Federal Agency for Fishery, official sources of the European Union, textbooks, scientific articles, Internet resources, data from international organizations, and other sources served as the study's information base.

The theoretical section of this Thesis summarizes the sanctions imposed on Russia between 2013 and 2020. This section will also include a literature review, which will summarize

information about sanctions and countersanctions, their types, and the main aspects of their impact on foreign trade in the fishing industry. The dynamics of changes in the volume of Russian imports and exports of fish products during the period under consideration will also be taken into account.

The practical part of this work will be the monitoring, selection and analysis and comparison of data on the volume of foreign trade of Russia in the fish sector, obtained from official sources. It will also present the comparison of fish import and exports flows from 2013 to 2020, changes in import and export markets and changes in the structure of Russian fish import and export to evaluate impact of imposed sanctions to Russia's foreign trade in fish products. Moreover, it will show the calculations and evaluations of the indices such as Laspeyres, Paasche and Fisher Price Indexes, Laspeyres, Paasche and Fisher Volume Indexes, Turnover Index and Terms of Trade Index. An assessment of the impact of sanctions imposed against Russia on import and export flows of fish products will be presented. The results will be based on data from official sources provided by the Russian government and official sources provided by the European Union for the period 2013-2020.

The final section of the thesis will present the study's findings, analysis of the findings, and, as a result, the author's own conclusions on the problem under consideration. Furthermore, recommendations will be developed to reduce the negative impact of sanctions on the Russian fishing industry, its import and export, as well as to increase this industry's capacity to reduce the negative impact of sanctions on the volume of fish products in the country.

3. Literature review

3.1 Definition and types of economic sanctions

In today's realities of actively developing globalization and integration of different countries' economies, the introduction of various types of trade barriers causes significant harm not only to the country's economy, but also to some of its sectors. Embargoes are one of the most severe trade barrier consequences. An embargo, as we all know, is a complete rejection of trade relations between two countries. Furthermore, it is the most severe trade barrier, which is frequently imposed for political reasons in order to deal a serious blow to a country's economy.

Military conflicts between developed countries are gradually becoming a thing of the past in the age of democracies and are being replaced by various forms of political and economic pressure, such as sanctions. Sanctions, on the other hand, have a significant negative impact on bilateral international trade. Some academics, on the other hand, believe that imposing limited and moderate sanctions will benefit all trade participants (Caruso, 2003).

Following the events of 2014, the topic of sanctions has become one of the most iconic topics of debate not only among politicians, state economists, and renowned international experts, but also among the general population of the countries. Of course, the events in Ukraine, which resulted in a slew of restrictive measures in a variety of areas imposed by the United States of America, the European Union, and a number of other countries, became the impetus for a more in-depth examination of the impact of restrictive measures on countries. Of course, the Russian Federation's response was swift, resulting in an even greater wave of negative consequences and heated debate. All discussions about restrictive sanctions eventually come down to one topic: determining the impact of sanctions on the economy of this or that country, as well as the degree of effectiveness and acceptability of this type of restrictive foreign policy instrument in the modern world.

Economic sanctions, as we all know, are restrictions or complete cessation of trade and financial transactions in order to achieve security or foreign policy goals. Individuals, legal entities, organizations, or states may face sanctions imposed by a single country or a group of countries. Sanctions can take many forms, ranging from a ban on individual entry to a

complete or partial freeze of assets, to various types of financial restrictions, to a ban on the supply of arms and food.

Sanctions can be various of types (RIAC, 2021):

1. Broad sanctions that prohibit all types of trade and financial transactions with entire countries;
2. Sanctions by industry (affecting particular sectors of the economy and groups of persons);
3. Targeted sanction (restricting various kinds of operations with individuals or companies).

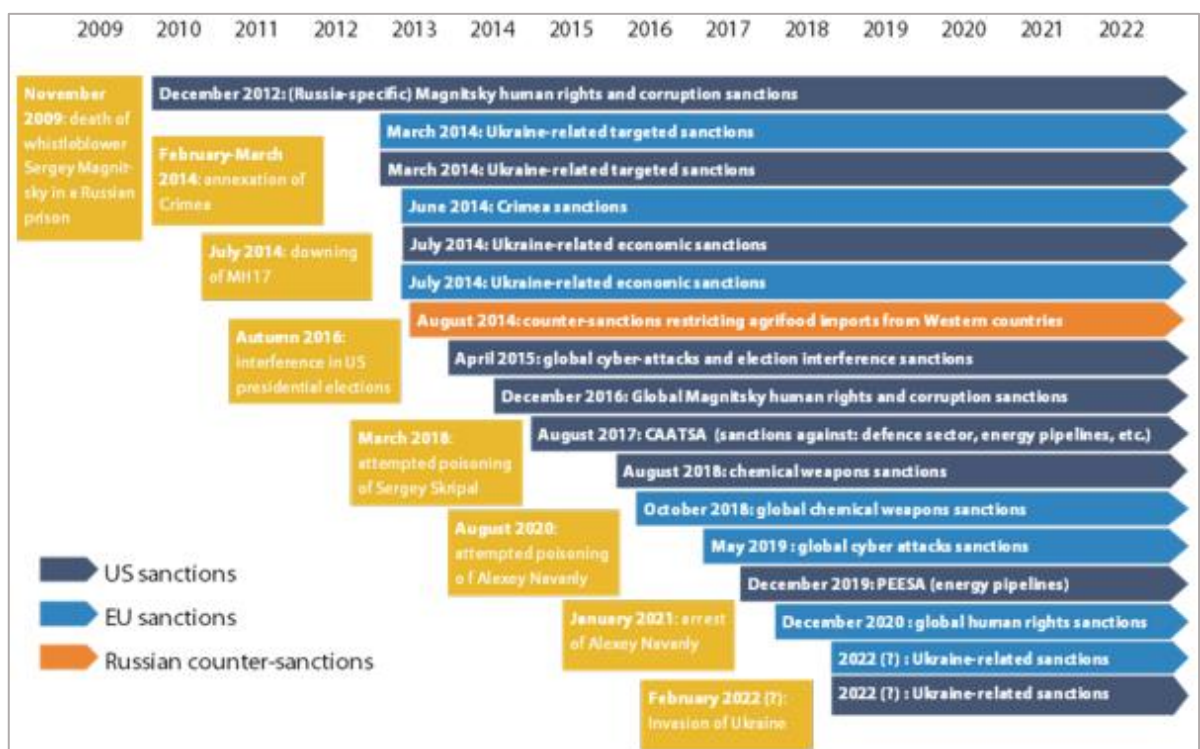
From a political standpoint, the sanctions against Russia were intended to change the country's political regime as well as the direction of Russian foreign policy toward Ukraine and Crimea. However, according to much prominent scholars' research, the sanctions have no significant impact on the country's political regime or political decisions (Neuenkirch and Neumeier, 2016; Oechslin 2014). Of course, countries hoped that imposing sanctions would deter Russia from intervening in Ukraine, but they did not have the desired effect. Nonetheless, some believe that the restrictions helped to protect Ukraine from more aggressive Russian actions (Gould-Davies, 2018). Some academics believe that the sanctions had a negative impact because they only strengthened Russian President Putin's position in the country by increasing his support from the country's ruling elite (Fedorovina and Arkhipov, 2018). However, Putin's popularity among the general public has dwindled noticeably. Although Russia's economy has seen weak growth since 2015 and unemployment is as close to historical levels as possible, implying a gradual recovery from sanctions, only a small percentage of rich people are benefiting from the economic recovery, while real wages for ordinary citizens continue to fall (Chatzky, 2019).

3.1.1 The history of economic sanctions against Russia

As we all know, in the past, military action between countries, military interventions, and mass bloodshed were the best and only ways to resolve conflicts. Large-scale military conflicts, however, are a thing of the past as a result of the transition to modern democratic relations and the state. Nonetheless, every country is concerned with its sovereignty and the security of its citizens. In general, "security" is a broad and complex concept to which different researchers bring their own interpretation. In general, security is defined as the

fulfillment of people's basic needs for survival, integrity, tranquility, independence, and the ability to grow. However, some scholars define "security" not only as a state of security, but also as the protection of an individual's, society's, and state's most important interests from threats. Other researchers believe that the concept of security encompasses all aspects of society and the state, as well as a specific state of society in which no dangers exist (Clever, 2015). Of course, economic security is an important aspect of a country's security.

Figure 1: Sanctions timeline



Source: EPRS, 2022

Many academics believe that economic security consists of the following features:

- Consistency and stability, resistance to internal and external threats, which refers to the strength and dependability of all elements of the economic system, the stability of the state's economic development, and destabilizing factors such as sustainable disarmament;
- Economic independence denotes the ability of any subject of economic security to independently make and implement strategic economic and political decisions for

development, as well as the ability to use national competitive advantages to ensure stability and development;

- Self-reproduction and self-development are intertwined. This characteristic entails creating the necessary conditions for an effective economic policy and expanded self-reproduction, thereby ensuring the national economy's competitiveness in the global arena;
- National Importance This characteristic determines a country's ability to protect its economic interests.

Sanctions, restrictions, and food embargoes are among the most serious threats to countries' economic security, including Russian Federation. As we are aware, sanctions have a direct impact on the disruption of foreign trade relations, which leads to a shortage of borrowed funds, a shortage of imported goods, and, as a result, an increase in prices for goods within the country, as well as an increase in interest rates.

The global financial crisis, as well as economic sanctions, have had a significant impact on Russia's level of security. It is expected that the negative impact will exacerbate environmental protection and agricultural development, potentially posing a barrier to long-term development. The financing crisis in Russia exacerbates the country's already dire economic situation and stifles the development of its own agricultural production (Kopein and Filimonova, 2018).

Russia's annexation of Crimea, invasion of eastern Ukraine, election interference, malicious cyber activities, human rights violations, use of chemical weapons, weapons proliferation, illegal trade with North Korea, and support for Syria and Venezuela were the primary reasons for European Union and US sanctions against Russia in early 2014. Sanctions against Russian individuals may include freezing assets subject to US jurisdiction, limiting access to the US financial system, including limiting or prohibiting transactions involving US persons and entities, and denying entry into the US. The US also exerts tight control over exports to Russia's energy and defense sectors (ITA, 2021).

Sanctions with the greatest impact on Russia and its economy from EU and USA (ITA, 2021):

- Investment and military cooperation with Russia have been halted.
- Export licenses for defense goods and services to Russia have been revoked.
- Sanctions imposed on the Russian economy.

- Russia is prohibited from supplying equipment for deep oil and gas production, Arctic shelf development, and shale oil and gas production.
- The European Investment Bank has ceased funding for projects in Russia.
- Russian state banks have been sanctioned.
- Russian oil and gas investments, as well as investments in Crimea and Sevastopol, are prohibited.
- The supply of food and agricultural products has been halted, as has the sale of weapons and defense goods, defense services, and design and construction services.

Some experts believe that the West achieved its goal and that the sanctions imposed on Russia, combined with the real threat of new sanctions, had a significant impact on reducing Russian aggression against Ukraine, even though the factors on the ground did not change significantly. Nonetheless, it is believed that more serious and stringent economic and political sanctions would have had a greater impact on the country's behavior in the international arena (Christie, 2016).

Against a backdrop of declining performance in almost all sectors, Russia's food sector grew as a result of the food embargo. However, this is an exception, and the other sectors are suffering from a lack of investment, as well as sanctions imposed on key enterprises in the sectors. Among Russian sectors, the transportation sector suffered the most damage because it contains a high proportion of state-owned enterprises that were hit by sanctions, and the defense sector suffered the most damage because it is state-owned and also because some countries imposed an embargo on Russian arms supplies. It is worth paying attention to the defense sector, as it is without a doubt the most important sector for the Russian economy, and it holds the leading position in the global arms market (along with the United States); the sanctions had an immediate impact on the defense sector, with arms exports from Russia dropping significantly in 2014, indicating that the sanctions achieved their goal.

It is crucial to highlight that sanctions are a tool used to terminate trade, financial, and economic relations for foreign and security policy reasons. Sanctions are far from a sure thing, but they are worth considering as one method of influence. Some argue that sanctions do not work in practice as well as they do in theory. One indicator is the ability to divert trade to non-sanctioned countries. Sanctions imposed by a state demonstrate that diplomatic solutions to existing problems have not been found. It was not possible to solve the existing problems diplomatically, so this type of influence was used.

3.1.2 International experience of sanctions in the world nowadays

The goal of imposing sanctions on other countries around the world is to change a country's policy decisions that do not serve their interests or violate international legal norms. There is a widespread belief that sanctions are frequently ill-conceived and ineffective. Others, on the other hand, believe that in today's world, sanctions have a significant impact on countries and have generally become more effective.

Travel bans, asset freezes, arms embargoes, capital restrictions, foreign aid cuts, and trade restrictions are all examples of sanctions. They are used to achieve a variety of foreign policy objectives, such as counterterrorism, counteroffensive, nonproliferation, democracy and human rights promotion, conflict resolution, and cybersecurity.

Sanctions are an important tool in the EU's Common Foreign and Security Policy, allowing the EU to intervene to prevent conflicts or respond to emerging or ongoing crises. Sanctions are typically not punitive measures, but rather are intended to change policies or activities by introducing them into non-EU countries (ec.europa.eu).

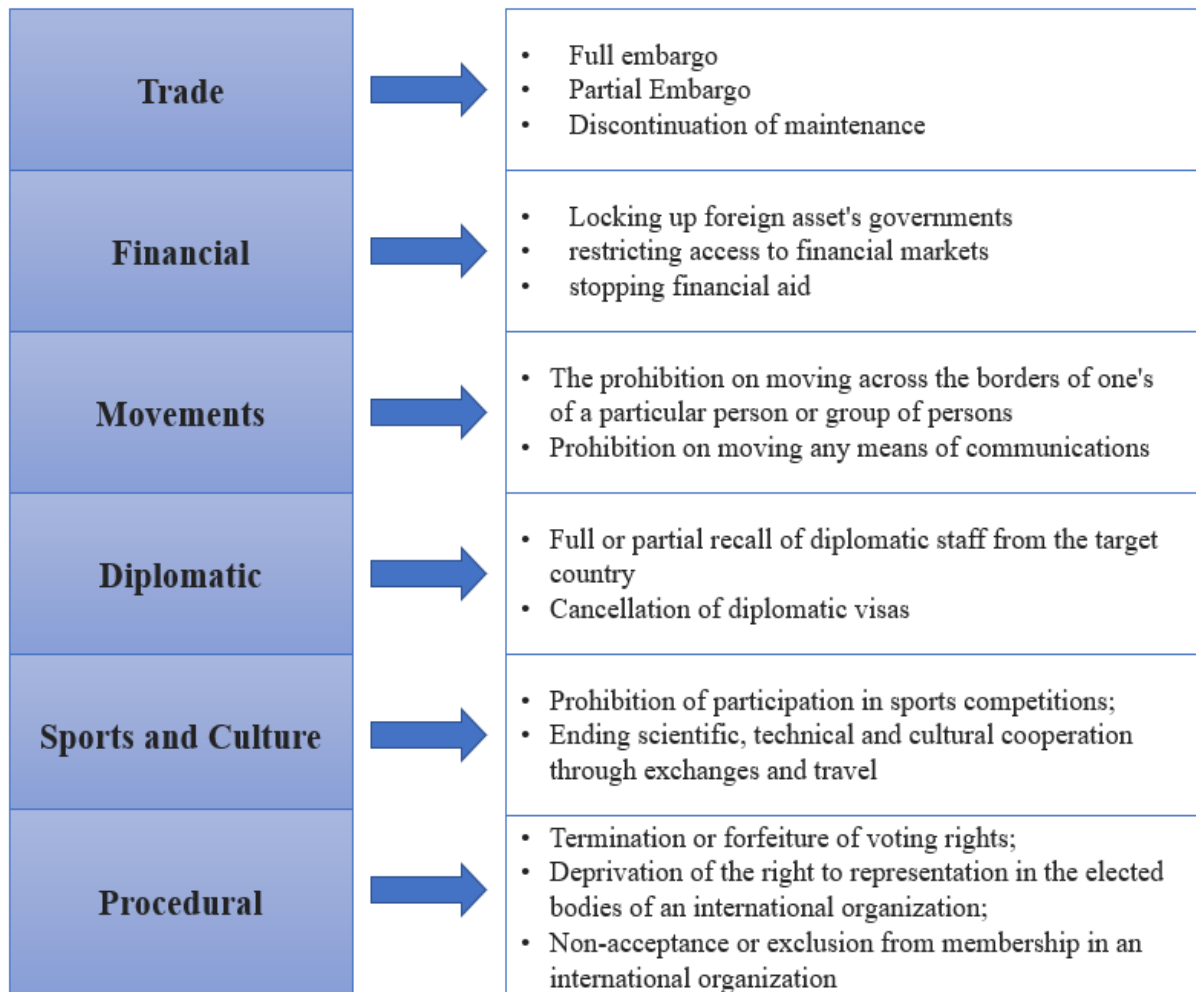
Sanctions are imposed by the European Union as part of its common foreign and security policy. Because the EU lacks a unified military force, many European leaders regard sanctions as the bloc's most potent foreign policy tool. The sanctions policy must be approved unanimously by the member countries of the Council of the European Union, the body that represents EU leaders.

The Office of Foreign Assets Control ("OFAC") of the United States Treasury Department administers and enforces economic and trade sanctions against targeted foreign governments and regimes, terrorists, international drug traffickers, those involved in activities related to the proliferation of weapons of mass destruction, and other threats to national security, foreign policy, or the United States economy (home.treasury.gov)

The United States employs the most economic and financial sanctions of any country. The executive or legislative branches of government can issue sanctions policy. The process is usually initiated by the president issuing an executive order in response to an external threat to the state. This gives the president special authority to regulate commerce in response to that threat for a year, unless extended or terminated by a joint resolution of Congress. Congress, for its part, has the authority to enact legislation imposing new sanctions or amending existing ones, which it has done on numerous occasions.

The following characteristics are shared by all sanctions around the world:

Image 1: Characteristics of international sanctions



Source: Processed according to Oechslin, 2014.

Most researchers agree that imposing sanctions on countries is largely ineffective in influencing the target state's political decisions, and thus the main goal of sanctions has not been met (Oechslin, 2014). Other researchers, however, believe that sanctions, regardless of their impact on a country's policy decisions, can have a very negative impact on the dyadic ties between the sending and receiving countries, leading to a reduction in trade flows, labor and population migration, and foreign direct investment (Afesorgbor, 2019). Furthermore, in a sanctioned country, there may be even more negative consequences, such as a currency crisis (Peksen and Son, 2015), reduced economic growth (Neuenkirch and Neumeier, 2015), and an increase in the gap between the rich and poor segments of the population (Neuenkirch and Neumeier, 2016). Furthermore, the sanctions severely limit the country's integration into the global economy, which is undoubtedly a huge

disadvantage for the country and contributes to its backwardness, not to mention the impact on bilateral trade with other countries (Doornich and Raspotnik, 2019).

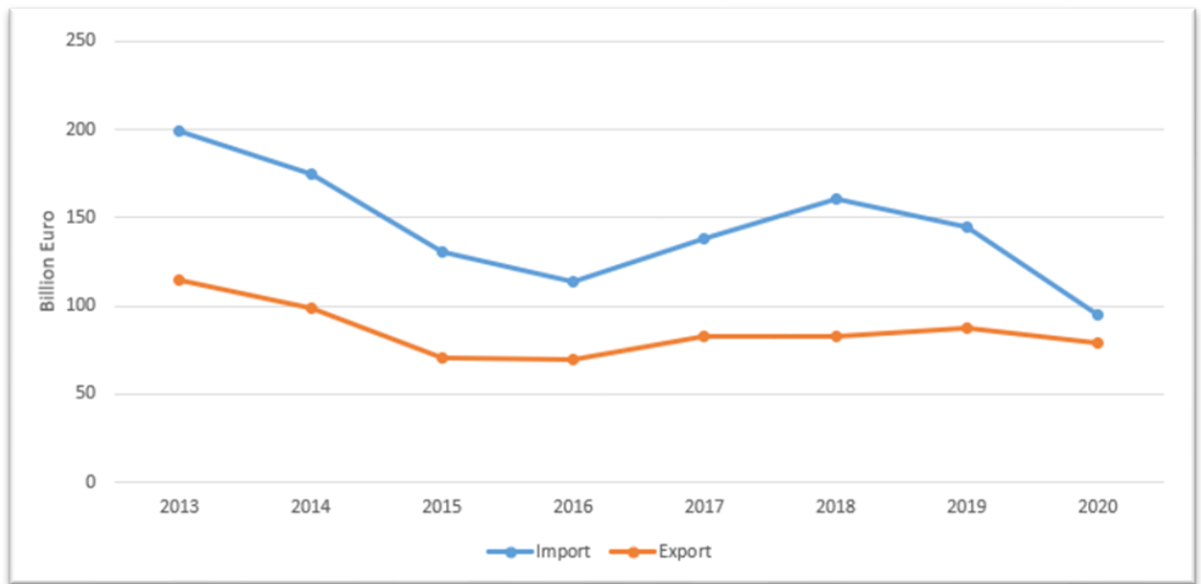
To determine the effectiveness of economic sanctions in general, we can examine the findings of a statistical study on the effectiveness of sanctions imposed after World War II. To conduct the analysis, 204 economic sanctions cases were used. According to the study, a partial change in the policy of the state against which economic sanctions were imposed was 51 percent successful, democratization of society and/or a change of political course was 31 percent successful, cessation of hostilities was 21 percent successful, and reduction of military capabilities was 31 percent successful. As a result, only about 30% of the time does the use of economic sanctions solve the problem (Aslund, 2014) (Hufbauer, 2008). A similar study was carried out in R. Garfield, J. Devin, and J. Fausey's "The Health Impact of Economic Sanctions" (Zubenko, 2016).

Aside from the impact of sanctions on monetary capital, there is also the issue of the drain of so-called "intellectual capital," or qualified personnel capable of developing innovative products. The key reason for this leakage is believed to be heavy bureaucratic processes when attempting to implement their ideas, and there are virtually no effective institutions that would assist in the implementation of breakthrough initiatives. Another factor highly influencing the migration of Russian scientists and other specialists is the level of pay in Russia, which is significantly lower than in other countries. (Uroshleva, 2018). The average salary in Russia in 2013 was 29,000 rubles (\$911). Salaries in rubles had increased 1.8-fold by 2021 (to 52 thousand rubles), but had decreased significantly in dollars (\$690).

3.1.3 Russian counter-sanctions in response to EU sanctions

Russia has the legal right, under international law, to impose counter-sanctions in response to sanctions imposed on it. The Russian Federation's response to the actions of the European Union and the United States includes, first, economic retaliatory sanctions and, second, a number of internal measures, including those aimed at implementing an import substitution policy. In 2014, Presidential Decree No. 560 of 06.08.2014 [12] imposed retaliatory Russian counter-sanctions that prohibited or limited foreign economic transactions involving the import into Russia of certain types of agricultural products, raw materials, and foodstuffs, the country of origin of which is the state that decided to impose economic sanctions on Russia. (Dobrynina, 2020).

Figure 2: EU trade in goods with Russia 2013–2020, billion Euro



Source: Eurostat, 2022.

Russia has been one of the European Union's most important trading partners since its inception. However, the volume of trade between the parties decreased in 2014 due to two major factors: the Russian economy's recession and the imposition of anti-Russian sanctions and Russian retaliatory measures.

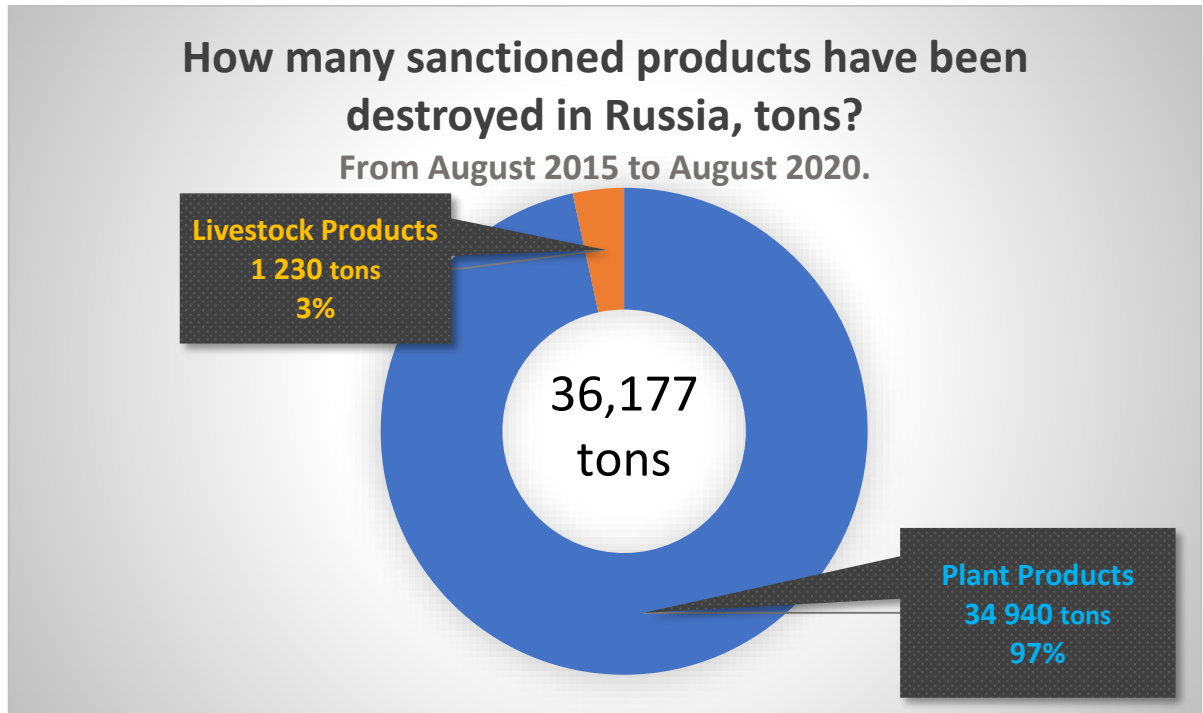
The COVID-19 crisis reduced both EU and Russian exports and imports in 2020. In April 2020, exports fell to 5.4 billion euros. It had recovered to €7.2 billion by December 2020. Imports fell to €6.1 billion in April 2020. It had recovered to €8.5 billion by December 2020 (Eurostat).

There is a strong belief that the imposition of counter-sanctions has only exacerbated Russia's situation and had a significant negative impact on the country's economy. After the EU and the US imposed sanctions on Russia in mid-2014, President Putin signed a decree imposing severe restrictions on food imports from sanctioned countries. A year later, the Russian president issued a decree ordering the destruction of all illegally imported goods (Batalov, 2018).

More than 36,000 tons of food have been destroyed in the last five years (by the middle of 2020) (fsvps.gov.ru). At the same time, plant products accounted for 97 percent of all products destroyed, while livestock products, such as meat and milk, accounted for only 3 percent. This disparity could be attributed to the fact that Russia has long used an

electronic veterinary certification system, which makes it easier to control illegal livestock shipments.

Image 2: Destroyed sanctioned products in Russia 2015 - 2020, tons



Source: Rosselkhoznadzor, 2020

There is an opinion that the Russian government hoped that the imposition of counter-sanctions would hasten the lifting of the sanctions. This assumption, however, proved to be incorrect. As a result of the food embargo, the following happened (Batalov, 2018):

- The embargo had a greater negative impact on domestic consumers. The 0.2-point drop in GDP resulted in higher prices for a variety of goods, which resulted in a significant increase in population spending.
- Following the imposition of counter-sanctions, Russian manufacturers were forced to rapidly increase production rates, which frequently did not improve product quality and, in some cases, resulted in a decrease in product quality.
- One of the most serious negative consequences is the destruction of sanctioned goods imported into Russia. It is a wrongdoing to destroy products, even sanctioned ones, given the population's standard of living and the large percentage of people living on or below the poverty line. In Russia, petitions have been circulated

requesting that the government distribute sanctioned goods to those in need, but they have gone unanswered.

3.2 Impact of sanctions on Russian economy

Irrespectively, many international experts agree that the sanctions have severely harmed Russia's economy. Nonetheless, Russian officials and some experts maintain that there have been no negative consequences for the Russian economy, and that the European Union and the United States' sanctions against Russia have benefited the Russian economy, because the sanctions have resulted in Russia increasing its domestic production, boosting the development of agriculture and most industries, and pursuing an active and successful import substitution policy. A number of Russian academics believe that the sanctions have benefited certain industries to some extent, and that for some sectors of the economy, the sanctions and countersanctions have neutralized high competition, allowing Russian businesses to expand.

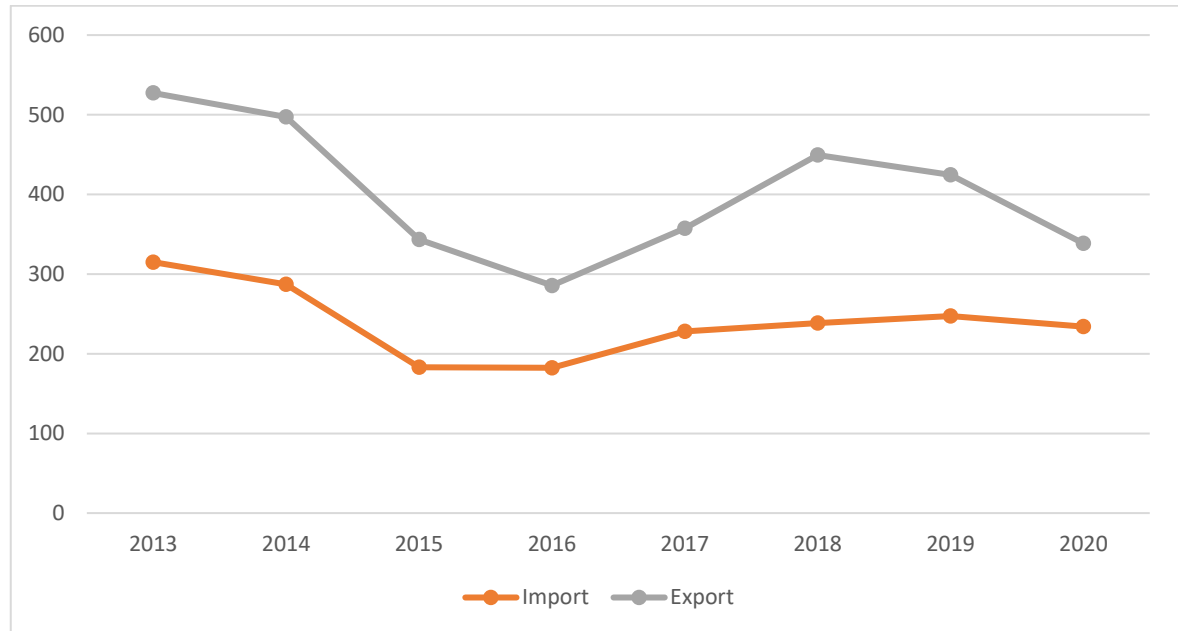
Nonetheless, the major economic indicators reveal the true state of affairs. Russia's GDP shows a dismal dynamic when compared to other countries; the standard of living is falling, the ruble is depreciating, and the consumer price index is rising.

The sanctions had the greatest impact on the financial sector. The closure of communication channels with Western organizations made it difficult for banks and investment funds to operate. Furthermore, the oil and gas industry, as well as the market for high-tech equipment, suffered. Experts also point to the issue of a lack of appropriate conditions for the localization of production of foreign-origin products. Furthermore, the outflow of capital from the country is a serious problem as a result of the anti-Russian sanctions. Some investment projects have had to be "frozen" indefinitely, which is undoubtedly unfavorable to business, as companies must plan their activities. For example, due to the cessation of supplies of ship turbines from Ukraine, the launch of several ships had to be postponed. Some experts believe that in such a situation, it is necessary to try to create conditions that will attract investors from friendly countries.

As shown in the graph below, the sanctions imposed on Russia resulted in a sharp decline in imports and exports after 2014. The Russian Federation's main export commodities (in terms of value) are oil, petroleum products, natural gas, machinery and equipment, diesel

fuel, ferrous metals, and hard coal. Machinery and equipment are the most important imported goods.

Figure 3: Volume of Russian import and export in 2013 – 2020, billion USD



Source: Rosstat, 2021

Foreign trade turnover fell by 31% as well. The country's development is thought to have been hampered by a lack of external capital. "Even if you explain the paradoxical benefit of sanctions through import substitution, which revitalizes the national economy, this message is hardly practical. You manufacture your own goods, but you face challenges in terms of competitiveness and citizen well-being. The sanctions are said to have boosted agriculture, but there is some debate about how much they extended the trend that began before the 'Crimean' 2014, and how much they introduced something new." (Bulkin, 2020). The United States imposed the first modern sanctions against Russia in the spring of 2013, following the so-called "Magnitsky case." Sergei Magnitsky, a Russian auditor who fought corruption in tax refunds at the time, died in a Russian prison. The United States barred Russians from entering the country because they were involved in human rights violations, according to Washington (RIA News, 2021).

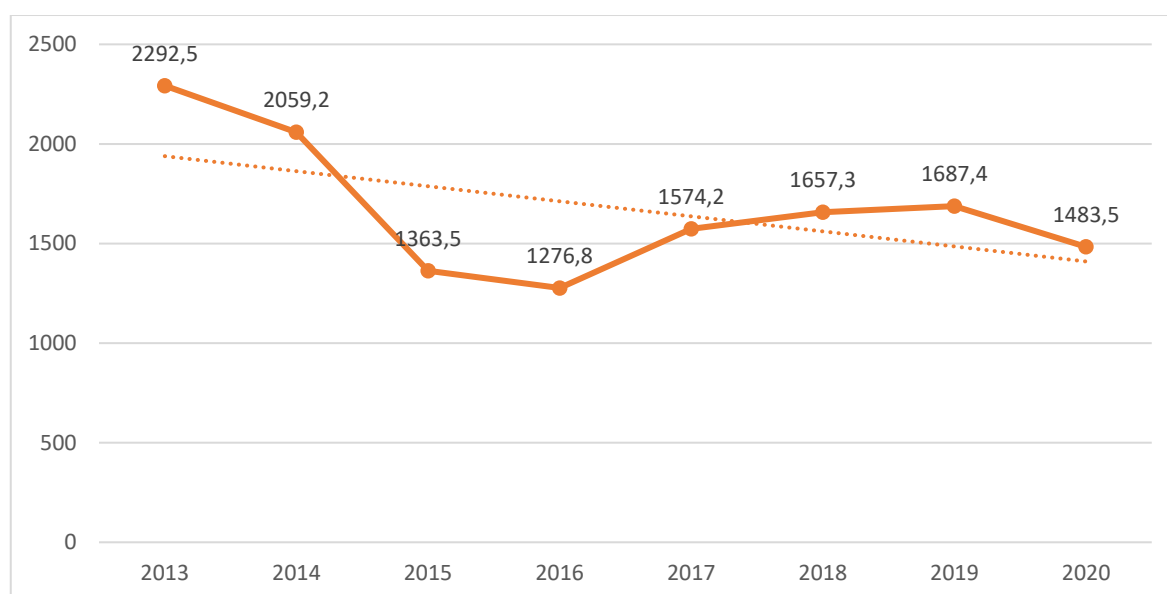
Sanctions against Russian citizens and businesses continued to rise until the spring of 2021. The reasons for this included the annexation of Crimea, the construction of gas pipelines, meddling in US elections, arms shipments to Syria and North Korea, cyber

attacks, the Navalny case, human rights violations, and so on. Several countries have imposed sanctions, including the United States, the European Union, Canada, Switzerland, Japan, Australia and New Zealand (TASS, 2016).

Foreign companies were subjected to restrictions ranging from loans and purchases of Russian state debt to a complete ban on deliveries of a number of goods to Russia. According to Russian authorities' rhetoric, they do not intend to change their political course. They talk about the benefits of sanctions for the Russian economy in public.

President Vladimir Putin declared that the sanctions had caused no more than \$50 billion in damage, but that the country had earned roughly the same amount. According to him, this occurred as a result of import substitution programs, which resulted in an increase in agricultural production. According to his estimates, Russia has emerged as a market leader in the bread export market, selling \$25 billion in grain in 2019, which is \$11 billion more than Russia earned in the same year from the arms trade. "We spent a lot of money on so-called import substitution and started producing products and technologies that we didn't have before, or we simply forgot and lost them." We recreated everything. And this is certainly good for us; it diversifies our economy and, in fact, aids us in resolving the main issue," Putin said (Kremlin, 2020).

Figure 4: Dynamics of Russian GDP in 2013 – 2020, billion USD



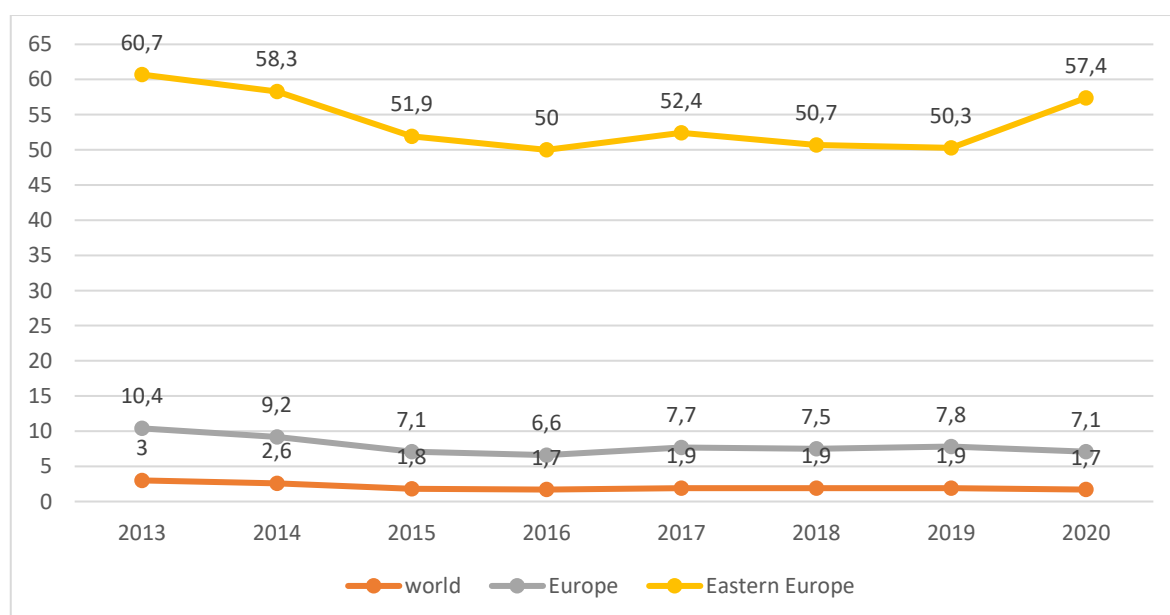
Source: UN data, 2022

Russia's GDP was \$2,292.5 billion in 2013, placing it eighth in the world. Russia's GDP share in the world was 3.0 percent. In 2013, Russia's GDP per capita was \$15,884.0, placing it 65th in the world. Russia's GDP per capita was \$5,118.0 more than the global GDP per capita (\$10,766.0).

Russia's GDP in 2020 was \$1,483.5 billion, ranking 11th in the world and matching the GDPs of Brazil (\$1,444.7 billion) and Australia (\$1,423.5 billion). Russia's GDP share in the global economy was 1.7 percent. Russia's GDP per capita in 2020 is expected to be \$10,166, ranking it 81st in the world. Russia's GDP per capita was \$786.0 less than the world's GDP per capita (\$10,952.0).

Between 2013 and 2020, Russia's GDP at current prices fell by \$809 billion (35.3 percent) to \$1,483.5 billion, reflecting a \$25.4 billion increase in population and a -\$834.4 billion reduction in GDP per capita. The average annual GDP growth rate in Russia was -\$115.6 billion, or -6.0 percent. Russia's GDP at constant prices grows at a 0.36 percent yearly rate on average. The global share decreased by 1.2 percent. In Europe, the share fell by 3.4 percent. Between 2013 and 2020, Russia's GDP per capita fell by \$5,718.0 (36%) to \$10,166.0. At current prices, the average annual per capita GDP growth rate is -\$816.9, or -6.2 percent.

Figure 5: Share of Russian GDP in the World, Europe and Eastern Europe 2013 – 2020, %



Source: UN data, 2022

The reason Russia's share of global GDP is at about 2% (more specifically, 1.7%) is because the country has not seen even one economic modernization from 1991 to 2020, although economies such as China and India have expanded significantly, increasing their proportion of global GDP.

And Russia's share has been falling steadily over the years, and it is presently less than 2%. The reason for this is that Russia has purposefully de-industrialized, banking on gas and oil to power the economy. As a result, the economy as a whole has devolved into a rudimentary state, with the majority of raw resources exported without further processing.

3.2.1 Impact of anti – Russian sanctions on EU and USA

Penalties, as we all know, have a severe impact not only on the country targeted by the restrictions, but also on the countries that imposed the sanctions. The crisis created by Russia's annexation of Crimea has had a major impact not only on Russia and Ukraine, but it also has the potential to endanger Europe's weak economic development. Western sanctions on Russia were first implemented in March 2014, even before Crimea was annexed by Russia, and have subsequently been frequently increased and extended.

While the sanctions had a far lesser overall impact on the EU, they did have an impact on several individual nations. The economic impact on various EU nations varies based on their position in the Russian market, with the Baltic states and some Eastern European EU member states bearing a disproportionate share of the burden.

Recent wiiw estimates, based on Eurostat and Rosstat foreign trade data, account for a -0.2 percent loss in German GDP owing to decreased exports to Russia from 2014 to 2018. (2018 was estimated from Russian mirror statistics). (The year 2018 was calculated using Russian mirror statistics.) A comparable estimate for Austria shows a cumulative GDP loss of -0.5% during the same time period. The Czech Republic and Hungary (both -0.6% of GDP), as well as Slovakia, which has a very large reliance on the Russian market (a loss of more than 1% of GDP), were particularly heavily impacted. However, in absolute terms, Germany incurred the greatest losses (export losses of more than €14 billion from 2014 to 2016), with exports recovering in 2017 and 2018. Italy, France, and Poland all suffered significant absolute export losses in Russia (Havlik, 2019).

Sanctions on Russia, on the other hand, have had a favorable impact on other countries. The Faroese government is working hard to enhance fish exports to Russia, which are now

valued at around 2.5 billion Danish kroner per year (355 million euros a year). Local fishing firms are now so profitable that the Faroe Islands as a whole reap the rewards. In recent years, the Faroese economy has risen by 6-8 percent, unemployment has nearly been eradicated, and an increasing number of young people are returning to the islands from abroad. The population has surpassed 51,000 for the first time in history (Breum, 2018).

The economic sanctions placed on Russia dealt a significant blow to Norwegian fishing enterprises, who were forced to seek alternative markets and initially suffered greatly as a result of the restrictions. According to the prime minister, the sanctions caused millions of crowns in damage. However, fish producers have found a way out of this dilemma and have continued to conduct business - refocusing on Asian markets - with Norwegian fish now supplying China, Japan, and South Korea. Nonetheless, Norwegian officials anticipate that local products will return to the Russian market, which was far more accessible for local manufacturers owing to its proximity to Norway.

3.3 Russian fish industry

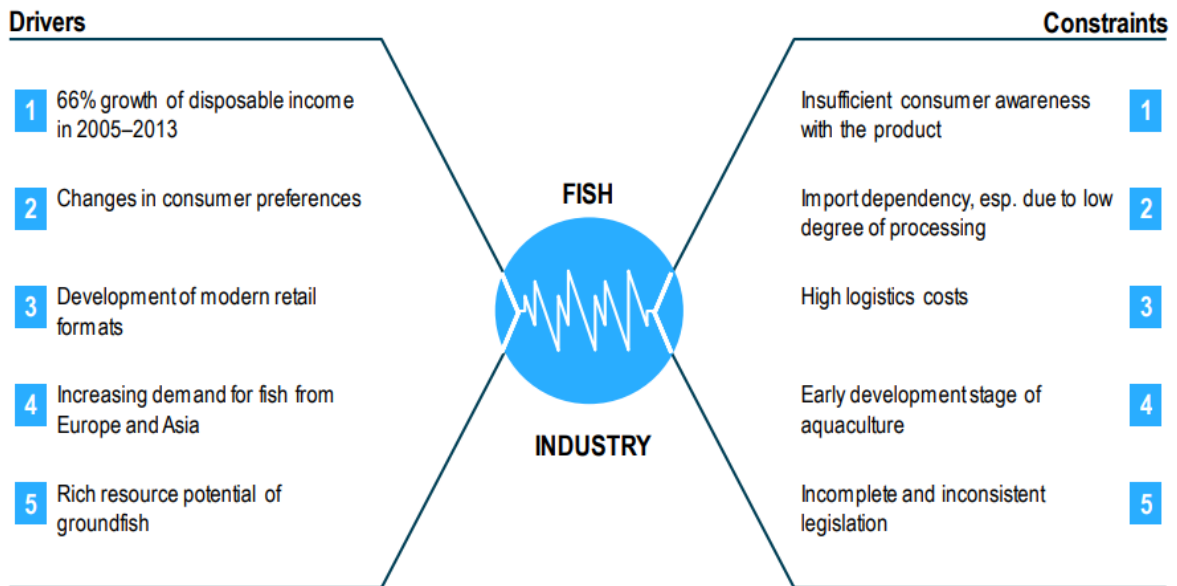
Russia's economy is dependent on resources. More than 70% of the country's GDP is derived from the extraction and processing of minerals and other natural resources. Oil prices have a significant impact on the country's budget income. In 2020, the cut-off mark for oil income for reserves is \$42.4 per barrel. If the price of energy climbs over that threshold, extra budget income is transferred to reserves. If the price goes below that level, the reserves are utilized to pay the fiscal deficit. The system allows for the passage of oil volatility peaks. The rest of the economy is an addendum to the above-mentioned system. The remainder of the economy is an afterthought to the outlined process and plays no significant part in the country's macroeconomic stability.

Russia boasts a plethora of aquatic biological resources. Aquatic biological resources, like any natural riches, are a national treasure that should benefit all people of the country, contribute to the creation of a high quality of life, give socioeconomic advantages, and contribute to the improvement of the state's international position.

Fishery is important to the country's economy for several reasons. For starters, it offers jobs in several parts of the country, including Murmansk, Arkhangelsk, Magadan, Sakhalin, and Kaliningrad oblasts, Kamchatka and Primorsky Krai, Republic of Karelia, Chukotka, and Koryak Autonomous Okrugs. Fishing is typically the principal source of

income for the local population, including indigenous peoples, in the Far North. Second, the fishing sector contributes significantly to both the GDP of the aforementioned areas and Russia's GDP.

Image 3: Drivers and constraints of the fish industry in Russia



Source: Roland Berger Strategy Consultants

The fish sector is important in the country's agriculture since it generates particular feed mixes (fish oil, fish meal) for fur farming, cattle and poultry breeding, and fertilizers.

Fish farming refers to economic sectors that have a demonstrable multiplicative influence on other industries, such as fish processing, ports, shipbuilding, machine construction, shipbuilding, and so on.

According to the United Nations, by 2030, the consumption of farmed fish will outnumber the catch of wild fish for the first time. Aquaculture is growing at a rapid pace in many nations throughout the world, while chances to expand catch are nearly exhausted. Fish farming occurs in Russia as well, although its prospects are not as promising as those of Chinese or European aquaculture. Nonetheless, complicated projects for the growth of this industry are being implemented at the highest levels of government, because even with the Russian Federation's immense resources, it will face finite natural reserves sooner or later.

The industry's businesses provide about 2,500 distinct items. Not only is fish frequently employed in the culinary business. Trading businesses are also interested in various raw commodities captured in the waters. However, fish is utilized for more than just food. It is

a key raw element in Russia's medical and light industries. Animal husbandry and poultry farming require the goods as a food chain component.

Russia's extensive international economic collaboration with other nations is a key component fueling the industry's future growth. This adds to the development of the sales market and greater competitiveness. Poachers' impunity is one of the most serious issues. They yearly deplete bioresources and deteriorate the status of the aquatic environment.

A rerun of the 2014 crisis occurred in 2020, with a lot of overlapping elements. Oil became inexpensive at the time as a result of sanctions and the financial crisis. The globe was attacked this time by a coronavirus outbreak, which was accompanied by a stock market crisis and a decline in oil prices. There are no fundamental distinctions between the two crises. The crisis components evolved concurrently in both situations, and the superposition of events only aggravated the total scenario. Even if the coronavirus had not existed in 2020, stock markets and oil prices would have fallen, but the decline would have been smoother and would not have had such a large impact on the actual economy.

The latest global crisis was just as bad for Russia as the last one. The coronavirus was just as bad as the sanctions. Russia's biggest commercial partner is China, which has been severely impacted by the coronavirus. In 2019, China accounted for 16.6 percent of Russia's international trade turnover. China contributed for 80% of the growth in overall global demand for energy resources in 2019. In all situations, Russia might be said to have instigated the escalating crises for political objectives. There was a confrontation with Ukraine in 2014, as well as the annexation of Crimea. In 2020, Russia exacerbated the issue by reducing its share of the global oil market, first by breaking up the OPEC+ contract and then by launching a new deal with worse terms.

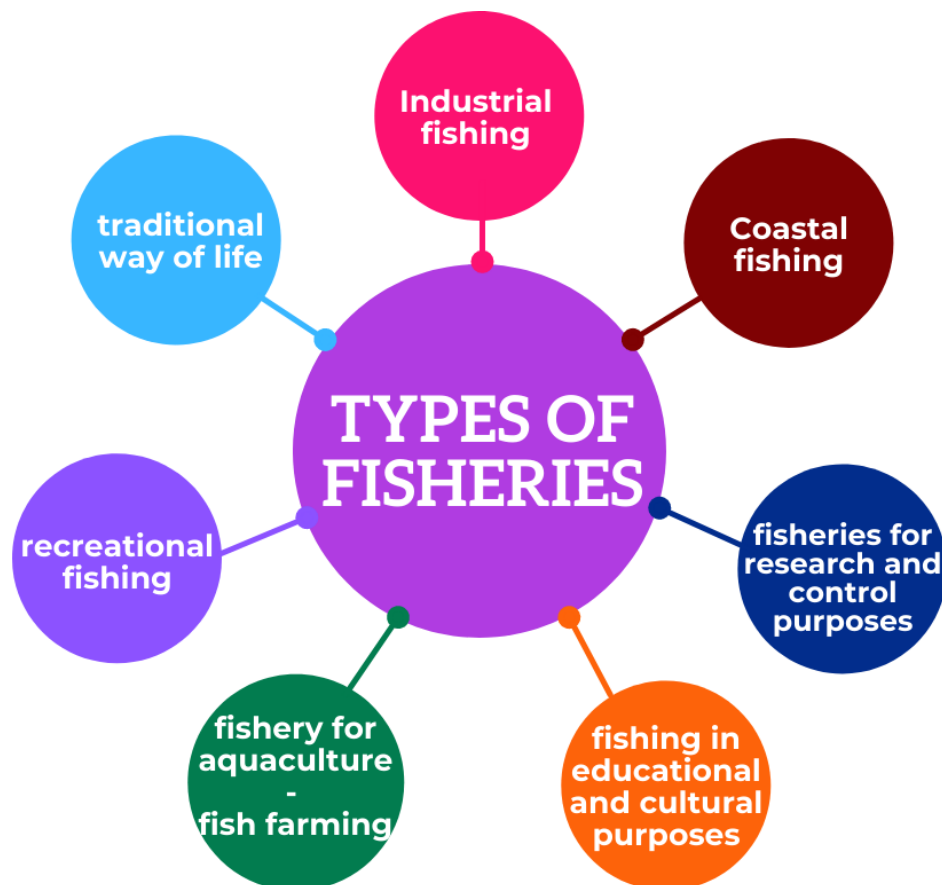
Furthermore, Russia's armed invasion of Ukraine's sovereign state in February 2022 exacerbated the country's already dire predicament. The country had not yet had time to properly recuperate and recover from the upheaval of the previous years when Russia experienced a new massive crisis and default. Given the volatility of events, it is difficult to foresee how the nation and its economy will evolve in the future, but it is reasonable to assume that the repercussions of such acts would be disastrous for the country and its people. Furthermore, due to the unwillingness of most exporting nations to establish economic links with Russia, it is unclear how the fishing sector will evolve in the future.

Russia's fishery-industrial complex was established in the postwar years, and it is constantly updated and upgraded. The complex's foundation is the specialized industrial

fleet. Its berthing grounds are regularly outfitted with modern equipment, which improves the quality of services supplied to fisherman.

There are 400 kinds of fish of commercial worth, but only those that reside on the shelf zone and the non-retentive part of the ocean are caught. The catch's species makeup is governed by eight families (these species account for around 75% of global fish output) (Mashkovtsev, 2020): Cod, Herring, Anchovy, Mackerel, Stavrid, Tuna, Smelt, Flounder. Other fish species and groups are included in the world's catch, albeit in lower amounts, in addition to these.

Image 4: Types of fishing



Source: Processed according to Federal Law N 166-FZ, 2004

The Soviet period saw the most rapid development of aquaculture in Russia. From 1970 until 1990, the state aquaculture development program was in force, allowing Soviet fish farmers nearly limitless access to breeding materials and fish farming equipment. During this time, fish farms in the USSR boosted output by more than fivefold. By 1990, the volume of supply had reached a peak, topping 418 thousand tons, accounting for around

3% of global fish output at the time. Russia now ranks 78th among fish farming powers, producing up to 200 thousand tons of fish each year. This is quite minor as compared to Soviet-era indicators. Nonetheless, based on 1996 production quantities (about 50 thousand tons), we may conclude that Russian aquaculture is in an active recovery phase (Karpov, 2020).

The total profit of the industry businesses was 150 billion rubles. This is 17% less than in 2019. (180 billion). Profits have fallen for the first time in five years; since 2014, the industry's profit statistics had increased by 18-19% every year. In 2020, the sector contributed 74.8 billion rubles in taxes to all budgets (-1.6 percent less than in 2019). This is 1.6 percent less than the previous year (76 billion rubles). The drop was caused by the income tax's decrease in 2020. At the same time, "payroll taxes" (personal income tax, social contributions) in the industry climbed by 4% year on year. This shows that the industry had a challenging year without layoffs or salary reductions (Fishing and fish farming. 2021).

3.3.1 Russian fish export development

Despite the fact that Russia is surrounded by twelve seas, three to five million tons of fish are taken each year. However, hardly every Russian can afford to consume fish on a daily basis. Almost half of all captures are shipped overseas. Unfortunately, there are various reasons for this:

- the fact that border, customs, and veterinary services are time-consuming, since the fish might be scrutinized for several weeks. Fishermen lose money as well as time since they must pay for fish storage at the port as well as the inspection itself. And, of course, this might have an adverse effect on the quality of fresh fish.
- Another cause is the population's poor solvency. Fish grew more costly as the currency fell: pollock, which was given to cats in the USSR, now costs 5-10 dollars per kilogram. Such rates are prohibitively expensive for many Russian nationals, while persons living abroad may readily obtain seafood at such costs. That is why fishing enterprises do not lower their prices, knowing that if the fish is not purchased in Russia, it will be purchased in the West and Asia.

- The third cause is a lack of transportation. For example, it takes 2-3 weeks to carry seafood from the Far East to the European area of Russia. Furthermore, this necessitates high-tech transportation, which Russia lacks, and transportation costs are rising year after year. Such issues do not exist when exporting fish abroad, thus fishermen prefer to sell fish to nations that are ready to pay for their own transportation.
- Another significant issue is that the Russian fishery does not receive adequate official support: subsidies and loan closing help are rare, so fishermen must maintain and modernize the worn-out fleet at their own expense. Furthermore, there aren't enough fish-processing factories in the nation, so there's nowhere for the fish to go. This is why fish is sent to Norway and China, where it is advanced processed and then returned to Russia, as illogical it may appear.

3.3.2 Russian fish import development

The COVID-19 pandemic epidemic put all countries to the test. Some sectors were more impacted than others, and it frequently depended on methods to avoid infection among personnel in continuous manufacturing operations. As we know, Russian fishing enterprises were able to quickly take precautionary steps to avoid the development of the epidemic in the sector. As a consequence, no illness outbreaks occurred, and the fishing business did not experience any disruptions. Under such conditions, dealing with imports was particularly difficult, as it was essential to substitute fish from Iceland, Norway, and the Faroe Islands. Chilled salmon and trout may be replaced solely with aquaculture fish from Murmansk and Karelia. Admittedly, considering the expense of shipping, commodities from the Far East are not profitable. And, as a result of Western sanctions and anti-coronavirus prophylactic limitations, the established logistics from European fishing countries ceased to function. However, Russia's aquaculture sector is reliant on foreign technology and resources. As a result, this period was defined by the suspension of export-import ties, which harmed the Russian fishing sector. After all, the Norwegian and Faroese coastal zones gather over 70% of all aquatic bioresources in the Northwest. Nonetheless, other individuals believe that the import restrictions are a good thing for businesses and the country as a whole since they provide an ideal incentive for companies to enhance their

local market position. In theory, the balance of exports and imports allows for the replacement of items that are lost, but regrettably, effective import substitution for all commodity groupings is not attainable.

In general, can be claimed that Russia is one of the world's major fishing countries. Despite increased local production of fish products, the Russian market remains in deficit, with exports surpassing imports numerous times during the last three years. Simultaneously, fish has long been one of the most popular goods among Russian customers, particularly in recent years when a healthy lifestyle has been aggressively promoted. Russia's per capita fish intake is fairly high at 21.9 kg/year, although it has fallen dramatically since the implementation of counter-sanctions, when per capita consumption was 24.8 kg/year (2013). Current industrial developments, together with the global situation with coronavirus, have contributed to a large increase in the price of several types of fish products. Consumers began to choose fish products that were not only cheaper, but also had a longer shelf life, which explains the rise in demand for canned, preserved, dried, smoked, and salted fish.

3.4 Sanctions in Russian fish industry

Presidential Decree No. 560 of August 6, 2014, titled "On the Application of Certain Special Economic Measures to Ensure the Security of the Russian Federation," imposed a one-year ban on the importation of agricultural products and raw materials from the United States, European Union countries, Canada, Australia, and the Kingdom of Norway into our country. Except for canned foods, the list of prohibited products includes all types of goods - "fish and crustaceans, mollusks and other aquatic invertebrates".

According to 2013 numbers, Russian firms produced 3 million 496.9 thousand tons of fish goods (excluding canned and preserved fish and seafood). 1 million 594.2 thousand tons of this volume were exported, whereas 904.1 thousand tons of imported fish and seafood were purchased. Thus, the volume of fish and fish products consumed in the nation in 2013 was 2,806.8 thousand tons, with foreign commodities accounting for 32.2 percent of the total. The proportion of Russian fish products in the domestic market climbed to 69.5 percent in the first half of 2014, up from 67.8 percent at the same time in 2013. As we can see, these levels are still slightly lower than the Food Security Doctrine indication. For fish products it should be not less than 80% (Retail, 2014).

Norway is well-known for being the Russian Federation's top supplier of fish goods. According to 2013 data, this nation accounted for 31.8 percent of all imports into the Russian Federation. Norwegian fish products accounted for 10.2 percent of total consumption volume. There was also active trading with European Union nations. According to 2013 data, the percentage of fish products from EU nations in overall volume of imports was 12.8 percent, while the share in total volume of consumption was 4.2 percent. Canada and the United States were minor providers of fish and seafood to Russia, but they were still among the top 10 importers (fish.gov.ru). Thus, in 2013, these nations accounted for 4.3% and 2.2% of the overall amount of fish products imported into Russia, as well as 1.4% and 0.7% of our country's domestic market. Australia imported relatively little fish and seafood. According to the figures of 2013, it was 0.01% of the overall amount of fish products imported into the Russian Federation, and roughly 0.004% of total consumption. In sum, the fish products of the nations included in the Decree accounted for 16.5% of total Russian Federation imports of fish and seafood in 2013. In the first half of 2013, and 2014, similar figures were 18.1% and 16.3%, respectively.

Nonetheless, anti-Russia sanctions have had a significant detrimental impact on sectors in other nations. Workers in the Norwegian fishing sector, for example, petitioned the kingdom's parliament in 2016 to relax sanctions on Russia, causing huge harm to the business. One of the most important issues for Norwegian sailors today is the impact of anti-Russian sanctions and Moscow's retaliatory restrictive measures. Russia slapped an embargo on Norwegian seafood imports in 2014 in reaction to EU sanctions, which Norway joined despite not being a member of the union. According to official statistics accessible on the Norwegian government website, Norwegian exports to Russia were 8.3 billion kroner (approximately \$1 billion) prior to 2014, while Russian exports to Norway were 9 billion kroner (about \$1.1 billion). "Norway's greatest export item was fish and seafood, and Russia was the main market for Norwegian fish and seafood in 2013. Exports in 2013 were anticipated to be \$6.5 billion, with Russia accounting for 76% of total exports" said the government. However, as a result of sanctions, this figure fell by 37%. And this was a major setback for the Norwegian fishing sector. Many fishing enterprises were unable to pay losses in 2016, prompting the government to offer a one-billion-dollar line of credit to assist the industry (Federal Agency for Fishery, 2016).

Because of the actions in Ukraine, the President of the United States extended sanctions on Russia for another year, until July 31, 2020, in December 2019. However, further

restrictions have been extended until July 31, 2021. According to the most recent data, the US government has decided that previously imposed limitations on sectors of the Russian economy, firms, and individuals would be severely strengthened and will remain in force permanently owing to Russia's armed invasion of Ukraine's land.

In 2020, the following are the main categories of exported items. As a result, sanctions on Russia are unlikely to be lifted very soon. Because the EU is currently trapped in a vicious spiral, no country will deviate from the existing framework. Despite the fact that several European nations, including Italy, Greece, Austria, Hungary, Spain, and Norway, are experiencing major economic losses as a result of Russia's retaliatory counter-sanctions, they will be unable to cancel or at least partially ease them. The West has consistently said that the lifting of sanctions is linked to Russia's execution of the Minsk agreements, and that sanctions would stay in place and in effect until they are implemented and the armed situation in Donbass is resolved. However, following the events in Ukraine in February, the removal or at least relaxation of sanctions against Russia is now a massive question, and considerable easing is doubtful in the foreseeable future.

4. Practical part

4.1 Place of fish sector in Russian foreign trade volume

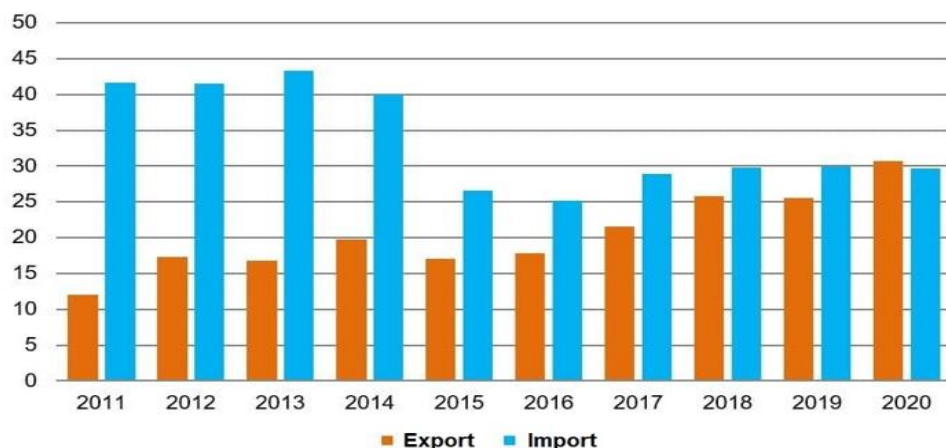
In 2020, agricultural exports overtook imports for the first time in Russia's modern history. According to statistics from Russia's Ministry of Agriculture's Federal Center for Development of Agricultural Exports "Agroexport" (AgroExport, 2021), the amount of agro-industrial complex (AIC) exports has reached a new high. It climbed by 20% year on year to \$30.665 billion, or 79.429 million tons in volume terms.

Russian agrarians enjoyed a successful harvest in 2020, allowing them to not only service the country's local market, but also to boost shipments overseas. As a result of the coronavirus, several nations were forced to expand their imports of agricultural and food items in order to refill supplies.

In recent years, Russia's exports of food items and agricultural raw materials have accounted for around 5.9 percent of the entire structure of commodities provided overseas. Russia is ranked 19th among the world's main food exporters. Russian product exports to overseas markets have nearly tripled in the last 10 years.

Prior to 2015, imports outnumbered exports by a factor of four. The tipping point occurred in late 2014, following the depreciation of the ruble. Because of a large increase in the cost of commodities and the introduction of trade sanctions with EU nations, the state strategy in the agriculture sector was geared at import substitution. Over the last five years, these policies have resulted in a dramatic drop in imports.

Figure 6: Dynamics of import and export of agricultural products 2011-2020, billion USD



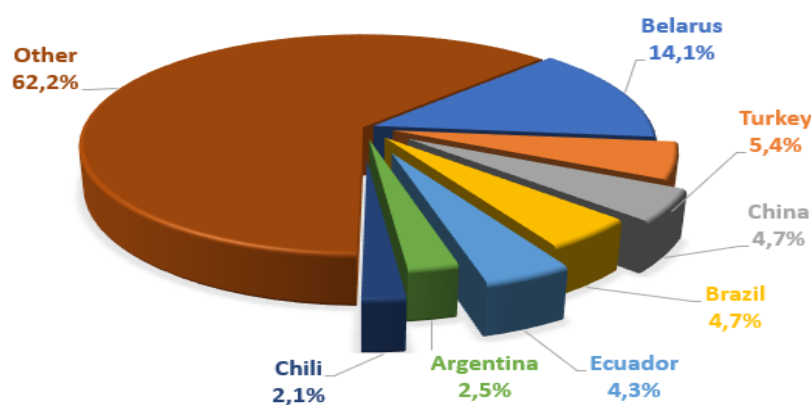
Source: Federal Center "Agroexport" of the Ministry of Agriculture of Russia, 2021

According to the results of 2020, the sale of food and agricultural products abroad exceeded the purchase of imported items, indicating food (food) security in Russia, according to official data. According to the facts presented, the state ensures its residents the availability of the essential amount of food for an active and healthy life.

By the end of 2020, the volume of food and agricultural goods imported into Russia was \$29.7 billion, a 2% decrease from the previous year. Imports of food and raw materials accounted for 12.8 % of total imports.

Belarus is the greatest provider of food and agricultural products, accounting for 14.1% of imports. Turkey comes in second with 5.4 %. China and Brazil tie for third position with 4.7 % apiece.

Figure 7: Largest food suppliers to Russia in 2020, %



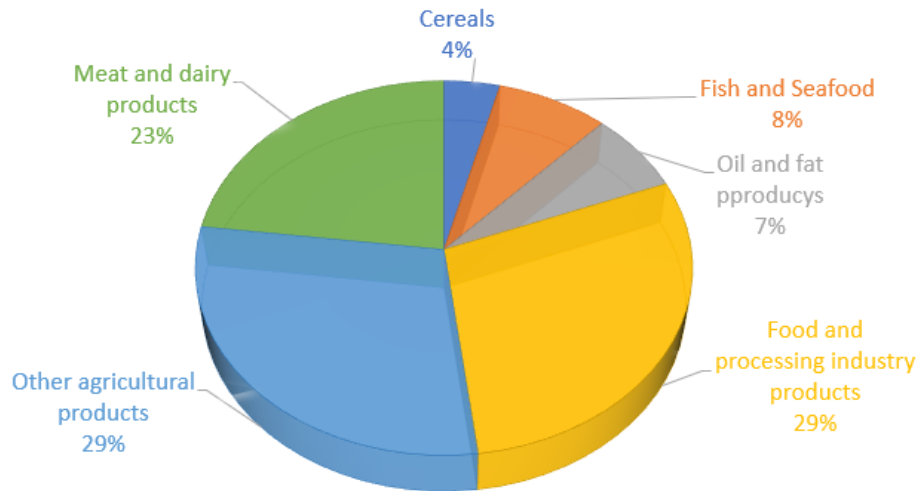
Source: Rosstat, 2021

The largest supplier of food to Russia in 2020 was Belarus, with a total share of imports of 14.1%. Turkey (5.4%), China (4.7%) and Brazil (4.7%) are far behind.

Food and processing sector items and other agricultural products account for the majority of agricultural imports, accounting for around 29 % of each group. Fruits such as bananas, citrus fruits, and apples are also available.

Meat and dairy products account for 23% of total consumption. Meat imports into Russia have dropped dramatically, and purchases of pork have nearly ceased. Imports of dairy goods, on the other hand, are growing year after year. Cheese and cottage cheese supplies climbed by 12.4%, while butter supplies increased by 11%.

Figure 8: Structure of import of agricultural and food products in Russia in 2020, %



Source: Data from the Federal Customs Service

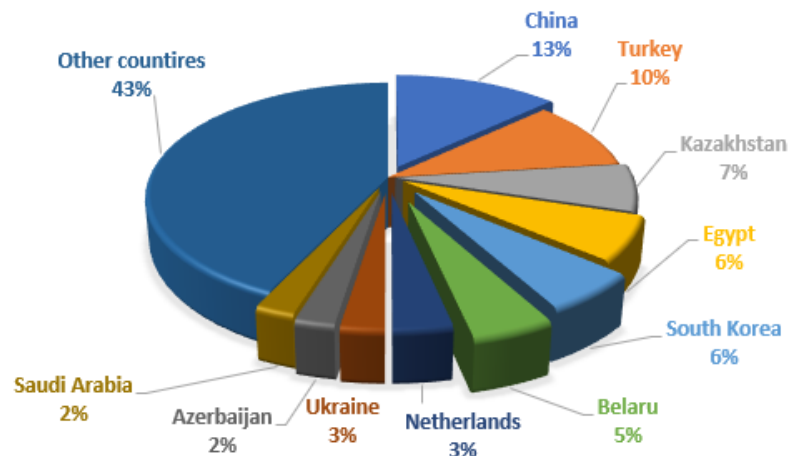
According to 2020 data, the supply of fish and seafood climbed by over 6%, accounting for 8% of the entire structure of food imports.

Oil and fats account for 7%, whereas vegetable oil supplies to Russia are expected to fall by 12.4 % in 2020 owing to a bumper sunflower harvest.

Grain imports to Russia were largely stable in 2020 compared to 2019 and accounted for around 4% of total food product imports. The majority of imports are soybeans (87%).

According to the Federal Customs Service, over 150 nations would import Russian agricultural goods in 2020. China (13 %), Turkey (10 %), Kazakhstan (6.8 %), and Egypt are the top buyers (6.4 %).

Figure 9: Largest buyers of Russian agriculture products in 2020, %



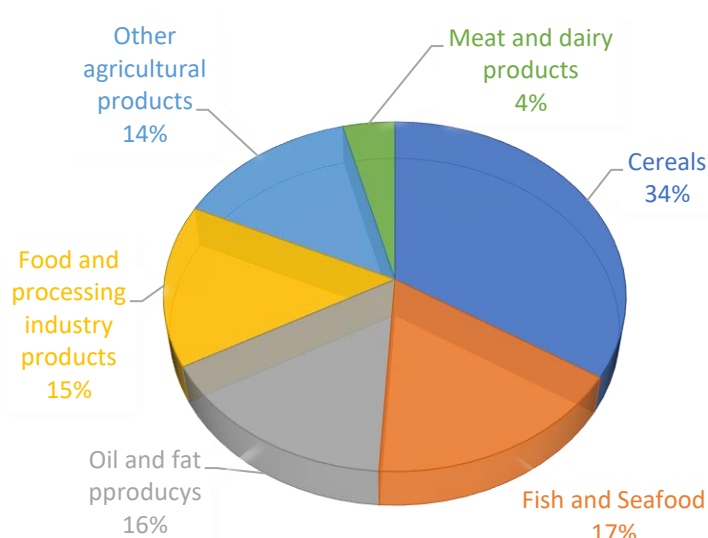
Source: Federal Center "Agroexport" of the Ministry of Agriculture of Russia, 2021

The main importing countries for Russia in 2020 are China (13%) and Turkey (10%). Kazakhstan comes next with a total share in Russian exports of 6.8%.

Cereals have the highest weight in the export structure (34%) and their shipping climbed by 29 percent last year compared to 2019. The grain harvest in 2020 was 133 million tons, the second most in Russia's history. Shipments of all main export commodities – wheat, barley, and maize – climbed last year. The largest purchasers of Russian wheat are Turkey, Egypt, and Saudi Arabia.

Exports of oil and fat products increased by 12% and now account for around 16% of overall structure. The rise is attributable to a record sunflower crop and increasing international supply of sunflower oil. Russia's oil and fat products are mostly shipped to China, Turkey, and India.

Figure 10: structure of agricultural export from Russia in 2020, %



Source: Federal Center "Agroexport" of the Ministry of Agriculture of Russia, 2021

Meat goods had a considerable rise in exports (by 49 %) due to increased supply of chicken and pork to China, Vietnam, and Ukraine. According to the 2020 findings. Russia came in third on the list of meat supplies to China, after only the United States and Brazil. Dairy product exports grew by 16 %. This was owing to the Russian ruble's depreciation, which made Russian dairy goods more competitive in post-Soviet nations. Kazakhstan, Belarus, and Ukraine are the top purchasers of dairy goods.

Deliveries of food and processing industry items from Russia grew by 13% as supplies of confectionary and sugar surged. Russia exports food and processing items to the CIS nations of Kazakhstan, Belarus, and Uzbekistan.

Fish and seafood were the only export segments to demonstrate a reduction in the structure of exports (17 %). Its market share fell by 2.1 % as a result of reduced pricing induced by the coronavirus epidemic and limits on seafood shipments to China. South Korea, China, and the Netherlands are the top purchasers of Russian fish and seafood.

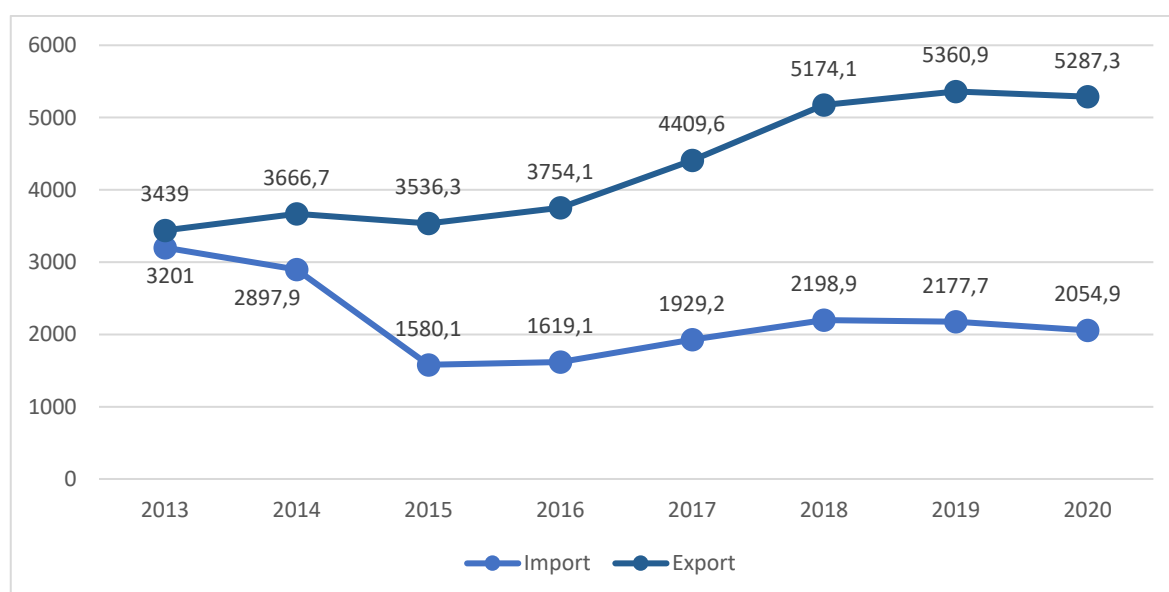
The food embargo, of course, has had a huge impact on each business. In reaction to Western sanctions, Russia enacted a food embargo in August 2014, which has been extended every year through December 2020. Sanctioned countries: Canada, USA, Australia, Iceland, Norway, Liechtenstein, Ukraine, Montenegro, Albania, EU countries.

Prohibited categories:

- Meat products,
- Dairy products,
- Fish and fish products,
- Fruits and vegetables,
- Nuts and salt.

Seeds, fish fry, nutritional supplements and vitamin complexes, lactose-free milk and dairy products, raw materials for baby food manufacture were consequently removed off the list.

Figure 11: Value of Russian fish import and export in 2013 – 2020, million USD



Source: Federal agency for fisheries in Russia, 2021

As seen in the graph, fish imports to Russia fell by 3.6 percent as a result of sanctions imposed on Russia, as well as a Russian food embargo imposed on some nations. Nonetheless, Russia's yearly fish exports have been increasing since 2015, and are expected to reach \$5,287.3 million in 2020, a 53.7 percent increase over 2013.

Fish imports to Russia, on the other hand, fell by 35.8 percent in 2020 compared to 2013. This is owing to severe sanctions against Russia, as well as Russian retaliatory actions in the form of a food embargo and, as a result, the closure of economic relations with Norway, Russia's main supplier of fish.

Table 1: Main indicators of fish capture and consumption 2013 – 2020, million tones/kg

Resources	2013	2014	2015	2016	2017	2018	2019	2020
Capture of fish and other aquatic resources, <i>million tones</i>	4,52	4,42	4,49	4,81	4,95	5,11	5,13	5,14
Fish consumption per capita per year (in raw weight); <i>kg</i>	27,3	25,7	22,3	22,3	22,9	20,2	21,1	20,0

Source: Rosstat, 2021

As shown in Table 1, a considerable increase in exports of fish products and a decrease in imports is attributable, in part, to the fact that Russia's yearly capture of fish and other aquatic resources is growing. In 2020, fish capture increased by 13.7 percent, or 0.62 million tons, which is not a terrible performance given the status of Russia's fishing sector following the dissolution of the USSR. Nonetheless, according to government figures, yearly per capita fish consumption is declining sharply, falling by 27% in 2020.

However, the reality in Russia is far worse than what is depicted in official sources. The value in the table is 30 percent exaggerated since it represents the weight of raw fish. However, in terms of commodity weight (which mirrors reality), fish consumption in 2020 did not surpass 14.4 percent. This is about half of the average per capita fish intake - 28 kg - set by V.V. Putin in 2013 for 2020 (Roscontrol, 2021). The rise in pricing is another factor contributing to the fall in consumption of fish products. For example, makers of fish delicacies and preserves warned earlier this summer that increased raw material costs would cause a 5-15 percent increase in their product pricing. Greater fishing and vessel maintenance costs can lead to higher costs. Salmon, mackerel, herring, and caviar have all increased in price. According to the Fishery Agency, the average price of mackerel for wholesale purchasers in central Russia today is 193 rubles per kg, and herring is 110 rubles

per kg, which is 37.85 and 61.76 percent higher than the same period last year, respectively.

One out of every ten Russian Federation urban dwellers does not consume fish. Every third can afford it once a week. Every second wishes to eat more but is unable to do so. Research commissioned by the Fish Union and merchants demonstrates this (Fishnet, 2021). According to Rosstat, Russia's average per capita intake of fish has plateaued; in certain cases, it has declined by hundreds of percent over the years. According to Rosrybolovstvo data, the sector has been seeing near-record capture rates for several years. According to industry analysts, the business is trapped in a vicious circle: customers buy little fish because of high pricing, inferior quality, and a limited selection of goods; manufacturers are not investing in new formats because they appear to be more interested in exports.

4.2 Import of fish products

Russia imposed an embargo on food imports from the European Union, the United States, and Canada in the summer of 2014. Among other things, fish and fish products, which used to account for one-third of the Russian market, were prohibited. The consumer market instantly responded by deteriorating and decreasing the selection and raising prices - fish and fish items increased in price by 30-40% on average.

Imports have altered as well, and not for the better. If Russia imported 790 thousand tons of fish in 2014, it will import nearly half that amount in 2020. According to the Federal Customs Service, it will be 421 thousand tons in 2020.

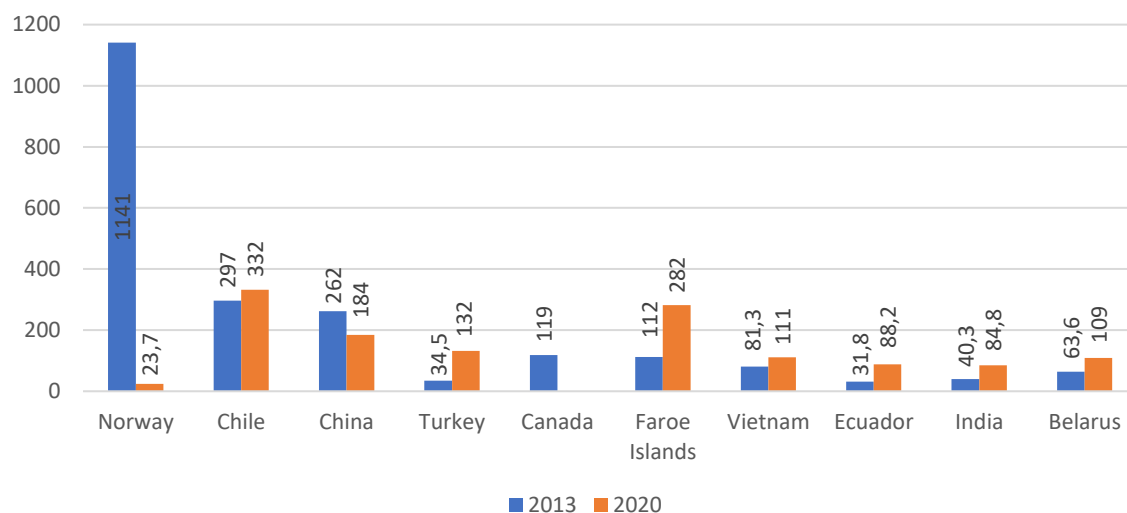
Because of the imposition of sanctions, the primary supplier of fish, Norway, which accounted for 22 percent of the volume of supply in 2014, has ceded its position to other nations. It was once the primary source of fresh trout and salmon. Other nations, like the Faroe Islands, Turkey, and Armenia, are now attempting to replace Norwegian supply. However, resuming former levels of fresh and chilled fish supply is still impossible; imports fell from 630.6 million dollars in 2014 to 222.4 million dollars, a 2.8-fold decrease. Fresh and chilled trout and salmon supplies, which have long been popular among Russians, have plummeted 3.7 times to 152 million dollars.

Imports of fresh fish are diminishing in favor of imports of frozen goods, notwithstanding a decline in imports of 31 percent to 702.5 million dollars in 2020 compared to 2014.

Aside from the Faroe Islands, the primary suppliers were Chile, from where frozen salmon, trout, and fillets were transported to Russia. It is worth mentioning that, following the imposition of the sanctions, Chile's share of total imports of all fish and seafood to Russia climbed significantly from 16 percent to 27 percent, and the country is now the major supplier of fish to Russia.

Imports of fish to Russia for many decades was so satisfied with all players in the market that few had the desire to move towards self-sufficiency. The accumulated organizational, tariff and legislative blockages will not allow import substitution to be "turned on" quickly - it will be easier to switch to import supplies from other regions.

Figure 12: Major suppliers of fish products to Russia in 2013 and 2020, million USD



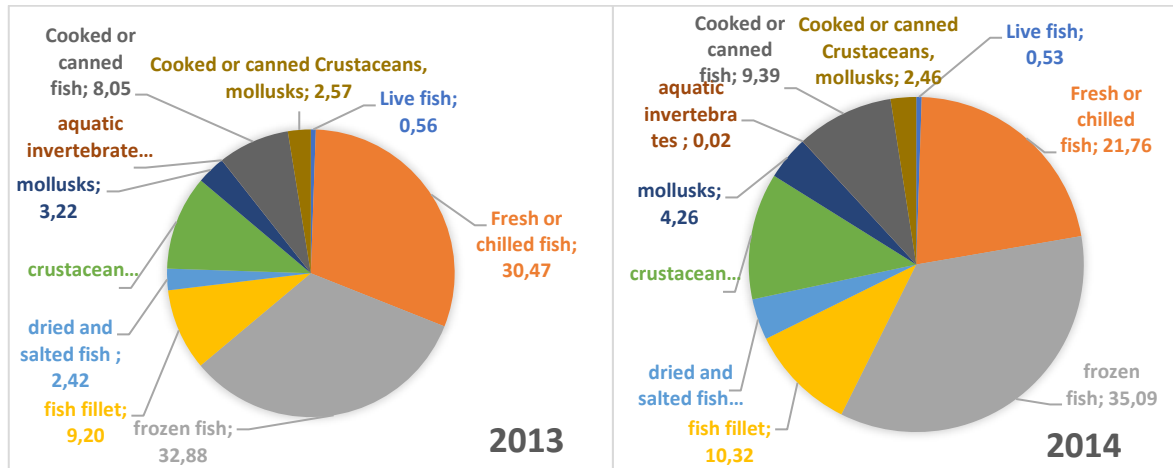
Source: Ru-Stat, 2022

Imports of fish and seafood in 2020 decreased by 6.36% and amounted to 1 682.4 million dollars. Fish and seafood imports came from 54 countries. The main suppliers of fish products to the Russian Federation in 2013 was Norway with total import volume 1 141 million dollars or with share 40% from total amount. In 2020 the main suppliers were Chile with the volume of 332 million dollars or 20% of the total volume of Russian import. The Faroe Islands with the volume of 282 million dollars or 17%. In the third place is China (184 million dollars) with total share 11%.

The structure of Russian imports in 2013, the pre-sanctioned era, was dominated approximately equally by frozen fish (32.88 %) with a total volume of 513 thousand tons and fresh or chilled fish (30, 47 %) with a volume of 142.3 thousand tons. Crustaceans

(10.64 %), fish fillets (9.2 %), and cooked or tinned fish followed (8.05 %). The smallest percentages of imports were live fish (0.56 percent) and aquatic invertebrates (0.02 %).

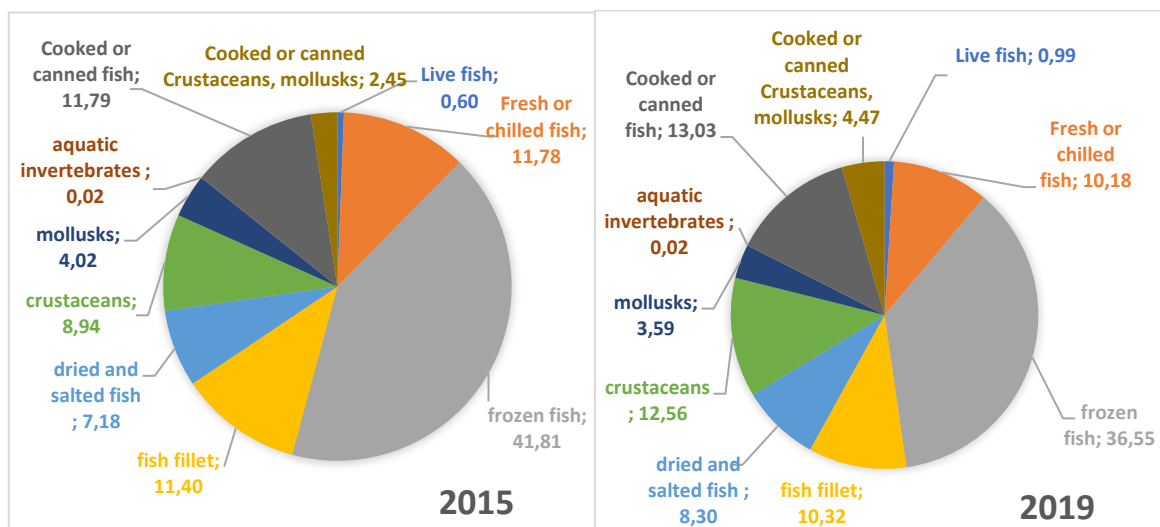
Figure 13: Structure of fish import in 2013 and 2014, %



Source: Federal agency for fisheries in Russia, 2021

In 2014, the situation reversed, and frozen fish took the lead in Russian fish imports; while the total volume of imports declined, its share climbed by 2.2 % to 437.8 thousand tons. The volume of fresh and chilled fish declined by 56 thousand tons (or 8.71 %) to 86.3 thousand tons. This decrease was caused by a twofold decrease in imports from Norway, Russia's largest source of live and fresh fish products. Other positions in the organization changed by less than 1.5 %.

Figure 14: Structure of fish import in 2015 and 2019, %



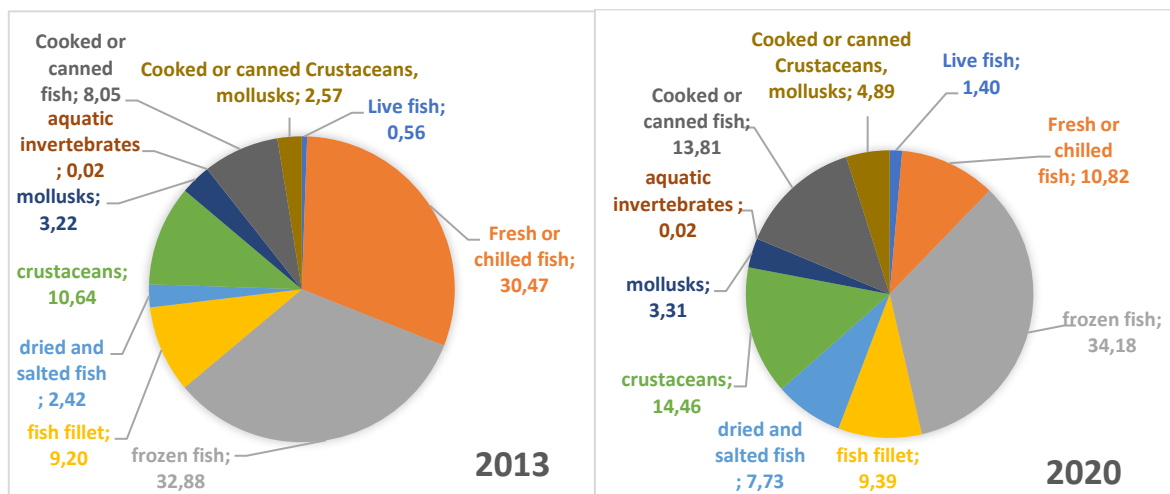
Source: Federal agency for fisheries in Russia, 2021

Overall, Russian fish imports had a terrible year in 2015. Following the introduction of sanctions, as well as Russia's retaliatory embargo on select nations, total imports of fish products plummeted nearly twofold in 2015, from \$2.9 billion to \$1.6 billion.

The most noticeable shift in 2015 is a 6.7 % rise in frozen fish share compared to 2014, yet overall frozen fish imports declined by 136,500 tons. Furthermore, the proportion of live fish reduced by a factor of two. These modifications resulted in a large increase in the price of fish products in Russia, which had a negative impact on the people and the availability of such a fundamental item as fish.

In 2020, the percentage of live fish continued to diminish, falling by 1.6 %. Of course, finding a suitable successor for Norway in terms of live fish imports for Russia proved incredibly difficult. Given its geographical position, Russia has few options for supplying live fish. Despite this, the frozen fish market share fell by 5.3 % in 2019 to 341.1 thousand tons. Crustaceans (by 3.6 %), dried and salted fish (by 1.2 %), and cooked or canned crustaceans and mollusks (by 2 %) all climbed dramatically in 2019.

Figure 15: Structure of fish import in 2013 and 2020, %

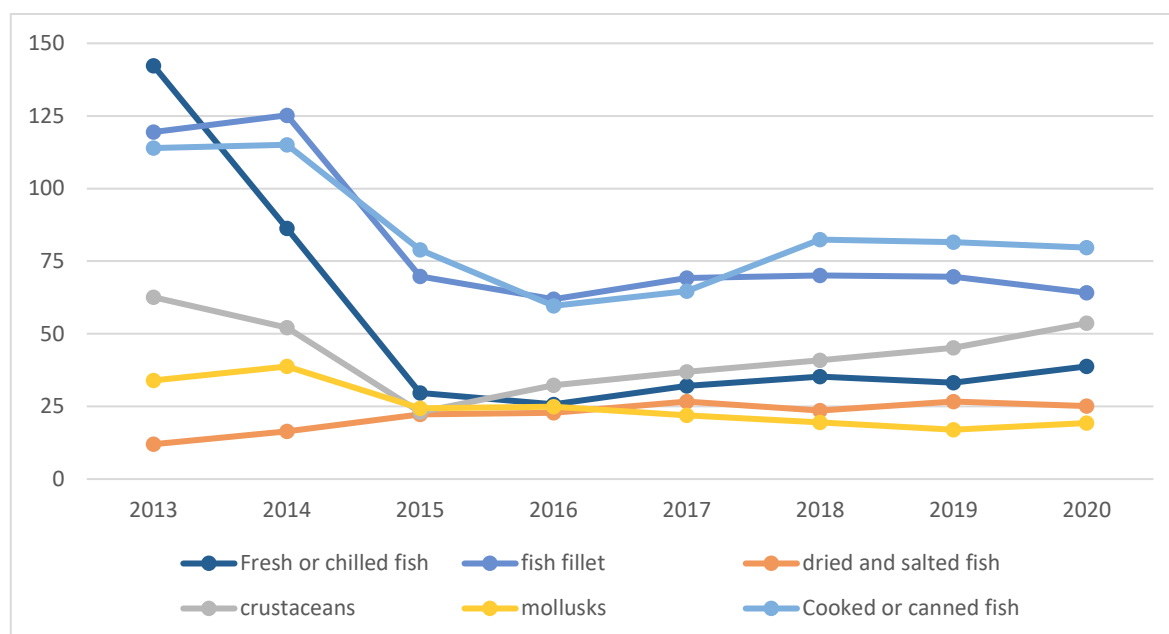


Source: Federal agency for fisheries in Russia, 2021

Of course, the sanctions and reciprocal food embargo have had a significant impact on Russia's fishing sector as a whole. It is not yet possible to catch up or, at the very least, attain indications comparable to those of 2013. Even if Russia succeeds in replacing all embargoed nations with other countries by 2020, the situation is unlikely to improve much. Fish imports in 2020 are still 1.5 times lower than in 2013, which is obviously a major issue for Russia.

As seen in the graph, the percentage of frozen fish remained almost the same as in 2013, growing by only 1.3 percent. However, the volume of frozen fish supply declined nearly twice as much in weight, from 512.9 thousand tons in 2013 to 290.9 thousand tons in 2020.

Figure 16: Changes in volume of imported products 2013 – 2020, thousand tons

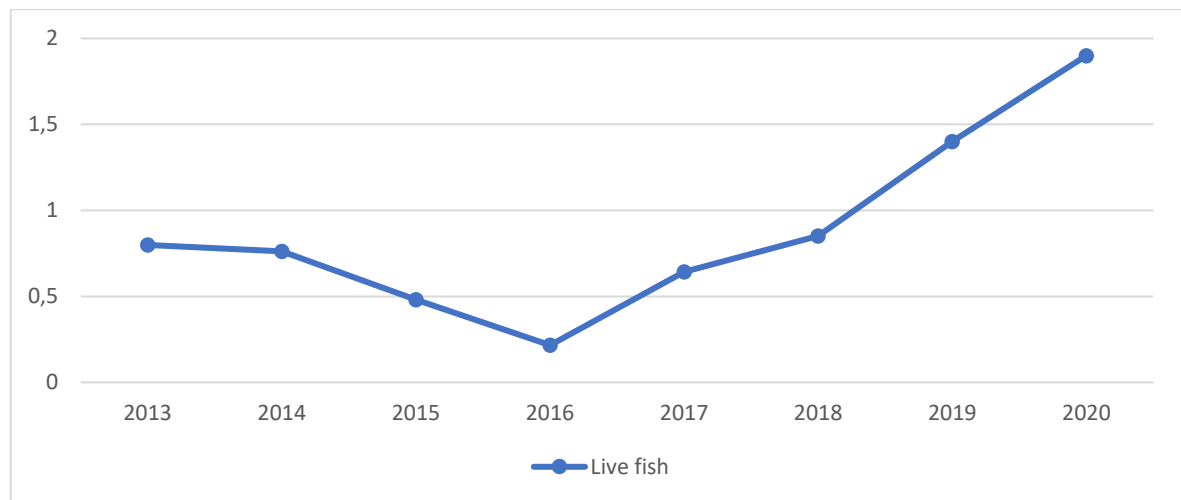


Source: Federal agency for fisheries in Russia, 2021

As previously stated, sanctions and counter-sanctions have drastically reduced imports of fish products. Naturally, this has had an impact on each particular product. Fresh and chilled fish was the most "affected" product, with a 79 percent drop in 2015 compared to 2013. In addition, imports of fish fillets, prepared and canned fish declined by an average of 40%. All of these developments, of course, had a detrimental influence on the status of the Russian fish sector, as well as a significant impact on the affordability of fish products for Russian consumers, because as imports were reduced, fish prices grew at an alarming rate.

Furthermore, imports of live fish, of which Norway was the primary provider, fell by nearly half in 2016. However, after Norway's prohibition on fish imports, it took many years to locate an importing nation that could compensate for Russia's scarcity of live fish. Nonetheless, from 2016, the number of fish imports began to quickly increase, and by 2020, it had more than doubled the level of 2013-2014.

Figure 17: Changes in volume of imported live fish 2013 – 2020, thousand tons



Source: Federal agency for fisheries in Russia, 2021

Nonetheless, despite the embargo, Norwegian fish shipments continued, according to official Russian sources (ru-stat.com), although only fresh fish was imported. For example, Norway purchased 391 tons of live fish (\$7.2 million) in 2017, 683 tons of live fish (\$10.5 million) in 2018, 969 tons (\$17.9 million) in 2019, and 1.43 thousand tons of live fish (1.43 million dollars) in 2020. (\$23.7 million). Of course, this contradicts Russia's stated stance as well as the embargo enforced by Russia.

Furthermore, in 2016, live fish from Belarus was imported for \$337.5 thousand; in 2017, the amount of supply increased to \$400 thousand; and in 2018, the import of live fish plummeted dramatically to \$86 thousand. Nonetheless, imports of live fish from Belarus in 2019 and 2020 were \$505 thousand and \$587 thousand, respectively. It appears that the fall in imports in 2018 was caused by a substantial drop in fish shipments to Belarus from Norway in 2018 (see chapter 4.2.2).

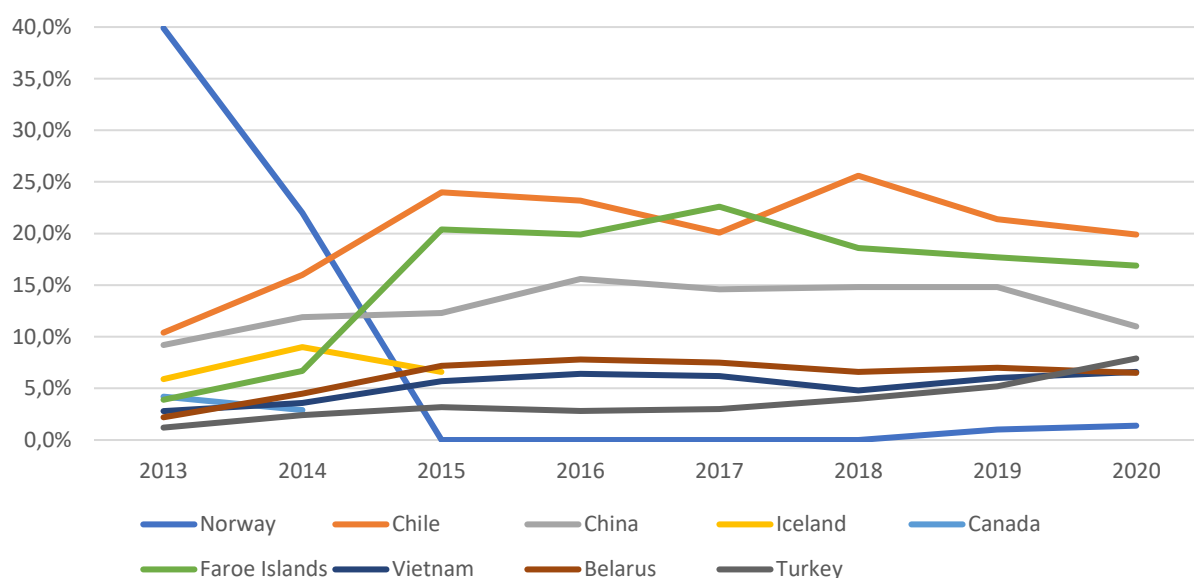
4.2.1 Changes in Import directions

Russia announced a one-year ban on beef, pig, poultry, fish, fruit, vegetables, cheese, milk, and other dairy products from the United States, Canada, the European Union, Norway, and Australia in August 2014. The decision, which has resulted in higher food costs for Russians, was in response to Western sanctions put on Russia's banking, energy, and military sectors in order to force Russia to quit destabilizing Ukraine.

The Norwegian Federation of Seafood Suppliers does not require such compensation. Many investors were taken aback by Russia's move to penalize Norway's non-EU fish output. Norway backed previous EU sanctions on Russia and stated unequivocally that it will do so again in the case of the new, stiffer penalties package imposed in July. According to the Russian Customs Service, the new restrictions would have the greatest impact on Norway's seafood trade: fish shipments to Russia totaled more than a billion dollars in 2013.

Meanwhile, Russia's sanctions have helped certain fish and seafood providers, notably those from Chile, Iceland, and the Faroe Islands - a tiny non-EU state located in the Atlantic Ocean between Iceland and Scotland - who will now have fewer rivals in the Russian market.

Figure 18: Main suppliers of fish products to Russia in 2013 – 2020, %



Source: Ru-Stat, 2022

Until 2014, Norway was the leading provider of fish products, as indicated in the graph. Norway met a large portion of Russia's fresh fish (76 %) and frozen fish (18 %) demands in 2013, with overall shipments to Russia totaling \$1,141.5 million, or 40 % of Russia's total fish imports. Norway was also the biggest provider of fish products to Russia in 2014, accounting for 22 % of total sales, or \$566.5 million. Norway gained the lead in 2014 as a result of a large number of shipments in the first half of the year. Shipments plummeted by 95% in September and October 2014, totaling 375 thousand dollars, before ceasing entirely

owing to Russia's restriction on imports of Norwegian fish products. In succeeding years, up to 2019, the percentage of Norwegian imports was so tiny that Norway was not one of Russia's thirty fish suppliers.

Nevertheless, the return of Norway's position in Russian exports to past volumes is highly unlikely in the near future. So far, the share of Norwegian supplies does not exceed 1.4%, and then in 2021 it dropped to almost nothing with a total weight of 14 tons of fresh fish.

Nonetheless, in 2015, Chile bore the brunt of Russian imports. During the period 2013-2020, the total percentage of shipments from Chile varied from 20% to 25.6 percent, saving Russia from a fish product deficit. Frozen fish was the major product, and after 2015, fish fillets were introduced. The Faroe Islands were Russia's second-largest exporter of fish products, with their overall proportion of Russian imports increasing from 3.9 percent in 2013 to 20 percent in 2020. In 2013, the Faroe Islands shipped 90% frozen fish and 10% fresh fish to Russia, but by 2015, with Norway's departure, the Faroe Islands' share of fresh fish had increased to 50%. As a result, it is apparent that the Faroe Islands have largely replaced Norwegian goods.

Despite the import substitution policy that has been vigorously pursued for the past six years, as well as the pace of development in local production of various categories of food items, Russia has not achieved comprehensive import substitution. Between 2013 and 2019, the amount of sanctioned goods imports declined by a fourth in real terms and by 40% in value terms. Simultaneously, the amount of Russian manufacturing of these categories of items grew by 12.3% (National Rating Agency, 2020).

Many of the major incumbent suppliers to the Russian Federation have dramatically boosted imports from the EU, which is likely attributable to an increase in re-exports to Russia rather than an increase in domestic demand. Belarus has surpassed the EU as Russia's primary supplier of sanctioned items, accounting for 25% of overall imports.

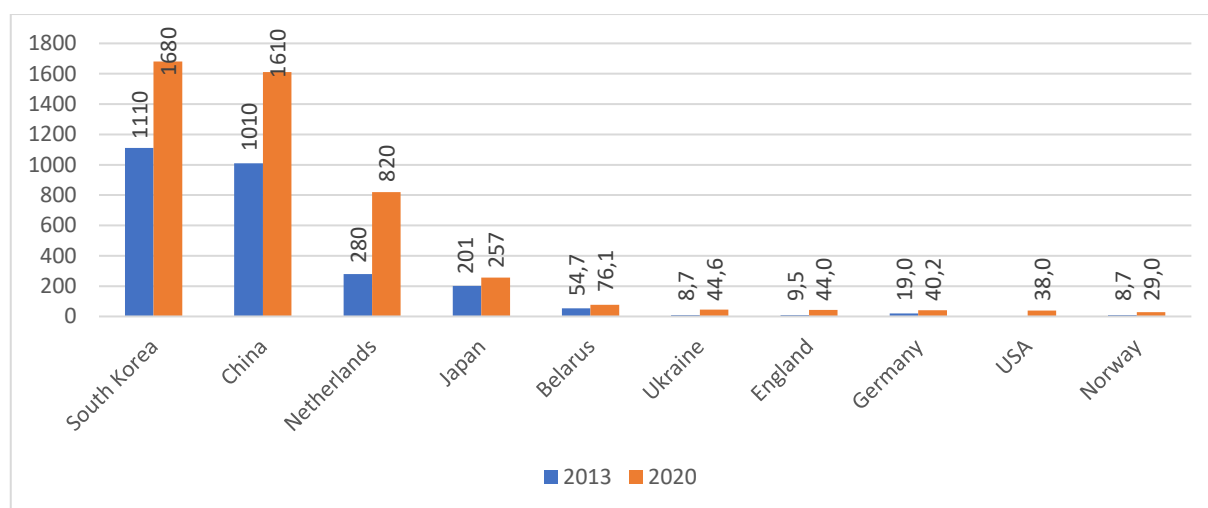
Statistical facts allow us to conclude that total import substitution did not occur in Russia throughout the seven-year timeframe. The limited implementation of the state policy adopted in 2014 is due to a number of factors, including climatic conditions that do not allow for the replacement of imported vegetables and fruits with domestic products, a lack of sufficient livestock to produce meat products, the price advantages of Russian fish exports over domestic supplies, and a lack of developed technology and capacity for the production of cheese and dairy products. Simultaneously, the import substitution process has demonstrated favorable dynamics, and provided some constraints are maintained,

Russia may be able to accomplish full import substitution in the future. Russia will be able to achieve 100% import substitution in the long run, notably in meat and dairy goods.

4.3 Export of fish products

According to the economic department's research, Russia's share in global food exports climbed from 0.7 percent in 2010 to 1.6 percent in 2018. Russia now ranks among the top twenty worldwide exporters, up from 31st in 2010. Unlike the top nations in terms of food exports, the structure of Russian supply is dominated by low-value-added items (mainly grains and frozen fish), whereas the primary exporting countries' food exports have a marked meat and dairy orientation.

Figure 19: Major importers of Russian fish products in 2013 and 2020, million USD



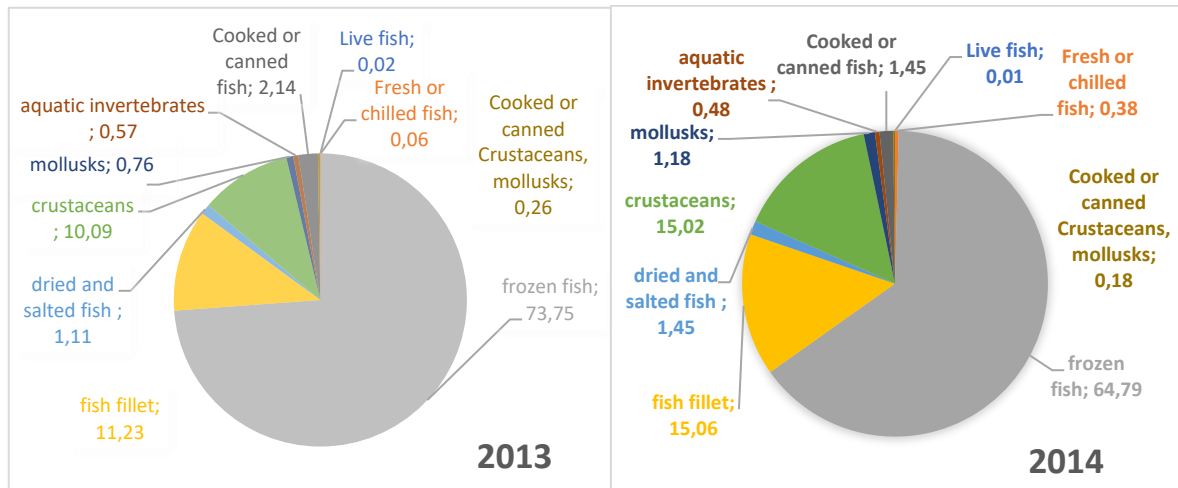
Source: Ru-Stat, 2022

South Korea (39.5 %), China (36 %), and the Netherlands (9.9 %) were the top three importers of Russian fish products in 2013. By 2020, the situation remained constant, with South Korea (34.8 %), China (33.3 %), and the Netherlands (17%) remaining the top three fish importers. The Netherlands received the most Russian fish exports to the European market, and its share has climbed by 7% since 2013.

Russia's biggest market for fisherman is China. Every year, around 1 million tons of fish and seafood, or 20% of total catch, are shipped to the country. More than half of them are pollock that has frozen. Due to the potential of the COVID-19 virus spreading, China

banned the ports through which it transported fish from Russia in December 2020. This condition caused pollock prices to plummet, posing a significant challenge to the whole sector. Rosrybolovstvo began to seek alternate sales channels, resulting in a rise in fish deliveries to South Korea.

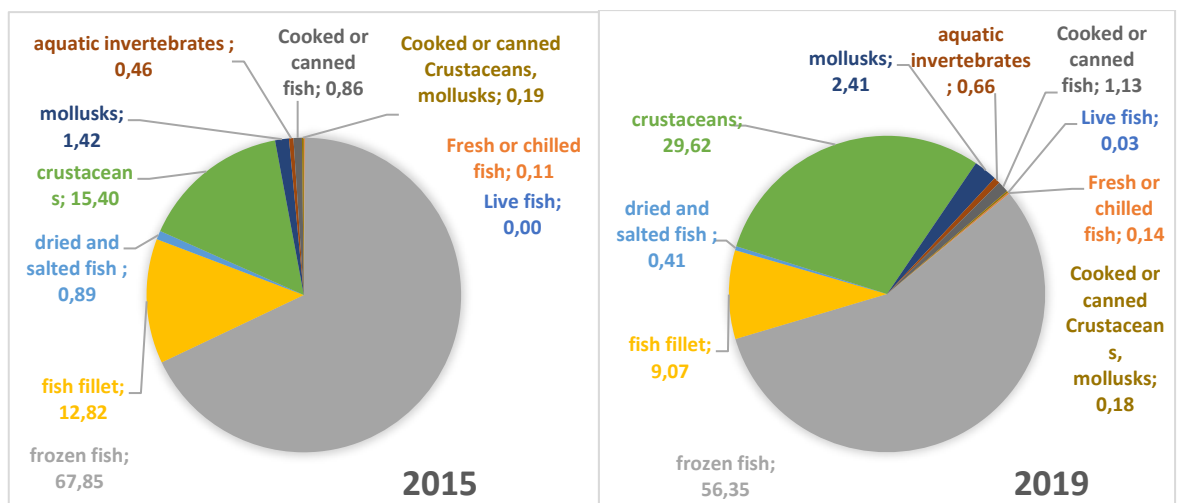
Figure 20: Structure of fish export in 2013 and 2014, %



Source: Federal agency for fisheries in Russia, 2021

The graph also shows that the structure of exports changed in 2014 compared to 2013. The proportion of frozen fish has fallen by 9%. However, the share of fish fillets climbed by 4% in 2014, the percentage of crustaceans increased by 5%, and the share of shellfish increased by 0.42 %. As a result, there were no substantial structural changes.

Figure 21: Structure of fish export in 2015 and 2019, %

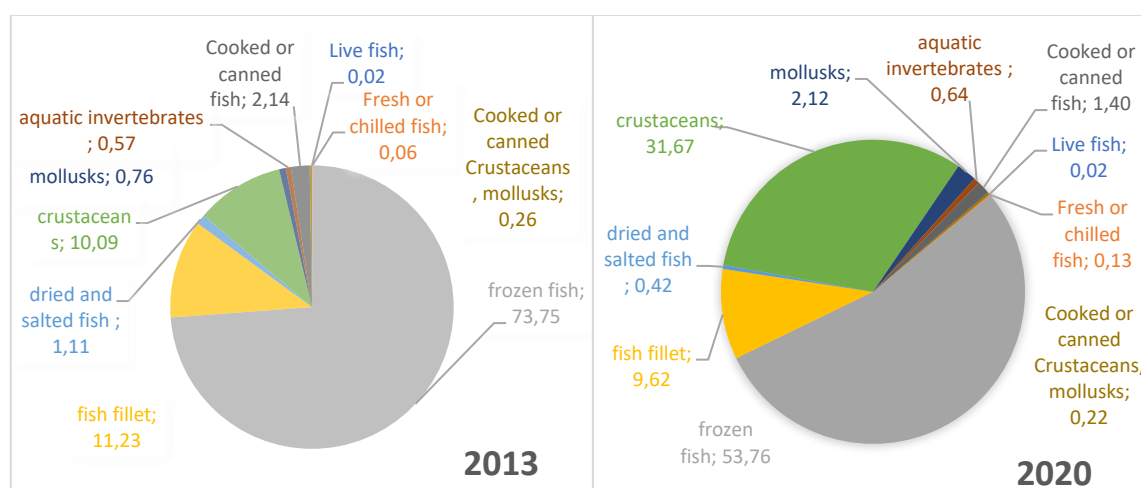


Source: Federal agency for fisheries in Russia, 2021

The biggest percentage of frozen fish in exports was witnessed in 2015, accounting for 67.85 % of overall exports, according to statistics. Exports of all fish products were the lowest in the post-sanctions period in 2015. Furthermore, live fish shipments in 2015 were the lowest in the whole time under study. Also, compared to 2014, the share of fish fillets (by 2.2%), dried and salted fish (by 0.6%), fresh and chilled fish (by 0.3%), and prepared and canned fish (by 0.6%) declined in 2015. However, the proportion of shellfish (by 0.25 percent) and crustaceans (by 0.4 %) increased.

The structure changed significantly in 2019 compared to 2015, where the share of frozen fish decreased by 11.5 %, the share of fish fillets decreased by 3.8 % and the share of dried and salted fish decreased by 0.5 %. On the other hand, the share of crustaceans increased significantly by 14.2 %, the share of shellfish by 1 %, and the share of live, fresh and chilled fish increased by 0.03 %.

Figure 22: Structure of fish export in 2013 and 2020, %



Source: Federal agency for fisheries in Russia, 2021

When comparing the structure of exports in 2013 and 2020, major shifts can be found.

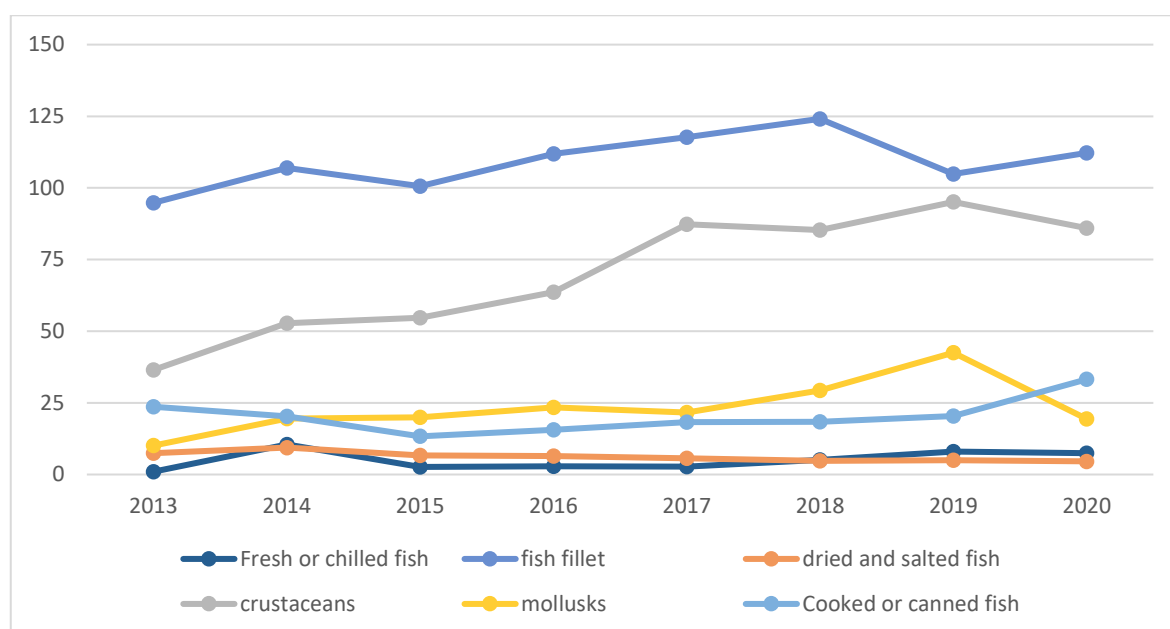
When compared to the base year, the share of frozen fish declined by 20% in 2020, as did the share of fish fillets by 1.6 % and the percentage of completed and canned goods by 0.54 %. The percentage of crustaceans, on the other hand, grew thrice, while the share of shellfish climbed by 1.5 %. Nonetheless, the percentage of live fish remained unchanged from 2013.

According to the fishing community, the answer to this problem might be the active growth of domestic coastal processing through the utilization of investment quotas. It

would boost Russian products' competitiveness on the global market, lessen the industry's reliance on other nations, and enhance the socioeconomic position of coastal districts. Russia has previously undertaken a number of projects for the building of fish processing facilities using investment quotas, with 9 of them built and operational in the Far East and 10 in the Northern basin.

Despite the epidemic, the industry's investment activity remains robust. The volume of investments in fixed capital of fish industry firms in 2020 is 68,2 billion rubles, up 73,3 % from the previous year. The realization of significant projects, as well as continuous investment in the building of the mining fleet, are driving investment growth.

Figure 23: Changes in volume of exported fish products 2013 – 2020, thousand tons



Source: Federal agency for fisheries in Russia, 2021

Overall, the structure of fish exports did not alter much over the time under consideration. Crustacean exports climbed dramatically; nevertheless, fresh and chilled fish exports, as well as dry and salted fish exports, failed to meet pre-sanctioned levels. It wasn't until 2018 that live fish exports were able to break through their ceiling and begin to expand somewhat, which is obviously significant development. In addition, frozen fish exports climbed by about 500 thousand tons compared to 2014, which is a great sign for Russian exports.

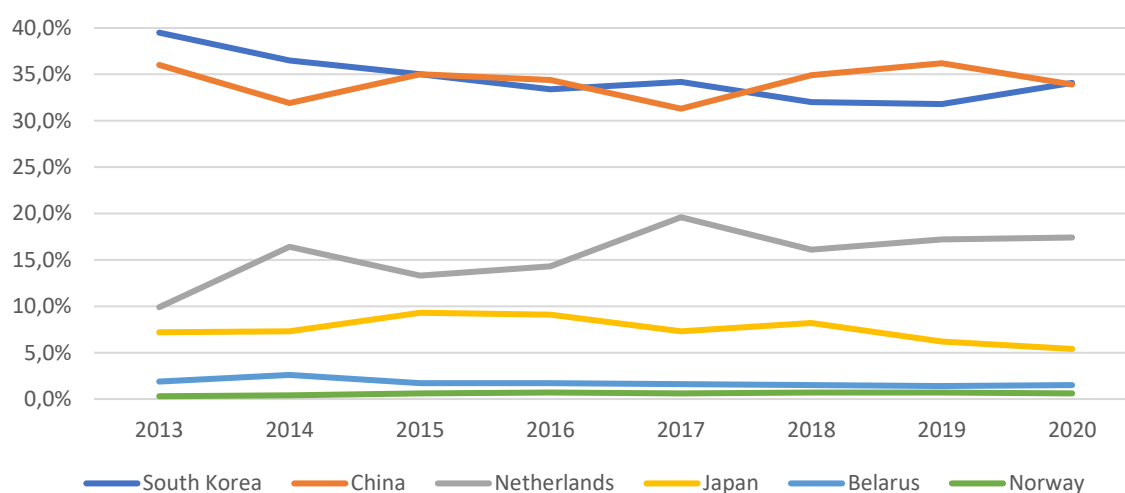
Six commodity types of fish exported from the FEFD overlapping with imported ones in 2020. The import price was greater than the export price for five goods. The difference between import and export pricing is due to FEFD deliveries of items not accessible from domestic fish growers and fish processors (tuna, trout, minced surimi). Some of the fish products exported as raw materials from the FEFD may be re-exported with a higher degree of processing, in a more marketable form, and in a more convenient commodity packaging. Primorsky Krai, Kamchatka Krai, Khabarovsk Krai, and Sakhalin Oblast exports account for more than 95 percent of the physical amount of goods and profits from FBG exports to the FEFD.

4.3.1 Changes in Export directions

The worldwide fish sector is expanding rapidly. Fish and seafood are among the most traded food products in the world. Russia has yet to completely realize its export potential; in 2018, it ranked ninth among the world's greatest exporters, and it is expected to rise to eighth position in 2019. At the same time, Russian exports of fish and seafood have been steadily increasing in recent years.

According to Rosrybolovstvo, the volume of aquatic bioresources output in Russia in 2019 was 4.92 million tons, a 2.2 percent decrease from the previous year's record. Aquaculture output grew by 20% to 287 thousand tons. Fisheries in 2020 shows an increase in aquatic bioresources production indicator in practically all major fishery basins.

Figure 24: Main importers of Russian fish products in 2013 – 2020, %



Source: Ru-Stat, 2022

As seen in the graph, the situation in the structure of Russian exports has not altered much despite the application of sanctions. The majority of Russian fish exports go to China and South Korea. China's overall share averaged 34.2 percent from 2013 to 2020, while South Korea's was 34.5 percent. The Netherlands is the leading buyer of Russian fish in the European Union, with a 10% share in 2013, but a 17.4% share by 2020.

Russia is China's top supplier of fish, accounting for around 14 percent of total Chinese imports in this category in 2019. China, in turn, is one of Russia's top consumers of fish. According to the Federal Center "Agroexport," Russia has the potential for increased supply, particularly from China, Vietnam, Thailand, South Korea (including completed goods), and Japan (including fish fillets, which are not currently supplied). Also promising are the EU countries, the United Kingdom, the United States, Latin American countries, particularly Brazil, and North Africa.

According to the OECD, worldwide fish imports would reach 46 million tons by 2028, a 4 million ton or 10% increase above the 2016-2018 average annual level. Africa (+1.5 million tons) and Asia (+1 million tons) will see the most growth.

4.4 Main indexes of the efficiency of foreign economic activity

Indices are used in international trade statistics to examine the dynamics of monetary relations, the physiological magnitude of exports and imports, the movement of tariffs on products, determining the "terms of trade," and the commodity structure of foreign commerce. Index features allow you to enter and assess the link between particular causes, as well as learn about their influence in the overall dynamics of exports and imports, that is the reason of choosing the following indicators.

The causes for price adjustments on international markets vary, but the primary ones are the global situation, fluctuations in agricultural yields and fish catch volume in particular years, and a variety of unpredictable political objectives. As a result, calculating price indices and actual amounts of items exported and imported is critical. For computations at the national level, yearly average indicators of homogeneous products exports and imports for the previous year and analogous statistics for the current year are utilized, followed by quantity and value indicators. The calculations are done in US dollars.

Indices are used in foreign trade statistics to investigate the dynamics of foreign trade turnover (exports plus imports), the physical volume of exports and imports, changes in

export and import prices in determining the index of terms of trade, and changes in the commodity structure of foreign trade turnover. The price index defines the change in the value of exports and imports as a result of a change in the average price level with the physical volume of foreign trade items being constant.

Laspeyres Price Index

The Laspeyres price index formula, with weighting by physical volume in the base period, is widely used in worldwide practice to create average price indices:

$$I_{pL} = \frac{\sum (P_{i,t}) \times (Q_{i,0})}{\sum (P_{i,0}) \times (Q_{i,0})} \times 100, \text{ where} \quad (1)$$

I_{pL} – Laspeyres price index,

$P_{i,t}$ - price of the individual item at the observation period,

$P_{i,0}$ – price of the individual item at the base period,

$Q_{i,0}$ – quantity of the individual item at the base period.

The index has the following advantages:

- Simple to compute and often used;
- It is inexpensive to build;
- Future-year values do not need to be computed; just base-year quantities (weightings) are needed;
- Provides a relevant comparison because changes in the index are linked to price changes.

The index's key shortcomings are that it is upwardly biased and tends to overestimate price rises (compared to other price indices). As a result, it overestimates price levels and inflation. This is because of:

- New products: More expensive new items that induce a price increase.
- Price rises resulting entirely from quality improvements should not be considered inflation.
- Substitution: The substitution of comparatively cheaper products or services for those that have become relatively more costly.

Paasche Price Index

The Paasche Price Index is a price index that is used to assess inflation and monitor the general price level and cost of living in the economy. The index typically has a base year of 100, with periods of higher price levels represented by indices larger than 100 and periods of lower price levels represented by indexes less than 100.

The Laspeyres Price Index is sometimes mistaken with the Paasche Price Index. The primary distinction between the Paasche Index and the Laspeyres Price Index is that the former employs current-period quantity weightings while the latter employs base-period quantity weightings.

The formula of the index:

$$I_{pP} = \frac{\sum (P_{i,t}) \times (Q_{i,t})}{\sum (P_{i,0}) \times (Q_{i,t})} \times 100, \text{ where} \quad (2)$$

I_{pP} – Paasche price index,

$P_{i,t}$ – price of the individual item at the observation period,

$P_{i,0}$ – price of the individual item at the base period,

$Q_{i,t}$ – quantity of the individual item at the observation period.

The index has the following benefits:

- Considers consumption trends by employing current amounts (current weightings).
- In terms of price increases, it is not skewed upward (compared to the Laspeyres Price Index).

The index has the following drawbacks:

- It might be difficult to collect data on current weightings (i.e., numbers for each item).
- It is more expensive than using a Laspeyres Price Index.
- Because the index already captures changes in consumption patterns when customers respond to price changes, it tends to understate price changes.

Fisher Price Index

For comparison study, average price indices are most commonly calculated using the Fisher formula, which averages information from the two preceding indices. In most circumstances, users at the EU Commission choose Fisher's index.

The formula of the index:

$$I_{pF} = \sqrt{I_{pL} \times I_{pP}}, \text{ where} \quad (3)$$

I_{pL} – Laspeyres price index,

I_{pP} – Paasche price index.

Fisher considered his price index formula to be an ideal blend of the best features of the Laspeyres and Paasche price indexes and modern index number statisticians generally agree with him. It can be shown that under certain assumptions the Laspeyres index is an upper bound on the true index while the Paasche index is a lower bound. The Fisher index, lying between the other two indexes, is the best measure of the change.

Laspeyres Volume Index

A Laspeyres volume index is a weighted arithmetic average of quantity relatives that uses the previous period's values as weights:

$$Q_L = \frac{\sum (Q_{i,t}) \times (P_{i,0})}{\sum (Q_{i,0}) \times (P_{i,0})}, \text{ where} \quad (4)$$

$Q_{i,t}$ – quantity of the individual item at the observation period,

$Q_{i,0}$ – quantity of the individual item at the base period,

$P_{i,0}$ – price of the individual item at the base period.

This formula compares the amounts in the two periods, 0 and t, by weighting them with a "fixed basket of prices" from the first time, $(P_{i,0})$.

Paasche Volume Index

Volume indices take into account both the effects of quality and quantity change. A 1 tone of live fish, for example, has greater quality than a 1 ton of frozen fish. The amounts purchased in two distinct times may be the same, say 50 tons, but if the product characteristics changed, a volume index would account for that as well as the quantity difference. This is performed by modifying the observed amounts for quality. The task of quality adjustment is particularly daunting for high-tech items such as computers and autos, where quality varies in a variety of sophisticated ways each year.

The formula of the index:

$$Q_P = \frac{\sum (Q_{i,t}) \times (P_{i,t})}{\sum (Q_{i,0}) \times (P_{i,t})}, \text{ where} \quad (5)$$

$P_{i,t}$ – price of the individual item at the observation period,

$Q_{i,0}$ – quantity of the individual item at the base period,

$Q_{i,t}$ – quantity of the individual item at the observation period.

It compares the amounts in the two periods, 0 and t, by weighting them with a 'set basket of prices' from the second era, ($P_{i,t}$).

Fisher Volume Index

The Fisher Volume Index, like the Fisher Price Index, is the geometric average of the Laspeyres and Paasche volume indices.

$$Q_F = \sqrt{Q_L \times Q_P}, \text{ where} \quad (6)$$

Q_L – Laspeyres price index,

Q_P – Paasche price index.

The Fisher index is said to be more accurate since it considers both indices Laspeyres and Paasche and produces the average value between them.

Turnover index

The turnover index indicates the change in the total value of items sold during the time period under consideration. The index's status is determined by two factors: the quantity of sold items and the price dynamics.

$$I_{pq} = \frac{\sum (P_{i,t}) \times (Q_{i,t})}{\sum (P_{i,0}) \times (Q_{i,0})}, \text{ where} \quad (7)$$

$P_{i,0}$ – price of the individual item at the base period,

$P_{i,t}$ – price of the individual item at the observation period,

$Q_{i,0}$ – quantity of the individual item at the base period,

$Q_{i,t}$ – quantity of the individual item at the observation period.

Terms of Trade

The ratio of a country's export prices to import prices is known as the terms of trade (TOT). The ratio indicates how many units of exports are required to purchase one unit of imports. To calculate the TOT, divide the price of exports by the price of imports and multiply the result by 100.

When more money leaves the nation and then returns, the country's TOT is less than 100%. When the TOT exceeds 100 percent, the country earns more money from exports than it spends on imports.

The TOT formula is:

$$TOT = \left(\frac{(Px,t) \times (Qx,0)}{(Px,0) \times (Qx,0)} \right) / \left(\frac{(Pm,t) \times (Qm,0)}{(Pm,0) \times (Qm,0)} \right) \times 100, \text{ where} \quad (8)$$

Px,t – price of export in the observation period,

$Qx,0$ – volume of export in the base period,

$Px,0$ - price of export in the base period,

Pm,t – price of import in the observation period,

$Qm,0$ – volume of import in the base period,

$Pm,0$ – price of import in the base period.

The TOT is used as an indicator of a country's economic health, but it can lead analysts to the wrong conclusions. Changes in import and export prices affect the TOT, and it is important to understand what caused the price to rise or fall. TOT measurements are often recorded in an index for economic monitoring purposes.

An improvement or increase in a country's TOT usually indicates that export prices increased because import prices either remained or fell. Conversely, export prices may have fallen, but not as significantly as import prices. Export prices may have remained stable while import prices have declined, or they may simply have risen at a faster rate than import prices. All of these scenarios could lead to an improvement in TOT.

4.4.1 Calculations for fish import

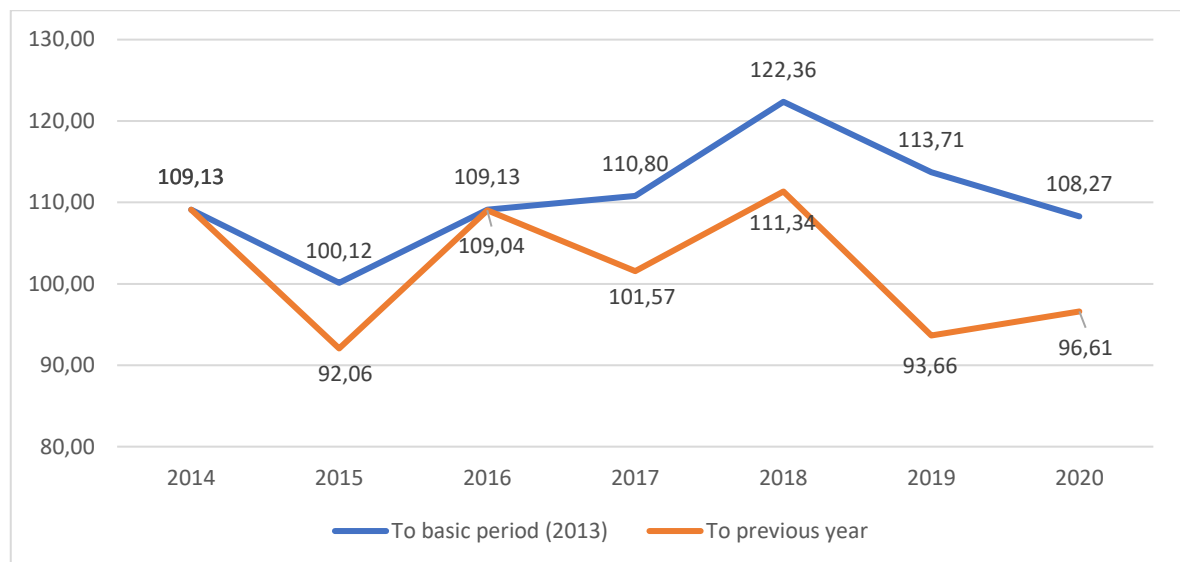
The Laspeyres index is calculated by dividing the prices of two time periods by the amount of consumption in the base period, and it indicates the change in the cost of the base period's consumer basket that happened during the current period. The Laspeyres index, which reflects the price dynamics of the consumer basket in the base period, does not account for changes in consumption structure caused by changes in goods prices. This index overestimates inflation when prices are rising and underestimates it when prices are decreasing, reflecting just the income effect and disregarding the substitution effect.

The Paasche index, on the other hand, is one of the price indices calculated to characterize variations in the pricing of items. It is calculated by dividing the prices of two time periods

by the amount of consumption in the present period, and it indicates the change in the value of the current period's consumer basket. It is determined as the ratio of current consumer expenditures to expenditures for the same selection set in the base period's pricing. The Paasche index, however, does not completely capture the income effect because it reflects the dynamics of consumer basket prices in the current time. As a result, we obtain an overestimation of price changes when they fall and an underestimating when they rise.

As a result, for more accurate calculations, I opted to utilize the Fisher price index, which displays the average value of the two indices described above.

Figure 25: Fisher price index for imported fish products in 2013 – 2020, %

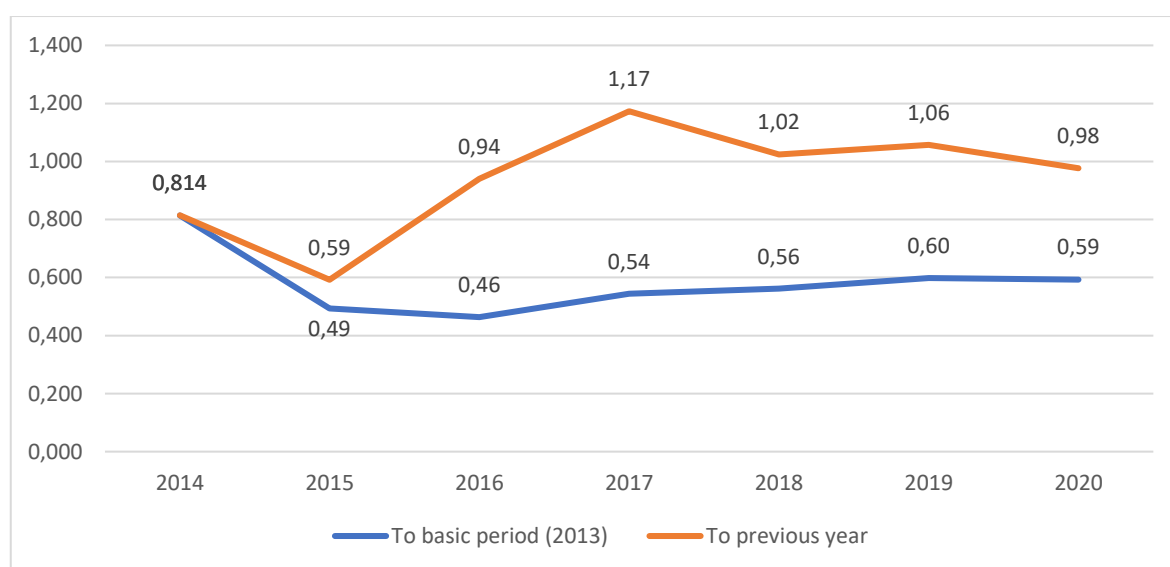


Source: Processing according to Federal agency for fisheries in Russia, 2021

When we look at the price indices for each prior year, we can observe that the level of import prices varies a lot from year to year. The lowest level of fish product import prices was observed in 2015 (by 7.94 %), which occurred as a result of the main suppliers leaving the Russian market or significantly reducing the volume of supplies, forcing Russia to agree to the terms and prices of new supplier countries in order to meet the demand for fish products. There was also a 7.47 % decrease in seafood import prices from 2017 and 2019. In 2019, the price index fell by the most, at 14.7 %. This was owing to a significant decrease in the price of each individual product in the import structure in 2019 compared to 2018 - the average cost per ton of items reduced by 44.2 %, from \$9917.7 to \$5537.6.

On the other hand, when investigating the dynamics of the fish price index from 2013 to 2020 in reference to the base year 2013, we notice no major variations. Furthermore, despite a 9% decline in fish import prices relative to the baseline in 2015, there is a considerable rise in import values by 2018 and a 13.2 percent gain in import values. This might be because, after 2018, the overall volume of fish product imports began to fall, which is undoubtedly a positive trend for Russia and its fishing sector. Nonetheless, compared to 2013, the costs of imported fish products never fell, and the prices of imports were always higher than the cost of imports in 2013.

Figure 26: Fisher volume index for imported fish products in 2013 – 2020, %



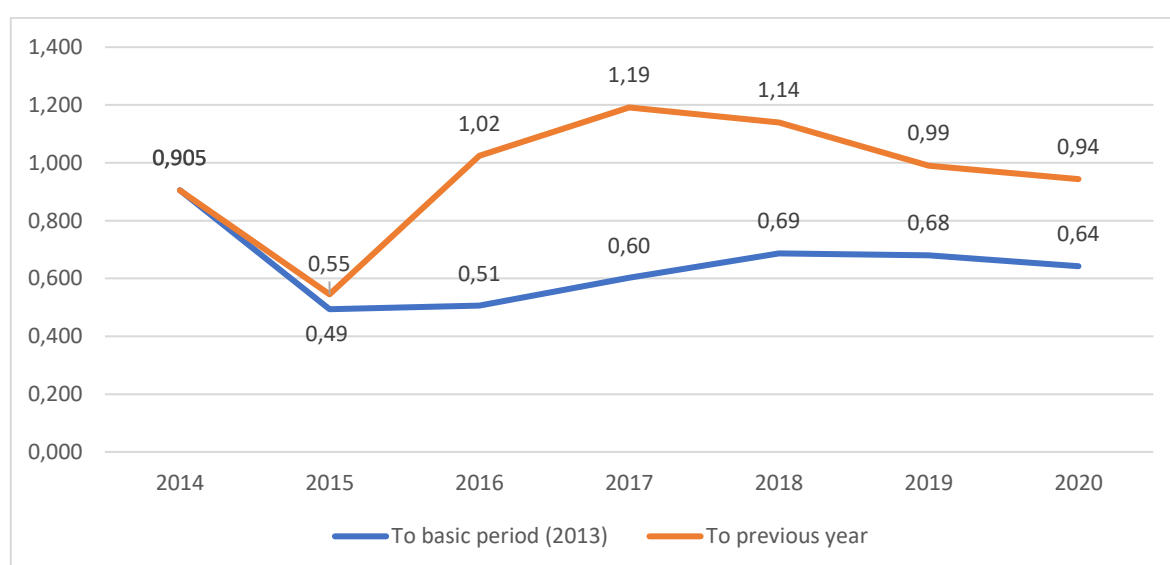
Source: Processing according to Federal agency for fisheries in Russia, 2021

This graph also displays the results of the Fischer index computation, which displays the average value of the Laspeyres and Paasche indices.

According to the findings of calculations for each prior year, 2015 was the most terrible year for Russian fish imports, with the volume index decreasing by 22 % compared to 2014. Of course, this is directly tied to both the previously mentioned price index and the sharp fall in imports in 2015. According to the calculations, the most successful year in terms of the rate of change in volume in similar prices in the reporting period compared to the same period the previous year was 2017, when the index climbed by 23 % compared to 2016 and even above the mark of 100 %. Nonetheless, there was a declining tendency in the future.

When we evaluate the Fisher volume index in terms of computations, the situation is typically similar, although the swings in the index level are not as dramatic. However, the lowest index is recorded in 2016, when the decline in the physical amount of imports was the smallest, decreasing by 35 %. That makes reasonable, given that the overall weight of fish imports in 2016 was nearly half that of 2013. Nonetheless, the index is increasing up until 2019. However, as a result, the average physical amount of fish product imports fell by 59 % in 2020.

Figure 27: Turnover index for fish products import in 2013 – 2020, %



Source: Processing according to Federal agency for fisheries in Russia, 2021

In the computation of the turnover index in the import of fish products 2013-2020, an unusual scenario is also seen.

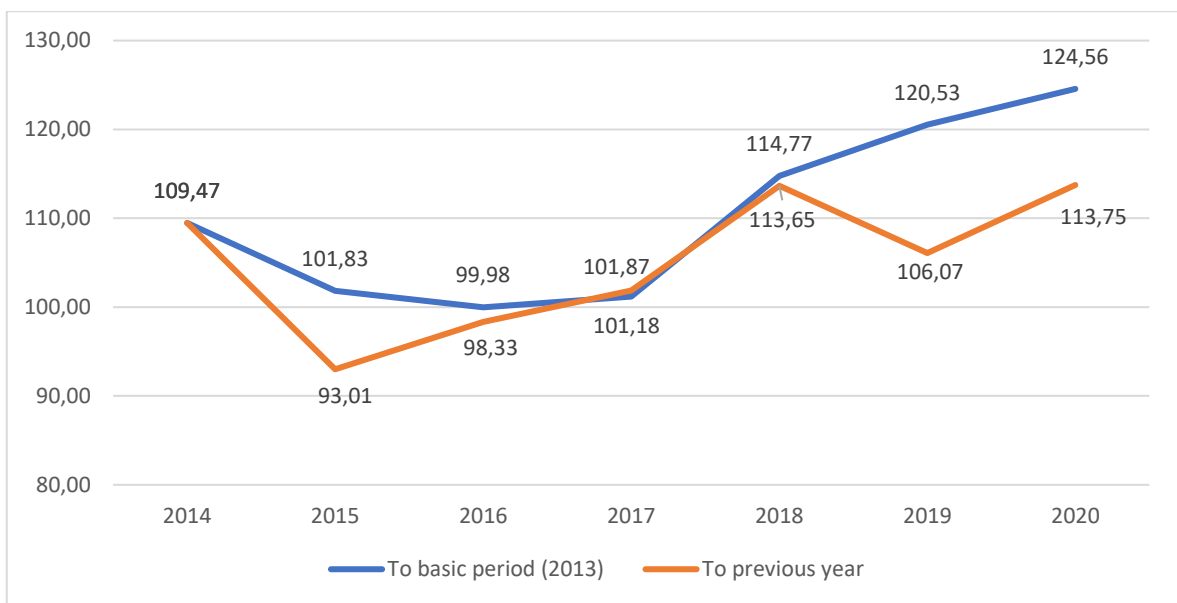
Despite the fact that the turnover index increased after 2016, it began to decrease after 2018 and, as a consequence, in 2020 it was 64 %, which is 27 % lower than in 2013, when the index was 91 %.

Nonetheless, the turnover index is defined by the calculation method as the ratio of total imports in the current year to total imports in the base year. As a result, the bottom line is the year-on-year reduction in the overall value of fish imports. As a result, we witness a declining tendency in general. Another advantage for Russia is that the reduction in fish imports may imply that Russia can provide itself with an adequate level of fish products, reducing the fish sector's reliance on other nations.

4.4.2 Calculations for fish export

According to current index theory, the Laspeyres formula systematically deviates from the real value in the direction of overestimation, whereas the Paasche formula systematically deviates in the direction of underestimate. The Gershenkrn effect is named after the American physicist who first described it. In light of this, worldwide organizations recommending pricing statistics propose computing the CPI using the Fisher formula.

Figure 28: Fisher price index for exported fish products in 2013-2020, %

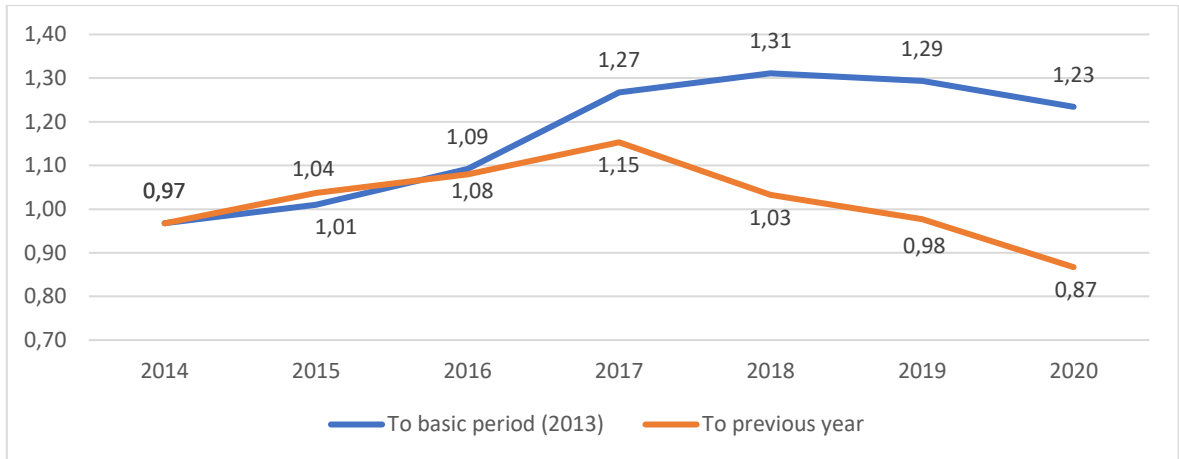


Source: Processing according to Federal agency for fisheries in Russia, 2021

The issue with exports is entirely different from the situation with imports of fish products. If we look at the calculations for each prior year, the lowest value of exports was in 2015, when exports fell by 7 %, while the level of fish export value grew by 1.2 % in 2017 compared to 2016.

When looking at the dynamics of the Fischer price index in terms of computations in respect to the base year (2013), a rising tendency may be noted. Overall, the "cheapest" years for fish exports were 2015 and 2016, with 2016 showing a 0.02 percent decline. There is a good tendency in the following years, and as a consequence, the value of Russian fish exports climbed by 24.6 percent in 2020, which is also a beneficial trend for Russia.

Figure 29: Fisher volume index for exported fish products in 2013-2020, %

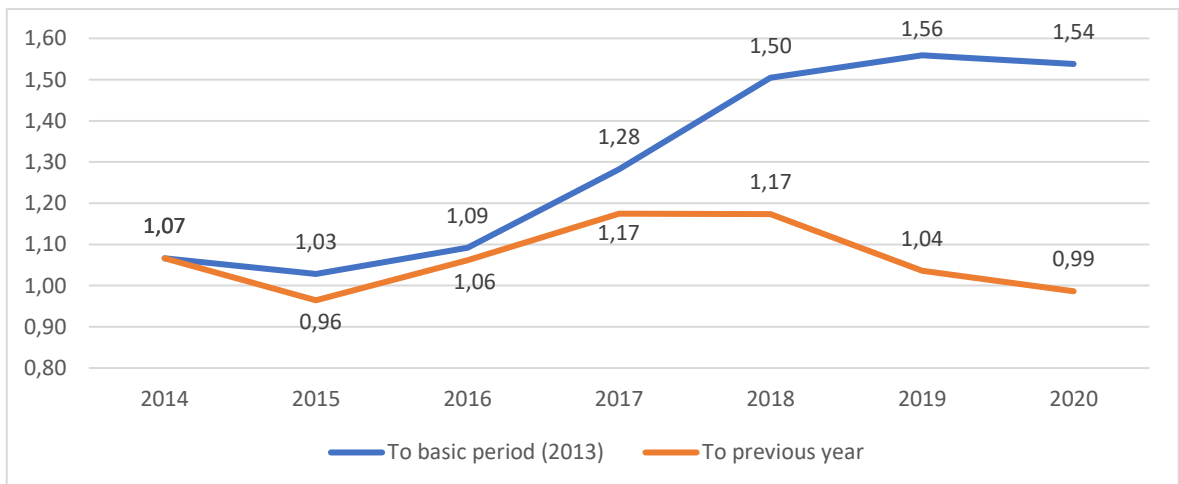


Source: Processing according to Federal agency for fisheries in Russia, 2021

Based on the data in the graph above, we can see that there is a clear decreasing tendency after 2017, when there was a high in the physical volume of fish exports, which climbed by 15 % compared to 2016. However, according to the estimates, the physical volume of exports declined by 11 % in 2020, which was the lowest amount.

When we look at the Fischer volume index in comparison to the base year 2013, which more clearly shows changes before and after the implementation of sanctions, we can observe that the highest value was in 2018, which was 31 % higher than the same figure in 2013. Overall, fish exports grew by 257.8 thousand tons in 2017 when compared to 2013. Despite a minor dip (8 % from 2018), the Fischer volume index climbed by 23 percent compared to 2013 and finished up at 2,217 thousand tons vs 1,883.3 thousand tons in 2013.

Figure 30: Turnover index for exported fish export in 2013-2020, %



Source: Processing according to Federal agency for fisheries in Russia, 2021

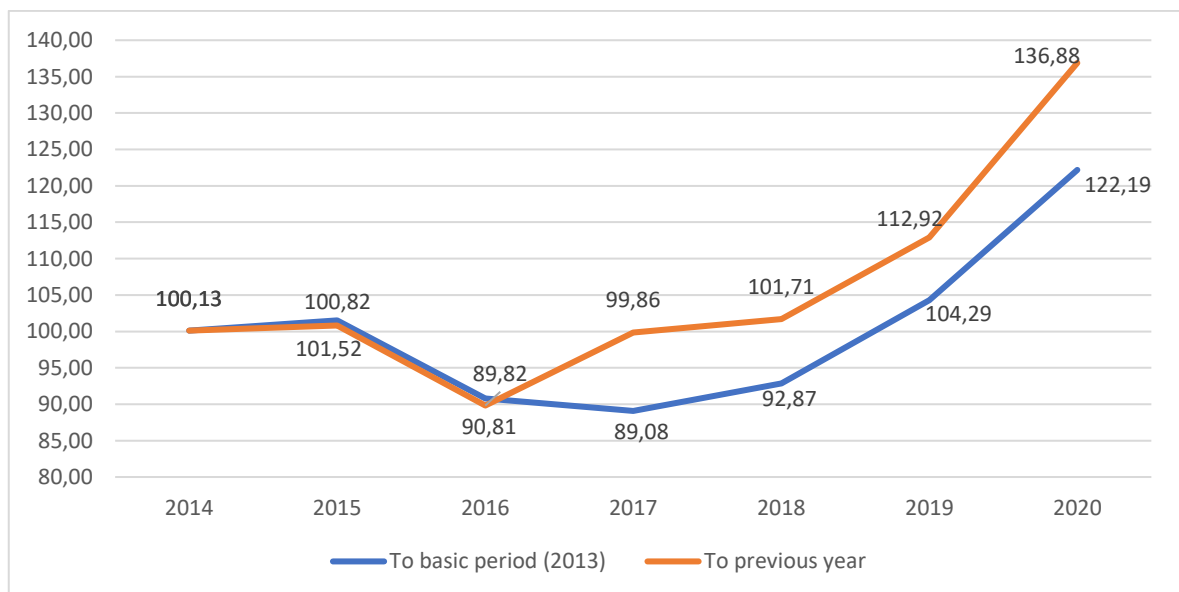
As seen in the graph, different calculation techniques provide somewhat varied outcomes, and the calculation in respect to each preceding year produces fewer positive dynamics than the calculation in reference to the base year.

According to the statistics, the highest percentage reduction from the previous year was recorded in 2015 (by 11%), while the smallest percentage loss was reported in 2019 (by 13 %). This is owing to the application of sanctions and limited supply to South Korea and the Netherlands in the first case, as well as reduced supplies to South Korea and Japan in the second situation. When comparing the calculations to the base period (2013), we can notice a growth in the indicator, but after 2019, there is a declining tendency. The largest relative rise was in 2019, when the turnover index climbed by 56 % compared to 2013 and the value of fish exports was \$5,360.9 million compared to \$3,439 million in 2013. The value of exports fell by \$73.6 million in 2020.

4.4.3 Calculations TOT for Import and Export

When examining the dynamics of international commerce, it is critical to examine not just changes in the value, prices, and physical volume of exports/imports, but also their efficacy. An index of terms of trade is calculated to assess the effectiveness of foreign commerce.

Figure 31: Terms of trade index for fish products import and export in 2013-2020, %



Source: Processing according to Federal agency for fisheries in Russia, 2021

The Trade Condition Index was also computed in two ways: relative to the previous year and relative to the base year (2013). Although there are minor variations, the index has increased from year to year.

When we look at the index of terms of trade from year to year, we can observe that the lowest index was in 2016, compared to 2015, and it declined by 11%. It turns out that the international trade circumstances, or more accurately the import and export of fish products in Russia, were the least advantageous in 2016 compared to the previous year. The key reason was that the import price index outperformed the export price index.

When comparing the index of trade conditions to the base year 2013, it is clear that 2017 was the most unfavorable year, with the index falling by 10.92 percent. Nonetheless, there is a favorable trend in the terms of trade index after 2017, which is up 22.2 percent in 2020 compared to 2013. All of these developments happened when the Laspeyres price index for exports climbed and surpassed the price index for imports. This signifies that the country's trade conditions improved because, per unit of export earnings from fish products, it was able to purchase more imported items in the reporting period than in the base period.

5. Results and discussions

Russia is one of the largest fishing countries in the world. Despite the increased domestic production of fish products, the Russian market is in deficit, with exports of fish products exceeding imports several times over the past three years. At the same time, fish has always been one of the most popular products among Russian consumers, especially in the past few years, when a healthy lifestyle is being actively formed. The actual level of fish consumption in Russia is not high enough and amounts to only 14.4 kg/year per capita, which is significantly lower than before the introduction of counter-sanctions, when per capita consumption was 27.3 kg/year (2013). Current trends in the industry against the background of the global situation with coronavirus have contributed to a significant increase in the price of many types of fish products. Consumers began to prefer not only cheaper versions of fish products, but also with a longer shelf life - this explains the increase in demand for canned, preserves, dried and salted fish.

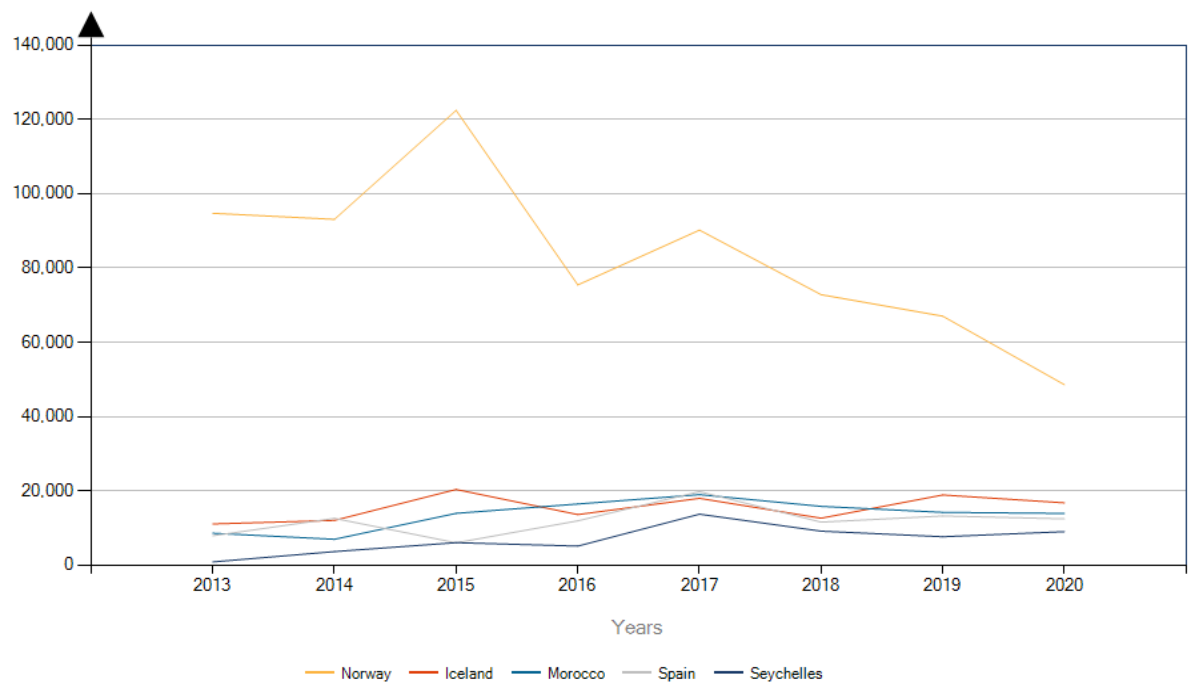
Despite the fact that the sanctions did not particularly target Russia's fishing sector, they had a significant influence on it. The unexpected departure of Norway, the most major

supplier of fish products, from commercial ties in 2013-2014 was a significant blow to the Russian fishing sector. However, it was the application of retaliatory counter-sanctions, rather than the introduction of sanctions against Russia, that caused the most harm to the Russian fishing sector.

However, if we look at the issue from the other side, we can see that it has also had a good impact on Russia's fishing sector. Because of the decrease in imports and the unwillingness of large importers to trade, Russia was forced to boost the pace of fish and aquatic bioresources production, which finally helped to improve the country's industry. In 2013, the levels of fish imports and exports were nearly the same, but with the implementation of sanctions, the gap in the levels of imports and exports began to widen, and as a consequence, the volume of exports will surpass the volume of imports by more than 2.5 times by 2020. The active growth of economic links with Chile, the Faroe Islands, and China was a huge boon for Russian fish imports.

Nonetheless, others believe that Russia can re-import embargoed products via foreign nations (Batalov, 2018). If you look at the graph closely, you can see that Turkey's stake climbed by 1% in 2015. At the same time, Norway's percentage of Turkey's imports climbed dramatically in 2015, before declining.

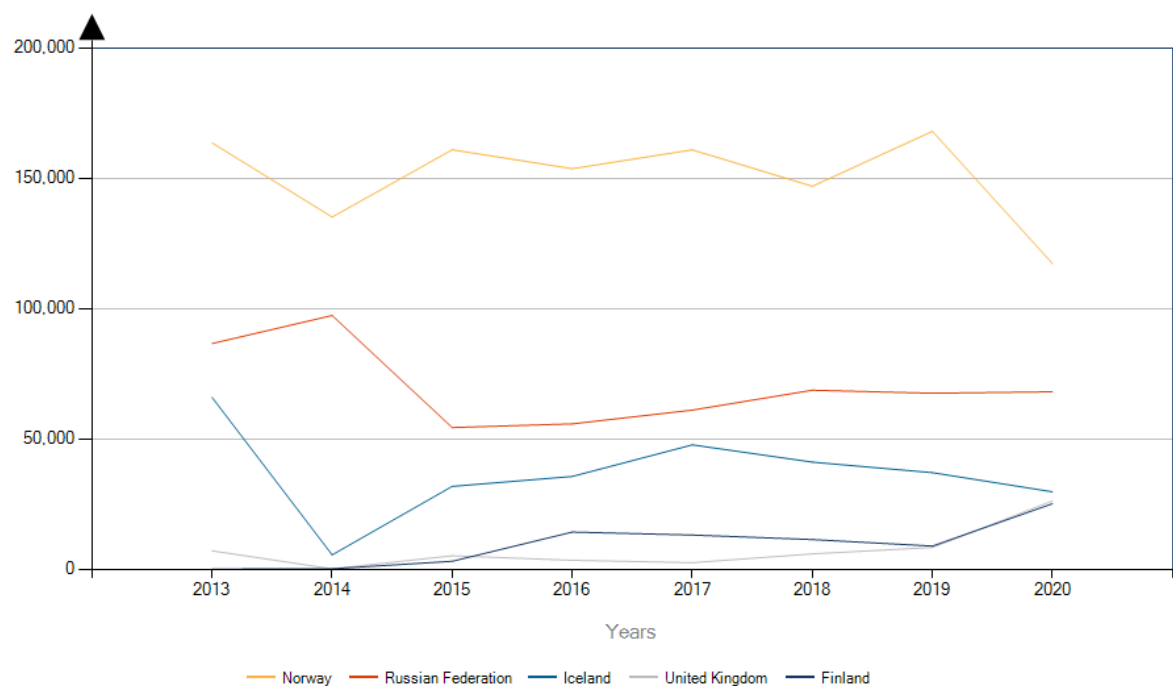
Figure 32: Main suppliers of fish products to Turkey in 2013-2020, thousand USD



Source: International trade center, 2021

According to the statistics, the only year throughout the observation period that Russia bought live fish from Turkey (for 164 thousand dollars) was 2015. Turkey's imports from Norway surged considerably the same year. I believe Russia simply re-imported live fish from Norway through Turkey in 2015, because that was the year Norway stopped trade with Russia totally, and Russia needed to find a replacement for it in terms of live fish imports immediately. However, because importing live fish from Turkey is exceedingly difficult and expensive, no live fish were acquired from Turkey after 2015.

Figure 33: Main suppliers of fish products to Belarus in 2013-2020, thousand USD



Source: International trade center, 2021

Imports from Belarus were another option for replacing live fish from Norway. Belarus has a high level of imports from Norway, as seen in the data, while imports from Finland have increased since 2015. To comprehend in depth, the amount of live fish imports from Belarus must be estimated. For example, live fish shipments from Belarus to Russia climbed from \$26 thousand in 2013 to \$138 thousand in 2014. Imports of live fish were 338 thousand dollars in 2016, and 587 thousand dollars in 2020.

Considering Belarus's lack of sea access, harvesting live fish in such large quantities is exceedingly difficult, and the surge in imports from nations with which Russia has severed economic links may imply that Russia is also re-importing live fish through Belarus.

Some scholars also argue that if a nation benefits from commercial links with Russia, anti-Russian sanctions will be avoided. The Faroe Islands, for example, were able to address numerous domestic difficulties as a result of a considerable rise in the supply of fish products to Russia (Breum, 2018). It is also well known that China is becoming crucial as Russia's primary trading partner, mostly at the cost of the EU. With the booming Chinese economy and the ongoing battle with the West, Russian international trade connections are expected to be reoriented more to the East, and Sino-Russian economic contacts will get tighter. All of this helps to Russia's ability to avoid sanctions and keeps Russia's fishing sector afloat (Havlik, 2018).

It is worth mentioning that the amount of Russian fish and seafood exports is 1.7-2.0 times that of imports. This arrangement creates a type of "reserve" of fish products, allowing the people to be completely supplied in times of import shortfall.

As a result, if we follow the route of substituting foreign products with Russian ones, challenges arise in the areas of logistics and stock management, raw material processing, and aquaculture development. To begin with, the transportation of fish and seafood from the eastern part of the nation to the European half of the country raises the cost of commodities significantly due to hefty transport taxes. Second, the coastal zone frequently lacks manufacturing facilities capable of processing the total amount of catches. Third, there is minimal focus on the growth of the artificial fish breeding business. The issue of salmon and trout supplies from Norway to the European portion of Russia, in particular, would vanish if domestic firms engaged in salmon farming in the Barents Sea were encouraged and able to supply the missing quantities. Currently, such firms produce 10-15 thousand tons of red fish every year, whereas the volume of this products imported into Russia exceeds 100 thousand tons. It is worth noting that many decisions regarding the industry's reorientation to the local market will need time and the ability to plan in the long run. In the current scenario, the state's aid and support of businesses is the most anticipated measure.

Unfortunately, it is not feasible to corroborate the facts I gave above with certainty. Nonetheless, it is reasonable to conclude that Russia is making progress in terms of supplying the appropriate amount of fish products. The fundamental issue, however, is that the bulk of fish production and processing firms in the Russian market are more focused on exports than on supply to the Russian people. According to the statistics in Table 1, fish consumption per capita in Russia has been declining year after year, and it will be twice as

low in 2020 as it was in 2013. As a result, Russia still has a massive pile of problems that must be addressed.

6. Conclusion

Sanctions are required to influence political decisions and the Russian government; however, many experts believe that the sanctions have had a much greater impact on the Russian population, small and medium businesses, and ordinary citizens, because "smart" sanctions, such as asset freezes and travel bans, have no discernible impact (Afesorghor, 2019).

Nonetheless, based on the analysis of the results presented in this Thesis, it is safe to conclude that it was the reciprocal Russian counter-sanctions, rather than the sanctions imposed by the European Union and a number of other countries, that had a far greater impact on the Russian fishing industry. Fish imports from key supply nations were cut to a bare minimum when Russia announced counter-sanctions. Of course, this circumstance harmed Norway, the European Union, and a few other nations that maintained fishing commercial links with Russia.

More active collaboration with Chile, the Faroe Islands, and China enabled the Russian fish sector to remain afloat by totally replacing all suppliers that withdrew. Because of these nations, Russia's fish imports have not altered dramatically, and the country's demands for fish products have been completely supplied.

On the other hand, even after the imposition of sanctions and counter-sanctions, the country's key exports have remained unchanged. The top three remained South Korea, China, and the Netherlands. However, the structure of exports has changed as a result of the expansion of Russia's fishing sector.

As a result, we may conclude that the sanctions have had a favorable influence on the Russian Federation's fishing sector. As a result, throughout the review period, 2013-2020, the focus shifted to issues that have long needed to be addressed:

- Development of own agriculture and fisheries;
- Development and growth of own technology implementation;
- Development of logistic network;
- Creation of our own payment system;

- Development of connections with Eastern nations.

The imposition of economic sanctions against Russia has significantly enhanced the importance of these issues. Their growth will help Russia to minimize its reliance on Western nations, both in terms of supply and financial support, in the long run.

The fish business performs well, and can conclude from the analysis performed in this article that the fish industry was able to recover from the sanctions and expand the amount of fish output, boosting the possibilities of becoming independent of other nations' fish products in time.

Import substitution in any industry will be conceivable if new production facilities and technology firms capable of competing with foreign competitors on market terms are released and created. At the same time, the positive dynamics and effect of import substitution may not be apparent for a long period (Smutka and others, 2019). However, it is important to consider not just exports, but also the demands of the country's people. The drop in fish consumption to 14.4 %, which is double the minimum amount, is a major issue for Russian population. This is due to fish enterprises being more export-oriented.

Sanctions did not have the predicted impact on the Russian fishing sector, according to the findings of the presented research. The main reason for this was the admission of goods from other countries that did not impose sanctions and are not subject to Russian counter-sanctions in the form of a food embargo into the Russian market. South Korea, the Faroe Islands, and China are among these nations. They compensated for the whole scarcity of fish products caused by the withdrawal of the principal suppliers. In the future, the sanctions, in my opinion, will not have the predicted effect, as long as there are nations ready to create commercial links with the sanctioned countries and have the capacity for significant fish deliveries. Nonetheless, compelling these nations to abandon commerce with Russia is exceedingly challenging, because the countries earn substantial quantities of money as a result of these contacts, which help them handle domestic problems and elevate their economy to a new level.

The COVID-19 pandemic, which lasted more than two years and essentially separated nations from one another, posed a major problem for all governments. The whole globe experienced massive losses, tourism came to a standstill, and international trade was exceedingly cautious. All of this, along with current global events, makes assessing very difficult, because a large variety of factors impact a country's imports and exports. Unfortunately, COVID-10 altered a lot of things, so it's impossible to draw any judgments

about how Russian fish imports and exports could evolve; possibly the scenario will turn out differently.

It is impossible to make any conclusions in today's world because the situation changes on a daily basis, and Russia's future prospects remain completely unknown. However, if we examine the potential of normalizing the situation and restoring logistical networks, diversification of fish export flows based on demand in the target market might be a significant gain for Russia. For example, it is vital to examine which countries have the most popular fish items and then bring highly sought-after fish to each country. For example, one country may send fish from the northern seas, while another country may deliver fish from the southern seas, and so on. Diversification will aid in increasing exports not just in volume but also in value.

As a result, sanctions and counter-sanctions first had a detrimental impact on Russia's fishing sector, exposing all of the difficulties that had developed over many years. At the same time, they have encouraged Russia's fish sector to flourish, since fish exports are increasing while imports of fish products are falling. The expansion of the Russian fish sector is a critical subject that demands a good deal of attention, but in the period 2013 – 2020 can be seen positive trends.

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8. Appendixes

Appendix 1 Export and import of the Russia of fish, fish products and seafood for 2013 - 2020

	Product name	FCS of Russia						Fish caught and sold outside the customs control zone			Total					
		Export			Import			Export			Export			Import		
		thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne
2013	Fish and crustaceans, Molluscs and other aquatic invertebrates		2813990			2861284			542118			3439			3201	
	<i>Live fish</i>	0,01	837,6		0,8	17801,1				0,01	837,6		0,8	17801,1		
	<i>Fresh or chilled fish</i>	1	1953,4	1867,9	142,3	975247,5	6852,6			1	1953,4	1867,9	142,3	975247,5	6852,6	
	<i>frozen fish</i>	1372,8	2105198,9	1533,6	512,9	1052452,6	2052	326,9	430979,3	1318,2	1699,7	2536178,2	1492,1	512,9	1052453	2052
	<i>fish fillet</i>	70,9	277362,9	3910,6	119,5	294416,4	2463,1	23,9	108824,2	4553,4	94,8	386187,1	4072,6	119,5	294416,4	2463,1
	<i>dried and salted fish</i>	6,8	36161,5	5340,1	12	77350,3	6427,4	0,6	2071		7,4	38232,5	5166,6	12	77350,3	6427,4
	<i>crustaceans</i>	36,4	346704,9	9526,5	62,6	340429,8	5440,7	0,1	138		36,5	346842,9	9502,5	62,6	340429,8	5440,7
	<i>mollusks</i>	10,1	26091,5	2576,6	33,9	103075,2	3041,9	0,04	81,1		10,1	26172,6	2591,3	33,9	103075,2	3041,9
	<i>aquatic invertebrates</i>	9	19679,2	2191,8	0,04	511,1		0,01	24,1		9	19703,3	2193,3	0,04	511,1	
	Prepared or canned fish products															
<i>Cooked or canned fish</i>	23,1	72382,5	3136,7	113,9	257520,5	2260,5	0,5	1224,2		23,6	73606,7	3118,9	113,9	257520,5	2260,5	
<i>oked or canned Crustaceans, mollusks</i>	1,2	9017,7		16,4	82194,5	5013,9				1,2	9017,7		16,4	82194,5	5013,9	
2014	Fish and crustaceans, Molluscs and other aquatic invertebrates		2860048,8			2554679,9			746889,6			3666,7			2897,9	
	<i>Live fish</i>	0,01	226,2		0,8	15245,9	20002,5			0,01	226,2		0,8	15245,9	20002,5	
	<i>Fresh or chilled fish</i>	1,5	3840,4	2522,8	86,3	630558,5	7310,5	9	10083,6	1124,5	10,5	13924,0	1327,4	86,3	630558,5	7310,5
	<i>frozen fish</i>	1168,7	1876109,6	1605,2	437,8	1016853,7	2322,8	307,7	499681,9	1624	1476,4	2375791,5	1609,2	437,8	1016853,7	2322,8
	<i>fish fillet</i>	68,8	330799,2	4809,2	125,2	298997,3	2387,7	38,2	221364,7	5790,5	107,0	552163,9	5159,7	125,2	298997,3	2387,7
	<i>dried and salted fish</i>	6,6	37655	5722,6	16,5	114989,4	6985,1	2,8	15461,5	5605,6	9,4	53116,5	5650,7	16,5	114989,4	6985,1
	<i>crustaceans</i>	52,7	550449,6	10447,6	52,1	354101,5	6794,6	0,1	205,5	2351,3	52,8	550655,1	10434,2	52,1	354101,5	6794,6
	<i>mollusks</i>	19,4	43236	2223,6	38,8	123344,3	3182,1	0,1	92,4	1432,6	19,5	43328,4	2221,0	38,8	123344,3	3182,1
	<i>aquatic invertebrates</i>	8,1	17733	2189,8	0,1	589,4	5894				8,1	17733,0	2189,8	0,1	589,4	5894,0
	Prepared or canned fish products															
<i>Cooked or canned fish</i>	20,2	52612,3	2607,7	115,1	272016,9	2363,8	0,1	403,8	3484	20,3	53016,1	2612,8	115,1	272016,9	2363,8	
<i>oked or canned Crustaceans, mollusks</i>	0,8	6726	7915,7	15	71224,8	4741,5				0,8	6726,0	7915,7	15,0	71224,8	4741,5	

Appendix 1 (Continued)

	Product name	FCS of Russia						Fish caught and sold outside the customs control zone			Total					
		Export			Import			Export			Export			Import		
		thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne
2015	Fish and crustaceans, Molluscs and other aquatic invertebrates	2786402,4			1355037,3			712631,6			3536,3			1580,1		
	Live fish	0,0086	34,7		0,4801	9514,8		-	-	-	0,0086	34,7		0,4801	9514,8	
	Fresh or chilled fish	0,96	1599,1	1665,729167	29,6996	186214,5	6269,932928	1,6546	2125,8	1284,78182	2,7	3724,9	1379,592593	29,6996	186214,5	6269,932928
	frozen fish	1208,1362	1858075,4	1537,968484	301,3143	660636,1	2192,514925	387,6157	541161,6	1396,129207	1595,7	2399237	1503,563953	301,314	660636,1	2192,514925
	fish fillet	71,1285	289418	4068,945641	69,7722	180135,4	2581,764657	29,4783	164085,8	5566,325059	100,6068	453503,8	4507,685365	69,7722	180135,4	2581,764657
	dried and salted fish	5,6953	26359,4	4628,272435	22,2539	113444,3	5097,726691	0,9183	5258,4	5726,233257	6,6136	31617,8	4780,724568	22,2539	113444,3	5097,726691
	crustaceans	54,7383	544466,5	9946,719208	23,0424	141236,8	6129,430962	-	-	-	54,7383	544466,5	9946,719208	23,0424	141236,8	6129,430962
	mollusks	19,9697	50308,4	2519,236644	24,4059	63505,7	2602,063435	-	-	-	19,9697	50308,4	2519,236644	24,4059	63505,7	2602,063435
	aquatic invertebrates	8,1775	16141	1973,830633	0,0242	349,8		-	-	-	8,1775	16141	1973,830633	0,0242	349,8	
	Prepared or canned fish products															
Cooked or canned fish	13,2859	30309,4	2281,320799	78,9228	186362,7	2361,329046	0,0363	104,3		13,2222	30413,7	2282,93375	78,9228	186362,7	2361,329046	
oked or canned Crustaceans, mollusks	0,5505	6864,4		10,4347	38722,9	3710,973962	-	-	-	0,5505	6864,4		10,4347	38722,9	3710,973962	
2016	Fish and crustaceans, Molluscs and other aquatic invertebrates	3015281,6			1392054			692669,6			3754,1			1619,1		
	Live fish	0,0442	63,3		0,2164	5606,1		-	-	-	0,0442	63,3		0,2164	5606,1	
	Fresh or chilled fish	2,0524	2436,2	1187,000585	25,7395	182991,2	7109,353329	0,8297	2284,1	2752,922743	2,8821	4720,3	1637,798827	25,7395	182991,2	7109,353329
	frozen fish	1316,7769	1965719,8	1492,826765	270,7062	635671,5	2348,197049	360,3573	503514,9	1397,265714	1677,2	2469234,7	1472,236287	270,706	635671,5	2348,197049
	fish fillet	79,3378	276331,3	3482,971547	61,913	161185,5	2603,419314	32,576	185458,3	5693,096144	111,9138	461789,6	4126,297204	61,913	161185,5	2603,419314
	dried and salted fish	6,1993	28273,2	4560,708467	22,7982	125575	5508,110289	0,2224	1228,3	5522,931655	6,4217	29501,5	4594,032733	22,7982	125575	5508,110289
	crustaceans	63,4691	665085,8	10478,8913	32,3219	202271,2	6258,023198	0,0736	184	2500	63,6	665269,8	10460,21698	32,3219	202271,2	6258,023198
	mollusks	23,4064	57640	2462,574339	24,882	78388	3150,38984	-	-	-	23,4064	57640	2462,574339	24,882	78388	3150,38984
	aquatic invertebrates	9,8103	19731,9	2011,345219	0,0279	365,4		-	-	-	9,8103	19731,9	2011,345219	0,0279	365,4	
	Prepared or canned fish products															
Cooked or canned fish	15,5903	38232,4	2452,319712	59,6472	177807,3	2980,983181	0,0264	69,3	2625	15,6167	38301,7	2452,611627	59,6472	177807,3	2980,983181	
oked or canned Crustaceans, mollusks	0,7016	7881,8		13,7544	49275	3582,489967	-	-	-	0,7016	7881,8		13,7544	49275	3582,489967	
2017	Fish and crustaceans, Molluscs and other aquatic invertebrates	3482367			1626207			865428,9			4409,6			1929,2		
	Live fish	0,1189	361,1		0,6429	10578,2		-	-	-	0,1189	361,1		0,6429	10578,2	
	Fresh or chilled fish	1,4239	2184,3	1534,026266	32,1067	242002,8	7537,454799	1,3151	1381,7	1050,642537	2,739	3566	1301,935013	32,1067	242002,8	7537,454799
	frozen fish	1441,4362	2057287,3	1427,248254	327,4941	729209,5	2226,634007	434,3536	579848,6	1334,969021	1875,7898	2637135,9	1405,880286	327,494	729209,5	2226,634007
	fish fillet	83,8761	349174	4162,97372	69,1898	168462,7	2434,790966	33,7705	178120,6	5274,443671	117,7	527294,6	4479,988105	69,1898	168462,7	2434,790966
	dried and salted fish	5,5142	26722	4846,033876	26,6583	157603,3	5911,978633	0,1146	506,6	4420,593368	5,6288	27228,6	4837,372086	26,6583	157603,3	5911,978633
	crustaceans	77,5529	948832,4	12234,64758	36,9555	240500,5	6507,840511	9,7406	105571,4	10838,28512	87,2935	1054403,8	12078,83519	36,9555	240500,5	6507,840511
	mollusks	21,6225	72450,3	3350,690253	21,9917	77463,1	3522,378897	-	-	-	21,6225	72450,3	3350,690253	21,9917	77463,1	3522,378897
	aquatic invertebrates	11,2178	25355,5	2260,291679	0,0174	386,8		-	-	-	11,2178	25355,5	2260,291679	0,0174	386,8	
	Prepared or canned fish products															
Cooked or canned fish	18,2722	52138,6	2853,438557	64,7113	229152,4	3541,149691	0,0002	1,5	7500	18,2724	52140,1	2853,489416	64,7113	229152,4	3541,149691	
oked or canned Crustaceans, mollusks	0,7538	9693,2		19,2728	73827,1	3830,63696	-	-	-	0,7538	9693,2		19,2728	73827,1	3830,63696	

Appendix 1 (Continued)

	Product name	FCS of Russia						Fish caught and sold outside the customs control zone			Total					
		Export			Import			Export			Export			Import		
		thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne	thousand tons	thousand \$	Price, \$, 1 tonne
2018	Fish and crustaceans, Molluscs and other aquatic invertebrates		4282356,3			1801852,4			816554,5			5174,1			2198,9	
	Live fish	0,3053	361,4		0,8511	13945,4	-	-	-	0,3053	361,4		0,8511	13945,4	16385,14863	
	Fresh or chilled fish	3,2804	3456,6	1053,712962	35,3174	264317,8	7484,067344	1,817	2101,4	1156,521739	5,0974	5558	1090,359791	35,3174	264317,8	7484,067344
	frozen fish	1540,2576	2569089,6	1667,960996	301,73098	776405,7	2573,171969	416,1711	680286,7	1634,632246	1956,5	3249376,3	1660,810785	301,731	776405,7	2573,171969
	fish fillet	104,6467	384083	3670,282962	70,1335	228670,8	3260,507461	19,5307	118980	6091,947549	124,1	503063	4053,690572	70,1335	228670,8	3260,507461
	dried and salted fish	4,4149	18897,6	4280,414052	23,5944	163194,6	6916,666667	0,3953	1505	3807,235011	4,8102	20402,6	4241,528419	23,5944	163194,6	6916,666667
	crustaceans	83,9056	1185417,8	14127,99384	40,9006	260867,1	6378,075138	1,4233	13578,8	9540,363943	85,3289	1198996,6	14051,47142	40,9006	260867,1	6378,075138
	mollusks	29,3489	90720,3	3091,097111	19,4919	94004,3	4822,736624	-	-	-	29,3489	90720,3	3091,097111	19,4919	94004,3	4822,736624
	aquatic invertebrates	11,7803	30329,98	2574,63562	0,0102	446,7		0,0295	102,6	3477,966102	11,8098	30432,58	2576,892073	0,0102	446,7	43794,11765
	Prepared or canned fish products															
Cooked or canned fish	18,3733	64028,2	3484,850299	82,4887	300876,1	3647,482625	0,000091	1,1	12087,91209	18,373391	64029,3	3484,892908	82,4887	300876,1	3647,482625	
oked or canned Crustaceans, mollusks	0,8231	11132,4		24,5632	96165	3915,002931	-	-	-	0,8231	11132,4		24,5632	96165	3915,002931	
2019	Fish and crustaceans, Molluscs and other aquatic invertebrates		4663054			1796663			627461			5360,9			2177,7	
	Live fish	0,9	1558	1806,8	1,4	21568,8	15064,1	0	4	869,6	0,9	1562	1801,8	1,4	21568,8	15064,1
	Fresh or chilled fish	3,8	3374,5	897,6	33,2	221669,5	6674,1	4,2	4122,5	977,6	8	7497	939,9	33,2	221669,5	6674,1
	frozen fish	1485,7	2497053,5	1680,7	341,1	795931,9	2333,4	324,8	523687	1612,3	1810,5	3020740,5	1668,4	341,1	795931,9	2333,4
	fish fillet	91,4	392001,4	4286,6	69,7	224761,3	3223,2	13,5	94216,2	6999,9	104,9	486217,6	4634,7	69,7	224761,3	3223,2
	dried and salted fish	5	22043,7	4383,2	26,7	180742,2	6763,1	-	-	-	5	22043,7	4383,2	26,7	180742,2	6763,1
	crustaceans	93,4	1582383,1	16947,4	45,2	273460,9	6051,3	1,8	5431,4	3094,9	95,1	1587814,5	16691,8	45,2	273460,9	6051,3
	mollusks	42,5	129323,2	3039,8	17	78071	4580,8	-	-	-	42,5	129323,2	3039,8	17	78071	4580,8
	aquatic invertebrates	11,4	35316,4	3093,2	0,1	456,9	315302	-	-	-	11,4	35316,4	3039,2	0,1	456,9	3153,2
	Prepared or canned fish products															
Cooked or canned fish	20,4	60819,8	2976	81,6	283729,9	3478,9	-	-	-	20,4	60819,8	2976	81,6	283729,9	3478,9	
oked or canned Crustaceans, mollusks	1	9609,6	9785,7	24	97280,3	4054	-	-	-	1	9609,6	9785,7	24	97280,3	4054	
2020	Fish and crustaceans, Molluscs and other aquatic invertebrates		4636904			1682400			564741			5287,3			2054,9	
	Live fish	0,9	1210,7	1404,7	1,9	28744,9	15310,2	-	-	-	0,9	1210,7	1404,7	1,9	28744,9	15310,2
	Fresh or chilled fish	3,7	4436,9	1206,9	38,8	222370,3	5726,2	3,7	2439,2	653,5	7,4	6876,1	928,1	38,8	222370,3	5726,2
	frozen fish	1613,1	2365857,6	1466,6	290,9	702461,1	3414,9	328	476517,4	1452,9	1941,1	2842375	1464,3	290,9	702461,1	2414,9
	fish fillet	99,9	423768,1	4242,8	64,1	192973,2	3010,7	12,3	84820,2	6876,8	112,2	508588,3	4532,3	64,1	192973,2	3010,7
	dried and salted fish	4,6	22267,8	4818,3	25,1	158900,9	6330,4	0,02	18,3	756,2	4,6	22286,1	4797,1	25,1	158900,9	6330,4
	crustaceans	86	1673699,9	19470	53,7	297079,5	5535,1	0,05	945,7	19993,7	86	1674645,6	39463,7	53,7	297079,5	5535,1
	mollusks	39,4	111892,3	2841,8	19,3	67962	3519,5	-	-	-	39,4	111892,3	2841,8	19,3	67962	3519,5
	aquatic invertebrates	10,5	33770,2	3227,1	0,01	314,8	44338	-	-	-	10,5	33770,2	3227,1	0,01	314,8	44338
	Prepared or canned fish products															
Cooked or canned fish	33,2	74072,2	2231,2	79,7	283714,3	3557,7	-	-	-	33,2	74072,2	2231,2	79,7	283714,3	3557,7	
oked or canned Crustaceans, mollusks	1,7	11622,7	6806,5	25,5	100425,7	3943,5	-	-	-	1,7	11622,7	6806,5	25,5	100425,7	3943,5	

Appendix 2 Main indexes for Fish Import (%) – calculations based on the data from *Appendix 1*

Price Index	2014	2015		2016		2017		2018		2019		2020	
	<i>to 2013</i>	<i>to 2014</i>	<i>to 2013</i>	<i>to 2015</i>	<i>to 2013</i>	<i>to 2016</i>	<i>to 2013</i>	<i>to 2017</i>	<i>to 2013</i>	<i>to 2018</i>	<i>to 2013</i>	<i>to 2019</i>	<i>to 2013</i>
Laspeyres	109,26	92,21	100,11	109,45	109,70	101,81	111,95	111,84	122,30	93,76	113,15	97,05	107,43
Paasche	109,00	91,92	100,13	108,64	108,56	101,34	109,66	110,86	122,43	93,57	114,28	96,17	109,11
Fisher	109,13	92,06	100,12	109,04	109,13	101,57	110,80	111,34	122,36	93,66	113,71	96,61	108,27
Volume Index													
Volume Index	2014	2015		2016		2017		2018		2019		2020	
	<i>to 2013</i>	<i>to 2014</i>	<i>to 2013</i>	<i>to 2015</i>	<i>to 2013</i>	<i>to 2016</i>	<i>to 2013</i>	<i>to 2017</i>	<i>to 2013</i>	<i>to 2018</i>	<i>to 2013</i>	<i>to 2019</i>	<i>to 2013</i>
Laspeyres	0,800	0,593	0,493	0,943	0,466	1,176	0,550	1,028	0,561	1,058	0,595	0,981	0,588
Paasche	0,829	0,591	0,493	0,936	0,461	1,170	0,538	1,019	0,562	1,056	0,601	0,972	0,598
Fisher	0,814	0,59	0,49	0,94	0,46	1,17	0,54	1,02	0,56	1,06	0,60	0,98	0,59
Turnover index													
Turnover index	2014	2015		2016		2017		2018		2019		2020	
	<i>to 2013</i>	<i>to 2014</i>	<i>to 2013</i>	<i>to 2015</i>	<i>to 2013</i>	<i>to 2016</i>	<i>to 2013</i>	<i>to 2017</i>	<i>to 2013</i>	<i>to 2018</i>	<i>to 2013</i>	<i>to 2019</i>	<i>to 2013</i>
	0,905	0,55	0,49	1,02	0,51	1,19	0,60	1,14	0,69	0,99	0,68	0,94	0,64
Terms of Trade													
Terms of Trade	2014	2015		2016		2017		2018		2019		2020	
	<i>to 2013</i>	<i>to 2014</i>	<i>to 2013</i>	<i>to 2015</i>	<i>to 2013</i>	<i>to 2016</i>	<i>to 2013</i>	<i>to 2017</i>	<i>to 2013</i>	<i>to 2018</i>	<i>to 2013</i>	<i>to 2019</i>	<i>to 2013</i>
	100,13	100,82	101,52	89,82	90,81	99,86	89,08	101,71	92,87	112,92	104,29	136,88	122,19

Appendix 3 Main indexes for Fish Export (%) – calculations based on the data from *Appendix 1*

Price Index	2014	2015		2016		2017		2018		2019		2020	
	to 2013	to 2014	to 2013	to 2015	to 2013	to 2016	to 2013	to 2017	to 2013	to 2018	to 2013	to 2019	to 2013
Laspeyres	109,39	92,96	101,63	98,30	99,61	101,67	99,72	113,74	113,57	105,87	118,00	132,85	131,27
Paasche	109,55	93,05	102,02	98,37	100,35	102,08	102,66	113,56	115,99	106,27	123,10	97,39	118,20
Fisher	109,47	93,01	101,83	98,33	99,98	101,87	101,18	113,65	114,77	106,07	120,53	113,75	124,56
Volume Index													
Volume Index	2014	2015		2016		2017		2018		2019		2020	
	to 2013	to 2014	to 2013	to 2015	to 2013	to 2016	to 2013	to 2017	to 2013	to 2018	to 2013	to 2019	to 2013
Laspeyres	0,961	1,037	1,008	1,079	1,088	1,151	1,249	1,033	1,297	0,975	1,266	1,013	1,301
Paasche	0,975	1,037	1,012	1,080	1,096	1,155	1,286	1,032	1,325	0,979	1,321	0,742	1,171
Fisher	0,97	1,04	1,01	1,08	1,09	1,15	1,27	1,03	1,31	0,98	1,29	0,87	1,23
Turnover index													
Turnover index	2014	2015		2016		2017		2018		2019		2020	
	to 2013	to 2014	to 2013	to 2015	to 2013	to 2016	to 2013	to 2017	to 2013	to 2018	to 2013	to 2019	to 2013
	1,07	0,96	1,03	1,06	1,09	1,17	1,28	1,17	1,50	1,04	1,56	0,99	1,54