Differences between Regional and National Economic Stability and Well-being in Russia Based on Adjusted Misery Index

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Zásady pro vypracování

Introduction
Define the objectives and the application method used in Master thesis.
I. Theoretical part

- Conduct a critical literature review focused on economic theories and empirical studies related to inflation, unemployment and total product.
- Define key components of the Misery index and data availability.

II. Practical part

- Analyze development of economic stability and well-being indicators on the regional and national level in Russia. Propose adjustments to the standard Misery index.
- Estimate adjusted Misery index and compare its development on the regional and national level.
- Discuss observed differences between the standard and adjusted Misery indexes.

Conclusion

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ABSTRAKT

Hlavním cílem diplomové práce je navrhnout úpravy indexu bídy a vyhodnotit jeho hodnotu v Rusku v období 2010–2019. Práce se skládá ze dvou částí: teoretické a praktické. V teoretické části je proveden kritický literární přehled ukazatelů ekonomické stability, jako je inflace, HDP a GRP, míra nezaměstnanosti, a přístupy k odhadu těchto ukazatelů v Rusku. Zatímco praktická část diplomové práce si klade za cíl analyzovat tyto ukazatele v Rusku na národní a okresní úrovni, vypočítat standardní index bídy, navrhnout úpravy a vyhodnotit hodnotu upraveného indexu bídy. Poté autor vypočítá upravený index bídy pro dané období, aby viděl tendence a odhadl rozdíl mezi okresy. Poté, co bude provedena analýza a odhad, autor práce uvede některá doporučení. Výsledkem práce jsou odhadované upravené indexy bídy na národní a okresní úrovni, které lze použít k pochopení reálného obrazu a vytvoření strategií pro zlepšení situace.

Klíčová slova: CPI, index bídy, odhad inflace, ukazatele ekonomické stability

The main aim of the thesis is to propose adjustments to the misery index and evaluate its value in Russia during the period from 2010 till 2019. The thesis consists of two parts: theoretical and practical. In the theoretical part, critical literature review of the indicators of economic stability such as inflation, GDP and GRP, unemployment rate, as well as approaches of estimation of these indicators in Russia is performed. While practical part of the thesis aims to analyze these indicators in Russia on national and district level, calculate the standard misery index, propose adjustments, and evaluate the value of the adjusted misery index. After that, the author calculates the adjusted misery index for the period to see the tendencies and estimate the gap between districts. After the analysis and estimation will be performed, the author of the thesis gives some recommendations. The result of the thesis is estimated adjusted misery indexes on the national and the district level which can be used for understanding the real picture and creating strategies to improve the situation.

Keywords: CPI, Misery index, inflation estimation, economic stability indicators

I hereby declare that the print version of my Bachelor's/Master's thesis and the electronic version of my thesis deposited in the IS/STAG system are identical.

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CONTENTS

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INTRODUCTION

Measurement of economic and well-being indicators is an essential tool for each country to understand the situation and create an improvement strategy based on the results. However, based on the fact that Russia is the largest country globally, the estimation of such indicators only on a national level is not enough to conclude. In order to see the fair picture, it is also needed to evaluate the results on a regional level.

The thesis's primary goal is to propose adjustments to the misery index and evaluate its value on the national and district level in Russia. As well as to compare and evaluate how big the gap between these values. Thus, the first part will present the theoretical framework of the economic stability and well-being indicators in Russia. To do so, the author will perform a literature review regarding such indicators and the misery index.

As this thesis will primarily focus on proposing adjustment and further estimation of the adjusted misery index in order to discuss observed differences between the standard and adjusted misery indexes, the following sub-topics will be covered:

1. What is the value of inflation in Russia and how it is measured?
2. What is the difference between GDP and GRP in Russia, and how it is calculated?
3. What is the value of unemployment rate in Russia?
4. What is the impact of sanctions on economic stability in Russia?
5. How can the geographical location of the district impact on values of economic stability indicators?
6. Misery index as a connection among inflation, unemployment rate and GDP

Moreover, the author will describe the methods of collecting data and its analysis. For this research, the author will use mainly secondary data published by Rosstat – the official institute of Russian statistics.

Also, statistical analysis will be involved during the thesis work. Well-being and economic stability indicators will be analyzed by creating the graphs of series tendencies, calculating the growth rate, and calculating the structures sometimes in some cases (horizontal and vertical analyses will be applied). Moreover, in the theoretical part, the importance of district’s specifics will be evaluated as well as a definition of misery index will be identified.

In the practical part of the thesis, the author will analyze the structure of CPI in Russia and the minimal product basket. Also, the author will compare the values of CPI for food, non-food and services on national and districts level in order to see the differences and make

the conclusion. After that, the author will perform the evaluation of inflation based on the monetary aggregates.

Then the product analysis will be done by analyzing the tendencies of GDP and GRP changes in Russia. Furthermore, the GRP growth will be estimated for the ulterior calculations of the adjusted misery index.

After that, the unemployment analysis will be done in order to evaluate the districts with the highest and the lowest unemployment rate.

Moreover, using the econometric analysis, especially the OLS method, the author will determine the connection between the change in Brent price and the exchange rate of USD in Russia based on the statistics in order to evaluate the impact of external shocks on economic stability. Since some negative news had happened, or sanctions were applied, there was a significant impact afterwards on these values.

In the final part, the calculation of the misery index will be made by using different approaches: standard and adjusted. Firstly, the standard misery index will be estimated, and after that based on the proposed adjustments the adjusted misery index will be calculated.

After all calculations will be done, and data will become comparable, the comparison will be applied. Based on the comparison between the standard and adjusted misery indexes the further recommendations will be discussed.

The motivation behind the studying of this topic is based on the fact that due to the Russian territory, it is very complicated to see the accurate picture of the values based only on national level estimation. In this case, it is necessary to do the calculations on the district level as well to understand the fair overview of the situation. Also, the main goal is to create the adjustments for the calculations to take into the consideration the product specifics.

Moreover, it is more important to estimate the difference between the values on national and regional levels to see how large the gap exists. Thus, the author of the thesis will propose the adjustments for the adjusted misery index estimation, compare the results with the standard misery index values and create some recommendations for the further researcher’s estimation.

OBJECTIVE AND METHODOLOGY

The main aim of the thesis is to propose adjustments to the misery index and evaluate its value in Russia on national and district levels.

Firstly, the critical review will be conducted to analyze the Russian monetary system, how such values as inflation, GDP/GRP and unemployment rate are calculated. After that, author will determine if the role of external factors such as sanctions can impact these values. Then the crucial step is analyzing the importance if the district's specifics, proposing adjustments to the misery index and then the estimation of an adjusted misery index.

The author will analyze CPI structure and CPI value for food, non-food and services on national and district levels. To compare the CPI values among districts and investigate the gap between national and district values.

After that, the product analysis will be done by analyzing the tendencies of GDP and GRP changes in Russia. Furthermore, the GRP growth will be estimated for the ulterior calculations of the adjusted misery index.

Moreover, the unemployment analysis will be done to evaluate the districts with the highest and the lowest unemployment rate.

As a final step, the misery index calculation will be performed using two methods: standard and adjusted on national and district levels. Based on the proposed adjustment, author will calculate the values of the adjusted misery index on national and district level in Russia. Then, the results between the standard and adjusted values will be discussed and further recommendations for future estimation will be given.

The limitation of the research, which the author will face, will be discussed after the result of the misery indexes on different levels will be received and suggestions for future studies will be given.

I. THEORY

1 INDICATORS OF ECONOMIC STABILITY IN RUSSIA

This chapter will be focused on inflation, product, and unemployment in Russia as well as on external shocks on economic stability in Russia and the importance of district's specifics in the indicators of economic stability. The definition of each indicator (inflation, product, unemployment) will be discussed among with the methods of calculation which are used in Russia. As a final point of this chapter, the misery index will be described as a connection among the inflation, GDP, and unemployment rate. Moreover, the methods of calculating misery index will be identifies as a standard and adjusted one. Furthermore, the adjustments for the evaluation of the adjusted misery index will be proposed for subsequent calculation.

1.1 Inflation

This sub-chapter will be about the discussion of the methods of calculating CPI in Russia. As well as the connection between the inflation and money aggregates will be observed. As a final point, the foundation of the monetary policy and the role of CBR in the inflation regulation will be described.

1.1.1 Methods of calculating CPI

Consumer price indices are official statistical indicators that characterize the dynamics of prices for consumer goods and services. The traditional international methodology underlying the calculation of the CPI is based on the basic theory of the Laspeyres price index. The calculation methodology in the Russian Federation generally complies with international standards. However, in connection with the changing socio-economic conditions of the country's economic development, some adjustment of the methodology arose. In this regard, in 2015, a document was released that currently describes the "Official statistical methodology for organizing statistical observation of consumer prices for goods and services and calculating consumer price indices. (Paltseva, 2015, s.154-165)

CPI is calculated for the Russian Federation as a whole and for federal districts and regions of the Russian Federation. The CPI calculation methodology can be divided into the following steps (Documents of Rosstat, 2015):

- sample of settlements in which monitoring of consumer prices for goods and services is organized,

- selection of essential trade and service organizations in which prices and tariffs for goods and services are registered,
- selection of goods (services) -representatives,
- selection of goods with specific consumer properties,
- registration of prices and tariffs,
- formation of a system of weights for calculating average prices and indices,
- consumer prices for goods and services,
- calculation of consumer price indices for certain types and groups,
- goods and services, as well as the consolidated CPI for all goods and services,
- calculation of average prices (tariffs) for goods and services,
- preparation of pricing information for valuation,
- the consumer basket, on the basis of which the subsistence minimum is determined,
- calculation of the cost of various sets of consumer goods and services for interregional comparisons of the purchasing power of the population,
- checking the reliability of the information on consumer price levels.

The calculation of individual price indices (PRI) for a representative product is carried out at the level of the cities in which the registration of consumer prices is organized. At the first stage, the calculation of price changes (price quotations) is carried out, which is determined as the ratio of the price of a product (service) with specific consumer properties in the reporting period to price in the previous period:

$$i_{c,t/t-1} = \frac{p_{c,t}}{p_{c,t-1}} \quad (1)$$

where $i_{c,t/t-1}$ is the change in prices for goods (services) with specific consumer properties (c) in the reporting period (t) compared to the previous period (t-1); $p_{c,t}$– comparable price quotation in the reporting month; $p_{c,t-1}$– comparable price quote in the previous month. (Documents of Rosstat, 2015)

At the second stage, the CPI is determined for a particular type of product (service) representative as a simple geometric average of price changes at comparable price quotations:

$$I_{gj,t/t-1} = \sqrt[n]{i_{c1,t/t-1} * i_{c2,t/t-1} * \dots * i_{cn,t/t-1}} \quad (2)$$

where $I_{gj,t/t-1}$is the index of prices (tariffs) for the j-th representative product in the g-th city in the reporting month compared to the previous month; $i_{c1,t/t-1} * i_{c2,t/t-1} * \dots * i_{cn,t/t-1}$ – changes in prices for goods (services) with specific consumer properties registered in various trade organizations (services) of the city (price quotes); *n* is the number of price quotes. (Documents of Rosstat, 2015)

Since for calculating composite indices, it is necessary to bring their components to a comparable form, then when calculating the aggregate price index (APC) for certain types of goods (services) – representatives as a whole for the constituent entity of the Russian Federation, individual price indices for representative goods are used, and as the territorial weight is the proportion of the population.

$$I_{kj,t/t-1} = \frac{\sum_{g=1}^{m} d_{g\,0}\; p_{gi,t-1}\; i_{gj,t/t-1}}{\sum_{g=1}^{m} d_{g\,0}\; p_{g\,j,t-1}} \quad (3)$$

where $I_{kj,t/t-1}$ is the consolidated index of consumer prices and tariffs for a group of goods (services) in the k-th constituent entity of the Russian Federation in the reporting month compared to the previous month, i_{gj}– index of prices (tariffs) for the j-product-representative for the k-entity of the Russian Federation in the reporting month as compared to the previous month– consumer spending of the population for the purchase of the j-th product (service) – a representative of the population in the k-th constituent entity of the Russian Federation in the base period in the prices of the previous month; $p_{g\,j,t-1}$- average price (tariff) for the j-th product (service) -representative in the g-th city the previous month; $d_{g\,0}$ - the share of the g-th city in the total population of the r-th subject of the Russian Federation in the base period.

Based on the aggregate price indexes for certain types of goods and services in the constituent entity of the Russian Federation and the share of expenses for their purchase in the total consumer expenditures of households, a consolidated price index is determined for individual subgroups of goods and services by aggregated groups, as well as the CPI as a whole for the constituent entity of the Russian Federation. The CPI calculation for the previous month is carried out according to the modified formula of the Laspeyres index (the name “Laspeyres index” is used as a traditional label to indicate that it is a basis-weighted form):

$$I_k = \frac{\sum p_{kj,t-1}\, q_{kj_0}\ I_{kj}}{\sum p_{kj,t-1}\, q_{kj_0}} \quad (4)$$

where I_k is the consolidated index of consumer prices and tariffs for a group of goods (services) in the k-th constituent entity of the Russian Federation in the reporting month compared to the previous month; I_{kj} – index of prices (tariffs) for the j-product-representative for the k-entity of the Russian Federation in the reporting month as compared to the previous month; $p_{kj,\ t-1}\ q_{kj0}$ – consumer spending of the population for the purchase of the j-th product (service) – a representative of the population in the k-th constituent entity of the Russian Federation in the base period in the prices of the previous month. (Documents of Rosstat, 2015)

The Laspeyres Price Index compares of the aggregate prices weighted by the physical volumes of the reference period, or the arithmetic average of the price indices weighted by the value in the reference period.

Consumer prices are monitored in all constituent entities of the Russian Federation. The price information is collected in the capitals of republics, centres of territories, regions, autonomous regions, autonomous districts, cities of federal significance and selectively – in regional centres (cities, urban-type settlements, after this referred to as "cities"), selected considering their representativeness in reflection socio-economic and geographical location of the regions and the degree of saturation of the consumer market with goods and services. By the current methodology, the consumer price index for goods and services is constructed for the urban population. (Official methodology, Rosstat, 2014, s. 40)

The selection of cities for monitoring prices in the constituent entities of the Russian Federation is carried out in accordance with the following criteria:

- the total number of surveyed settlements in the subject of the Russian Federation, as a rule, should be within 2-4 cities,

- cities selected for price monitoring should reflect the geographic characteristics of the region and be located in different parts of it,

- the sample should not include cities located close to to each other and from the territorial centre, if the levels and dynamics of prices in these cities are not fundamentally different,

- cities selected for monitoring prices should be characterized by the presence of a stable filling of the consumer market with goods and services included in the list adopted for monthly monitoring,

- the population of the cities selected for monthly monitoring of prices, in total, must be at least 35% of the urban population of the constituent entity of the Russian Federation.

Based on the developed criteria, a list of settlements is formed (a total of 266 settlements), in which information is collected on the level of prices and tariffs for goods and services. Registration of prices and tariffs is carried out:

- monthly – according to the complete list of goods (services) – representatives from the 23rd to the 25th day of the reporting month. For goods and services, prices (tariffs) for which are not subject to sharp changes, prices can be registered one or two days earlier than the established time.

- weekly – for a limited range of goods and services-representatives, determined by the relevant regulations within the time frame established by these documents. (Official methodology, Rosstat, 2014, s. 10)

1.1.2 The connection between inflation and monetary aggregates

Today many countries, as intermediate targets of national monetary politicians, use a policy of regulating monetary aggregates. Therefore, the relationship between inflation and the velocity of circulation of monetary aggregates becomes of great importance in connection with the need to achieve material and financial balance in the Russian economy. (Logvinenko, 2010, s. 5)

According to Keynes, the fact of increase in the velocity of money circulation indicates the period of transition from the stage of moderate inflation to real inflation. The criterion for "moderate inflation" is a rise in prices below the level of interest rates. It creates conditions for economic development. A sign of actual inflation, the price index is outpacing the increase in interest rates, which means depreciation of loans. Money and "consumption" of fixed capital. The main reason for the acceleration of turnover money Keynes considered the flight from money caused by their inflationary depreciation.

Based on this fact, in countries where the speed of M2 circulation, the higher the inflation can be seen. Whereas, in countries where the inflation is relatively low, the speed of the M2 aggregate circulation will be as well not so high.

Money supply growth rates directly affect the value of the rate of turnover of money. Since the main focus of the Bank of Russia is on the growth rates of aggregates M0 and M2, then the dynamics of the rate of their turnover should also be considered: (Logvinenko, 2010, s. 5)

$$V0 = \frac{GDP}{M0} \quad (5)$$

Where V0 – is a cash turnover rate, GDP is a gross domestic product (in national currency), and M0 – cash in circulation outside the banking system (in national currency).

$$V1 = \frac{GDP}{M2} \quad (6)$$

Where V1 – is a cash and non-cash turnover rate (aggregate indicator), GDP is a gross domestic product (in national currency), and M0 – the volume of cash in circulation (outside banks) and balances in national currency on the accounts of non-financial organizations, financial (except credit) organizations and individuals who are residents of the Russian Federation (in national currency).

Nowadays, in the economies of different countries, the central bank affects inflation, by direct regulating the volume of the money supply, and changing the size of the discount rate. To curb demand inflation, the central bank raises the refinancing rate. At the same time, on the one hand, there is a reduction in the scale of refinancing, and as a result – the growth rate of the monetary base in the economy. On the other hand, the rise in the cost of loans leads to a decrease in the velocity of money circulation and a reduction in the size of the money multiplier. Thus, the ultimate goal of increasing the refinancing rate is to reduce the broad money supply. (Malkina, 2015, s. 274-280)

Malkina (2015, s. 274-280), in her research, found the connection between inflation and monetary supply. The study showed a direct link between the growth of the average quarterly money supply and the development.

Based on this fact, it is crucial at the time of estimation inflation by CPI and pay attention and analyze the monetary aggregates, especially M2, their structure, changes and tendencies, and inflation analysis.

1.1.3 The foundation of Russian monetary policy and the role of CBR in the inflation regulation

Ovchinnikova (2015, s. 36-42) separates the evolution of the Russian monetary system into five different periods. The first period is from 1990 to 1994 – emission period. The second one is the period of relative stabilization – from 1995 till August 1998. The third period (august 1998 – 2008) can be called a recovering period. From 2009 till August 2014 was a period of financial stabilization. And after that, till nowadays, the crisis period is operating.

Research of (Vukovich and Suleymanova, 2012, s. 23-26) identifies a monetary policy as a set of connected measures, on the one hand, determining the change in money supply and, on the other hand, including credit policy – with the aim at regulating the volume of loans, level of interest rates and other indicators of the capital loan market. Based on their research, the main objective of Russian monetary policy is to achieve macroeconomic stabilization in the long run. Private goals of this policy are primary associated with a stable increase of the money supply in the circulation, the equilibrium of the banking interest rate and the weakening of inflation processes.

(Federal Law "About Central Bank of the Russian Federation" – Bank of Russia dated on 10.02.2002) establishes the CBR as the primary regulator of the monetary system in Russia. This official document also includes the main principles of monetary policy. In order to achieve the inflation target, the Bank of Russia implements monetary policy within the inflation targeting regime. The consistency, predictability and transparency of the central bank's actions are crucial in pursuing an economic policy. Therefore, the Bank of Russia's monetary policy is based on a range of principles, such as:

- CBR sets a permanent public quantitative inflation target – for households, businesses and financial market participants to consider this fact during their activities and decision-making process. The inflation target is set for the annual growth rate of CPI. In this case the target inflation is set to approximately 4% annually permanently. (In the case, of a significant deviation of inflation from the target, the Bank of Russia assesses the reasons for and the duration of the variation in order to make appropriate decisions on monetary policy measures that would help bring inflation back to the target)
- The inflation targeting regime involves a floating exchange rate determined by supply and demand in the currency market – under the floating exchange rate regime, CBR carries out no interventions on the domestic foreign exchange market to maintain any specific exchange rate or the pace of its movements. However, CBR may conduct foreign currency transactions in the domestic market in case of a threat to financial stability.
- The key rate is the main instrument of the CBR's monetary policy – by changing the key rate, the CBR influences the movement of interest rates in the economy, which in turn impacts domestic demand and inflation.
- The CBR makes its monetary policy decisions based on the macroeconomic forecast, which is caused due to analysis of a wide range of data – during the formulation of

assumptions for the macroeconomic forecast, CBR uses a conservative way focusing on inflationary factors and risks.

- CBR follows the principle of monetary policy transparency to enhance the understanding and trust of monetary policy to all economic agents – the main aim of this principle is to fully inform about purposes, principles, measures and results of Russian monetary policy. (Federal Law "About Central Bank of the Russian Federation", 2002)

Besides the listed principles, CBR also uses special instruments to regulate the Russian monetary system, such as:

- Interest rates of CBR operations
- Mandatory reserve requirements
- Operations on the open market
- Refinancing of credit institutions
- Foreign exchange intervention
- Settings benchmarks for the growth of money supply
- Direct quantitate restrictions
- Issue of bonds on its own behalf
- Other instruments determined by the CBR (Federal Law "About Central Bank of the Russian Federation", 2002)

As it was mentioned earlier, CBR uses the targeting inflation method to keep the inflation rate mainly on the same level (Apr. 4%). The main instrument which CVR uses is the changing of interest rate. In this case, interest rate is the central bank's rate for the loans to commercial banks and deposits.

CBR board of directors determines the key rate level 8 times a year: at four central meetings held once a quarter and at four intermediate meetings held between the main ones. As a result of each meeting, a press release on the key rate is published and the Chairman of CBR speaks at a press conference with comments on decisions made and answers the questions from journalists. Usually, on the 6th working day after the main meeting, CBR also publishes its monetary policy report.

To sum it up, the central bank of Russia plays the most crucial role in the regulation of the Russian Monetary system. Article 75 of the Constitution of the Russian Federation establishes a special constitutional and legal status of the Central Bank of the Russian Federation, defines its exclusive right to issue money and, as the main function, protect and ensure the stability of the ruble. The status, goals of activity, functions and powers of the

Bank of Russia are also determined by the Federal Law of July 10, 2002, No. 86-FZ "On the Central Bank of the Russian Federation (Bank of Russia)" and other federal laws.

Speaking about the board of directors of CBR, it is a collegial governing body of the Bank of Russia, which includes the Chairman of the Bank of Russia and 14 members of the Board of Directors who work permanently at the Bank of Russia. Members of the Board of Directors are appointed by the State Duma for a term of five years on the proposal of the Chairman of the Bank of Russia, agreed with the President of the Russian Federation. At the current moment, the governor of the Bank of Russia is Elvira Nabiullina.

1.2 Product

This sub-chapter will focus on methods of calculating GDP and GRP in Russia. Moreover, the difference between the methods will be discussed and the importance od estimating GRP will be determined.

1.2.1 Methods of calculating GDP and GRP in Russia

Based on the official methodology of the Russian statistical institute, GRP or Gross Regional Product can be defined as a general indicator of the economic activity of the region, characterizing the process of production of goods and services for the final use. At the same time, GRP is the gross value added created by residents of the region and is defined as the difference between output and intermediate consumption. GRP is calculated at current basic prices and in constant prices. Basic prices include the production prices of a given industry, the value of subsidies on products, but do not include taxes on products. (Rosstat, 2019)

GDP is an essential part of the system of national accounts. Gross Domestic product characterizes the final result of the production activity of resident economic units, which is measured by the value of goods and services produced by these units for last use. The GDP can be calculated by three methods corresponding to different stages of reproduction – production method, method of using income and method of forming GDP by sources of revenue. (Rosstat, 2019)

The production-based method of calculating GDP is obtained as a sum of the gross value added of all industries or institutional sectors at basic prices added by net taxes on products. Using income can be identified as a sum of expenditures of all institutional sectors on final consumption, gross capital formation and net exports. The method of forming GDP by sources of income consists of wages of employees (residents and non-residents), gross profit of all industries or institutional sectors, and net taxes on production and imports. (This

method is not independent, since, based on adopted methodology, not all income indicators are obtained by direct account, some of them are calculated by using the balance method) (Rosstat, 2019)

Russian Government established a particular document which is called "Procedure for development and representation of GDP's data". This document defines the general rules of providing information by Rosstat about GDP, deadlines for submission of data. According to this document, GDP is formed using the official methodology, which is based on the conception of the system of national accounts.

The annual GDP estimation is considered the main one. In the yearly assessments, seasonality factors are smoothed out. Quarterly estimation of GDP is carried out in order to monitor intra-annual dynamics based on current statistical information and sample surveys. Quarterly GDP values are revised after obtaining more detailed annual data when constructing national yearly accounts. (Rosstat, 2019)

Zaitseva (2012, s. 86-103) stands that methodological principles of estimation GDP and GRP are mostly similar. Still there are some differences that impact on the fact that the sum of GRP is not equal to GDP, and every year, this amount became lower.

According to Rosstat, the main reason for such differences is the open nature of regions in Russia, making it difficult to clearly define the boundaries of production and evaluate the right amount of added value created in the economic territory of the region. In addition, accounting for added value at the regional level complicates the widespread construction of corporations on the principles of vertical or horizontal integration, which has become widespread in recent years. Furthermore, the current rules and procedures for accounting do not allow assessing the output and production costs for each of the production units included in the integrated corporation, due to which the assessment of value-added for these units is rather conditional. As a result, in the regions where the head offices of the integrated corporation are located, the added value is somewhat overestimated, while in the regions where the individual divisions of these companies are located, the added value, on the contrary, is underestimated.

Certain types of economic transactions, due to their specificity, are not subject to regional accounting, but are taken into account only for the country as a whole and are included in the estimates of Russia's GDP, which is one of the features of the methodology for calculating regional indicators of the system of national accounts. So, when calculating GRP, the added value created as a result of multi-regional activities is not considered. This mainly concerns the production of collective consumption services, in particular, activities

in the field of the country's defence, part of public administration services and some other services provided to society as a whole at the expense of the federal budget. The activity of financial intermediaries, which is rarely limited to the framework of individual regions, is also not taken into account. (Rosstat, 2019)

It is essential to mention that both indicators – either GDP or GRP are significant for evaluating the Russian economy. Since these indicators have almost the same methodology for their estimation, they are not equal to each other and should be used independently. Due to the fact, that Russia has a vast territory, analysis of the only GDP will not show an accurate picture. In this case, it is imperative to pay attention to GRP, which shows the situation in the region, to understand the primary trend and the nature of possible issues.

GDP can be calculated by three methods corresponding to different production stages – production, the method of using income and the method of forming GDP by sources of income.

GDP, which is calculated on a production basis, is the sum of the gross value added of all industries or institutional sectors at basic prices and net taxes on products. GDP calculated by the use of income method characterizes the sum of expenditures of all institutional sectors on final consumption, gross capital formation and net exports.

GDP, calculated by the income source method, consists of wages of employees (residents and non-residents), gross profit of all industries or institutional sectors, and net taxes on production and imports. This method is not independent, since by the adopted methodology, not all income indicators can be estimated based on statistical information received from respondents; some of them are calculated using the balance method. (Rosstat, 2008)

1.3 Unemployment

This sub-chapter will be about methods of calculating unemployment rate in Russia. Moreover, the difference in values of unemployment rate in Russia on national and district level will be discussed. Furthermore, the problem of high unemployment rate will be raised and the reason behind that in some district will be observed.

1.3.1 Methods of calculating unemployment rate in Russia

According to Russian law, the unemployment rate is the ratio of the number of unemployed in a particular age group to the number of the labor force (employed and unemployed) of the corresponding age group, calculated in per cent.

Data about the number of the labor force, employed and unemployed were obtained from the materials of sample labor force surveys conducted by the statistical authorities of the Russian Federation, with subsequent dissemination of the results to the entire population of the surveyed age. The survey has been undertaken in Russia since 1992. 1992-1994, 1997, 1998 it was held once a year as of the last week of October 1995. 2 surveys were carried out – for the last week of March and October, in 1996 – as of the last week of March, since 1999 to August 2009 the survey was carried out at quarterly intervals. Since September 2009 survey translated for a monthly frequency. (Rosstat, 2019)

Klimova (2014, s. 112-116) wrote that according to Russian law, an unemployed person is considered when three conditions are met. The first one – the person does not have a job and any income, the second one – registered in a special governmental institute that helps search the job, the third one – the person is searching for work and ready to start soon. This statement considers being right because these 3 points are the main in estimating the number of unemployed people in Russia.

Regarding the methodology of estimation unemployment rate in Russia, Kapelushnikov (2002, s. 48) wrote that in Russia use four methods of estimation: 1) based on the results of population censuses or regular sample surveys of the labor force; 2) based on official estimates, which are calculated by the state statistics authorities by combining data from various available sources; 3) on registrations with employment services; 4) by the number of persons receiving unemployment insurance benefits.

Nikitina (2013, s. 102-104) wrote that the unemployment rate is a big problem in the Russian economy. She also raised the problem of women's unemployment in Russia and the unemployment of recent graduates.

Efimova (2015, s.14-22) found out that the level of employed people is higher in big cities, especially in Moscow and Saint-Petersburg and in Russia's central part. However, she wrote that quite a high level of unemployment can be seen in the regions which are located far away or geographically not in a suitable place. This opinion can't be refuted since geographical location plays a critical role in Russia. Because of the area, in some regions, the situation can be worse than in others. This problem will be detailly described in the next paragraph. In Figure 1, the case can be more clearly seen.

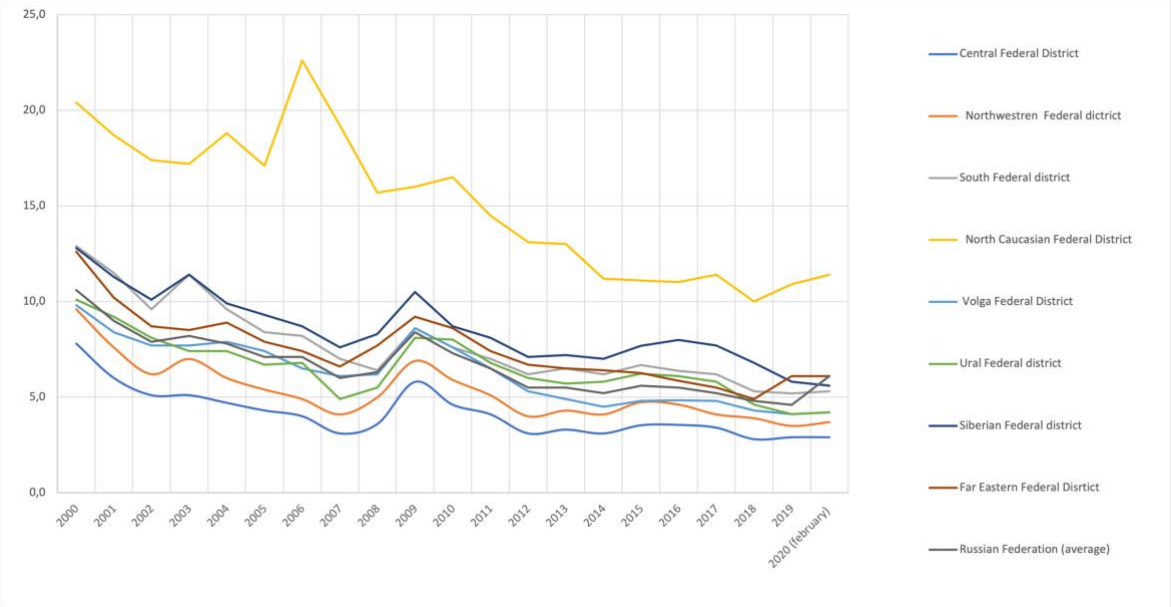

Figure 1: The unemployment rate in Russian in different districts from 2000 to 2020

Source: Rosstat

Based on figure 1, it can be seen that Efimova (2015, s.14-22) was right about the unemployment situation. The district that is much more below the average level is the Central Federal District, which is the most attractive because of its geographical location because it borders Europe and Scandinavian countries. Also, this district includes the biggest cities such as Moscow and Saint-Petersburg, so there is no doubt that level of employment is quite high and there is no problem with unemployment. Whereases the situation with the North-Caucasian Federal District is the opposite compared to the Central Federal District and the average.

In the research of Sypchenko (2018, s.16-19), she considers the unemployment problem in the North-Caucasian Federal district. Despite the fact that situation in the district has been becoming better during the years due to the different social programs which the government performed, there are still some problems to solve. Sypchenko (2018, s.16-19) mentioned high unemployment rate, insufficient material security, low level of employment and quality of life of the population, which is a prominent factor in the emergence of a tense situation in the region and an increase in the level of manifestation extremism and terrorism.

To overcome these ussies, the government should pay attention industry-specific for the North Caucasus: agriculture, tourism and services, mining, oil refining petrochemical, fuel and energy industries, not fully developed. More efficient development of these industries will significantly reduce unemployment and provide employment, thereby increasing the standard of living of the population of the North Caucasus, which will ensure

a more stable development of socially economic sphere of the region. (Sypchenko, 2018, s.16-19)

The problem of the geographical location of the region and the possible impact due to this fact, as well as the external shocks on economic stability indicators will be considered in the next paragraphs.

1.4 External shocks on economic stability indicators in Russia

This sub-chapter will focus on discussion of the external shocks on economic stability mainly on the sanction impact. The waves of sanctions will be analyzed as well as the annual main news which had an influence on the decision for sanction's implementation. Moreover, the connection between the change in inflation and unemployment rate, and the sanctions implementation will be established.

1.1.4 External shocks on economic stability indicators in Russia: impact on sanctions

There are few factors in Russia that usually make a significant impact on changes in inflation, GDP and unemployment rate. Based on the fact that these values are strongly connected with each other, and the change of one will make the other values change as well. In Russia, the first value to change because of external factors is inflation. After the inflation change, it is making a big impact on GDP results and the unemployment rate.

Based on the news and analytics, there are a few factors that can influence inflation:

- Changes in Brent price
- Changes in currency pair USD/RUB
- Sanctions
- Political situation
- Coronavirus.

Usually, it is like a dominoes; when one wall falls, the others will have to fall too. When the sanctions apply or big political news happens, the expectations are changing, which have a direct impact on brent price change. Based on the fact that the brent price is in the U.S. dollar, moreover, the brent is one of the key drivers of the Russian economy in terms of export – the change in currency pair USD/RUB applies. Usually, this change is negative in relation to rubble, as a result, the value of the national Russian currency decrease. After the drop of rubble's value, the prices will be increased, which will make the inflation grow

as well. The increase in inflation will make the situation harder for the economy and might decrease the GDP value and increase the unemployment rate. The last one will rise because of the inflation; companies will have many, cost and as a result, they will have to decrease the number of employees.

One of the good examples of the change in all values (Inflation, GDP, unemployment rate) can be the situation that happened in 2014. As a result, 2015 marked the beginning of a difficult adaptation of the Russian economy to the impact of economic sanctions imposed in July 2014 and the fall at world oil prices at the end of 2014. This double shock led to a sharp decline in national income, as well as a drop in consumer and investment demand, as a result of which Russia's real GDP contracted by 3.7% in 2015. (Rosstat, 2016)

After a short rally at the beginning of 2015 in August there was another drop in world oil prices, as a result, the expected recovery in economic growth was postponed. The persistence of low oil prices triggered a serious devaluation of the ruble, but a flexible exchange rate policy contributed to a sharp decline in imports and allowed to preserve the foreign exchange reserves of the Bank of Russia and limit the negative impact of low oil prices on budget revenues.

However, this led to rising inflation to double digits, undermining purchasing power households and caused a rapid drop in consumption amid a sharp decline in real wages. A decline in real incomes, along with an increase in prices for food, led to a significant increase in poverty in 2015. (RBC, 2020)

In figure 2, the changes in inflation and unemployment rate can be seen in connection with the time when sanctions against Russia were implemented.

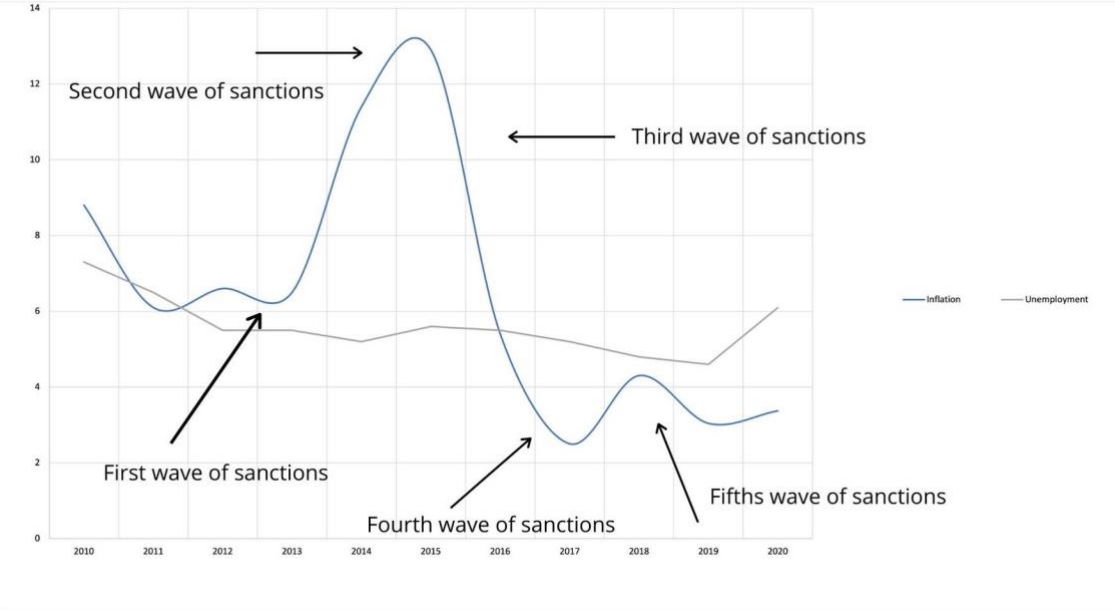

Figure 2: Connection between changes in inflation and unemployment rate in Russia and the implementation of sanctions against Russia (2010-2020)

Source: Rosstat and author's analysis

Based the figure 2 it is clearly seen how strongly the sanctions are connected with the change in inflation and unemployment rate. The inflation rate was more affected in comparison to the change in the unemployment rate. Nevertheless, the unemployment rate was also affected, but sanctions in the same direction as an inflation rate.

Nowadays, already seven years past from the first sanctions which were implemented against Russia. In the table 1 the year of sanctions and their description can be seen.

Table 1 – Sanctions which were implemented against Russia for the last 7 years

Year of the sanctions	**Description of the sanctions**
2013	Large-scale sanctions against Russia began to be imposed in April 2013 following the death of Russian auditor Sergei Magnitsky. In the West, they believe that his death in 2009 is connected with the exposure of corruption schemes for tax refunds, in which Russian officials and security officials could be involved. The "Magnitsky Act", initially directed against persons who, in the opinion of the

Year of the sanctions	Description of the sanctions
	American authorities, could be involved in the death of the auditor, later began to act against those responsible for violations of human rights and the principle of the rule of law both in Russia and around the world.
2014	The most ambitious sanctions are related to the annexation of Crimea to Russia and the events in the east of Ukraine. In the "Crimean" sanctions, the persons on the list are necessarily somehow connected with the "annexation and / or integration of Crimea"
2015	The cyber-attacks were sanctioned by Trump's predecessor, Barack Obama, on April 1, 2015. They allow the US Department of the Treasury to block any assets in the country of persons suspected of committing cyberattacks
2017	On August 2, 2017, US President Donald Trump signed into law the Federal Countering America's Adversaries Through Sanctions Act (CAATSA). It imposes additional restrictions on Iran, North Korea and Russia.
2018	On August 27, 2018, sanctions came into force that do not directly affect individuals or legal entities. They are connected with the poisoning of ex-GRU colonel Sergei Skripal and his daughter Yulia in British Salisbury. The export to Russia of goods and technologies that are controlled by

Year of the sanctions	Description of the sanctions
	American regulators according to the "National Security" criterion (for example, avionics, underwater vehicles, some gas turbines, calibration equipment, etc.) was banned. The exclusion included goods and technologies necessary to ensure the safety of civil passenger aviation. In January 2019, the EU introduced the first sanctions against individuals involved in the Skripal poisoning.

Source: RBC and author's analysis

All these sanctions made a huge impact on the rate of currency pair USD/RUB and EUR/RUB. On figure 3 the change in the exchange rate of the U.S. dollar and EUR for the period of sanctions can be seen.

Figure 3: Change in exchange rate of U.S. dollar and EUR in relation to rubble in Russia (2013-2021)

Source: RBC analysis based on Bloomberg data and CBR data

Based on figure 3, it can be clearly seen that during these 7 years of sanctions in Russia, the exchange rate significantly increased for U.S. dollar – by 139,66% and for EUR – 121,85%. Moreover, these factors had a huge impact on prices and, as a result as well on wages, unemployment, and the life-level of the population.

In the table 2 the changes in exchange rate of USD, EUR as well as the change in price Brent can be seen.

Table 2 – The changes in exchange rate of USD, EUR and Brent price from 2013 to the first quarter of 2021 in Russia

Year	USD change, %	EUR change, %	Brent price change, %
2013	+7,65%	+12,96%	-3,96%
2014	+54,66%	+36,27%	-47,55%
2015	+35,72%	+16,65%	-33,92%
2016	-25,07%	-19,87%	+52,66%
2017	-3,82%	+9,13%	+17,69%
2018	+18,4%	+9,97%	-15,12%
2019	-10,88%	-9,8%	+22,7%
2020	+19,33%	+30,7%	-21,52%
2021	+0,2%	-1,48%	+21,04%

Source: RBC

In 2021 mostly the government election in USA and sanctions because of Navalny against Russia made an impact on the exchange rate. Based on the table 13, it is clearly seen the strong connection between the exchange rate of USD and brent price. That proves the fact that the change in brent price is making the significant change in the value of rubble and as a result can rise or low the inflation.

To sum it up, the sanctions which were established against Russia during the last 7 years made a significant impact on changes in value such as inflation, GDP and unemployment rate. The most sensitive indicator in terms if these changes was inflation, after that, other changes had appeared as a result.

1.5 The importance of district's specifics in the indicators of economic stability

In this sub-chapter the importance of district's specific in the indicators of economic stability will be discussed. Moreover, the size and the location of each Federal district in Russia will be analyzed. After that, the amount of population in each federal district will be

observed. After that, the main problems of each district will be raised and discussed along with the potential impact on the indicators of economic stability.

1.1.5 The importance of district's specific in the indicators of economic stability: geographical location

There are 8 Federal districts in Russia: Central Federal district, Northwestern Federal district, South Federal district, North-Caucasian Federal district, Volga Federal district, Ural Federal district, Siberian Federal district, Far-Eastern Federal district. These districts include 173 cities, 146 million and 238 thousand people who are living there.

According to statistics, based on the square of each Federal District, the biggest one is the Far Eastern Federal District, which includes 41% of the whole Russian territory. The second one is the Siberian Federal District, with 25% of the entire territory. Then with 11% and 10% of the Russian territory are Ural Federal district and Northwestern Federal District. The rest are rather more minor in comparison – Volga Federal District, Central Federal District, South Federal District and North Caucasian Federal District. (Figure 4)

Despite this fact, most people live in Central Federal District and Volga Federal District – 27% and 20% of the Russian population. The most sparsely inhabited district is Far Eastern Federal district, which at same time is the biggest based on the square statistics. (Figure 5) The reason behind it is the geographical location of this region. (Rosstat, 2019)

Considering the problems in each Federal District worth to be done separately by going into details to see the whole nature of the problem.

Starting with Central Federal District, there are several problems of this area to discuss: the main problem for the Central Federal District is a sharp acceleration in the introduction of the results of scientific and engineering activities into the world economy and everyday life of the population, primarily in the field of information and communication technologies, pharmaceuticals, bio- and nanotechnology, energy and automotive industry. At present, the contribution of Russia and the region to this process is mainly associated with the use of borrowed technologies and the use of the final results as users. (Nogan, 2018, s. 152-163)

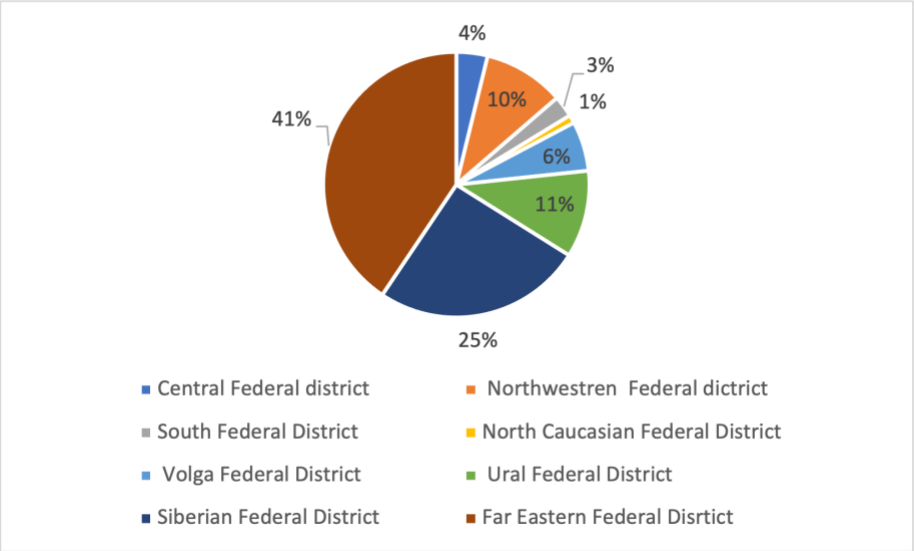

Figure 4: Classification of Russian Federal Districts by square from the whole territory in % (2021 year)

Source: Rosstat

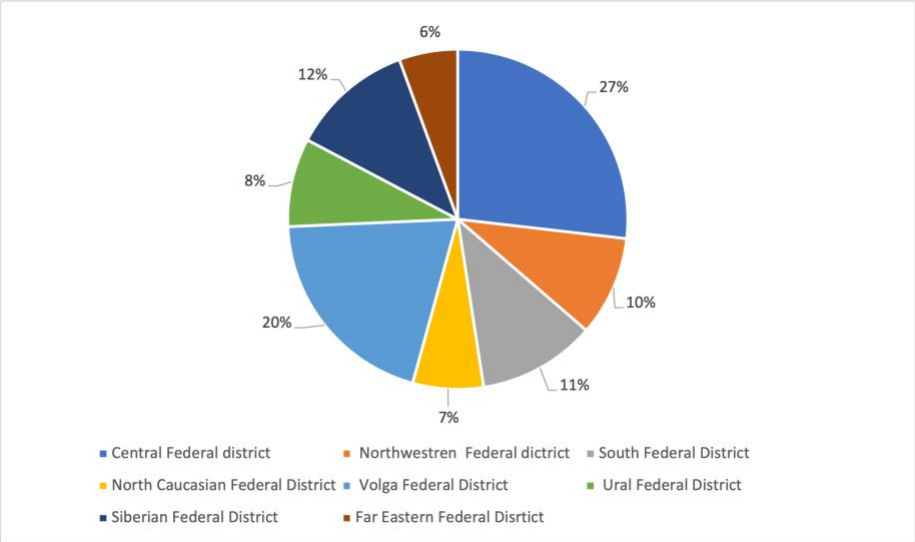

Figure 5: Classification of Russian Federal Districts by population from the whole territory in % (2021 year)

Source: Rosstat

Based on the order of the Government of Russian Federation N1540-r, the vital internal threats of the Central Federal District are:

- settlement mainly of the Moscow region and large centres, the emergence of territorial differentiation
- population decline, long-term crisis demographic processes
- lack of qualified personnel

- a sharp differentiation of life in cities and rural areas, the formation of dying out unpromising villages and regions,

According to fact, in Central Federal District live 27% of Russian population which is maximum among other districts, it is clearly seen that there is a significant migration of people from other districts who want to achieve more goals. Since the capital – Moscow, is located in Central Federal District, a lot of people are moving there to have more possibilities which makes the situation harder in terms of balanced allocation of the labor force through the country.

Considering the problems of South Federal district, Nogan (2018, s. 152-163) states that the most crucial issue is the migration of the rural population in this district. In her research she shows that the larger the share of rural population gets, the larger the percentage of unemployed rural residents is. Therefore, it can be considered as a big problem in Russia's agricultural regions. Because of this, the key strategic goal of the government should be to boost employment and efficiently regulate the labor market in rural areas, which is supposed to change the direction of internal labor migration.

Chechenov (2006) thinks that industrial dynamics in the South Federal district are determined by four key industries – food industry, electric power industry, mechanical engineering and fuel industry. Based on this fact, there is a considerable potential for building up labor possibilities in this district and decreasing the internal migration by keeping qualified employees. This strategy would also reduce the level of unemployment in this district, which is higher than Russia's average unemployment rate.

Speaking about Volga Federal District, Lapin (2013, s.21-28) did a SWOT analysis of this district and found out the main problems:

- unfavourable demographic situation
- the low share of small business in the gross regional product
- insufficiency and high cost of energy resources
- capital outflow to resource regions

Despite this fact, this region has a desirable location for its development since it has a border with Kazakhstan. Moreover, it has all possibilities to create new work placements for people and improve their qualification.

Siberian Federal District is the second largest district in Russia and one of the richest districts that contains economically developed Russian Federation regions. Siberia is considered to be the "storeroom" of Russia due to its rich natural resources. But its main

resources (oil and gas) now belong to the Ural Federal District, which includes the Tyumen Region. In terms of economic potential, the entire Siberian Federal District is weaker than the Tyumen Region (with autonomous okrugs), which produces more than 13% of the total gross regional product (GRP) of Russian regions, while the SFD accounts for less than 12% of the total GRP, which is less than its share in the country's population. (Kosmina, 2019)

Despite the fact, that this region has a vast potential to grow and has all possibilities to reach the goals of development, the unemployment rate there is higher comparing the average unemployment rate in Russia.

Speaking about Northwestern Federal District, Hodachek (2012, s. 241-243) prioritizes the problems of:

- Exclave position of the Kaliningrad region of the Northwestern Federal District
- High mortality and reduced life expectancy
- Low fertility
- The migration inflow does not compensate for the natural population decline
- Outstripping inflation growth
- The central part of the population's expenditures is for current consumption (food)

North Caucasian District is the district with the highest unemployment rate in Russia (Fig. 1). Despite this fact, there are more problems in this district which can be considered such as terrorist threat, low incomes of the population, low level of education, lack of qualified employees. Litvinova (2019, s. 4) states that the North Caucasian district is an area with a complex ethnic and confessional composition; since the collapse of the USSR, it has become a border. The processes of social transformation, ethnopolitical and territorial conflicts that engulfed this territory in the 1990s were complemented by the difficulties of economic recovery in the new economic conditions. Its foundations were undermined. Now several republics of the North Caucasus are usually recognized as depressive; many regions need subsidies from the federal budget.

Ural Federal District has another issue that is mainly connected with ecology. Based on the location of the district, one of the most leading industry in this area is manufacturing which has a massive impact on the life level of the people living there. (Litvinova, 2019 s. 2)

Regarding the Far Eastern Federal District, one of the most important problem is migration since people do not see the opportunities to grow and the chose to change the place of living. Because of the geographical location, far eastern federal district is one of the most

problematic. Harsh climate, lack of work placements, high prices of products, low transport accessibility are the main problems which motivate people to leave their place instead of staying there to improve the situation. (Chemodin, 2018, s. 24-30)

Considering the average wage in every district, it can be seen that the highest one is in Central Federal District which proves the reason why people are motivated to move there and try their possibilities. (Fig. 6). Almost the same wage level can also be seen in the Far Eastern District – the main reason for such wage level is to fulfill people's needs since the price level is higher than in Central Federal District. (Rosstat, 2019)

The gap between the highest wages and lowest ones among district is quite high. High inequality has other negatives too, such as lowering social mobility and, in education, reducing people's opportunities to learn. (Keeley, 2015, s. 14-15)

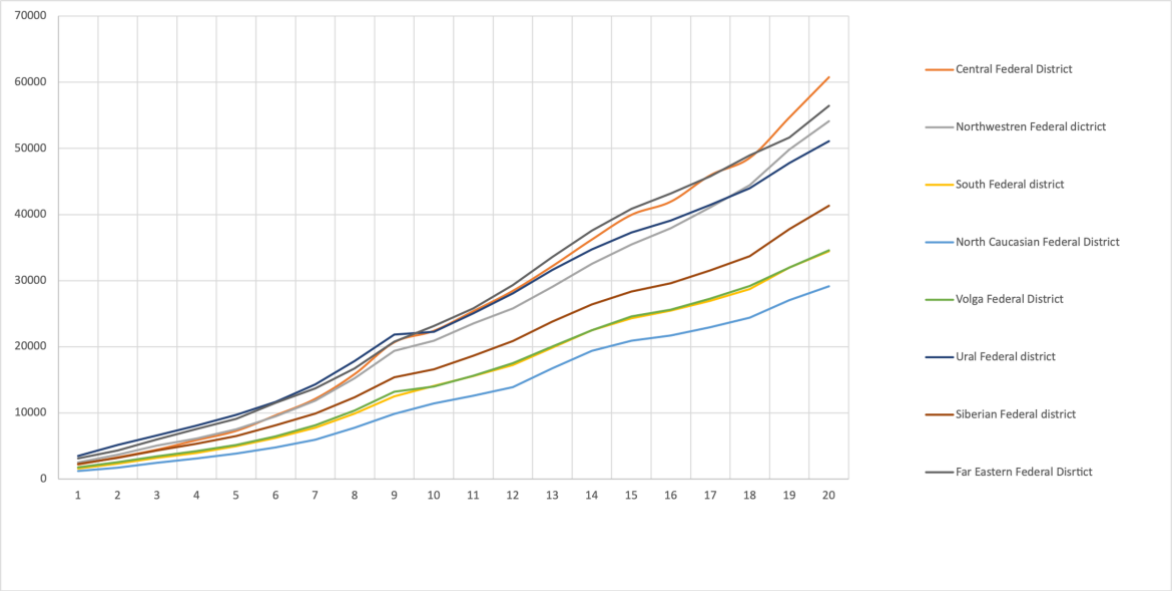

Figure 6: Average wage in districts of Russia from 2000 till 2019 in Rub

Source: Rosstat

Looking into statistics, the biggest cities of Russia are Moscow, Saint-Petersburg, Novosibirsk, Ekaterinburg and Kazan. (Fig. 7) By summing the population of Moscow and Saint-Petersburg, the result will be approximately 17 mils. people that is almost 11% of the whole Russian population.

After consideration of different issues of districts, to sum it up, the table was created, which is characterizing the main problem of each Federal District in Russia. (Table 3)

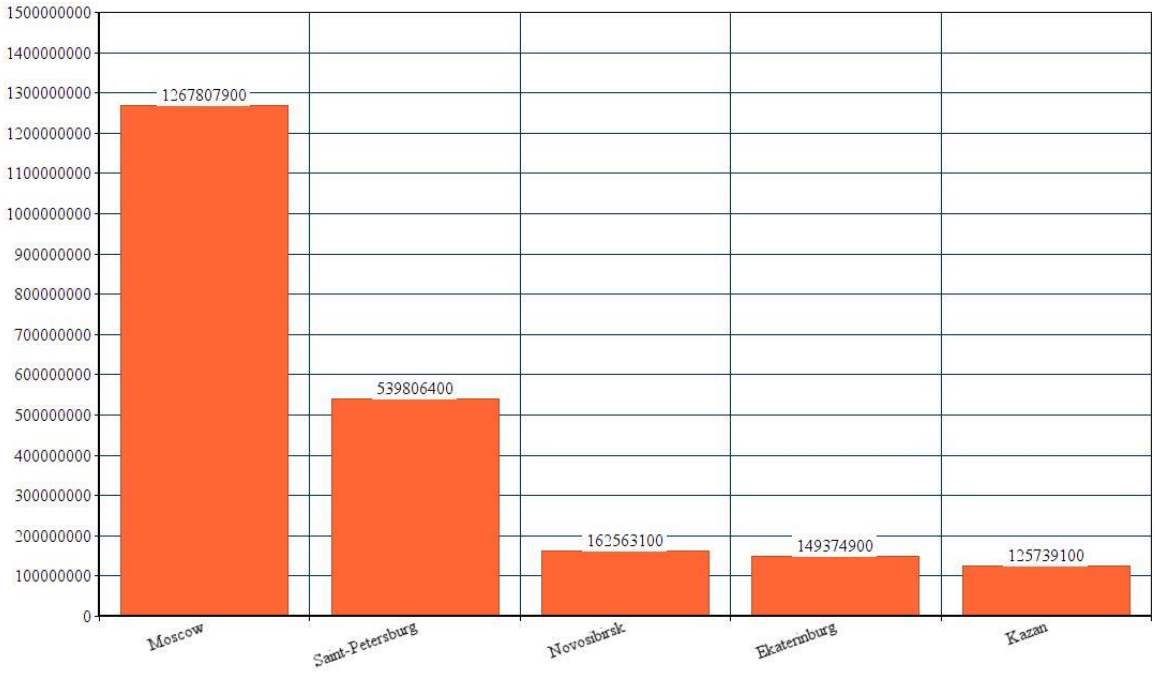

Figure 7: Population of the 5 biggest cities in Russia (2020)

Source: Rosstat

Table 3 The main problem of each Federal District in Russia

Name of the Federal District	**The main problem**
Central Federal District	The main resources as well as labor force is located in Moscow that creates the problem of not balanced distribution
South Federal District	Migration of rural population, but since of the most important area in district is agriculture, it can slow the process of growth
Volga Federal District	Capital outflow to resource regions which as well slow the potential growth of the district

Name of the Federal District	The main problem
Siberian Federal District	Despite the fact, that the region is full of resources and very reach environmentally to achieve certain results, the unemployment rate is higher than the average one in Russia
Northwestern Federal District	The migration inflow does not compensate for the natural population decline
North Caucasian District	Highest unemployment rate in Russia, as well as a low level of income and education
Ural Federal District	Ecological issue because of the number of factories on the territory
Far Eastern Federal District	High level of migration

Source: Author's analysis

There are also common issues that connect districts among each other, such as high level of migration. The main part of the population's expenditures is for current consumption (food), outstripping inflation growth.

1.6 The connection among inflation, unemployment rate and GDP: Misery index

This sub-chapter will be about the discussion of the definition of the Misery index and how it was created by different authors. After that, the methods of calculating the misery index will be observed using the standard and adjusted way. Furthermore, the adjustments will be proposed for the estimation of the adjusted misery index in order to take into consideration Russian specifics.

1.6.1 The identification of the Misery index

The welfare function over inflation and unemployment (loss function) has now become a standard tool in macroeconomic textbooks (Blanchard and Fischer, 1989; Persson and Tabellini, 1990). The particular specifications for the loss function differ in terms of functional form and the weights attached to the two components. An especially simple

version is the so-called "misery index", which specifies the loss as the unweighted sum of the annual inflation and unemployment rate. (Weilsch, 2007)

The misery index was invented by economist Arthur Okun in early 1970s, when the United States began experiencing a combination of both increasing unemployment and increasing inflation. Because both inflation and unemployment impose significant costs, the index was suggested by Okun as a means of providing a simple yet objective measure of "economic malaise". A higher level of either of these variables has adverse effects on national welfare. Therefore, the misery index can be considered a reverse economic well-being measure (Nessen, 2008).

The first approach of calculating the misery index as a standard one was based on the simple formula as a sum of current unemployment rate and the current inflation rate.

Okun's misery index underwent multiple modifications over several decades. The first modification was suggested in 1999 by Harvard economist Robert Barro. Barro created A Barro misery index to evaluate post- WWII heads of states by adding more aspects of economic performance – namely economic growth data and interest rate. In 2011, Johns Hopkins economist Steve Hanke built Barro's misery index and extended its use beyond the U.S. The new version is equivalent to the change in the real GDP per capita subtracted from the sum of unemployment, inflation, and the interest rate.

At first glance, Okun's approach seems overly simplistic: it considers only two aspects of a country's economic performance and weights the unemployment rate and the inflation rate equally.. These criticisms can create the temptation to reject the index in toto, as a rough and excessive simplification. On the contrary, the misery index remains a useful basic tool for two main reasons.

First, the misery index seems to provide a useful approximation of the influence of macroeconomic conditions on population well-being, as measured by specific indicators such as consumer sentiment (Lovell & Tien, 2000), the crime rate (Lean & Tang, 2009), the poverty rate (Lechman, 2009, s. 10) and even the suicide rate (Yang & Lester, 1992), among others.

Second, and more importantly, the misery index has turned out to be an insightful idea. Further research has extended the EDI along with two partially overlapping paths. On the one hand, authors such as Barro (1999) and Hufbauer, Kim, and Rosen (2008) have attempted to improve the original index by including more indicators of the state of health of the macroeconomy (e.g. the GDP growth rate, the real long-term interest rate, the house and share prices, and so forth). This idea of an "augmented misery index" has been further

developed by adding (and weighting) new variables to obtain a full composite indicator of a country's macroeconomic performance (Setterfield, 2009). On the other hand, the EDI served as a starting point in applied research on the "macroeconomic loss function" (Mayer, 2003). Motivated by the misery index, the pioneering studies by Di Tella, MacCulloch, and Oswald (2001) and Welsh (2007), among others, investigated the relation between macroeconomic performance and subjective well-being in an attempt to develop a reliable social welfare function that might be used to evaluate the effects of shocks and policies on population well-being (Blanchflower et al., 2013).

The misery index concept is also applicable in asset classes, where it measures the perceived investor's misery. For example, the famous Tom Lee's Bitcoin Misery index (BML) measures bitcoin investor's distress. BML calculates the overall misery index by finding the trades' and adds the global volatility of cryptocurrency.

1.6.2 Methods of calculating misery index

Misery index estimation can be applied through two methods: standard and adjusted. As it was already mentioned in the sub-chapter 1.6,1, that the Misery index estimation can be done in different ways. Based on Okun's algorithms, it can be calculated as a following (Lechman, 2009):

$$OMI = \pi + \mu \tag{7}$$

where: OMI1 stands for Okun`s Misery Index, π – annual inflation rate, and μ – the total unemployment rate.

This approach can be called the Standard Misery index.

After the Okun's misery index was established, Robert Barro modified a little bit the calculation. His main difference was in adding two explanatory variables – real GDP growth rate and long-term interest rate. Barro's misery index is calculated as a follow (Lechman, 2009):

$$BMI = \pi + \mu - Y + i \tag{8}$$

where BMI stands for Barro`s Misery Index, π – annual inflation rate, u – total unemployment rate, Y – annual GDP growth rate, and i – nominal long-term interest rate.

Such approach can be called adjusted misery index.

According to Eurostat methodology: annual inflation rate, unemployment rate, real GDP growth rate and long-term interest rates are defined in the following way:

- Annual inflation rate – officially calculated as Harmonised Indices of Consumer Prices (HICPs), designed for international comparisons of price levels, used by European Central Bank for inflation monitoring;

- Total unemployment rate – a rate representing unemployed persons as a percentage of the labor force (meaning persons between 15 and 74 years old, who are – both employed and unemployed)

- Real GDP growth rate – growth rate calculated using data at previous year`s prices;

- Long-term interest rate – in that case, annual interest rate refers to the interest rate of ten year government bond yields

Both ways of the estimation: standard and adjusted ones will be used in terms of calculation Misery index for Russia on national and regional level. In order to calculate Standard misery index on the regional level, the inflation and unemployment rates will be used separately per each federal district.

Furthermore, for the calculation of the adjusted misery index in Russia in district level some adjustments should be made. For Adjusted misery index calculation on regional level, the inflation and unemployment rates will be used the same as a separate one for each federal district, however, to see the accurate picture of the situation in each federal district, instead of changes in GPD, the changes in GRP of each federal district will be used. Since GRP, in this case, will be more suitable to make the numbers comparable among each other.

The nominal long-term interested rate will be used the same for each federal district's calculation because it remains the same on the whole territory of the Russian Federation, and no differences is depending on the location.

The reason behind implementing such an adjustment of using the GRP growth rate instead of GDP growth rate on district level is determined by the fact the Russia is the largest country. Based on this, each federal district is performing differently and has its own potential. Furthermore, to estimate the adjusted misery index on district level, this proposed adjustment will be implemented.

2 METHODOLOGY

This chapter will focus on describing the methodology of data collection methods which will be used in the thesis. As well as the data analysis methods will be discussed. Moreover, the explanation of how the ordinary square method will be used in terms of shocks analysis, will be described.

2.1 Data collection methods

There are many methods of collecting data, but firstly it is essential, to begin with data classification. To collect data, social scientists make use of several different data collection strategies. (Hox, 2005)

Data can be defined as primary and secondary. Primary data is the kind of data collected directly from the data resources without going through any existing resources. A typical example of primary data is the data collected by organizations during market research, product research, and competitive analysis. This data is collected directly from its original source, which is, in most cases are the existing and potential customers. (Formlus, 2019)

Secondary data is the data that has been collected in the past by someone else but made available for others to use. They are usually once primary data but become secondary when used by a third party. For example, researchers need to consult past works done in this field and add findings to the literature review when conducting a research thesis. Some other things like definitions and theorems are secondary data that are added to the thesis to be properly referenced and cited accordingly. Some familiar sources of secondary data include trade publications, government statistics, journals, etc. (Formlus, 2019)

In this thesis, secondary data is used in both parts of the work – either theory or practical part. Since for the theory part only this type of data can be used based on analyzing previous researchers to evaluate the results and create a theoretical base for further analysis. In the practical part, secondary data will be used as well. The leading resource for the statistical data will be the federal government website of Russia, which is called Rosstat.

The Federal State Statistics Service (Rosstat) is an executive body that carries out the functions of generating official statistical information on social, economic, demographic, environmental and other public organizations in the Russian Federation, as well as in the manner and cases established by the legislation of the Russian Federation on the control in the sphere of official statistics. (Rosstat, 2019)

Federal State Statistics Service is in charge of the economic development of the Russian Federation. The Federal State Statistics Service is guided in its activities by the Constitution of the Russian Federation, federal constitutional laws, federal constitutional laws, acts of the President of the Russian Federation and the Government of the Russian Federation, other treaties of the Russian Federation, acts of the Ministry of Economic Development of the Russian Federation. (Rosstat, 2019)

The Federal State Statistics Service carries out its activities directly and through its territorial bodies in cooperation with other executive authorities, the federal service of power of the constituent entities of the Russian Federation, local governments, public associations and other organizations. (Rosstat, 2019)

Meeting the needs of the authorities and administration, the media, the population, the scientific community, organizations in diverse, objective and complete statistical information is the main task of the Federal State Statistics Service. It includes the central bodies of the federal level and the territorial bodies of Rosstat located in all constituent entities of the Russian Federation. International Expertise Recognized the Statistical Data of the Federal State Statistics service had been admitted as a reliable source. (Rosstat, 2019)

Regarding the data availability in Russia, the Rosstat can be considered a reliable source monitoring by the Russian government and publishes the official statistics and required information on an ongoing basis. The data published by Rosstat can be used to further analyze and evaluate the situation of economic stability and well-being in Russia.

Such a source of statistics as a Rosstat can be recognize as the only institute which provides the direct access to statistical data available in Russia.

2.2 Data analysis methods

Secondary data analysis is the process of analyzing data collected from another researcher who primarily collected this data for another purpose. Researchers leverage secondary data to save time and resources that would have been spent on primary data collection. (Formlus, 2019)

The secondary data analysis process can be carried out quantitatively or qualitatively depending on the kind of data the researcher is dealing with. The quantitative method of secondary data analysis is used on numerical data and is analyzed mathematically, while the qualitative method uses words to provide in-depth information about data. (Formlus, 2019)

There are different stages of secondary data analysis, which involve events before, during and after data collection. These stages include:

- statement of purpose,
- research design,
- developing research questions,
- identifying secondary data,
- evaluating secondary data.

There are two main methods of Data analysis: qualitative analysis and quantitative analysis. The approach of qualitative research answers questions such as “why”, “what”, and “how”. These questions are addressed via quantitative techniques such as questionnaires, attitude scaling, standard outcomes, and more. (Formlus, 2019)

Whereas quantitative analysis generally measures in terms of numbers. The data here present themselves in terms of measurement scales and extend themselves for more statistical manipulation. In this thesis, quantitative approach will be mostly used, since the target of the research is analyzing different numbers representing well-being and economic stability indicators and calculating the misery index. However, after such analysis, the qualitative approach will apply to evaluate the nature of the problems and create possible solutions for solving the issues. (Formlus, 2019)

Also, statistical analysis will be involved during the thesis work. Well-being and economic stability indicators will be analyzed by creating the graphs of series tendences, calculating the growth rate, and calculating the structures sometimes in some cases (horizontal and vertical analyses will be applied). Moreover, the analysis of sanction’s impact on inflation will be performed. During this analysis, the connection between the change in brent price and the USD exchange rate in Russia will be identified using econometrics’ methods (OLS method) through a particular program Gretl. As the result of this analysis, the beneficial influence of sanctions will be investigated at the national and district levels in Russia.

Interpreted broadly and adapted to fit the context, economic analysis can be applied with considerable success to all these many and varied interactions and transactions. (Dixit, 2014) That’s why in the analytical part, some estimation will be done to make data comparable and adopt to further analysis for the investigation of problems in Russia.

As a final point of the thesis, the calculation of the misery index will be made by using different approaches: standard and adjusted ones. The adjustments which were proposed in the sub-chapter 1.6.2 regarding the adjusted misery index estimation in Russia will be implemented and the final calculation will be performed.

After all measure will be done, and data will become comparable to each other, the comparison will be applied. The difference in results of standard misery index and the adjusted misery index will be discussed. Based on the comparison, the results will be made and then it will be evaluated for further recommendations.

II. ANALYSIS

3 INFLATION ANALYSIS OF RUSSIA

In this chapter the structure of CPI will be discussed along with the structure and the price of minimal product basket in Russia. After that, the value of CPI for food, non-food and services will be analyzed on the national and district level. Moreover, the analysis of the Olivie's will be applied. As the final point of this chapter, the evaluation of the inflation based on the monetary aggregates in Russia will be performed.

3.1 Structure of CPI

CPI is one of the key instruments which helps to estimate the inflation in the country. According to Russian statistics, CPI consists of food products, non-food products and services. The structure of each category can be seen in table 4.

Table 4 The structure of CPI for each category (goods/services which are included)

Food products	**Non-food products**	**Services**
Meat	Clothes	Household services
Fish	Fur	Passenger transport services
Oil and fat	Knitted products	Communication services
Milk and Milk's products	Shoes	Housing services
Cheese	Cleaning suppliers	Primary school education services
Eggs	Perfumes and cosmetics	Educational services
Sugar	Haberdashery	Cultural services
Confectionary	Tobacco products	Sanatorium treatment services
Tea, coffee, cocoa	Furniture	Medical services
Bread	Electrical goods	Others
Pasta and cereal	Press/print media	
Fruits and vegetables	Radio	
Alcoholic beverages	PC	

Food products	Non-food products	Services
Public catering	Communication equipment	
Others	Building materials	
	Cars	
	Patrol	
	Medical goods	
	Others	

Source: Rosstat

Based on table 4, the main categories of products, non-products and services can be seen, which are included in the calculation of CPI. Regarding the statistics in %, the biggest part all the years was food products. It was fluctuated from 36,51% to 42,71% during the period of 2006 till 2019. The second part in term of size was non-food products, where the expenditures of the population formed from 33,75% to 37,37% during the same period of time. Governmental statistics showed that the less of the earnings, people spent on services – from 23,55% to 27,58% during the period of 2006 till 2019.

The graph with changes of each part of CPI from 2006 till 2019 can be seen in fig. 8.

Based on the figure 8, the biggest part in CPI structure is food products. This part is leading almost the whole time, however, some years non-food products had higher consumer contribution.

Regarding the structure of each category, based on 2019 results, in the food products sector, people spent most of their income on meat (9,54%), fruits and vegetables (4%), alcoholic beverages (4,49%), milk and milk's products (3,15%). In non-food sector, the biggest expenditures apply to clothes (4,63%), cars (5,94%), patrol (4,07%) and medical goods (2,16%). In services, the costliest ones are housing services (9,99%), household services (3,30%). The whole structure for 2019 can be seen in fig. 9.

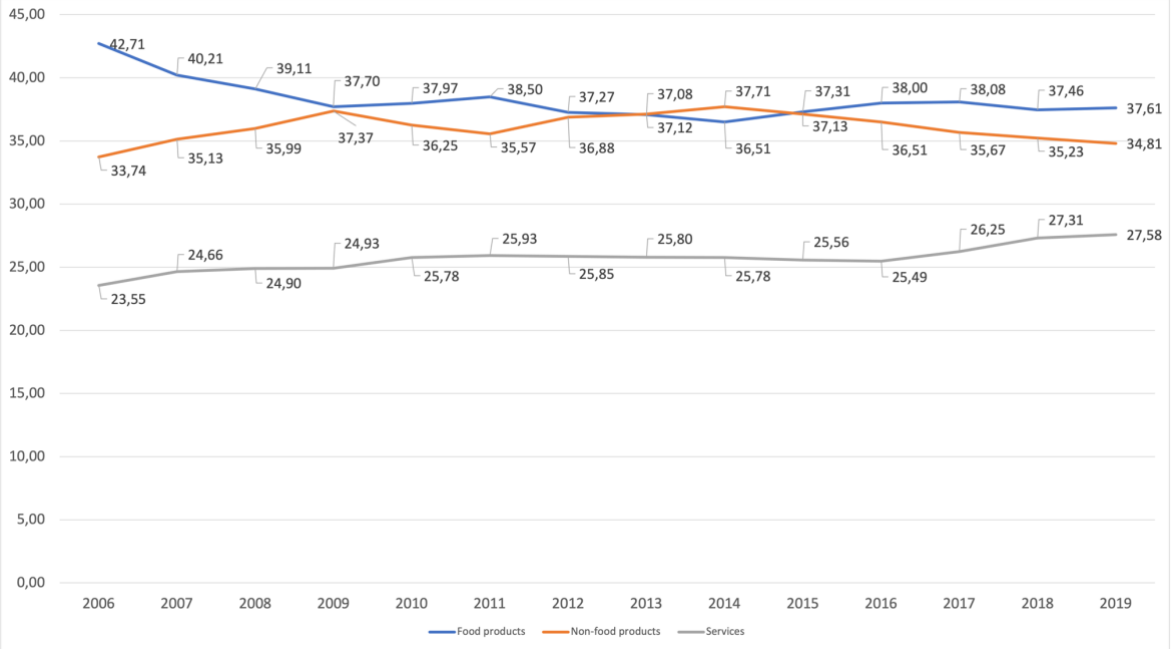

Figure 8: CPI structure for the whole Russia based on the categories in % (from 2006 till 2019)

Source: Rosstat

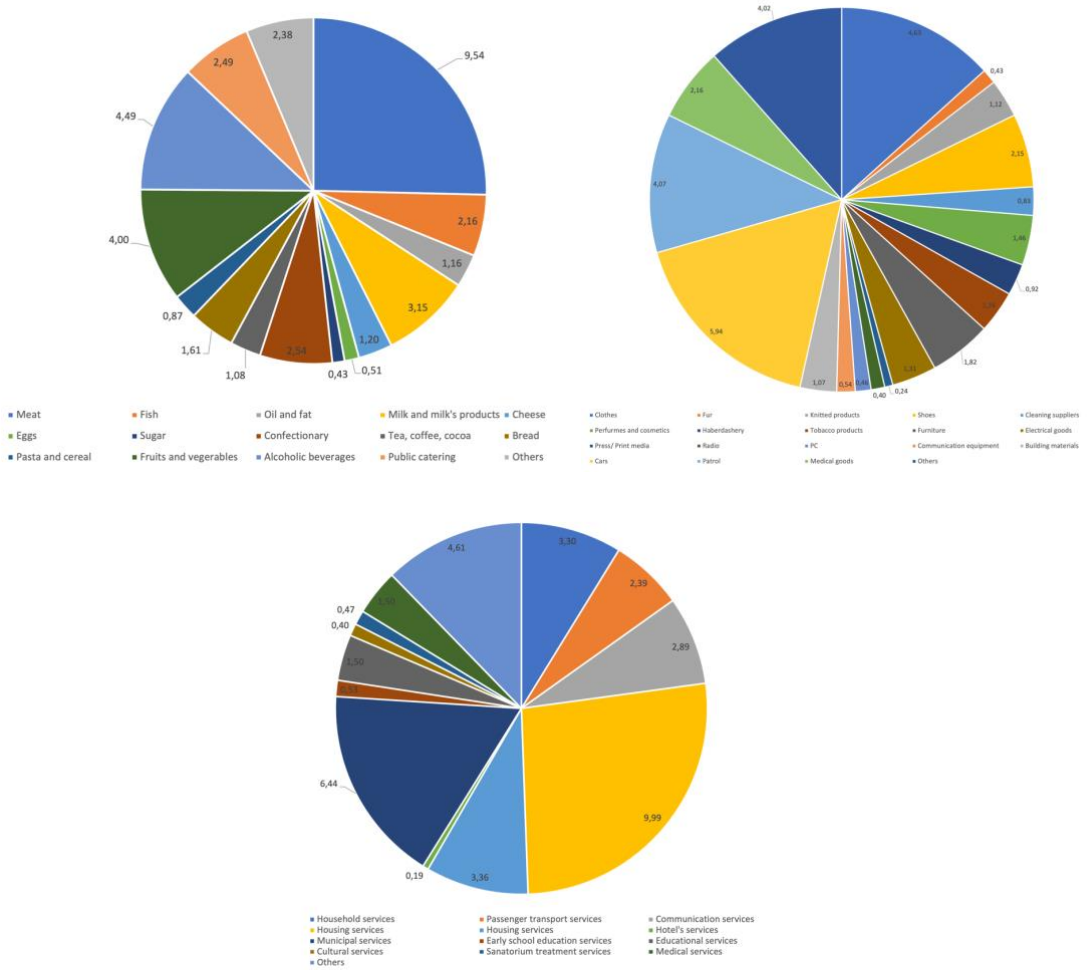

Figure 9: CPI structure for the whole Russia detailed in % (2019)

Source: Rosstat

The detailed structure of CPI in the period of 2006 till 2019 can be found in Appendix P I. Moreover, the list of the products which are included in the CPI calculation can be found in Appendix P II.

To sum it up, the structure of CPI in Russia is consisted of 3 categories: food, non-food, and services. The biggest part is food which was 37,61% in 2019. Other part that are non-food and services were 34,81% and 27,58% in 2019.

3.2 Minimal product basket: price and structure

A consumer basket is an approximate calculation set, a range of goods that characterize the typical level and structure of monthly consumption of an individual or family. This set is used to calculate the minimum consumer budget based on the value of the consumer basket in current prices.

In 2012 a special law about the structure of the product basket was established in Russia. In this law, it is written how many of each food product per year is needed for different category of the population: actively productive population, pensioners and children. The table of products with the estimated amount of each category is written in table 5.

Table 5 The structure of product food basket for each category of population per year on average (Russian law, 2012)

Name of the product	**Measure**	**Consumption volume for actively productive population**	**Consumption volume for pensioners**	**Consumption volume for children**
Bread products	kg	126,5	98,2	77,6
Potatoes	kg	100,4	80,0	88,1
Vegetables	kg	114,6	98,0	112,5
Fruits	kg	60,0	45,0	118,1
Sugar and confectionery	kg	23,8	21,2	21,8
Meat	kg	58,6	54,0	44,0
Fish	kg	18,5	16,0	18,6
Milk	kg	290,0	257,8	360,7
Eggs	pieces	210	200	201
Butter	kg	11,0	10,0	5,0
Other products	kg	4,9	4,2	3,5

Source: Rosstat

The cost of the consumer basket is equal to the subsistence minimum, which is approved once a quarter. The food part of the basket consists of eleven items: bakery products, potatoes, vegetables, fruits, sugar and confectionery products, meat products, fish products, milk and dairy products, eggs, vegetable oil and others (salt, tea, coffee, cocoa, spices). The second half of the basket – non-food goods and services – is calculated using the so-called counting method: there is no clear list of non-food goods and services, but there

is a sum of money that is supposed to be spent on them. And this amount should be equal to the cost of the food part. (Rosstat, 2015)

The grocery basket does not involve eating out, which also constitutes a significant expense item for a working person. For this reason, the Institute of Socio-Economic Problems of Population of the Russian Academy of Sciences insists on revising the consumer basket and including such items as vitamins and meals outside the home. As a result, the total cost of the basket is significantly underestimated, and for a part of the population, such important elements of modern life as a computer, medicines and treatment remain inaccessible. The current basket is not provided for the possibility of solving the housing problem and creating a financial reserve. (Rosstat, 2015)

In figure 10, it can be seen the graph of price changes of product basket for different regions and Russia as a whole from 2002 till 2020.

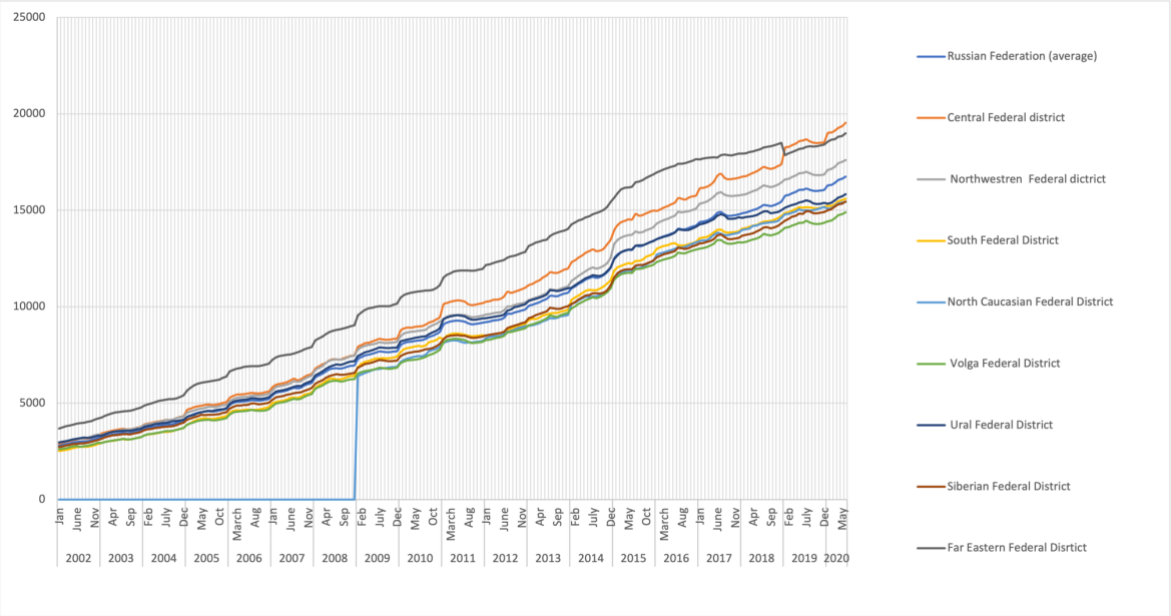

Figure 10: Changes in product basket in Russia for federal districts and Russia as a whole (from 2002 till 2020)

Source: Rosstat

Before 2009 there was no data about the North-Caucasian Federal district because it was founded in 2009. Based on this graph, it is clearly seen that there are at least three federal districts where the price of product basket is higher than the average one in Russia. These districts are Far-eastern federal district, Central federal district and Northwestern federal district.

In comparison, the minimum price of product basket in January 2020 was 15003 rubles in the Siberian federal district, whereas the highest price of this period was 18988

rubles in the central federal district. At the same time, the average one for the whole Russia was 16284 rubles.

Overall, the price of product basket has risen almost six times from 2002 till 2020. The detailed table of yearly prices per each federal district and Russia as a whole from 2002 till 2020 can be found in Appendix P III.

The increase in food prices in Russia in the first quarter of 2019 was 3.1 per cent, which is higher than the average for the European Union (1 per cent). The highest growth was observed in the price of vegetables – 20.8%. On average, for the EU countries, this figure was 3.9%. A similar picture can be traced in virtually all groups of goods: fruits – 4.1% versus 0.8%, bakery products and cereals – 2.9% versus 0.9%. The smallest difference was recorded in the growth of prices for dairy products, cheese and eggs – 0.8% versus 0.5%. (RBC, 2020)

The increase in food prices is observed from year to year in Russia. It is another crucial problem which is needed to solve since the raise in the wages do not cover the real growth in food prices.

3.3 CPI food, non-food and services on the national level

CPI in Russia, as well as in any other country, is a very important index to estimate and analyze. Based on the statistics from Rosstat, figure 11 was made.

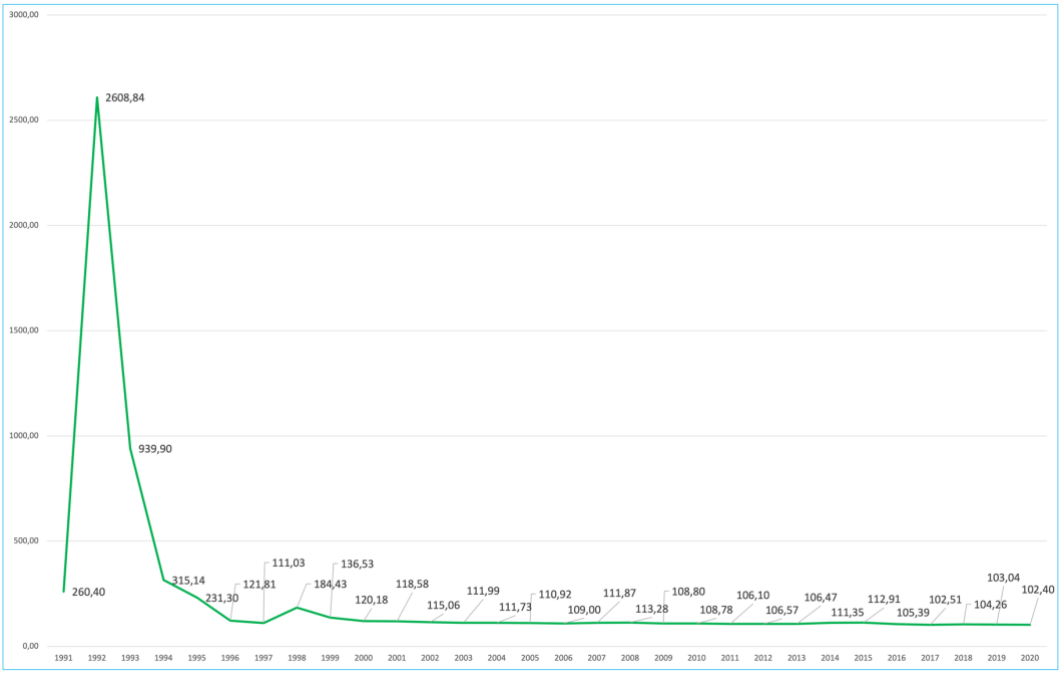

Figure 11: Changes in CPI on the national level in Russia (from 1991 till 2020)

Source: Rosstat

Based on figure 11, it can be seen that huge drop in CPI value on national level in Russia was in 1992-1193. The reason behind that was denomination processes in the country.

The detailed table of CPI changes from 1991 to 2020 can be seen in Appendix P IV.

In 1992 CPI had the highest level and was 2608. It was a huge increase in comparison with 1991, where the CPI level was 260. The reason behind that was a significant reform which was established in 1991. (Krakova, 2018)

On January 22, 1991, the President of the USSR, Mikhail Gorbachev, signed a decree according to which old bills of the 1961 model with a denomination of 50 and 100 rubles were withdrawn from circulation. The reform was announced on the TV program "Vremya" (Time) at 9 pm – most banks and shops were closed. From midnight, these bills ceased circulation. For three days, it was necessary to have time to exchange the "old" money, but not more than 1000 rubles. The restrictions also affected the ability to withdraw money from savings books – no more than 500 rubles per month. (Krakova, 2018)

The reform hit thousands of people, many of whom lost their long-term savings. One-step monetary reform carried out suddenly and without warning, became the actual confiscation of money from the population. "Immediately after the message on the Vremya program, as eyewitnesses say, impatient citizens rushed to the central telegraph office to process postal orders, to the railway stations – to the ticket offices, where they bought it in order to return tickets later. Already on the night of January 22-23, queues began to line up to the savings banks. By the morning, they had grown tenfold," wrote the Izvestia newspaper on January 23. (Krakova, 2018)

After this reform, the situation in society stabilized until 1997, when a new denomination was made. Fifteen years ago, on August 4, 1997, the Bank of Russia, pursuant to a decree of the President of the Russian Federation, made a decision to denominate (reduce the denomination) of the ruble and change the price scale a thousand times from January 1, 1998. (RBC, 2020) Table 6 is shown the change in the value of the Russian ruble from 1993 till 2019.

Table 6 The value of Russian ruble and its change in the period of 1993 till 2019 (To count the value of money, the basis was 1000 rub)

Year	**Growth in consumer price in %**	**Equivalent in past money, rub**	**Equivalent in current money, rub**
1993	839,9	666	1502

Year	Growth in consumer price in %	Equivalent in past money, rub	Equivalent in current money, rub
1994	215,1	6257	160
1995	131,1	19715	51
1996	21,8	45600	22
1997	11	55541	18
Denomination of rub, - 1000:1	0	61650	16
1998	84,4	62	16221
1999	36,5	114	8796
2000	20,2	155	6444
2001	18,6	187	5361
2002	15,1	221	4520
2003	12	255	3927
2004	11,7	285	3507
2005	10,9	319	3139
2006	9	353	2831
2007	11,9	385	2597
2008	13,3	431	2321
2009	8,8	488	2048
2010	8,4	531	1883
2011	6,1	576	1737
2012	6,6	611	1637
2013	6,5	651	1536
2014	11,4	694	1442

Year	Growth in consumer price in %	Equivalent in past money, rub	Equivalent in current money, rub
2015	12,9	773	1294
2016	5,4	872	1146
2017	2,5	919	1088
2018	4,3	942	1061
2019	1,8	983	1018

Source: Author's processing using data of Rosstat

Based on table 5, it is clearly seen how the value of the Russian ruble was changed during the period of time. The most significant growth in consumer price was in 1998 when the reform of the denomination was implemented.

Considering the changes in CPI food on the national level, the same tendency can be seen. (Figure 12) The detailed table of CPI food changes on a monthly basis from 1991 to 2020 can be seen in Appendix P V.

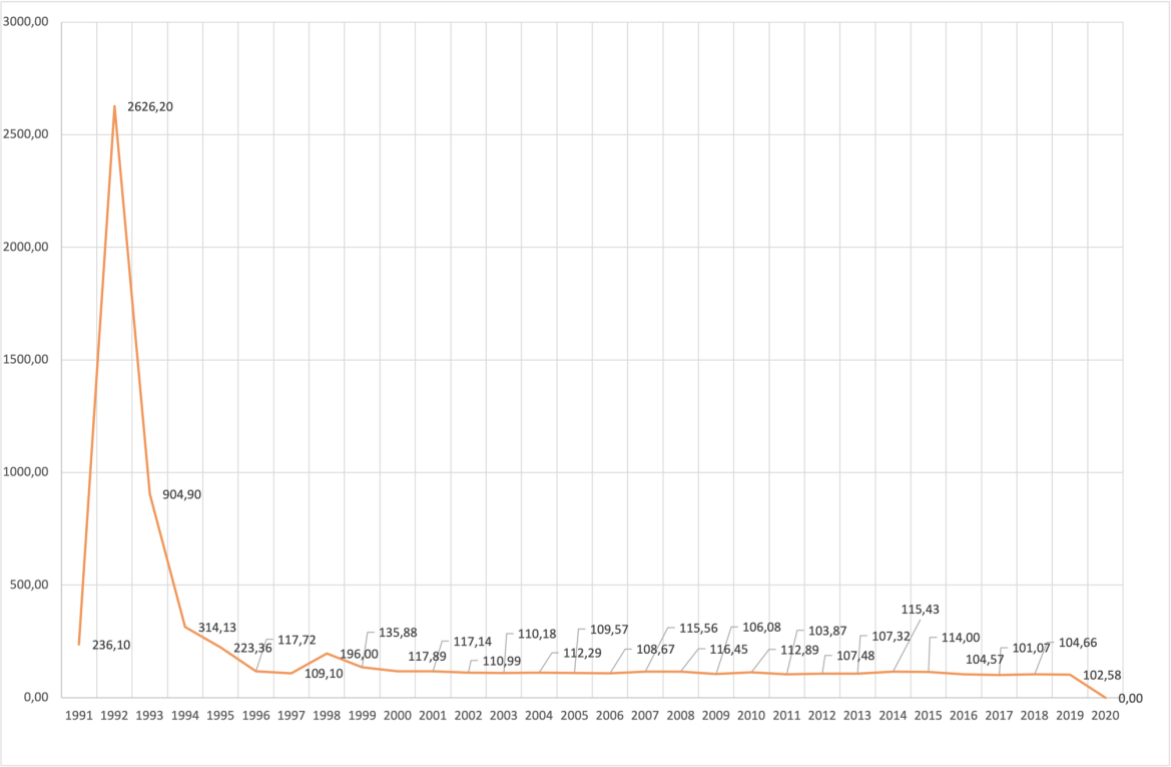

Figure 12: Changes in CPI food on national level in Russia (from 1991 till 2020)

Source: Rosstat

The most significant impact was as well after the reform in 1991, after which the level of CPI raised from 236,1 to 2626,2. The monetary change of 1997-1998 also influenced the situation by increasing the CPI food level from 109,1 till 196,00. After 1999 the situation started to stabilize, and the CPI food level began to decrease. The minimum was in 2017 and was 101,7. (RBC, 2020)

In many respects, the record low inflation is explained by the moderately tight monetary policy of the Central Bank, the continued decline in real incomes of the population, which have been declining for the fourth year in a row, and a good harvest. For 11 months of 2017, household income in real terms decreased by 1.4%. In 2016, revenues fell by 5.8% in real terms, in 2015 there was a decline by 3.2%, in 2014 their decline was 0.7%. Nowadays Central Bank of Russia is trying to keep inflation at a level of 4%. (RBC, 2020)

The change in the level of CPI for non-food products can be seen in figure 13.

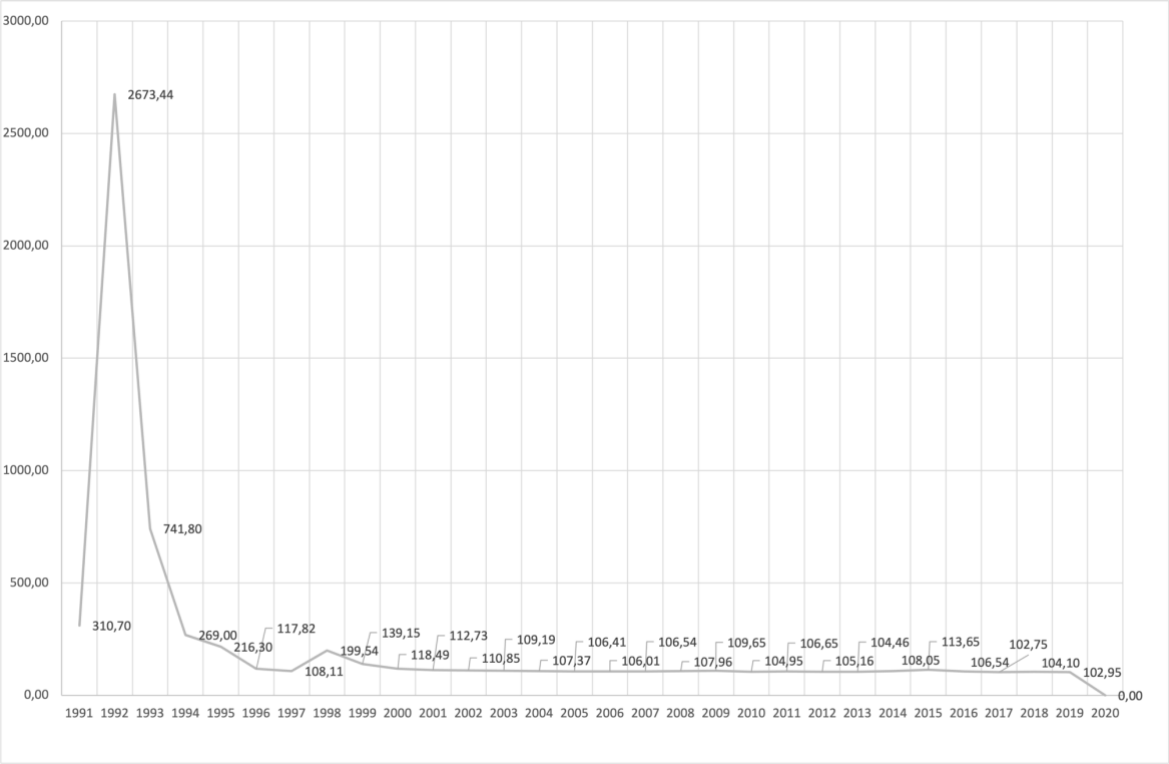

Figure 13: Changes in CPI non-food on the national level in Russia (from 1991 till 2020)

Source: Rosstat

The change in the level of CPI for services can be seen in figure 14. The growth of CPI for the non-food product is quite similar to CPI for food products. However, CPI for services is a little bit higher, despite the fact that changing tendency remains the same. The detailed table of CPI non-food and services changes on a monthly basis from 1991 to 2020 can be seen in Appendix P VI and Appendix P VII.

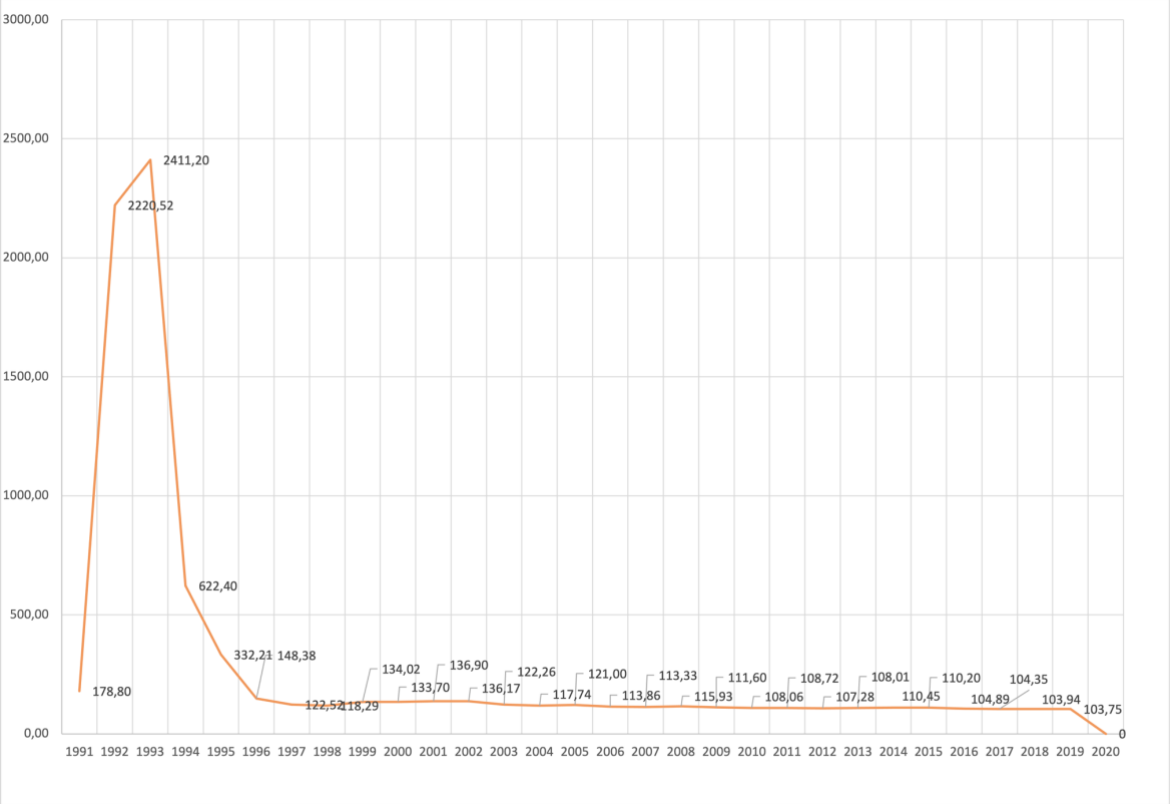

Figure 14: Changes in CPI services on the national level in Russia (from 1991 till 2020)

Source: Rosstat

Speaking about 2020 and its results regarding the CPI, the following conclusions can be made:

- the basic consumer price index, which excludes changes in prices for certain goods that are influenced by factors that are of an administrative and seasonal nature, in December 2020 amounted to 100.46% (in December 2019 – 100.14%), in annual terms – 104.21% (103.13%).
- inflation in December 2020 exceeded both analysts' expectations and the Ministry of Economic Development and Trade. The consensus forecast of economists surveyed by Interfax at the end of December was 0.7%, the Ministry of Economic Development expected inflation in December in the range of 0.6-0.7%.
- inflation in 2020 became the highest since 2016 (when it was 5.4%), in 2017 the price growth was the lowest in history of 2.5%, in 2018 – 4.3%, in 2019 – 3.0 %.
- the rise in prices by the end of 2020 by more than 1 p.p. exceeded the official forecast of the Russian government, which was 3.8%, and barely met the latest forecast of the Central Bank, which only in mid-December raised it to 4.6-4.9% from 3.9-4.2%.

- according to Rosstat data, food prices in December 2020 rose by 1.5%, and in general for 2020 – by 6.7%, which is 2.6 times more than in 2019 (2.6%).
- the rise in prices for non-food products in December 2020 was 0.4%, and 4.8% over the year (3.0% in 2019).
- services in December rose by an average of 0.4%, and in 2020 – by 2.7% (3.8% in 2019).

The main contribution to the acceleration of inflation in 2020 was made by the weakening of the exchange rate – estimated at about 1.5 percentage points (out of 2.5 percentage points of the increase in annual inflation in December compared to January). At the same time, taking into account the stabilization of the situation in the foreign exchange market, the effect of the exchange rate pass-through, according to our estimates, will be exhausted in the first quarter of 2021. As reported, the annual inflation in the Russian Federation in January 2020 was 2, 4%, in December 2020 – 4.9% (hence 2.5 pp of growth). (Ministry of Economic Development, 2020)

Additional pressure on the growth rate of consumer prices in 2020 was exerted by the situation in the agricultural markets, both Russian and global. The growth of exchange prices for key food products, as well as a decrease in the yield of certain crops compared to the record levels of 2019, led to an acceleration of growth. Domestic consumer prices for food products (6.7% at the end of 2020), including for socially significant food products ". (Ministry of Economic Development, 2020)

3.4 CPI food, non-food and services on district level

Based on all data above, it is clearly seen that since Russia is a very big country, to get a fair picture of the situation, it is needed to look into details and consider CPI not only on the national level, but also on a district level to see the difference. In figure 15, the general CPI on the district level in comparison to CPI on the national level is shown in the period from 2010 till 2020.

Based on the picture below, minimum two federal districts are operating above the national level are Central federal district and North Caucasian federal district. Based on the numbers of 2020, Northwestern federal district, Volga federal district and Far eastern federal district as well were operating above the national level. The detailed table of CPI changes

on an annual basis on district and national levels from 2010 to 2020 can be seen in Appendix P VIII.

Figure 15: Changes in CPI general on district and national level in Russia (from 2010 till 2020)

Source: Rosstat

Considering the CPI for food products on district level in comparison to national one, the following overview can be seen – figure 16.

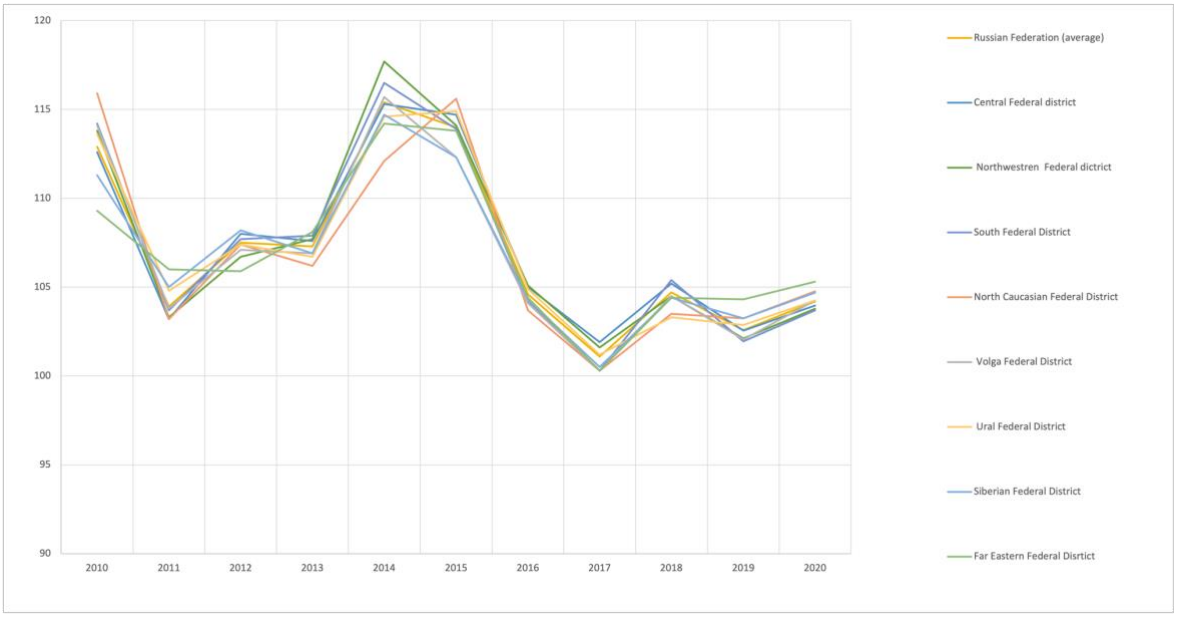

Figure 16: Changes in CPI food on district and national level in Russia (from 2010 till 2020)

Source: Rosstat

Based on this picture, it is seen that above the national level in terms of CPI level for food products, five districts are operating: North Caucasian federal district, Volga Federal district, Ural Federal district, Siberian Federal district and Far Eastern federal district. The most significant change in CPI for food was in 2014 for every district. Food prices in Russia in 2014 increased by 16.7%.

Growth in prices for food products – in 2015 amounted to 20.2%. According to the results of the last two years, the most expensive products have come under the embargo. For example, during this time, the price of nuts has skyrocketed – more than twice, to 586.5 rubles per kilogram. Hazelnuts and almonds were traditional favourites in Russia, and they are 100% imported. After the imposition of sanctions, Russia left nuts from the United States and Spain, which provided the bulk of imports. (Rosstat, 2016)

The detailed table of CPI food changes on an annual basis on district and national levels from 2010 to 2020 can be seen in Appendix P IX.

Regarding the changes in CPI for non-food products on district and national levels from 2010 till 2020, the following graph can be seen. (Figure 17)

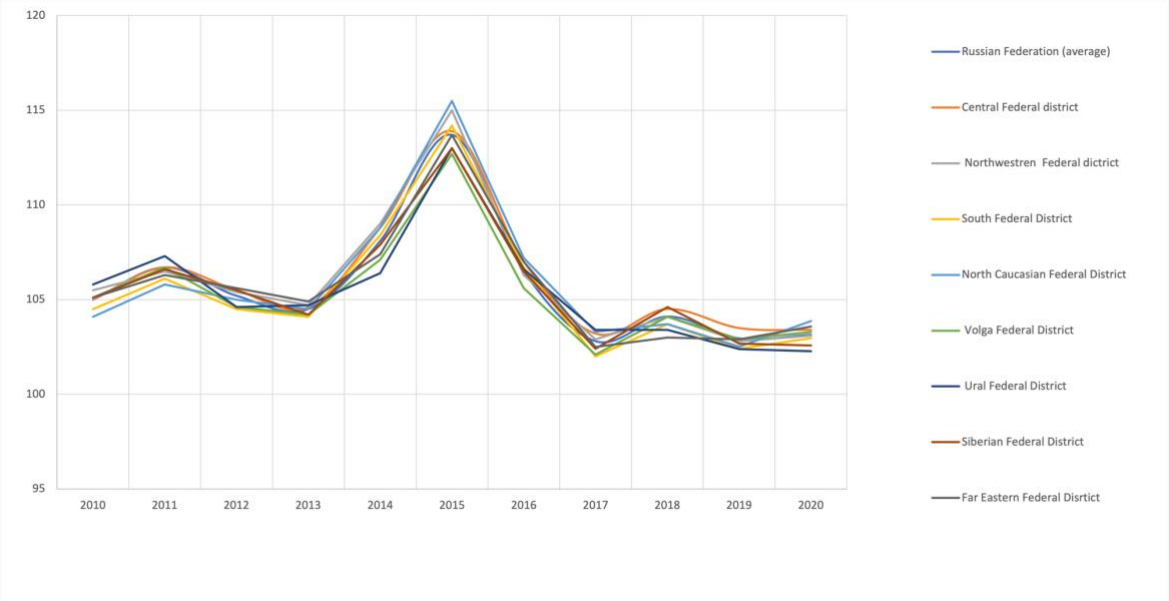

Figure 17: Changes in CPI non-food on district and national level in Russia (from 2010 till 2020)

Source: Rosstat

Here same most districts are operating above the national level, except a few ones such as North-Western federal district, South federal district, Ural federal district and Siberian federal district. 2014 was had also a significant impact after the sanctions against Russia were made, which influence a lot to prices of all products.

Speaking about 2020, in March 2020, the increase in prices for non-food products was estimated at 5.7%. Prices for essential goods (preparation for the self-isolation regime), as well as for household appliances and electronics (as a result of the increased fears of the population about the impact of the depreciation of the ruble on prices). When this, according to estimates, the rate of rising in the cost of clothing and shoes have hardly changed. Motor fuel prices remained stable amid a damping mechanism that smooths out the influence of fluctuations in world prices for oil and oil products on the dynamics of domestic prices. (Report of CBR, 2020) The detailed table of CPI non-food changes on an annual basis on district and national levels from 2010 to 2020 can be seen in Appendix P X.

Looking into details about CPI for services on district and national level from 2010 till 2020, the following graph can be seen. (Figure 18)

Figure 18: Changes in CPI services on district and national level in Russia (from 2010 till 2020)

Source: Rosstat

Based on the graph above, it can be clearly seen that the central federal district is operating above the national level. The reason behind that can be the average price level in Moscow since all kind of services is the most expensive there. Due to the fact that Moscow is located in the Central federal district, it impacts a lot on the average price level in the district.

The minimum CPI for services is in the North Caucasian federal district in comparison with other districts. The reason for it can also be the fact that in North Caucasian district price level as well as salary level on of the lowest in Russia. The detailed table of

CPI service changes on an annual basis on district and national levels from 2010 to 2020 can be seen in Appendix P XI.

In March 2020, compared to the previous month, there was an acceleration of annual inflation in most regions (78 regions, weight in the CPI – about 87%). The annual growth rate of food and non-food prices mainly increased while the dynamics of prices for services remained the most heterogeneous. In most regions, the annual growth rate of prices for services has decreased compared to February (in 46 regions, there was a slowdown in price growth, in 36 – acceleration). (RBC, 2021)

In most regions, the dynamics of inflation was largely determined by general federal factors, such as the weakening ruble and a surge in demand for a number of goods. Topics not less from region to region their scale influence varied. Remained significant also the influence of local factors. So, in the North-West and Volga federal districts, inflation in March accelerated more than in other districts, which was mainly related to price dynamics for food products. (CBR report, 2020)

At the same time, a decrease in the annual rate of price growth was noted in the Far Eastern Federal District. It happened due to a slowdown in food inflation, which in this region has a pronounced specificity. In March, there was a decrease in prices for white cabbage and cucumbers. In addition, the growth of prices has slowed down for services (largely due to the dynamics of tariffs for air transportation). (CBR report, 2020)

The distribution form of regional inflation in March has changed compared to February. Regional heterogeneity of inflation slightly increased in March. The greatest differences remained in the dynamics of prices for services. At the same time, the regional heterogeneity of inflation persists at a lower level than a year earlier. (CBR report, 2020)

To sum it up, changes in different types of CPI (food, non-food, and services) have the same tendencies in districts. The main effect was visible in 2014, the reason behind that was the sanctions implementation against Russia. After the 2014, the values started to decrease. However, there was another rise in 2018. The reason of it was also new sanctions.

3.5 Olivye's index

Like a Bid Mag index, which estimates inflation all over the world, in Russia, there is a special local index, which is based on product basket for the most popular new year dish for every Russian person – Olivye salad. The Famous salad Index is an informal measure of inflation in a country for staple foods for the current year.

Rosstat annually monitors how the Olivye index has changed over the past year. It is calculated based on the price of the products that make up the salad. Since this dish became one of the symbols of the New Year back in Soviet times, the results of the officials' calculations are reported on the eve of this holiday.

Based on the cost of the individual Olivye ingredients, the total cost of the salad is determined. It is compared with the last year's price of the dish, after which the inflation rate in the country for the last year is determined as a percentage. That is, the Olivye index is in the economy an indicator of the rise in the cost of living for Russians (from the previous New Year's Eve days). Its value is associated with changes in the real value of the consumer basket and is considered more accurate than other inflationary calculations of statisticians.

Despite the fact that individual products from which Olivye is made may become cheaper throughout the year, the cost of a popular salad as a whole increase from year to year.

This index was first time estimated at the end of 2010. For the basis of the calculation, the compound of the salad Olivye is taken. (Figure 19)

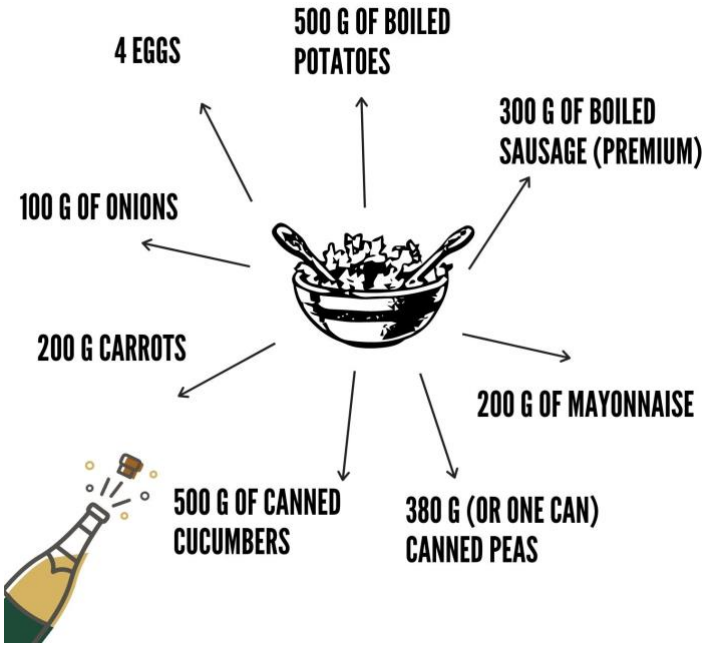

Figure 19: The compound of the Olivye salad in Russia, which is used for Olivye's index estimation (2020)

Source: Rosstat

In table 7, the price changes for the olivye's index can be seen from 2011 till 2020.

Table 7 The Olivye index in rub from 2011 till 2020

Year	Olivye's index in rub
2011	205
2012	222
2013	237
2014	242
2015	260
2016	304
2017	308
2018	311
2019	326
2020	340

Source: Rosstat

Based on these data, it can be clearly seen that during the period of time from 2011 till 2020, the Olivye index raised, which proved the fact of increasing the prices.

At the end of 2020, the head of CBR – Elvira Nabiullina, cooked the olivye salad and counted that the cost of ingredients for Olivye salad increased by 6.8% over the year. As noted by Nabiullina, this year, the rise in prices for ingredients for Olivier is outstripping the inflation rate. According to the Central Bank's forecast, at the end of this year, inflation will not exceed 4.9% (from the beginning of the year to December 21, inflation was 4.8%). (RBC, 2020)

Based on this index, a comparison in inflation can be made. In table 8, the inflation of the Rosstat can be seen as well as the calculation of inflation based on the price changing of Olivye index.

Table 8 Comparison between inflation, estimated by Rosstat and inflation, estimated on the change of Olivye index from 2012 to 2020

Year	Inflation (Rosstat), in %	Inflation (based on the Olivye index change), in %
2012	6,58	8,3
2013	6,45	6,8
2014	11,36	2,1
2015	12,91	7,4

Year	Inflation (Rosstat), in %	Inflation (based on the Olivye index change), in %
2016	5,38	16,9
2017	2,52	13,2
2018	4,27	0,97
2019	3,05	4,8
2020	4,9	4,3

Source:

Based on the numbers in table 8, the following conclusion can be made: the final numbers of inflation, calculated by Rosstat and the inflation, calculated on changes in the price of the Olivye index are not the same. Some of the years, Olivye's index inflation was higher than the actual one, for example how it was in 2016 and 2017 when the estimated inflation was 16,9% and 13,2%. Whereas some of the years, this kind of inflation was lower than the actual one, in 2014 and 2015, Olivye's index inflation was only 2,1%, and 7,4% compared to 11,36% and 12,91% as an actual one.

It is important to mention that Olivye index can replace the actual inflation rate, which is estimated on a monthly basis during the year because Olivye index is showing the price change only in certain types of food products that are related to the salad compound. Whereas the inflation rate is a complex indicator, showing the price change in different types of the economic sphere.

Despite this fact, the Olivye index is a significantly important indicator since it is showing the real impact of price changes on people. It is as well calculated not only on the national level but also on the regional level. The Olivye index for 2019 per each region of Russia, as well as the price change in % to 2018, can be found in Appendix P XII.

Based on that data, the most expensive Olivye was in Chukotka Autonomous District, where the price was almost two times higher than the national level price. Moreover, 30 regions out of 8 have an Olivye price higher than the average national price.

3.6 Evaluation of the inflation based on the monetary aggregates in Russia

Today many countries, as intermediate targets of national monetary strategy, use a policy of regulating monetary aggregates. Therefore, the study of the relationship between

inflation and the velocity of circulation of monetary aggregates becomes of great importance in connection with the need to achieve material and monetary balance in the Russian economy.

Looking into statistics of CBR, which estimates the values of monetary aggregates such as especially M0 and M2. (Figure 20)

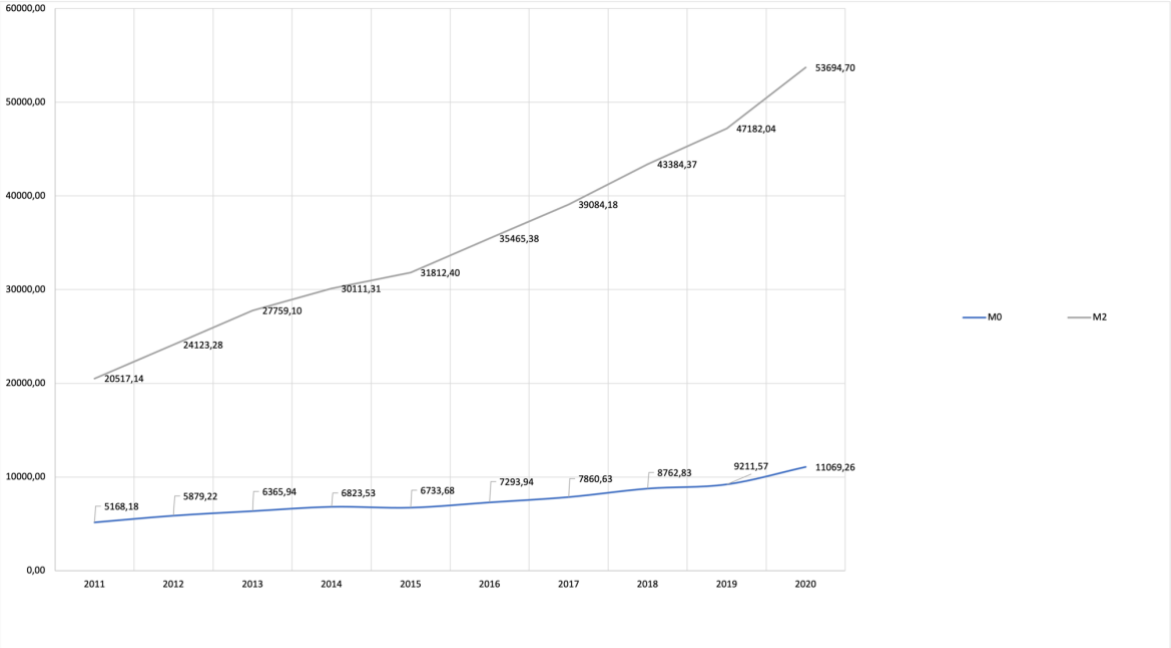

Figure 20: Changes of monetary aggregates M0 and M2 in Russia from 2011 and 2020

Source: Author's estimates based on data of CBR

Bank of Russia usually publishes the value of all monetary aggregates on a monthly basis. As well as they publish the values of the aggregates M0, M1 and M2, CBR is also showing the structure of each aggregate. For further calculation and comparison convenience, the simple annual average of the M0 and M2 values was estimated. Based on the estimated data, figure 22 was created. Looking into a trend, both aggregates steadily increased during the analyzed period from 2011 till 2020.

Growth rates of money supply directly affect the value of the rate of turnover of money. Since the main focus of the Bank of Russia is on the growth rates of aggregates M0 and M2, then the dynamics of the rate of their turnover should also be considered. (Table 9)

Table 9 – Estimation of cash turnover rate as well as cash and non-cash turnover rate in Russia for the period of 2011 till 2020

Index/ Year	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**	**2020**
V0	11,6	11,6	11,5	11,6	12,3	11,7	11,7	11,9	11,9	9,7
V2	2,9	2,8	2,6	2,6	2,6	2,4	2,2	2,4	2,3	2,0
Inflation, %	6,1	6,6	6,5	11,4	12,9	5,4	2,5	4,3	3,04	3,37

Source: Author's estimates

The computation was made based on the annual average values of M0 and M2, data of Rosstat about annual GDP. To estimate the indexes V0 and V2, the formulas 7 and 8 were used, which were described in the heoretical part. V0 – is a cash turnover rate, and V2 – is cash and non-cash turnover rate. Comparing the dynamics of the money turnover rate and the inflation rate, the following conclusions can be drawn:

1) The higher the rate of turnover of money, the higher the inflation rate and vice versa.

2) The dynamics of the rate of turnover of money is most associated with the dynamics of prices.

Looking into more details, the following graph based on the values of table 10 was made. (Figure 21)

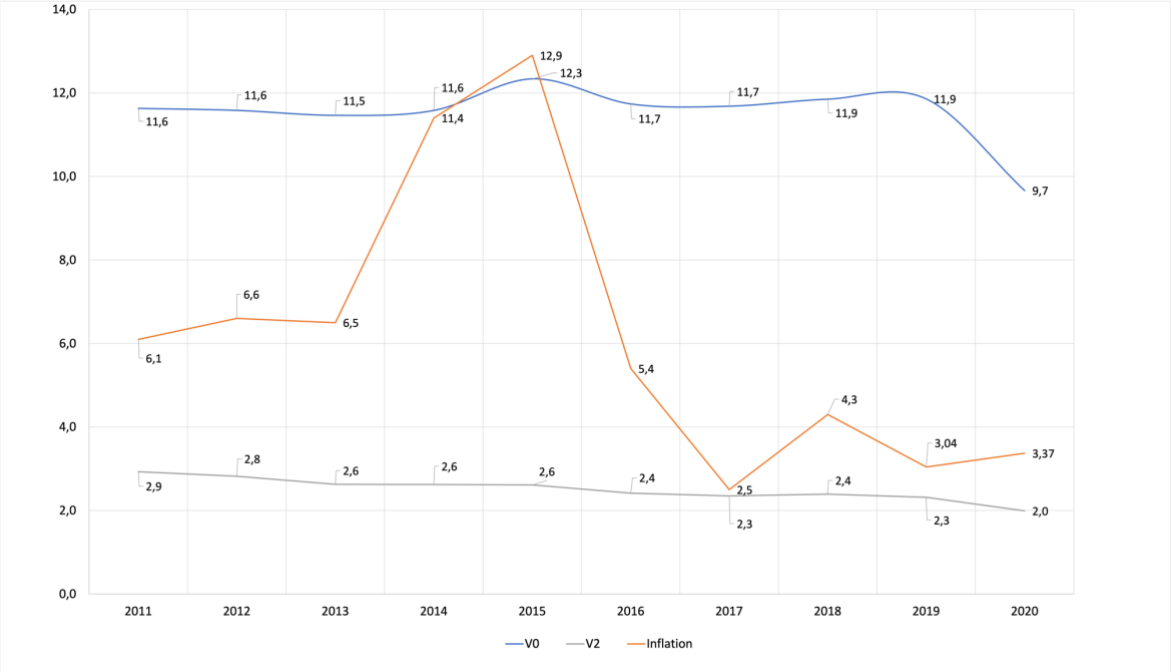

Figure 21: Connection between the cash and non-cash turnover rate and inflation in Russia in the period of 2011 to 2020

Source: Author's estimates

Based on figure 21, it is seen that when the V2 indicator, the cash and non-cash turnover rate, which is connected with the value of M2, slightly increased in the period of 2013-2015, at the same time the inflation rate significantly climbed as well. After that, when from 2015 to 2016, this indicator decreased, the inflation rate dropped at the same time.

The whole data for the period of 2011 to 2020 for the computations of the cash turnover rate and cash and the non-cash turnover rate can be found in Appendix P XVII. These computations and analysis helped to prove the fact of the connection in inflation change with the change in cash and non-cash turnover rate.

Western economists point out that in the transition from high inflation to low in the short term, it is difficult to predict the change in the turnover rate money. To implement money targeting, you need at least a year forward to estimate the rate of money turnover, given that the money demand function remains unknown. Usually, this problem is solved proceeding from the set for calculations of a constant or even increasing rate of turnover of money. (Logvinenko, 2010, s. 5)

However, the standard money demand function implies that such premises are illogical: calculations should be based on a significant reduction in inflation rates, and falling inflation is likely to decrease the rate of turnover of money from double digits to single-valued values. Thus, since the velocity of circulation of money is one of the factors of

inflation, then the targeting of monetary aggregates in the short run increases the likelihood of monetary errors strategy. (Logvinenko, 2010, s. 5)

Therefore, according to the quantitative theory of money, money targeting should be used in the medium and long term concurrently with the implementation of a comprehensive program, including a reduction in the budget deficit, refusal to finance government spending through loans from the Central Bank and etc., in order to stabilize inflation expectations.

4 PRODUCT ANALYSIS OF RUSSIA

This chapter will be focused on the analysis of the structure of the GDP in Russia as well as on the describing the structure of the results of GDP estimation based on three methods. After that, the analysis of GRP in Russia will be performed. As a final point of the chapter will be the estimation of the GRP growth rate for the calculation of the adjusted misery index.

4.1 The results of estimation GDP and GRP in Russia

The estimation of GDP and GRP in Russia is a significant process that helps to evaluate the results of the country's performance. Based on the fact that Russia is the largest country in the world, not only the result of GDP is analyzed, but also the GRP result to have a deeper overview and develop a further strategy of improvement.

As it was mentioned in chapter 1.2 about the product, GDP can be calculated by three methods corresponding to different stages of reproduction – production, the method of using income and the method of forming GDP by sources of income.

On the table below, the structure of GDP calculated by production basis can be seen. (2014-2020) – Table 10

Table 10 The structure of Russian GDP calculated by production basis from 2014 till 2020 in %

Sphere	2014	2015	2016	2017	2018	2019	2020
Agriculture	3,90	4,30	4,27	3,90	3,8	3,9	4,1
Mining opertaions (mineral extraction)	9,10	9,80	9,63	10,90	13,4	12,9	9,8
Manufacturing activities	13,10	13,80	13,00	13,70	14,4	14,5	14,8
Electrical energy	2,70	2,80	2,93	2,90	2,6	2,6	2,6
Water supplies	0,50	0,50	0,49	0,50	0,50	0,50	0,50
Construction	6,80	6,30	6,36	6,00	5,6	5,5	5,7
Wholesale and retail trade	16,30	15,80	14,66	14,10	13,5	13,0	13,1
Transportation and storage	6,20	6,70	7,30	7,00	6,6	6,8	6,5
Hospitality	0,90	0,90	0,91	0,90	0,9	0,9	0,7
Information and communication activities	2,50	2,50	2,53	2,60	2,5	2,6	2,8
Finance and insurance activities	4,50	3,60	4,41	4,40	4,3	4,3	4,9
Real estate activities	10,60	10,10	10,18	10,00	9,5	9,8	10,5
Profwssional, scientific and technical activities	4,40	4,50	4,45	4,50	4,1	4,3	4,5
Public administration	2,00	2,40	2,42	2,40	2,1	2,1	2,0

Sphere	2014	2015	2016	2017	2018	2019	2020
Public administration in terms of war protection	8,00	7,70	7,97	7,80	7,5	7,5	8,3
Education	3,20	3,10	3,17	3,20	3,2	3,2	3,4
Healthcare	3,40	3,20	3,18	3,10	3,3	3,5	3,9
Culture and sport activities	0,80	0,90	0,89	0,90	1,0	1,0	0,9
Others	0,50	0,50	0,59	0,60	0,6	0,6	0,6
Households as employers; undifferentiated activities of private households for the production of goods and services for their own consumption	0,60	0,60	0,66	0,6	0,6	0,5	0,4

Source: Rosstat

For more details, the diagram was built for 2020 – figure 22. Based on the table 10 and figure 22, it is clearly seen that the biggest percentage in the GDP structure belongs to manufacturing activities, in 2020, this significative was almost 15%. Others to three are wholesale and retail trade, real estate activities and mining operations.

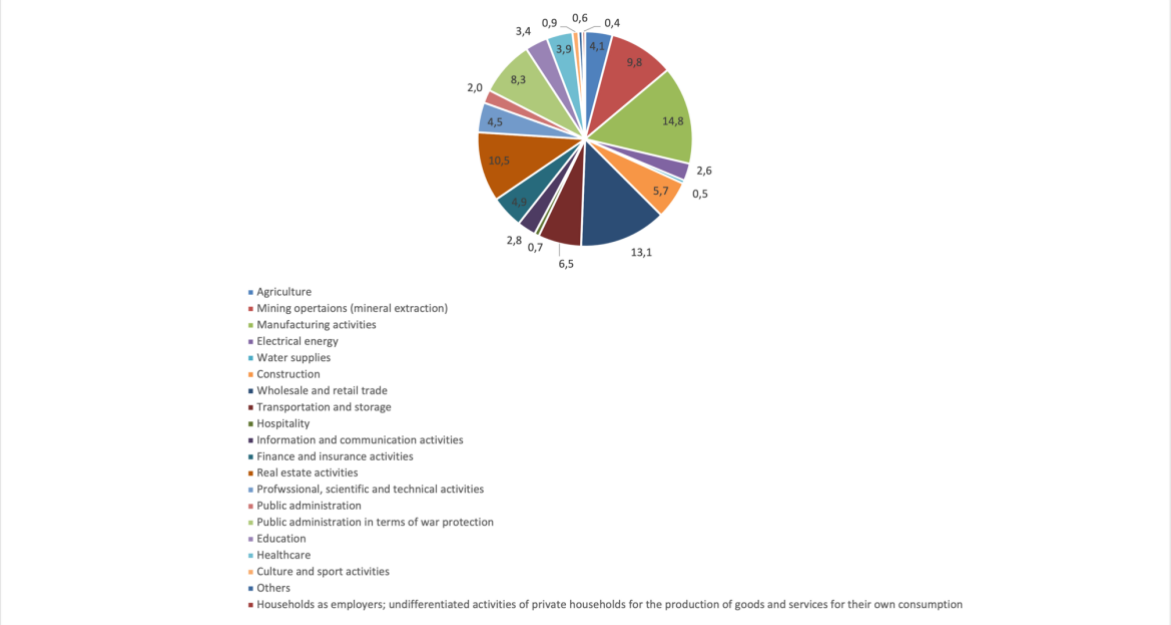

Figure 22: GDP structure calculated by production method in % (2020)

Source: Rosstat

Regarding the use of the income method, the structure of GDP mainly consists of final consumption, gross accumulation and net income. The overview of 2019 and 2020 can be seen in figure 23. In the structure of income method, the most significant part belongs to

final consumption – 70%, then it goes to gross accumulation – 24% in 2019 and 23% in 2020, and the last one is net export – 5% in 2019 and 8% in 2020.

Speaking about the source of income method for the estimation of GDP, it includes remuneration of employees, net taxes on production, gross profit of the economy and mixed gross income. (figure 24) The biggest part belongs to the remuneration of employees – 49% in 2019 and 46% in 2020. The second significative based on size is the gross profit of the economy and the gross mixed income: 39% in 2019 and 42% in 2020. The rest is going to the net taxes on production: 10% in 2019 and 11% in 2020.

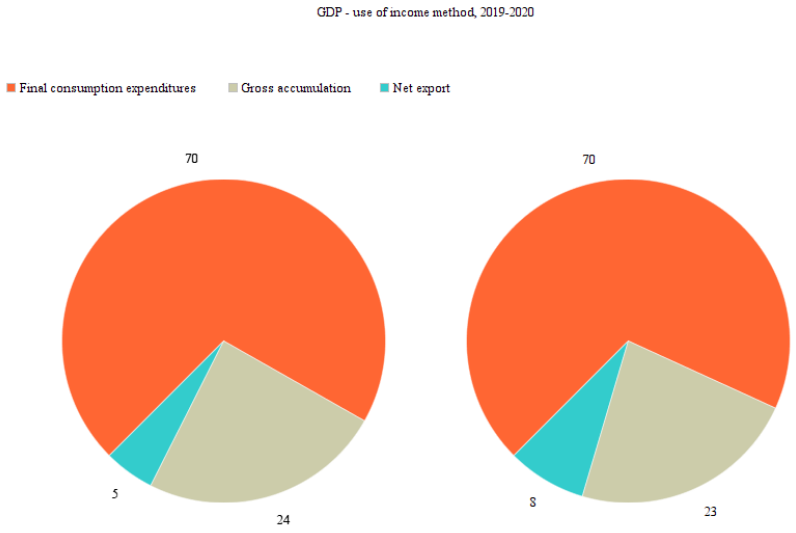

Figure 23: GDP structure calculated by use of income method in % (2020)

Source: Rosstat

Figure 24: GDP structure calculated by a source of income method in % (2020)

Source: Rosstat

GRP is a generalized indicator of the economic activity of the region that characterizes the process of producing goods and services for the final consumption. At the same time, GRP is the gross value added created by residents of the region and is defined as the difference between output and intermediate consumption. (Rosstat, 2020)

As well as calculation of GRP, calculation of the leading indicator of GRP based on Rosstat technology is made.

According to the Methodology, when carrying out monthly calculations of GRP in the absence of operational information on the production of products in a particular sector of the economy. The general scheme for calculating output and intermediate consumption is as follows: multiply the gross output of a given industry in the previous period of the corresponding year in current prices of this period by the index of the physical volume of output of this industry (as a percentage of the previous period). (Bank of Russia, 2020)

Every year Rosstat publishes a report with statistics where the structure of GRP per each region can be found. At the same time, they also calculate the total contribution of all regions as the sum and then estimate the percentage structure based on the sphere. Such overview can be seen in figure 25 for 2019, whereases detailed statistics per each federal district can be found in Appendix P XIII.

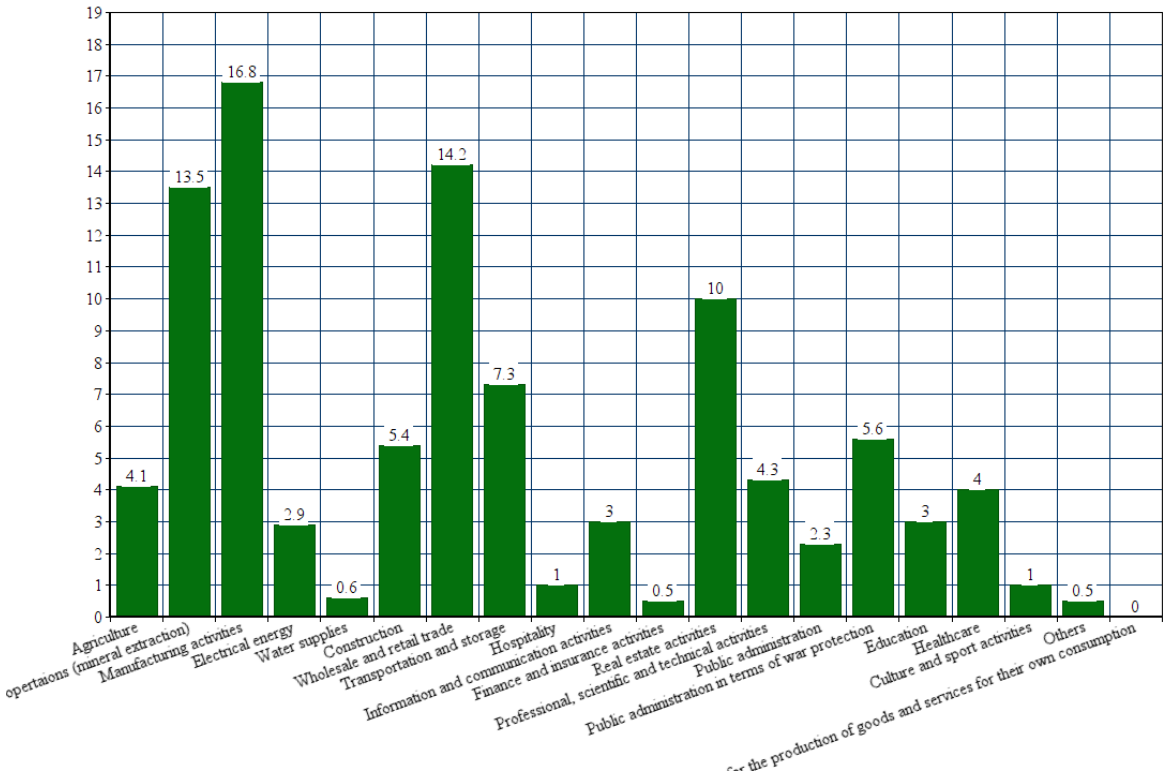

Figure 25: GRP structure as a sum of all regions in % (2019)

Source: Rosstat

To sum it up, it is important to say that the sum of the GRP is not equal to GDP since it is two different indexes. But at the same time, due to the broad location of the Russian Federation, it is very important to calculate and analyze GRP index to find out the strength and weaknesses of each region in the country.

To conduct the value of the adjusted Misery index the estimation of the GRP growth should be done. The GRP growth rate was estimated from 2010 till 2019 in %. In table 11, the results for the period of 2014-2019 can be seen.

Table 11 GRP growth estimation in Russia from 2014 till 2019 in %

Name/Year	**2014**	**2015**	**2016**	**2017**	**2018**	**2019**
Central Federal district	9	8	6	8	19	5
Northwestern Federal district	7	21	7	5	21	7
South Federal district	-1	11	7	7	18	4

Name/Year	2014	2015	2016	2017	2018	2019
North Caucasian Federal district	12	8	3	2	18	6
Volga Federal district	8	10	3	7	21	6
Ural Federal district	7	11	4	12	22	1
Siberian Federal district	11	11	4	10	20	6
Far Eastern Federal district	12	11	4	5	29	7

Source: Author's estimates

These values will be used accordingly in the adjusted misery index's calculation in the chapter 6.2.

5 UNEMPLOYMENT ANALYSIS OF RUSSIA

This chapter will be about the discussing of the results of the unemployment rate in Russia. The unemployment rate is one of the key indexes which allow finding the existing problems in society in terms of economic performance.

Based on the discussion in paragraph 1.3.1 about unemployment in Russia, it was found out that the district which is much more below the average level is the Central Federal District which is being the most attractive because of the geographical location because it borders with Europe and Scandinavian countries. Also, this district includes the biggest cities such as Moscow and Saint-Petersburg, so there is no doubt that the level of employment is quite high and there is no problem with unemployment. Whereases the situation with the North-Caucasian Federal District is the opposite compare to the Central Federal District as well as to the average.

According to statistics, the number of workers at the age of 15 and over in November 2019, according to Rosstat, amounted to 76,176 thousand people, including 72,669 thousand people (95.4% of the labour force) were engaged in economic activities and 3,507 thousand people (4.6%) did not have a profitable occupation but were actively looking for it (in accordance with the methodology of the International Labor Organization, they are classified as unemployed).

The lowest unemployment rate, determined in accordance with the estimating methodology, is noted in the Central Federal District (2.9% of the labour force), the highest in the North Caucasian Federal District (10.9%).

Among the constituent entities of the Russian Federation, the lowest unemployment rate was recorded in St. Petersburg (1.4% of the labor force), Moscow (1.5%), Yamalo-Nenets Autonomous Okrug (1.8%), Khanty- Mansiysk Autonomous Okrug (2.5%), Moscow Region (2.7%), Republic of Tatarstan (3.2%), Bryansk Region (3.3%), Novgorod Region (3.4%), Udmurt Republic (3, 4%), Ulyanovsk region (3.6%).

Based on the statistics, the highest unemployment rate is in North Caucasian Federal District: Ingushetia (26.3%), the Republic of Chechnya (13.7%) and the Karachay-Cherkessia Republic (12.0%). The problem of unemployment in Ingushetia is explained by the fact that most graduate applicants are lawyers and economists, and medical students are in short supply. This trend can be explained by the fact that there is a high staff turnover in the health care structure of the region. (Rosstat, 2020)

Based on statistical data, the need for medical workers in the North Caucasian Federal District in Ingushetia is very high and reaches 60% of the total demand; the lowest percentage of unemployment is made up of social workers and workers of technical specialties.

One of the reasons for the resulting unemployment in the Republic of Ingushetia is the lack of funding from the regional authorities for programs to promote the employment of the local population. This reason may be fundamental in the North Caucasus Federal District; therefore, the federal center is also engaged in its solution, allocating additional funds from the federal budget for the implementation of employment programs for the population, which should help reduce tension in the labour market. (Rosstat, 2020)

Considering the distribution of the unemployed population depending on the place of settlement, it can be concluded that the largest number of unemployed populations is concentrated in rural settlements, since in this area, as a rule, there are no latest technologies in agricultural production, there is an insufficient number of industrial enterprises, there are no sufficient volume investments for the development of remote areas, and labor migration is regularly recorded. This phenomenon can be explained by the fact that young people tend to leave the villages because of low wages, difficult working conditions, lack of prestige of work and poor social conditions. (Rosstat, 2020)

In addition, the problem of unemployment in rural settlements extends to urban settlements, the population of which does not exceed 50 thousand people. That is, it can be stated that in medium and large cities of Russia, where the highest concentration of the population is observed, as well as in cities with a population of one million, this problem is much less common, since many of them have been and remain centers of production of material goods and innovations. (Rosstat, 2020)

An analysis of unemployment in Russia shows that the most crisis years in the history of the Russian Federation were 1992–2000; after this period, the level of unemployment began to gradually decline. Since the birth rate during the years of perestroika decreased and, accordingly, the number of able-bodied people decreased, the country managed to increase the employment of citizens, that is, to provide jobs. (Rosstat, 2020)

Thus, the solution to the problem of unemployment is seen as follows:

- Firstly, in increasing not so much the number of labor resources of the indigenous population of the country, as the quality of working personnel. This can be done by improving the qualifications of personnel, retraining employees, replacing old equipment with new, more modern ones. In this case, it is possible to implement

the formula for the growth of the country's economy when a smaller amount of labor resources achieves higher rates of economic growth when labor productivity at an enterprise grows.

- Secondly, in the shift of development centers to the periphery, to rural areas with a small population. On the one hand, this will attract to the creation of the necessary (as in a city) infrastructure, and on the other hand, it will contribute to the dispersal of the population relatively evenly across the territory of the country, to reduce disparities in the development of regions, and to increase the level of employment and well-being in rural areas. (Grigoriyev, 2020)

It can be generalized that only a comprehensive approach to the problems of unemployment can become a way to increase the level of real employment of the population on the territory of our country. The population can and wants to work, but this work should not only be highly paid but also correspond to the profession of citizens, their preferences, opportunities, and professional training.

6 EXTERNAL SHOCKS ANALYSIS ON ECONOMIC STABILITY IN RUSSIA

This chapter will focus on the analysis the connection between the brent price and the exchange rate of the U.S dollar in Russia using the OLS method through the Gretl program. After that, the impact of sanctions in Russia on district level will be discussed.

6.1 The connection between brent price and the exchange rate of the U.S dollar in Russia

The question about the connection between inflation and the exchange rate of U.S. dollar was set up a long time ago. It is obvious that these two factors depend on each other because when the exchange rate changes, the value of the Russian ruble changes as well, which later on has an impact on inflation. The question is, what is the factor(s) which influence to U.S. dollar exchange rate in Russia? The answer is simple – it is a brent price. The prove of it will be figure 26.

Changes in international oil prices remain a fundamental driver of growth at the macro level and that this has also been a decisive factor of economic development during Putin's different terms in office. The president's economic team has developed strategies to deal with the macroeconomic volatility oil dependence implies to avoid the type of crisis Russia had in 1998. (The Russian economy under Putin, 2018)

Based on figure 26, it is clearly seen that the connection between the change in price brent and the change in USD exchange rate in Russia is very high. When the price brent price started to fall, the exchange rate of USD started to increase at the same time. The data for the analysis was taken from RBC. Every change in each year was associate with negative political news. This news were mostly about the sanctions which were implemented several times against Russia, but also about other events which were behind the sanctions and were the reason why the sanctions were established.

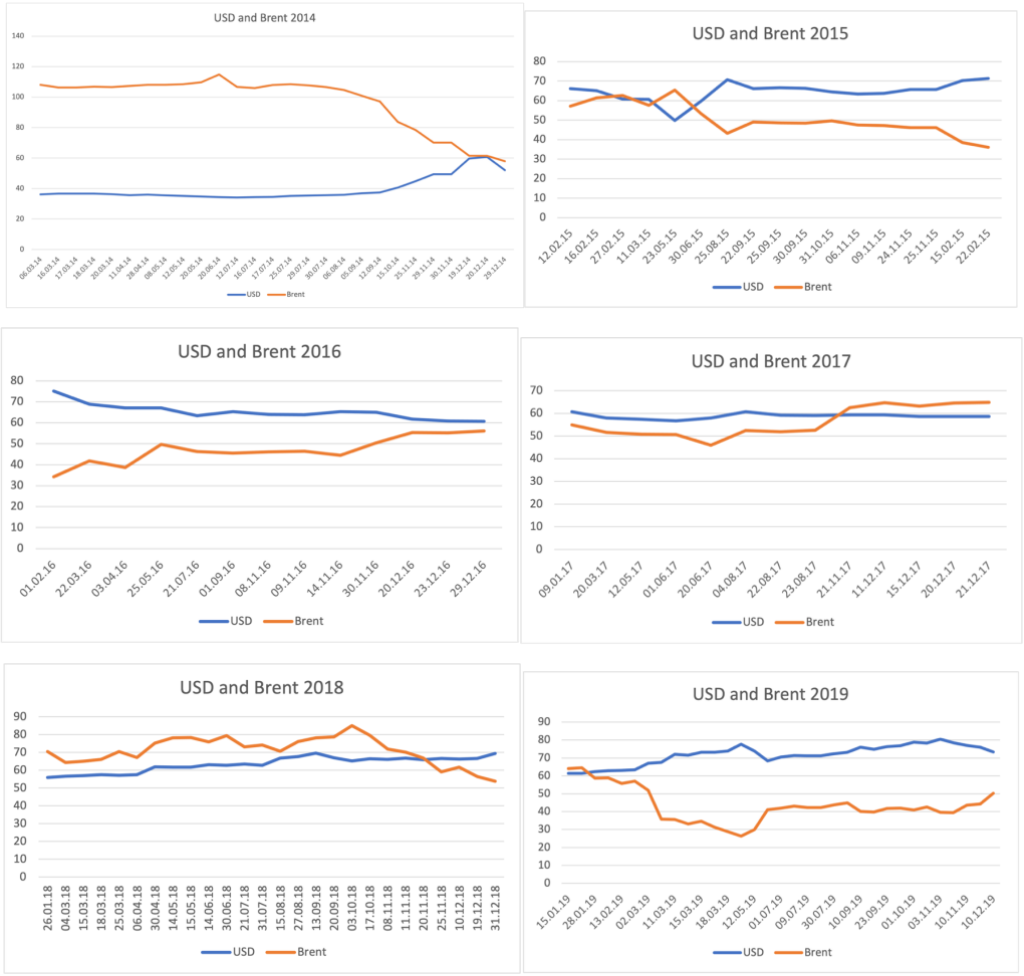

Figure 26: Connection between changes in brent price and USD exchange rate in Russia (2014-2019)

Source: RBC and author's analysis

Going into deeper investigation about the connection of brent price and USD exchange rate, the econometrics' analysis through the Gretl program was made. For the first analysis, data of 2014 was taken. For the regression estimation, the Ordinary Least Squares (OLS) method was used. The result can be seen on figure 27.

```
Model 1: OLS, using observations 1-27
Dependent variable: USD

             coefficient   std. error   t-ratio   p-value
  ---------------------------------------------------------
  const       79.9731      2.52972      31.61    1.11e-21 ***
  Brent       -0.416614    0.0256726    -16.23    8.75e-15 ***

Mean dependent var   39.56556   S.D. dependent var   7.727272
Sum squared resid    134.6016   S.E. of regression   2.320359
R-squared            0.913299   Adjusted R-squared   0.909831
F(1, 25)             263.3470   P-value(F)           8.75e-15
Log-likelihood      -59.99886   Akaike criterion     123.9977
Schwarz criterion    126.5894   Hannan-Quinn         124.7684
```

Figure 27: OLS regression estimation for the brent price and USD exchange rate in Gretl for 2014

Source: Author's estimation through the Gretl program

Dependent variable was chosen the USD exchange rate because it usually changes after the brent price changes. Analysis showed that the R-squared (coefficient of determination) in the model is 0.91. That is, 91% of the total variation exchange rate of the dollar against the ruble is explained by changes in oil prices. R square: 91% of the variations in the dependent variable can be explained by the independent variable. The model showed that when the Brent price increases by 1 dollar the exchange rate decreases by 0.4. We can reject the null hypothesis of (brent) parameters since the P- value is less than 0.05.

The model will look like this:

Dollar = 79.9731-0.416614*Brent

In figure 28, the graph of values which were estimated by the model and actual values of the USD exchange rate can be seen.

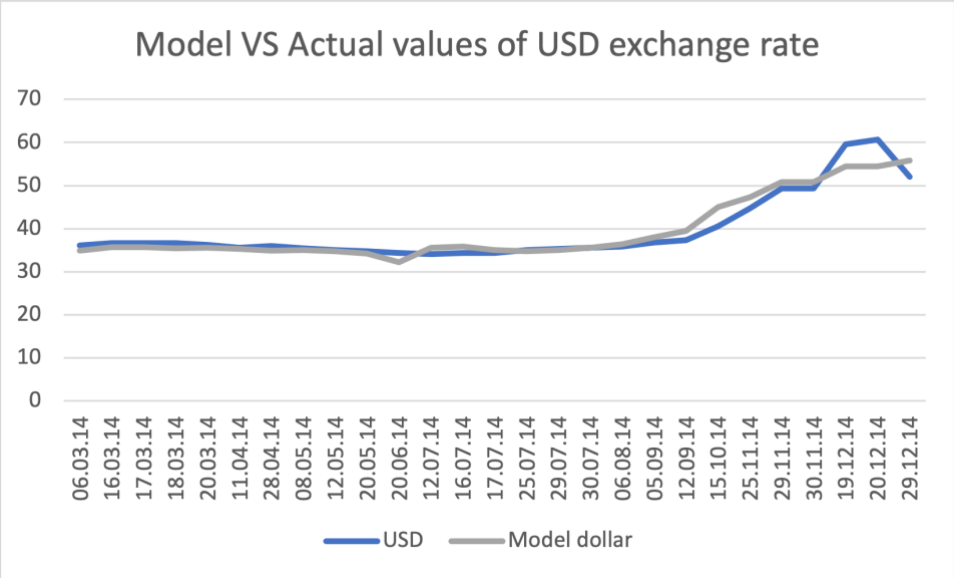

Figure 28: Estimated and actual values of USD exchange rate in Russia in 2014

Source: Author's estimation through the Gretl program

The graph speaks for itself. The correctness of the hypothesis about the absolute dependence of the Russian ruble on current oil prices is obvious based on the graph. The same procedure for the model estimation based on the OLS method for 2015 to 2019 years were also made. The results of the models can be seen in Appendix P XVIII.

The graphical results of the estimated model and actual values of the USD exchange rate can be seen in figure 29. The estimated model values for 2014-2019 can also be founded in Appendix P XVIX.

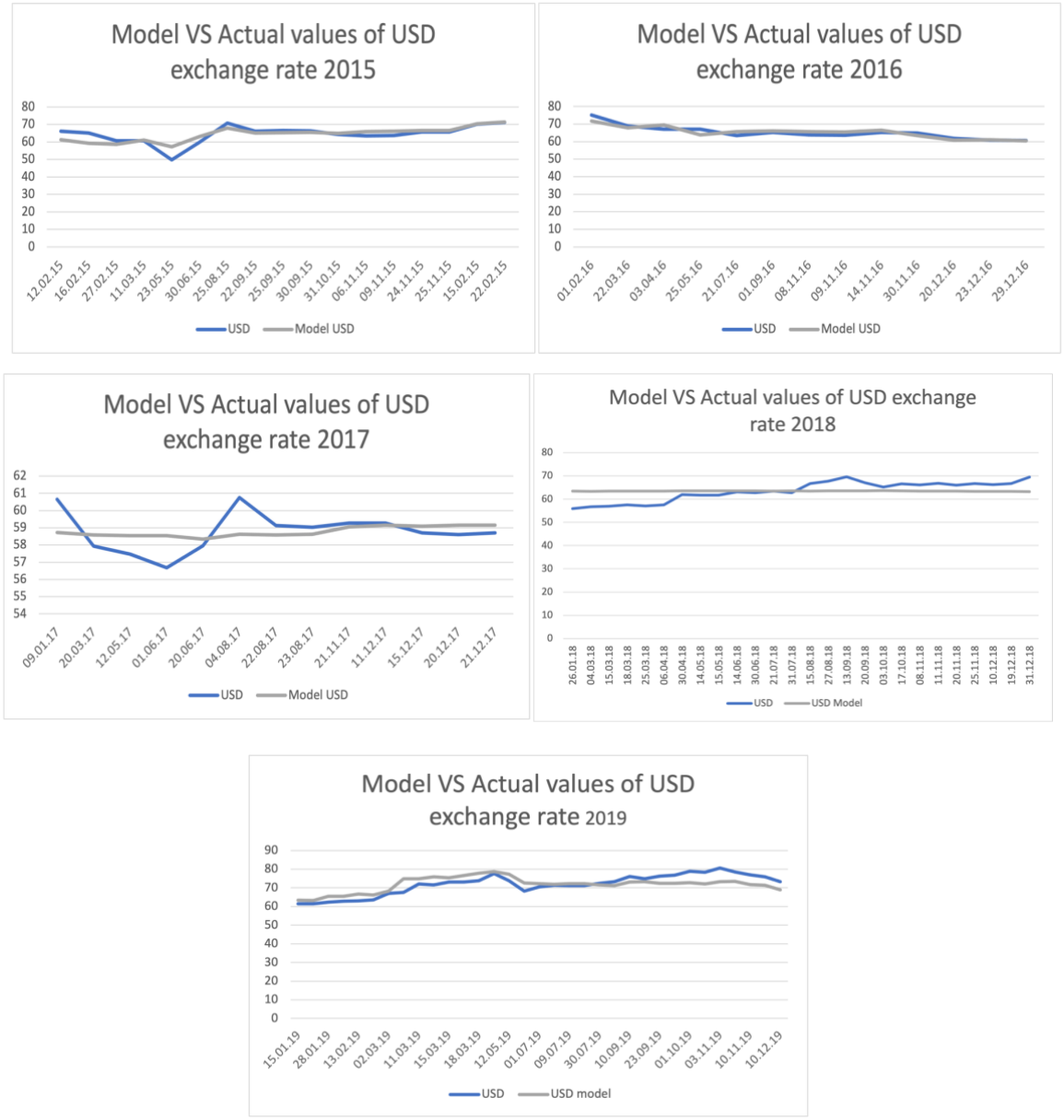

Figure 29: Estimated and actual values of the USD exchange rate in Russia in 2015-2019

Source: Author's estimation through the Gretl program

Based on the graphs below, for some years (for example, 2016, 2019), the model was almost repeating the actual values, which means that the connection between change in brent price and the change in the USD exchange rate was very strong. In 2015 model was very closed to the actual values, however in the first part of the year it was a little bit different from the factual results. In 2017 and 2018 the model was slightly different from the actual values; it means that the connection between changes in brent price and the USD exchange rate was weaker. The result of it could be the operation of the CBR, who took into consideration the occasions of previous years and did their best to protect the value of the Russian ruble for the period of new sanctions.

To sum it up, the connection between the changes in brent price and USD exchange rate remains very high. Every time the brent price changes, the USD exchange rate is very sensitive to it and as a result it also changes. The drop in brent price makes exchange rate of U.S. dollar rise, which has an impact on the inflation in the future. Since the rise of USD exchange rate means the depreciation of national currency, the long-term impact of it is the increasing inflation. At the same time increasing inflation might be the result of decreasing GDP results and increasing unemployment rate. In this situation, the main aim of CBR is to keep the exchange rate and protect it from changes in the brent price using the banking instruments.

6.2 Impact of sanctions on district level in Russia

Since 2014, the situation in world commodity markets has been deteriorating. In addition, since March 2014, a package of sanctions (financial and economic, scientific and technological, trade, etc.) imposed by the governments of a number of countries against Russia has been in effect. As a result, the volume of foreign trade of the Russian Federation decreases and the inflow of foreign investments into the country decreases, which entails a number of negative consequences. (Nechaev, 2019)

Firstly, since the share of revenues from foreign economic activity in the federal budget revenues in recent years has been close to 40%, and in the consolidated budget revenues it is at the level of 18-22%, the reduction in the export of Russian goods and services leads to a drop in the revenues of the federal budget and export-oriented regions.

Secondly, the curtailment of the production volumes of exporting enterprises and their incomes causes a decrease in employment and, consequently, a lower volume of tax revenues to the budgets of all levels. In the revenues of the consolidated budget of the Russian Federation, only taxes on profit and income of individuals make up about 20%.

Thirdly, the main items, which account for more than 80% of Russia’s total imports from foreign countries, are machinery, equipment, and vehicles; chemical industry products; food products and agricultural raw materials. The dependence of the Russian market on imported products is significant, including software and science-intensive products. Therefore, a reduction in imports, restrictions on the export of technologies to Russia hinder the development of several industries, which is also fraught with a decrease in employment, incomes of the population and federal, regional, and local budgets, and unsatisfied effective demand stimulates price growth.

Fourthly, the restriction of opportunities for domestic economic entities to obtain foreign loans caused by anti-Russian sanctions worsened the situation in the domestic financial market. Many business entities cannot attract the financial resources they need. The inaccessibility of external sources of financing in the absence of their equivalent replacement by internal ones hinders the development of production and technological progress. This leads not only to the consequences described above but also to a deepening of the technological lag the countries occupying the advanced frontiers of science and technology. The latter also makes it difficult for Russia to integrate into world food production chains. (Nechaev, 2019)

Sanctions can be divided into three groups: financial sanctions, restrictions on the export of equipment and technologies, Food countersanctions from the Russian side.

Regarding the financial sanctions, the main problem is the ban on lending to Russian banks and companies in Western banks. This drastically reduced the access of Russian businesses to "cheap" money. According to PricewaterhouseCoopers, if in 2013 Russian issuers raised $46.4 billion in the Eurobond market alone, then in 2015 – only about $ 5 billion. (Sostav, 2014)

In European and American banks, it was profitable to refinance without diverting fixed assets to pay interest on old loans. As a result, companies could invest in development. In 2015, experts from the Institute for Economic Forecasting (INP) of the Russian Academy of Sciences calculated that "the Russian economy is forced to make up for $ 160-200 billion in lost borrowed resources." That is, this money must either be sought in Asian banks, which cannot be done quickly, or taken from our own circulating assets. As a result, money that could be used to develop a business often goes to pay interest on old loans. Sostav, 2014)

But there are some positive sides to this story – Russia was managed to improve the cooperation with Asian countries and, as a result, started to build their business relations with them to improve the situation. As well as in response to attempts to restrict the settlements of several banks in the Visa and MasterCard systems, the national payment system "Mir" was successfully launched in Russia.

Regarding the restrictions on the export equipment and technologies, The most tangible for the Russian defense industry was the termination of military-technical cooperation with Ukraine. Deputy Prime Minister Dmitry Rogozin reported that Russia cannot complete the construction of a number of ships for the needs of the Navy due to the suspension of supplies of Ukrainian gas turbine units. It is well known that the frigates of projects 11356 (series for the Black Sea Fleet) and 22350 (the newest frigate "Admiral

Gorshkov") for the Russian Navy were equipped with Ukrainian engines today. The construction of a number of ships had to be suspended. The same applies to some other types of military equipment. (Tass, 2017)

But the defense industry's dependence on imported technologies is incomparably less than in the energy sector. It is on the energy sector that the sanctions will have the most long-term and painful impact, experts from the Institute of Economic Forecasting of the Russian Academy of Sciences note. According to their calculations, a decrease in the rate of development of new fields, in the most negative scenario, will lead to the fact that "by 2030 the volume of oil produced may decrease by 15%. (Tass, 2017)

The positive side of this story was Problems with imported, and, above all, Ukrainian components, dramatically accelerated the implementation of the import substitution program in the military sphere. According to Dmitry Rogozin, within the framework of this program, production of 186 items, which were previously produced in Ukraine, is being developed in Russia. According to the Ministry of Defense of the Russian Federation, by the end of 2016, Russian defense industry enterprises had fulfilled the plan for "Ukrainian" import substitution by 70-80%, and this figure reached 100% in 2018. (RBC, 2020)

Thus, Rybinsk NPO Saturn began deliveries of gas turbine engines for warships in late 2017 – early 2018.

Regarding the food countersanctions from Russian side, in 2014, Russia imposed an embargo on supplies to the country for "certain types of agricultural products, raw materials and food, the country of origin of which is the state that has decided to impose economic sanctions on Russia." The list includes meat and dairy products, vegetables, fruits, nuts, etc.

At first, countersanctions contributed to the growth of inflation on food products. As a result, this became one of the factors that for the first time in many years in 2014, the country recorded double-digit inflation – 11.4%, and in 2015 it was 12.9%. However, the positive side if these sanctions was the climb in development. (Nechaev, 2019)

According to the National Meat Association (NMA), Russia's self-sufficiency in poultry meat is currently almost 100%, in pork – 90%, in beef – 65%. The cabinet of ministers, in turn, believes that Russia provides itself with milk by 75%. By now, the impact of food sanctions on inflation has also been minimized. At the end of 2016, it amounted to only 5.4%. (Nechaev, 2019)

Speaking about certain examples of the regions which were affected by the sanctions mostly it was the regions where the main activity is production. Sanctions against defense and machine-building enterprises have become sensitive for the leading enterprises of

Udmurtia, the Tula region, and St. Petersburg. "Fuel" regions in Western Siberia experienced inconvenience due to restrictions on the use of foreign technologies for geological exploration and production.

To varying degrees, the regions where large companies that fell under them are located, were affected, for example, Uralvagonzavod (Sverdlovsk, Chelyabinsk, Tver, Tomsk regions), NPO Bazalt (Moscow, Kostromskaya, Moscow, Tula regions), Concern Constellation "(Voronezh, Novgorod, Rostov, Ryazan, Tambov, Tver regions, Krasnodar Territory, North Ossetia, Moscow)," NPO Mashinostroyenia "(Moscow, Orenburg, Smolensk, Chelyabinsk regions, Perm Territory) and others. (Sostav, 2014)

In 2019 the Ministry of Economic Development of Russia estimated the losses to Russia as a result of sanctions from various countries for the previous year. It was $ 6.3 billion for the 2018 only. The most severely affected by the sanctions were such sectors of the Russian economy as metallurgy (nearly $ 4 billion), agriculture, the chemical industry, and the auto industry. So, the regions where these sectors are the main in terms of economy were affected the most. Since lots of industrial factories are in Siberia, the sanctions of 2014 could be the reason why the unemployment rate in this district slightly raised that time.

To sum it up, the main loss of the sanctions against Russia for the regions was after 2014. The reason behind that it is the fact that the districts were not ready to meet such a significant change in operation. After this occasion happened, all regions in Russia started to change their strategy by adapting the current situation with restrictions. These strategy changes helped to develop new sides and started cooperation with other countries in Asia.

Based on the analysis which was performed above regarding the impact of sanctions on the key components of the misery index such as inflation, unemployment rate and GDP, as well as the econometrics examination of the connection between the brent price and USD exchange rate in Russia, the different adjustment to the estimation of the misery index can be created. These adjustments may take into consideration the reasons behind the changes of indicators and specifics of the country in terms of sanction's implementations.

Moreover, the fact that the connection between the brent price change and the USD exchange rate is significant, which lead to the inflation change, it should be taken into consideration for the calculation of the adjusted misery index on the national and district level as a potential adjustment in future researches.

7 MISERY INDEX

This chapter will focus on the estimation the 2 types of misery indexes: standard and adjusted ones. After the standard misery index will be calculated, the proposed adjustment will be applied and then the estimation of the adjusted misery index will be done. The final point of the chapter will be evaluation of the differences between the results of the misery index estimation in a standard and adjusted way. Moreover, the recommendations for the further estimation will be suggested.

7.1 Standard Misery index estimation based on inflation and unemployment rate on national and district level

Estimation of the Misery index can help in evaluating the economic stability and well-being in every country. Moreover, since Russia is the largest country in the world, the estimation of the Misery index should be done not only on the national level but also on districts level to see an accurate picture.

Based on formula 7, which was mentioned in the theoretical part, the standard Misery index was calculated at national and district level. The calculation was made on the sum of the level of inflation and unemployment rate on the national and district levels. The computation was made for the period of 2010 to 2020. The result can be seen in table 12.

Table 12 The Standard Misery index estimation based on inflation and unemployment rate on national and district level from 2015 till 2020 in %

Name/Year	2015	2016	2017	2018	2019	2020
Russian Federation (average)	18,5	10,9	7,7	9,1	7,6	9,5
Central Federal district	17,2	9,4	6,6	7,5	5,9	6,2
Northwestern Federal district	17,8	9,7	7,2	8,0	6,5	7,1
South Federal district	19,3	12,1	8,3	9,8	7,9	8,7
North Caucasian Federal district	25,8	16,2	13,6	13,7	14,1	15,2
Volga Federal district	16,4	9,4	6,7	8,5	6,8	7,6

Name/Year	2015	2016	2017	2018	2019	2020
Ural Federal district	19,2	11,8	8,2	7,9	7,2	7,1
Siberian Federal district	19,3	13,0	9,7	11,1	9,4	8,9
Far Eastern Federal district	18,3	11,2	7,6	8,7	10,0	10,1

Source: Author's estimates

The whole table of misery index estimation based on inflation and unemployment rate on national and district level from 2010 till 2020 can be found in Appendix P XIV.

Based on the calculation, the district with the highest misery index during the 10-year time was the North Caucasian federal district. Moreover, in 2017 the misery index of North Caucasian district was almost two times bigger than the misery index on the national level. The reason behind that is a really high unemployment rate in comparison with other districts of Russia and also quite a high inflation rate.

Looking into the analysis of misery index, in 2015, there were four districts which were having higher the misery index results compare to the average one on the national level. By 2020 the situation improved and, in this year, only two districts were performing above the national average level. Nevertheless, the gap between national level and the North Caucasian district remains big.

The best performing district, based on the estimation, is the Central Federal district. Last years, the result there was the lowest one in comparison to other districts and national level. As well as North Caucasian district, quite high results compare to others are having Far Eastern federal district and Siberian federal district. The reason behind that can be location and far distance from the central part of Russia, where based on the index, the happiest people live.

Average indicators for the Russian Federation as a whole do not provide a qualitative assessment of the real situation in the labor market in the regions. How a rather striking example can be cited relatively close to the geographical location of the regions of the Urals. Among them, on the one hand, the Kurgan region stands out with a traditionally high level of unemployment, a significant indicator of its gap, a consistently low level of wages. And on the other hand, the federal district includes oil-producing northern territories (Tyumen region, Khanty-Mansi Autonomous Okrug, Yamalo-Nenets Autonomous Okrug) characterized by high employment rate, low NAIRU and unemployment gap, combined with high, even relatively all-Russian, wages fees. (report of CBR, 2020)

The same situation applies to the Misery index as well, not only because it includes the unemployment rate in the calculation, but rather than the average indicators for the Russian Federation as a whole do not provide a qualitative assessment of the real situation in Russia. In this case, it is really important for the estimation and evaluation looking into details on district and region levels to create a right strategy of improving the situation of economic stability, but more important also to decrease a gap in indicators results between national level and level of the districts.

In this case, the right approach will be as well to estimate the adjusted misery index based not only on inflation and unemployment rate but also considering the fact of the GDP/GRP growth and bank lending rate using proposed adjustment. By performing the calculation of such an index, it will help to see a more detailed picture in order to estimate the gap between national and district levels in indicators of economic stability and well-being in Russia.

7.2 Adjusted Misery index estimation based on inflation, bank lending rates, unemployment, and % GDP change on national and district level

Performing the estimation of the Adjusted Misery index in Russia could change the overview result and show a more accurate picture of economic stability and well-being on the district level and in the entire country.

Based on formula 8, which was mentioned in the theoretical part, the Adjusted Misery index was estimated at the national and district level as well. The calculation was made by using data of inflation rate, unemployment rate, bank lending rate and the growth of GDP and GRP.

All indexes were taken in percentage for further calculation. Inflation and unemployment rates were using the same as for the calculation of the first type of Misery index and were taken into consideration on national and district levels. The bank lending rate remains the same for the all-district calculations as well as for the national level because it is not changing depending on location and stays the same on the whole territory of Russia. For the calculation, the weighted average bank lending rates were estimated for the past ten years.

For the calculations of the growth of GDP, proposed adjustment for the district level calculation was applied. At the national level, the growth of GDP in current prices was taken

into consideration, whereases for district level, the GRP growth rate was used. The reason behind that is making the calculation more accurate by paying attention to changes on district level to see a fair overview of the situation.

The whole data for the period of 2010 to 2019 for the GRP growth rate as well as for the primary values, based on which these computations were made, can be found in Appendix P XV. As it is clearly seen from the table, not always the positive growth was seen during the analyzed period. For example, in 2014, in the South Federal district a negative growth of -1% was detected.

The next step was to calculate the adjusted misery index. (table 13) For the calculation the estimated GRP growth made, which was done in chapter 4.1 will be used.

Table 13 Adjusted Misery index estimation based on inflation and unemployment rate on national and district level from 2014 till 2019 in %

Name/Year	2014	2015	2016	2017	2018	2019
Russian Federation (as a whole in current prices)	24,9	30,8	20,5	6,72	4,2	10,46
Central Federal district	22,9	26,3	15,9	4,7	-2,5	8,3
Northwestern Federal district	26,3	14,2	15,3	8,6	-4,2	7,7
South Federal district	34,9	25,3	17,3	7,3	1,1	11,4
North Caucasian Federal district	24,9	35,5	25,3	17,4	5,2	16,2
Volga Federal district	23,2	24,0	19,3	5,4	-3,4	8,4
Ural Federal district	23,5	26,8	21,7	6,9	-4,0	13,6
Siberian Federal district	23,0	25,2	21,7	5,6	0,5	11,4
Far Eastern Federal district	20,9	24,4	19,9	9,1	-10,9	10,8

Source: Author's estimates

Based on the numbers in table 13, the situation with the misery index looks better due to the fact that even there were some negative values, which means that the growth of the GRP was bigger than the sum of inflation, unemployment rate and bank lending rate. It is a good sign in terms of improvement and the speed of the growth of GRP. Moreover, since

the adjusted misery index on the national level was estimated by using GPD in the current prices, the value of it is bigger than on the district level.

However, due to the fact that the sum of GRP is not equal to GDP, some factors are not taken into consideration, which makes the overview result not fair enough in terms of comparison. In this case, the adjusted misery index should be compared among only districts but not with the national level one in the case of this calculation.

According to district comparison, the biggest misery indexes were in Siberian federal district, South federal district, North Caucasian federal district and Ural federal district in 2019.

The leader of the highest misery index remains the North Caucasian federal district. Despite the fact that the value of the misery index of this district steadily decreased during the period of time, the North Caucasian federal district still has the hardest situation in the whole Russia with the unemployment and inflation rate, and the growth of the GRP is not covering this issue.

One more district where the estimated misery index is quite high is the Ural Federal district. The reason behind that is the fact the growth of GRP significantly dropped in 2019 compared to 2018. If in 2018, the growth rate for GRP of Ural Federal district was 22,3%, in 2019, it became 1,5%. This incredible change made a huge impact on the value of the misery index.

The same situation happened with the change of the growth of GRP in Siberian and South federal districts when the speed of the GRP's growth decreased. In figure, the changes of the misery index on the district and the national level from 2010 till 2019, can be seen.

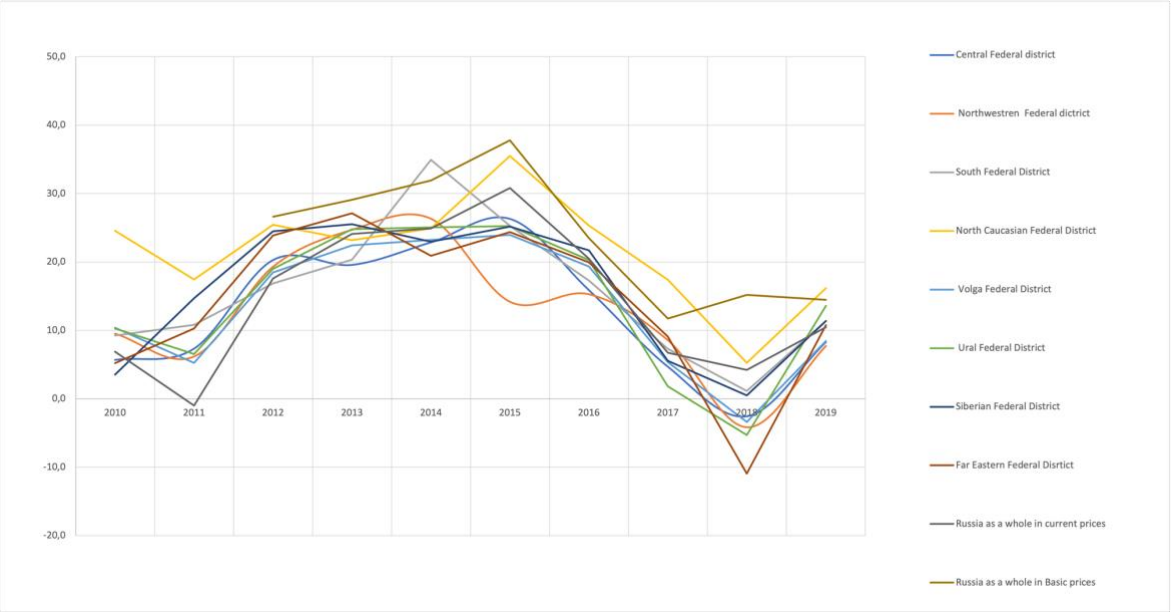

Figure 30: Changes of adjusted Misery index in district and national levels from 2010 till 2019 in Russia

Source: Author's estimates

It is important to mention that the gap between some district in terms of the value of the misery index is significant. For example, in 2019 the misery index of the Central federal district was two times smaller than the value of the North Caucasian federal district's index.

The whole data for the period of 2010 to 2019 for the adjusted misery index as well as for the primary values, based on which these computations were made, can be found in Appendix P XVI.

The proposed adjustment for the estimation of the adjusted misery index on district level helped to evaluate the potential of the district compare to the situation with inflation and unemployment rate in particular area. Negative value in 2018 shows that the growth of GRP was higher than the sum of inflation and unemployment rate that time, that means that despite the values of inflation and unemployment were positive and not so law, the districts were performing well.

7.3 Evaluation of differences between the results of estimation of standard and adjusted Misery indexes in Russia

After the calculation of the Misery index in standard and adjusted ways were done, the crucial part is to compare the results and evaluate it in terms of further development and recommendations.

The calculation of the adjusted misery index was made based on more detailed values than the misery index to see the differences in results. The values of the adjusted misery index were slightly higher than the values of the misery index. Moreover, while the adjusted calculation was made, some values were negative, which means that the growth of GRP in that period in these districts were significant, which helped to cover the situation with inflation and unemployment rate.

Regarding the results of misery index estimation, it shows that the highest value was detected in the North-Caucasian district. Based on the 1st methodology (standard misery index), the value of the misery index in this district in 2020 was almost two times higher than on the national level, and in 2019, based on the 2nd methodology estimation (adjusted misery index estimation), it was 1,55 times higher than on national level. Such a gap can be counted as significant. After the 1st estimation of the misery index, it was found out that on average, only two districts were performing higher than the national level value. There were the North-Caucasian Federal district and Far-Eastern Federal district.

After the adjusted estimation of misery index was done, the results were slightly the different because the 2nd technique of the calculation is more detailed. Based on results in 2019, 5 districts out of 8 were performing higher than the national level. There were: South Federal district, North-Caucasian Federal district, Ural Federal district, Siberian Federal district and Far-Eastern federal district. If the other districts had a slightly higher gap from the national level, the North-Caucasian Federal district had the highest gap again in both calculations.

This fact can be crucial since the adjusted misery index is showing that 5 out of 8 districts were performing higher than the national level, whereas based on the standard misery index estimation, only 2 districts were performing above the national level. This fact proves that the adjusted misery index estimation may show the hidden problem and help to evaluate the potential of the district and the weakness which should be overcome.

The calculation of indexes in both ways helped not only to understand the situation on national and district levels but also the see the difference in values on districts levels. It showed the fact that between some of the district, the gap in values can be significant, which should be taken into consideration for the purpose of economic stability of the country. The calculation of adjusted misery index should be applied on an annual or even quarterly basis to implement the tools of stabilizing the situation and reducing the gap between the districts.

As well as some more adjustments can be applied based on the size of the district, the number of population and labor force who are living there, the value of GRP out of GDP

and other indicators which can be described the real situation on the district. Moreover, such adjustments could also be made to make the data more comparable to create strategies for reducing the gaps and improving the situation.

Moreover, to create a proper adjustment for the misery index estimation, the analysis of the reasons which are influence by the change of misery index components should be done. Since the key one which usually lead to the changes of other indicators is inflation, in the paragraph 3.6, the evaluation of the inflation based on the monetary aggregates was performed.

Moreover, after this, the evaluation of different factors, but mainly the sanctions against Russia, was done to understand its impact on the change of key components of the adjusted misery index: inflation, unemployment rate, GDP.

Based on the analysis of external shocks which was done in the paragraph 6, the connection between the change in brent price and the USD exchange rate in Russia was established. This fact can also be used in the adjusted misery index estimation as a factor which has an impact on the situation with the change in inflation and furthermore in unemployment rate.

CONCLUSION

The main aim of the thesis was to propose adjustments to the misery index and conduct its value on national and district level in Russia. To do so, the thesis was divided into two parts: theoretical and practical. The first part presents the theoretical framework of indicators of economic stability and well-being in Russia. The author performed a literature review regarding such indicators and the misery index.

As this thesis was primarily focus on proposing adjustment and further estimation of the adjusted misery index in order to discuss observed differences between the standard and adjusted misery indexes, the following sub-topics were covered:

- What is the value of inflation in Russia and how it is measured?
- What is the difference between GDP and GRP in Russia, and how it is calculated?
- What is the value of unemployment rate in Russia?
- What is the impact of sanctions on economic stability in Russia?
- How can the geographical location of the district impact on values of economic stability indicators?
- Misery index as a connection among inflation, unemployment rate and GDP

The second part consisted of a practical analysis of CPI in Russia on different levels, GDP and GRP, and unemployment rate in Russia. As well as the analysis of sanction's impact on values such as inflation, GDP and unemployment rate. Moreover, the connection between the change in the Brent price and the USD exchange rate in Russia was detected.

Finally, the estimation of the misery index on national and district level was performed using two ways: the standard and the adjusted one. The standard way only included the values of inflation and unemployment rate for the calculation, whereas the adjusted one also took into consideration the values of GDP/GRP growth and bank lending rate.

Regarding the results of misery index estimation, it shows that the highest value was detected in the North-Caucasian district. Based on the standard methodology, the value of the misery index in this district in 2020 was almost two times higher than on the national level, and in 2019, based on the 2nd methodology estimation, it was 1,55 times higher than on national level. Such a gap can be counted as a significant. After the estimation of the standard misery index, it was found out that on average only 2 districts were performing higher than national level value. There were North-Caucasian Federal district and Far-Eastern Federal district.

After the estimation of the adjusted misery index was done, the results were slightly the different because the 2nd technique of the calculation is more detailed. Based on results in 2019, 5 districts out of 8 were performing higher than the national level. There were: South Federal district, North-Caucasian Federal district, Ural Federal district, Siberian Federal district, and Far-Eastern federal district. If the other districts had slightly higher gap from the national level, the North-Caucasian Federal district had the highest gap again in both calculations.

In order to reduce the gaps in values between the national and districts levels, as well as among the district itself the government should:

- Calculate the adjusted misery index on annual or even quarterly basis on order to be able monitoring the situation and establish the strategy which can improve the situation
- Develop other adjustments which can be made for the misery index calculation based on the size of the district, the number of population and labor force, the value of GRP out of GDP to make the data more comparable and investigate the reasons behind the changes

Regarding the results, which were estimated, the following recommendations can be proposed:

1. One of the key priorities should be stabilizing the situation in North-Caucasian district by creating new working places, improving the educational situation and motivate people to work. Moreover, some taxes privilege can be established in this district as well as the government subsidies can be paid for the purpose of the strategy implementation
2. Regarding the districts which also have quite high result of misery index – geographically they are located quite far from the central part of Russia. In order to improve the situation, there and stop migration of the young population to the central part of Russia, the government should investigate the reasons behind this process and also head the force to change the situation by implementing national strategies of development for the future years
3. Government should control on constant basis the results of each implementation by measuring different indexes, one of them could be the adjusted misery index.

LIMITATIONS OF THE RESEARCH

The author's assumptions and performed calculations can be mainly applied only to Russia. Every appraisal process is highly individual, thus the comparison inside one country should start with taking into consideration some facts which can impact on the results such as the size of the country, the geographical location, the main speres which can influence to the change in indicators in economic stability and well-being.

In case of Russia, since the sanctions and change in brent price are making the huge impact on the change in indicators, the author took this into the consideration and made a brief analysis of sanction's impact on values on national and district levels in Russia. Moreover, the econometrics' analysis using the OLS method was performed in order to investigate connections between the change in brent price and USD exchange rate in Russia.

Based on the facts which were mentioned above, the research and the calculations which were conducted have limitations which could have resulted in either vague or biased results of the estimation and comparison. Thus, all the calculations were done based on the results of the official statistics of Russia. Even though this resource of information is reliable, it could have resulted in some bias in the growth of GDP/GRP estimates, due to the usage of percentage values.

Moreover, there are some categories of uncertainties, which can make an impact on the results of the indicators of economic stability and well-being in certain district that are not shown in numbers. It could be the shadow economy, historical situation, negative local event which happened and etc.

SUGGESTIONS FOR FUTURE RESEARCH

As a final point of the thesis the author would like to give a suggestion for further studies in comparison national and regional economic stability and well-being in Russia based on the adjusted misery index.

There is astounding amount of theoretical knowledge regarding the economic stability and well-being, estimation of the misery index and inequality in different countries. Thus, before performing the research, the analyst should deeply research the theoretical background and historical singularities of country.

Russia is the largest country in the world, based on this fact, it is one of the main factors which influence to the difference in the comparable results. To understand the reason behind each value which is calculated by statistical institutes, not only the actual and historical numbers should be analyzed. The investigation should go deeply into details considering the facts of geographical location, the main business activity of the district, the structure of the population who are living there, the ability of being educated and the number of universities which can help young people in their further development, etc.

Thus, the author's suggestion is not only to estimate on annual or quarterly basis adjusted misery index in Russia on national and district level to estimate the difference in values and create a strategy for the gap reduction and further stabilization. Moreover, the new adjustment of the misery index calculation should take into consideration. It could be the GRP values out of GDP, the size of the district comparing to the whole Russian territory, the number of labor force who are living in the area, the main business activity of the district which is generated the biggest income and etc.

In the author's view, such adjustments will help to evaluate the situation clearer and investigate the reasons behind certain problems. Based on the fact, that the knowledge of the reason is halfway of problem solving it will make more efficient the impact and development of government strategies.

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LIST OF ABBREVIATIONS

APC Aggregate price index

BML Bitcoin Misery Index

CBR Central Bank of Russia

CPI Consumer Price Index

EDI Economic Discomfort Index

GDP Gross Domestic Product

GRP Gross Regional Product

HICP Harmonized Indices of consumer prices

NMA National Meat Association

OLS Ordinary listed square method

PRI Individual price indices

RUB Russian Rubble

SWOT Strength, Weakness, Opportunities, Threats analysis

USD United Stated Dollar

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APPENDICES

Appendix P XIX: The graphical results of estimated model and actual values of USD exchange rate from 2014 to 2019 in Russi

APPENDIX P I: DETAILED STRUCTURE OF CPI IN THE PERIOD OF 2006 TILL 2019 IN RUSSIA

Name of the product/services	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**	**100,00**
Food products	**42,71**	**40,21**	**39,11**	**37,70**	**37,97**	**38,50**	**37,27**	**37,08**	**36,51**	**37,31**	**38,00**	**38,08**	**37,46**	**37,61**
Meat	10,71	10,28	9,81	9,59	9,64	9,69	9,78	9,65	9,25	9,69	9,56	9,44	9,31	9,54
Fish	1,88	1,87	1,76	1,82	1,90	1,92	1,95	1,89	1,90	2,04	2,13	2,14	2,17	2,16
Oil and fat	1,60	1,37	1,40	1,26	1,21	1,24	1,18	1,12	1,10	1,08	1,13	1,21	1,19	1,16
Milk and milk's products	2,84	2,68	2,82	2,54	2,64	2,76	2,70	2,65	2,77	2,85	2,90	3,07	3,23	3,15
Cheese	0,99	0,96	1,18	0,93	0,97	1,05	1,06	1,01	1,09	1,14	1,10	1,16	1,18	1,20
Eggs	0,72	0,63	0,61	0,56	0,51	0,52	0,48	0,47	0,52	0,50	0,51	0,50	0,46	0,51
Sugar	1,14	0,92	0,73	0,59	0,68	0,70	0,53	0,48	0,46	0,50	0,51	0,49	0,39	0,43
Confectionary	2,33	2,28	2,23	2,21	2,33	2,40	2,50	2,49	2,45	2,45	2,69	2,69	2,64	2,54
Tea, coffee, cocoa	1,03	0,95	0,90	0,91	0,98	0,99	0,99	0,97	0,93	0,94	1,05	1,12	1,13	1,08
Bread	2,50	2,23	2,04	1,96	1,99	1,86	1,79	1,77	1,70	1,61	1,64	1,67	1,66	1,61
Pasta and cereal	1,12	0,99	0,94	0,91	0,90	0,96	0,82	0,74	0,72	0,80	0,88	0,94	0,87	0,87
Fruits and vegetables	3,96	3,83	3,83	3,57	3,61	4,18	3,42	3,63	3,69	3,99	4,16	3,87	3,89	4,00
Alcoholic beverages	7,12	6,63	6,33	5,85	5,78	5,33	5,23	5,40	5,21	4,98	4,73	4,71	4,36	4,49
Public catering	2,28	2,23	2,23	2,73	2,45	2,52	2,51	2,49	2,52	2,58	2,64	2,61	2,53	2,49
Others	2,49	2,36	2,30	2,27	2,38	2,38	2,33	2,32	2,20	2,16	2,37	2,46	2,45	2,38
Non-food products	**33,74**	**35,13**	**35,99**	**37,37**	**36,25**	**35,57**	**36,88**	**37,12**	**37,71**	**37,13**	**36,51**	**35,67**	**35,23**	**34,81**
Clothes	5,19	5,27	5,13	5,55	5,48	5,59	5,55	5,46	5,27	5,09	4,99	4,99	4,84	4,63
Fur	0,56	0,74	0,70	0,72	0,65	0,66	0,66	0,69	0,69	0,60	0,56	0,50	0,45	0,43
Knitted products	1,29	1,30	1,32	1,31	1,34	1,33	1,33	1,27	1,27	1,19	1,18	1,18	1,17	1,12
Shoes	2,52	2,55	2,52	2,53	2,54	2,56	2,50	2,36	2,30	2,23	2,22	2,33	2,29	2,15
Cleaning suppliers	0,74	0,67	0,68	0,74	0,82	0,80	0,80	0,76	0,76	0,76	0,83	0,86	0,83	0,83
Perfumes and cosmetics	1,36	1,35	1,34	1,27	1,44	1,44	1,43	1,40	1,43	1,38	1,43	1,48	1,47	1,46
Haberdashery	0,79	0,80	0,85	0,85	0,92	0,94	0,93	0,93	0,95	0,90	0,94	0,98	0,98	0,92
Tobacco products	0,83	0,72	0,68	0,65	0,69	0,76	0,75	0,84	0,91	0,99	1,13	1,18	1,24	1,24
Furniture	2,17	2,21	2,21	2,43	2,34	2,07	2,07	2,17	2,30	2,09	2,06	1,97	1,93	1,82
Electrical goods	2,18	2,07	1,99	1,94	1,76	1,62	1,61	1,53	1,53	1,64	1,61	1,46	1,38	1,31
Press/ Print media	0,50	0,49	0,47	0,45	0,48	0,47	0,44	0,41	0,37	0,32	0,30	0,29	0,26	0,24
Radio	1,15	1,20	1,01	1,00	0,95	0,85	0,78	0,73	0,66	0,68	0,64	0,50	0,43	0,40
PC	1,13	1,05	0,92	1,01	0,88	0,83	0,82	0,73	0,62	0,73	0,66	0,57	0,49	0,46
Communication equipment	0,87	0,80	0,73	0,63	0,53	0,50	0,41	0,39	0,60	0,51	0,50	0,51	0,53	0,54
Building materials	1,83	2,07	2,19	1,80	1,62	1,64	1,43	1,37	1,40	1,28	1,24	1,18	1,13	1,07
Cars	4,24	4,99	6,34	7,30	5,66	5,38	6,98	7,33	7,55	7,54	6,77	5,97	5,60	5,94
Petrol	1,91	2,00	2,10	2,12	2,38	2,45	2,57	2,87	3,00	3,12	3,17	3,35	3,96	4,07
Medical goods	1,43	1,62	1,52	1,56	2,07	1,90	1,82	1,82	1,93	2,01	2,10	2,11	2,13	2,16
Others	3,05	3,23	3,29	3,51	3,70	3,78	4,00	4,06	4,17	4,07	4,18	4,26	4,12	4,02
Services	**23,55**	**24,66**	**24,90**	**24,93**	**25,78**	**25,93**	**25,85**	**25,80**	**25,78**	**25,56**	**25,49**	**26,25**	**27,31**	**27,58**
Household services	2,71	2,69	2,82	2,80	2,76	2,77	2,87	2,86	3,00	2,91	3,01	3,10	3,31	3,30
Passenger transport services	3,31	3,26	3,26	3,38	3,09	3,02	2,85	2,85	2,82	2,71	2,62	2,50	2,48	2,39
Communication services	2,66	3,19	2,96	2,96	3,14	3,25	3,15	2,91	2,85	2,65	2,66	2,76	3,02	2,89
Housing services	8,90	8,83	8,57	7,89	8,81	9,01	9,20	9,24	8,96	8,88	8,81	9,48	9,90	9,99
Housing services	2,78	2,75	2,74	2,57	2,61	2,71	2,80	2,78	2,77	2,94	2,88	3,38	3,41	3,36
Hotel's services	0,11	0,10	0,12	0,14	0,15	0,15	0,14	0,15	0,17	0,19	0,19	0,19	0,18	0,19
Municipal services	6,01	5,98	5,71	5,18	6,05	6,15	6,26	6,31	6,02	5,75	5,74	5,91	6,31	6,44
Early school education services	0,28	0,35	0,35	0,36	0,43	0,41	0,39	0,40	0,42	0,47	0,50	0,57	0,54	0,53
Educational services	2,02	2,50	2,49	2,27	2,27	2,08	1,92	1,91	1,83	1,78	1,67	1,57	1,54	1,50
Cultural services	0,26	0,30	0,33	0,35	0,41	0,42	0,45	0,46	0,39	0,36	0,36	0,37	0,38	0,40
Sanatorium treatment services	0,54	0,45	0,56	0,66	0,51	0,49	0,48	0,47	0,43	0,41	0,40	0,42	0,43	0,47
Medical services	1,02	1,17	1,29	1,20	1,34	1,35	1,33	1,42	1,52	1,50	1,65	1,56	1,56	1,50
Others	1,85	1,92	2,27	3,06	3,02	3,13	3,21	3,28	3,56	3,89	3,81	3,92	4,15	4,61

APPENDIX P II: LIST OF PRODUCTS WHICH ARE INCLUDED IN CPI CALCULATION

There are some principles which are applied for the calculation of CPI in terms what products should be included or excluded. Fruits and vegetables are excluded from the general list of food products, since fluctuations in prices for them have a pronounced seasonal character and throughout the year significantly affect the CPI both in the direction of its decrease and increase.

From the group of non-food products, the calculation of the basic consumer price index does not include changes in prices for fuel (including gasoline), since the dynamics of prices for certain types of fuel, in addition to the seasonal factor, is subject to the administrative influence of federal and regional authorities.

The group of paid services to the population excludes those types of services for which prices are formed, as a rule, at the federal or regional level by decision of the relevant authorities (individual passenger transport services, communication services, practically all types of housing and communal services, certain types of legal services).

Based on this principle, food products include these goods: ***Meat and poultry***: beef (except boneless meat), kg; boneless beef, kg; pork (except boneless meat), kg; boneless pork, kg; lamb (except boneless meat), kg; minced meat, kg; pelmeni, manti, ravioli, kg; beef liver, kg.

Poultry: chickens (except chicken legs), kg; chicken legs, kg.

Sausages and smoked products: semi-smoked sausage, kg; raw smoked sausage, kg; smoked meat, kg; poultry culinary products, kg; cooked sausage I grade, kg; cooked sausage of the highest grade, kg; sausages, kg.

Canned meat: canned beef, pork stew, 350 g;

Fish and seafood edible: fish live and chilled, kg; frozen uncut fish, kg; frozen cut fish, kg; salted, marinated, smoked fish, kg; salmon caviar, domestic, kg; salted and smoked fish delicacies, kg.

Herring: salted herring, kg.

Canned fish: canned fish, natural and with the addition of oil, 350 g; canned fish in tomato sauce, 350 g.

Oil and fats: butter, kg; sunflower oil, kg.

Margarine and margarine products: margarine, kg.

Milk and dairy products: whole draft unpasteurized milk, liters; whole milk pasteurized, sterilized 2.5-3.2% fat, liters; sour cream, kg; fermented milk products, liters; milk yogurt, 125 g; fat cottage cheese, kg; low-fat cottage cheese, kg; curd cheeses, glazed with chocolate, 50 g; condensed milk with sugar, 400 g; dry milk mixtures for baby food, kg.

Cheese: rennet hard and soft cheeses, kg; processed cheese, kg; national cheeses and feta cheeses, kg.

Canned vegetables: canned vegetable snack bars, lunch, kg; canned, pickled natural vegetables, kg; canned vegetables for baby food, kg; tomato canned food, kg; ketchup, kg.

Canned fruits and berries: fruit juices, liters; canned fruits and berries for baby food, kg.

Eggs: chicken eggs, 10 pcs.

Sugar: granulated sugar, kg.

Confectionery: cookies, kg; gingerbread, kg; marshmallow, kg; caramel, kg; soft sweets, glazed with chocolate, kg; chocolate candies, natural and with additives, kg; chocolate, kg; cupcakes, rolls, kg; cakes, kg; chewing gum, packaging.

Jam, honey: jam, kg; natural bee honey, kg.

Tea coffee: natural instant coffee, kg; long black tea, kg; salt, sauce, spices, concentrates; mayonnaise, kg; table salt, kg; dry soups in bags, 100 g.

Flour: wheat flour, kg.

Bread and bakery products*:* rye bread, rye-wheat, kg; bread and bakery products from premium wheat flour, kg; bread and bakery products from 1st and 2nd grade wheat flour, kg; fancy bakery products made of premium flour, piece, kg; lamb products, kg.

Groats and legumes: polished rice, kg; semolina, kg; millet, kg; peas and beans, kg; buckwheat unground, kg; oat and pearl barley, kg; oat flakes “Hercules”, kg.

Pasta*:* vermicelli, kg; pasta from wheat flour of the highest grade, kg.

Alcoholic drinks**:* dessert liqueurs with strength up to 28% vol. alcohol, liters, ***grape wines: fortified grape wine with a strength of up to 20% vol. alcohol, liters; table grape wine (dry, semi-dry, semi-sweet) with a strength of up to 14% vol. alcohol and content up to 8% sugar, liters; ***cognac:*** ordinary domestic cognac, liters; imported cognac, liters; ***champagne:*** domestic sparkling wine, liters; imported sparkling wine, liters; ***beer:*** domestic beer, liters; imported beer, liters.

Non-alcoholic drinks: mineral water, liters; carbonated water (except mineral water), liters; *ice cream:* creamy ice cream, kg.

Catering: lunch in the restaurant is custom-made in the daytime, for one person; coffee in the cafeteria, 200 g; lunch in the canteen in the organization, for one person; lunch in a canteen, cafe, snack bar (except canteens in organizations), per person; custom-made dinner in a restaurant (including alcoholic drinks), per person.

Non-food products include these goods: ***Cotton fabrics:*** domestic printed chintz, m; cotton linen fabrics, m. ***Woolen fabrics:*** suit fabric, half-woolen, m; woolen costume fabric, m. ***Silk fabrics:*** dress fabric made of artificial or synthetic silk, m; decorative fabrics for the production of curtains and curtains, m. ***Linen fabrics:*** linen fabrics, semi-linen sheets, m.

Towels: personal towel, pcs; bath towel, pcs; kitchen towel, pcs.

Man's clothes: men's winter jacket with a top made of raincoat fabrics, pcs; men's demi-season jacket with a top made of raincoat fabrics, pcs; men's jacket made of genuine leather, pcs; men's raincoat made of mixed fabrics, pcs; men's two-piece suit made of woolen or semi-woolen fabrics, pcs; men's trousers made of semi-woolen or mixed fabrics, pcs; men's trousers made of denim (jeans), pcs; top shirt for men made of cotton or mixed fabrics, pcs; men's briefs made of cotton fabric, pcs.

Women's Clothing: women's winter coat made of woolen or semi-woolen fabrics, pcs; women's demi-season coat, pcs; women's coat from raincoat fabrics, pcs; women's raincoat, pcs; women's jacket made of genuine leather, pcs; two-piece suit for women made of woolen or semi-woolen fabrics, pcs; women's two-piece suit made of knitted fabric, pcs; women's dress made of mixed fabrics or light knitted fabric, pcs; women's skirt made of semi-woolen or mixed fabrics, pcs; trousers for women from semi-woolen or mixed fabrics, pcs; women's blouse made of

artificial or synthetic fabrics, pcs; women's dress made of cotton fabrics, pcs; women's dressing gown made of cotton fabrics, pcs; women's night shirt, pcs.

Children's clothes: winter jacket for school-age children, with a top made of raincoat fabrics, pcs; demi-season jacket for schoolchildren, with a top made of raincoat fabrics, pcs. Trousers for schoolchildren from semi-woolen fabrics, pcs; trousers for school-age children from denim, pcs; outer shirt for school-age boys, pcs; dress for girls of school age made of wool blend fabrics, pcs; blouse for girls of school age made of cotton fabric, pcs; skirt for girls of school age made of semi-woolen fabrics, pcs; jacket for preschool children with a top made of raincoat fabrics, insulated, pcs; top shirt for preschool boys, pcs; summer dress for girls of preschool age, pcs.

Toddler linen: overalls for children under one year old, pcs; diapers for newborns, pcs; romper from cotton knitted fabric, pcs; linen for newborns and toddlers, pcs.

Bed sheets: cotton pillowcase, pcs; cotton sheet, pcs; duvet cover made of cotton fabric, pcs; quilted blanket, pcs; pillow, pcs.

Furs and fur products: women's fur coat or sheepskin coat, pcs; children's fur coat or sheepskin coat, pcs; fur headdress for men from nutria, marmot, muskrat, pcs; fur headdress for men made of rabbit, sheepskin, pcs; fur headdress for women made of mink, fox, arctic fox, pcs; outer jersey, other knitwear, pcs; jumper for men, pcs; women's jumper, pcs; jumper for school children, pcs; sports suit for adults, pcs; sports suit for school children, pcs; knitted suit for toddlers, pcs; knitted headwear for men, pcs; knitted headwear for women, pcs; knitted hat for children, pcs.

Underwear jersey: men's briefs from cotton knitted fabric, pcs; t-shirt for men from cotton knitted fabric, pcs; children's T-shirt, pcs; pantaloons, panties for women, pcs; children's panties, pcs.

Hosiery: men's socks of cotton or mixed yarn, pair; socks, knee-highs for children, pair; elastic tights for women with a density of 15-20 DEN, pcs; elastic tights for women with a density of over 20 DEN, pcs; children's tights, pcs.

Man's footwear: boots, boots for men winter with a top made of genuine leather, a pair; low shoes, men's shoes with a top made of genuine leather, a pair; ankle boots for men with artificial leather upper, pair.

Women's shoes: women's winter boots with a top made of genuine leather, a pair; boots for women, autumn with a top made of genuine leather, a pair; closed female shoes with genuine leather top, pair; closed shoes for women with artificial leather top, pair; summer shoes for women with artificial leather top, pair; women's fashion shoes with a top made of genuine leather, a pair.

Footwear for children: winter boots for school-age children with a top made of genuine leather, a pair; boots, low shoes for school children, pair; boots, low shoes for preschool children, pair; children's summer shoes (sandals), pair; cross shoes for children with leatherette upper, pair.

Sneakers and sports shoes for adults: adult sneakers with leatherette upper, pair; adult cross-country shoes with genuine leather upper, pair.

Rubber footwear: solid rubber boots for children, pair; solid rubber boots for adults, pair.

Detergents and cleaners: laundry soap, 200 g; powdered cleaning agents, kg; washing powder, kg; toilet soap, 100 g.

Perfumery and cosmetic products: cologne, 100 ml; spirits of the group "Extra" domestic, 10 ml; imported perfumes, 10 ml; imported toilet water, 100 ml; shampoo, 250 ml; domestic face cream, 100 g; imported face cream, 100 ml; toothpaste, 100 g.

Haberdashery: bra, pcs; ladies bag made of leatherette, pcs; student briefcase, pcs; ladies bag made of genuine leather, pcs; umbrella, pcs; tulle, curtain fabric, m; genuine leather gloves, pair; men's handkerchief, pcs; toothbrush, pcs.

Thread: sewing threads of cotton or synthetic fibers, spool.

Tobacco products: cigarettes, pack; filtered domestic cigarettes, pack; filtered cigarettes, domestic, pack; imported filter cigarettes, pack.

Matches: matches, boxes.

Furniture: wardrobe for dresses and linen, pcs; dining table, pcs; sofa bed, pcs; chair with upholstered seat, pcs; set of cabinet furniture, set; set of upholstered furniture, set; bedroom furniture set, set; kitchen furniture set, set.

Carpets and rugs: woolen carpet, semi-woolen, m2; carpet (carpet) synthetic, m2.

Metal utensils and metal household items: enameled steel pan, pcs; stainless steel cutlery set, set; steel enameled teapot, pcs; glassware; a glass, a glass of plain glass, pcs; porcelain and earthenware; shallow or deep plate, pcs; teacup with saucer, set.

Clock: mechanical or electronic alarm clock, pcs; mechanical wrist watches, pcs; quartz wristwatch, pcs.

Electrical goods and other household appliances: freezer with a chamber capacity of 200-240 liters, domestic, pcs; domestic two-chamber refrigerator with a capacity of 250-350 liters, pcs; two-chamber refrigerator with a capacity of 250-350 liters imported, pcs; imported automatic washing machine, pcs; automatic washing machine, domestic, pcs; small-sized domestic washing machine, pcs; floor-standing electric vacuum cleaner, pcs; microwave oven, pcs; household stove, pcs; plastic electric kettle, pcs; mixer, pcs; electric iron with thermostat, steam humidifier, pcs; single-lamp ceiling lamp, pcs; lighting electric lamp, domestic, pcs; electric batteries of AA class, pcs.

Paper and related goods: school notebook, pcs; sketchbook, pcs; domestic toilet paper, roll; school supplies and stationery; ballpoint pen, pcs; black lead pencil, pcs; a set of felt-tip pens, 1 set.

Printed editions: all-Russian retail daily newspaper, pcs; retail weekly newspaper, pcs; the book of the detective-adventure genre, pcs; textbook, study guide, didactic material for a comprehensive school, pcs.

Bicycles and motorcycles: road bike for adults, pcs; bicycle for preschoolers, pcs; motorcycle without sidecar, pcs.

Television and radio goods: stereo radio tape recorder, pcs; color TV set, pcs; videorecorder, pcs; video cassette without recording, pcs; CD with recording, pcs.

Personal computers: desktop computer monitor, pcs; means of communication; cellular telephone set, pcs; domestic telephone set, pcs.

Toys: plastic toys for toddlers, pcs; soft toys for toddlers, pcs; other cultural goods;
imported camera, pcs.

Goods for physical education, sports and tourism: football ball, pcs; roller skates, pair.

Construction Materials: sheet glass, m2; wallpaper, 10 m; oil paints, domestic enamels, kg; stainless steel sink for the kitchen, pcs; unedged sawn timber of coniferous species, m3; edged board, m3; particle boards, m2; tared cement, 50 kg; slate, 10 tiles; red brick, 1000 pcs; roofing material, 10 m; linoleum, m2.

Jewelry: engagement ring, gram.

Cars: new domestic passenger car, pcs; new imported passenger car, pcs; used imported passenger car, pcs; domestic tires for a passenger car, pcs.

Medical supplies: corrective glasses, pcs; mercury medical thermometer, pcs; electronic device for measuring blood pressure, pcs; analgin domestic 500 mg, 10 tablets; aspirin domestic 500 mg, 10 tablets; aspirin UPSA 500 mg, 10 Tablets; no-shpa 40 mg, 100 tablets; nitrocor 0.5 mg, 10 tablets; valocordin, 20 ml; corvalol, 25 ml; validol 60 mg, 10 tablets; enap 5 mg, 10 tablets; atenolol 50 mg, 10 tablets; ampicillin domestic 0.25 g, 10 tablets; erythromycin domestic 0.25 g, 10 tablets; ascorbic acid, 10 pcs; domestic multivitamins, 10 pcs; imported multivitamins, 10 pcs; galazolin 0.10%, 10 ml; iodine, 10 ml; bandage, pcs; domestic cotton wool, 100 g.

Regarding the services, such services as are included: ***Domestic services:*** repair, sewing clothes and shoes; healing, pair.

Repair, sewing clothes: repair of men's trousers from all types of fabrics, one type of work; sewing trousers, pcs; sewing of women's dress, pcs.

Repair and maintenance of household electronic equipment, household machines and appliances: repair of domestic color TVs, one type of work; repair of imported color TVs, one type of work; repair of refrigerators of all brands, one type of work; repair of small electrical appliances, one type of work; repair of mechanical watches, service; replacement of batteries in a wristwatch, service; repair and maintenance of vehicles; adjustment of camber-convergence of wheels of a domestic passenger car, one type of work; tire fitting of domestic passenger car wheels, pcs.

Dry cleaning, laundry services: dry cleaner of a men's suit, pcs; washing and ironing straight linen without starch, kg; repair and construction of dwellings***;*** painting works, 10 m2; wallpapering, 10 m2; performance of works on facing with tiles, m2.

Photo studio services: making photographs for documents, 6 pcs; printing of color photographs, pcs.

Bath and shower services: bath in the common room, ticket.

Hairdressing services: model haircut in the women's room, haircut; perming hair, service; model haircut in the men's room, haircut.

Funeral services: making a coffin, pcs; digging a grave mechanically at a new burial site, service; digging a grave manually at a new burial site, service; digging a grave by hand at a related burial site, service.

Passenger transport services: automobile transport; travel in a city commercial bus, one-time trip; travel by minibus, one-time trip; travel in an intercity bus, per 50 km of track.

Communication services: internet connection services; dial-up Internet access, hour; housing and communal services; services of hotels and other places of residence; hotel accommodation, day per person; accommodation in a student hostel, month.

Services in the education system: preschool services; kindergarten, day of visit.

Secondary education services: education in general secondary educational institutions, month; education in secondary specialized educational institutions, semester; vocational training services; foreign language courses, academic hour; classes in vocational training courses, academic hour.

Higher education services: education in non-state higher educational institutions, semester; education in state higher educational institutions, semester.

These list of products and services is included in analyzing the prices in purpose of estimation of CPI. But in the official document of Rosstat there is also the list of products which is not included in the analysis.

Food products: *Fruit and vegetable products, including potatoes:* potatoes, kg; ***vegetables:*** fresh white cabbage, kg; bulb onions, kg; beetroot, kg; carrots, kg; garlic, kg.

Fruits and citrus: apples, kg; oranges, kg; bananas, kg.

Alcoholic drinks: vodka: Vodka with a strength of 40% vol. alcohol and above ordinary quality, liter; Vodka with a strength of 40% vol. alcohol and higher of high quality, liter.

The reason behind excluding fruits and vegetables from the analysis is the seasonal factor, which impact the prices of this category of products a lot. Based on this fact, it is clear why these products are not counted in order to have a fair picture of CPI without any distraction.

Regarding the non-food products and some services, the next list of things is excluded from CPI estimation: ***Petrol:*** automobile gasoline A-76 (AI-80), liter; motor gasoline of the AI-92 brand (AI-93, etc.), liter; motor gasoline of the AI-95 brand and above, liter. ***Fuel:*** coal, t; firewood, m3.

Passenger transport services: *automobile transport*: travel by city municipal bus, one-time trip; urban electric transport; travel by tram, one-time trip; travel by trolleybus, one-time trip; subway travel, one-time trip; *Air Transport:* flight in the economy class cabin of the aircraft, per 1000 km of flight; *Railway transport:* commuter train travel, one-time trip; travel in a compartment carriage of a fast non-branded long-distance train, per 100 km of track; travel in a compartment carriage of a fast branded long-distance train, per 100 km of track; travel in a reserved seat car of a fast non-branded long-distance train, per 100 km of track; travel in a reserved seat carriage of a fast branded long-distance train, per 100 km of track.

The reason behind excluding the price of passenger transport services might be as well the seasonal factor. Because in Russia the season of the year has a big impact on prices of different transport services.

There are also some communication services which are excluding from the observation: *postal communication:* sending a simple letter within Russia, weighing up to 20 g, pcs; *city telephone communication:* subscription fee for a subscriber payment system for telephone services, month; subscription fee for a time-based system of payment for telephone services, month; variable charge for the provision of a local telephone connection (conversation) with a time-based payment system for telephone services, minute; *long-distance telephone communication:* provision of long-distance telephone connections (conversations) in an automatic way over a distance of 601-1200 km, minute; provision of long-distance telephone connections (conversations) in an automatic way over a distance of 1201-3000 km, minute; *telegraph communication:* sending an ordinary internal telegram, 15 words; wired broadcasting; subscription fee for a radio broadcasting point, month; wireless radio communication; subscription fee for using cellular services, month; providing a local connection (conversation) via cellular communication, minute.

The list of housing and communal services is written next: *housing services:* maintenance and repair of housing for citizens of homeowners as a result of privatization, citizens of owners of residential premises for other reasons, m2 of total area; services for the organization and execution

of work on the operation of residential buildings, housing construction, housing construction and communal services, m2 total area; maintenance and repair of housing in state and municipal housing stock, m2 of total area; rent of residential premises in state and municipal housing stock, m2 of total area; garbage collection, month per person.

Utilities: water supply and sewerage, month per person; heating, m2 total area; hot water supply, month per person; network gas, month per person; liquefied gas, month per person; liquefied gas in cylinders, 50 l; electricity in apartments without electric stoves, 100 kWh; electricity in apartments with electric stoves, 100 kWh.

Legal services: attestation of a will in a notary office, service; intermediary and other services; re-receipt of a stamp document in the registry office, document.

The reason behind excluding the service prices can be the different in prices due to location. Because in some far eastern part of Russia the service prices in houses are very high. The main reason for that is the hard availability of services due to far destination from the central part of Russia.

APPENDIX P III: YEARLY PRICES OF PRODUCT BASKET PER EACH FEDERAL DISTRICT AND RUSSIA AS A WHOLE FROM 2002 TILL 2020

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	Dec	June
Central Federal District	914,58	1 029,49	1 167,5	1 234,28	1 366,5	1 472,64	1 804,71	2 099,5	2 123,29	2 636,49	2 435,51	2 638,63	2 939,49	3 378,86	3 656,29	3 788	3 870,27	4 137,17	4 230,23	4 736,33
Northwestren Federal dictrict	932,53	1 052,48	1 095,54	1 299,82	1 433,3	1 576,88	1 934,83	2 319,83	2 337,71	2 901,26	2 714,51	2 879,73	3 162,75	3 741,19	4 119,38	4 285,58	4 386,12	4 665,51	4 695,32	5 149,83
South Federal district	827,48	952,76	992,11	1 127,9	1 258,8	1 390,89	1 689,44	1 989,48	2 026,61	2 517,88	2 307,25	2 436,54	2 691,07	3 109,5	3 433,23	3 605,29	3 590	3 858,22	3 913,89	4 297
North Caucasian Federal District									2 033,91	2 549,77	2 323,68	2 508,86	2 733,64	3 047,38	3 396,62	3 510,25	3 610,09	3 745,48	3 920,61	4 255,35
Volga Federal District	827,27	938,9	987,65	1 113,86	1 215,8	1 310,7	1 653,48	1 904,65	1 865,41	2 401,48	2 189,43	2 342,82	2 598,48	3 002,62	3 254,17	3 363,83	3 382,88	3 577,36	3 607,47	4 031,83
Ural Federal district	936,99	1 045,89	1 125,91	1 271,66	1 395,92	1 554,08	1 894,64	2 278,04	2 280,82	2 730,61	2 606,04	2 866,47	3 057,95	3 498,84	3 853,34	3 891,7	3 992,62	4 150,36	4 256,51	4 754,4
Siberian Federal district	876,15	981,3	1 085,83	1 208,36	1 354,37	1 507,2	1 807,35	2 128,8	2 117,95	2 539,65	2 439,17	2 729,8	2 887,8	3 323,7	3 612,13	3 656,72	3 726,78	3 933,96	4 076,74	4 533,25
Far Eastern Federal Disrtict	1 143,99	1 250,74	1 419,23	1 654,8	1 898,59	2 078,61	2 453,82	2 942,74	3 178,6	3 436,33	3 608,74	3 812,61	4 243,01	4 726,62	5 254,56	5 290,91	5 194,01	5 443,49	5 417,1	5 898,69

APPENDIX P IV: CHANGES IN CPI ON NATIONAL LEVEL IN RUSSIA FROM 1991 TILL 2020

Consumer price index for goods and services in the Russian Federation from 1991 to 2020 (1)

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
by the end of the previous month																				
january	106,20	345,30	125,80	117,90	117,77	104,11	102,34	101,51	108,38	102,33	102,76	103,09	102,40	101,75	102,62	102,43	101,68	102,31	102,37	101,64
february	104,80	138,00	124,70	110,82	111,02	102,79	101,54	100,89	104,13	101,04	102,28	101,16	101,63	100,99	101,23	101,66	101,11	101,20	101,65	100,86
march	106,30	129,90	120,10	107,41	108,94	102,80	101,43	100,64	102,79	100,64	101,86	101,08	101,05	100,75	101,34	100,82	100,59	101,20	101,31	100,63
april	163,50	121,70	118,70	108,49	108,47	102,16	100,96	100,38	103,03	100,89	101,79	101,16	101,02	100,99	101,12	100,35	100,57	101,42	100,69	100,29
may	103,00	111,90	118,10	106,91	107,93	101,60	100,94	100,50	102,22	101,75	101,78	101,69	100,80	100,74	100,80	100,48	100,63	101,35	100,57	100,50
june	101,20	119,10	119,90	106,00	106,66	101,17	101,10	100,08	101,91	102,55	101,62	100,53	100,80	100,78	100,64	100,28	100,95	100,97	100,60	100,39
july	100,60	110,60	122,39	105,33	105,38	100,72	100,93	100,17	102,82	101,79	100,45	100,72	100,71	100,92	100,46	100,67	100,87	100,51	100,63	100,36
august	100,50	108,60	126,00	104,62	104,56	99,79	99,86	103,67	101,16	100,98	100,01	100,09	99,59	100,42	99,86	100,19	100,09	100,36	100,00	100,55
september	101,10	111,50	123,00	107,96	104,46	100,33	99,70	138,43	101,48	101,32	100,60	100,40	100,34	100,43	100,25	100,09	100,79	100,80	99,97	100,84
october	103,50	122,90	119,50	115,00	104,72	101,20	100,17	104,54	101,37	102,11	101,09	101,07	101,00	101,14	100,55	100,28	101,64	100,91	100,00	100,50
november	108,90	126,10	116,39	114,61	104,56	101,88	100,61	105,67	101,23	101,52	101,36	101,61	100,96	101,11	100,74	100,63	101,23	100,83	100,29	100,81
december	112,10	125,20	112,50	116,44	103,20	101,42	100,96	111,61	101,26	101,64	101,60	101,54	101,10	101,14	100,82	100,79	101,13	100,69	100,41	101,08
by the december of the previous year																				
december	260,40	2608,84	939,90	315,14	231,30	121,81	111,03	184,43	136,53	120,18	118,58	115,06	111,99	111,73	110,92	109,00	111,87	113,28	108,80	108,78

1)regarding the federal plan of statistic's institute, approved by order of Russian governement from 6 of may, 2008 № 671-p, ROSSTAT developes CPI ehich is used as a basic index to describe the level of inflation in the Russian Federation
2)May 2020 in % to december 2019

by the end of the period, in %

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
nd of the previou										
january	102,37	100,50	100,97	100,59	103,85	100,96	100,62	100,31	101,01	100,40
february	100,78	100,37	100,56	100,70	102,22	100,63	100,22	100,21	100,44	100,33
march	100,62	100,58	100,34	101,02	101,21	100,46	100,13	100,29	100,32	100,55
april	100,43	100,31	100,51	100,90	100,46	100,44	100,33	100,38	100,29	100,83
may	100,48	100,52	100,66	100,90	100,35	100,41	100,37	100,38	100,34	100,27
june	100,23	100,89	100,42	100,62	100,19	100,36	100,61	100,49	100,04	
july	99,99	101,23	100,82	100,49	100,80	100,54	100,07	100,27	100,20	
august	99,76	100,10	100,14	100,24	100,35	100,01	99,46	100,01	99,76	
september	99,96	100,55	100,21	100,65	100,57	100,17	99,85	100,16	99,84	
october	100,48	100,46	100,57	100,82	100,74	100,43	100,20	100,35	100,13	
november	100,42	100,34	100,56	101,28	100,75	100,44	100,22	100,50	100,28	
december	100,44	100,54	100,51	102,62	100,77	100,40	100,42	100,84	100,36	
zember of the pre										
december	106,10	106,57	106,47	111,35	112,91	105,39	102,51	104,26	103,04	102,40[2)]

1)regarding the federal plan of statistic's institute, approved by order of Russian governement from 6 of may, 2008 № 6
2)May 2020 in % to december 2019

APPENDIX P V: CPI FOOD CHANGES ON MONYHLY BASIS FROM 1991 TO 2020 IN RUSSIA

Consumer price index for food products in the Russian Federation from 1991 to 2020

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
by the end of the previous month																				
January	104,60	405,10	129,00	121,00	121,05	103,95	103,05	102,07	110,30	102,17	103,06	102,82	102,51	101,61	101,42	101,97	100,94	101,91	101,40	101,42
February	103,10	129,80	124,78	110,60	110,27	102,40	101,42	101,22	104,37	100,46	102,28	100,87	101,20	101,12	101,37	102,98	100,83	101,66	101,85	101,26
March	105,20	123,00	118,30	105,80	108,46	102,92	101,42	100,72	102,79	100,09	101,77	100,46	100,97	101,05	102,07	101,17	100,77	101,98	101,69	101,03
April	171,80	116,11	116,10	105,60	107,52	101,84	100,98	100,32	102,57	100,30	102,01	100,96	100,98	100,84	101,70	100,26	100,75	102,19	100,69	100,30
May	100,50	110,70	116,20	106,80	108,83	101,66	100,81	100,58	102,01	102,17	102,27	102,21	100,69	100,43	101,06	100,47	100,95	102,07	100,66	100,69
June	99,70	120,00	122,70	105,60	107,56	101,20	101,47	99,98	101,72	103,26	101,91	99,82	100,79	100,80	100,72	100,02	101,73	101,08	100,51	100,54
July	97,20	108,90	122,51	103,80	104,47	100,21	100,79	99,90	103,18	101,75	99,74	100,43	100,41	101,01	100,27	100,89	101,42	100,09	100,55	100,31
August	96,60	107,49	122,57	102,69	102,72	98,31	99,14	102,39	100,45	100,29	98,97	98,92	98,59	100,11	98,95	99,45	99,40	99,82	99,11	100,90
September	98,10	112,80	123,70	106,90	102,76	99,52	98,64	139,48	100,80	100,60	99,75	99,27	99,82	100,04	99,34	99,37	101,02	100,74	99,21	101,62
October	102,30	124,70	118,50	115,30	103,41	100,40	99,49	103,91	100,86	102,13	100,74	100,62	101,10	101,39	100,36	99,95	103,26	101,57	99,47	100,70
November	110,60	127,30	115,89	117,28	103,96	102,15	100,40	107,61	101,00	101,52	101,48	101,96	101,24	101,53	100,89	100,78	101,93	101,26	100,27	101,35
December	116,10	125,60	112,54	120,90	103,40	101,99	101,22	117,05	101,38	101,88	102,04	102,22	101,47	101,74	101,06	101,09	101,61	101,01	100,55	102,07
by the december of the previous year																				
December	236,10	2626,20	904,90	314,13	223,36	117,72	109,10	196,00	135,88	117,89	117,14	110,99	110,18	112,29	109,57	108,67	115,56	116,45	106,08	112,89

Consumer price index for food products in the Russian Federation from 1991 to 2020

By the end of he period, in %

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
by the end of the previous month										
January	102,60	100,76	101,76	101,02	105,66	101,19	100,85	100,50	101,27	100,69
February	101,22	100,68	100,81	101,18	103,29	100,68	100,20	100,35	100,79	100,57
March	100,94	100,81	100,41	101,76	101,57	100,40	100,14	100,53	100,53	100,96
April	100,36	100,23	100,70	101,29	100,33	100,42	100,60	100,43	100,43	101,72
May	100,03	100,56	100,95	101,45	100,07	100,37	100,59	99,94	100,41	100,16
June	99,75	101,61	100,50	100,69	99,55	100,12	101,02	100,38	99,52	
July	99,29	101,11	99,95	99,94	99,73	99,96	99,03	99,67	99,70	
August	98,63	99,48	99,25	99,74	99,34	99,41	98,20	99,62	99,09	
September	99,35	100,14	99,98	101,00	100,42	99,86	99,29	99,92	99,56	
October	100,51	100,53	101,11	101,17	101,04	100,78	100,38	100,55	100,18	
November	100,52	100,45	100,94	101,99	101,16	100,72	100,20	100,99	100,45	
December	100,67	100,88	100,75	103,25	101,18	100,58	100,60	101,70	100,65	
by the december of the previous year										
December	103,87	107,48	107,32	115,43	114,00	104,57	101,07	104,66	102,58	104,16[1)]

APPENDIX P VI: CPI NON-FOOD CHANGES ON MONYHLY BASIS FROM 1991 TO 2020 IN RUSSIA

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
by the end of the prevous month																				
January	109,00	311,10	116,31	110,70	111,97	102,69	100,99	100,54	106,16	102,17	101,35	101,23	101,08	100,51	100,37	100,41	100,40	100,62	100,72	100,23
February	105,90	147,60	122,81	108,92	109,79	102,20	100,59	100,28	104,01	101,32	101,34	100,77	100,88	100,42	100,35	100,45	100,33	100,59	101,60	100,30
March	104,60	141,90	120,62	107,70	109,17	101,86	100,82	100,21	103,20	101,38	101,25	100,68	100,81	100,44	100,39	100,42	100,38	100,74	101,43	100,39
April	170,50	125,40	117,82	107,22	108,72	101,37	100,53	100,17	104,03	101,49	100,87	100,77	100,63	100,58	100,51	100,28	100,40	100,88	100,99	100,34
May	105,40	111,80	115,47	105,45	105,56	101,18	100,57	100,08	102,71	101,09	100,87	101,19	100,58	100,77	100,43	100,41	100,35	100,79	100,65	100,42
June	102,20	112,10	116,45	105,00	104,58	101,12	100,45	99,99	101,62	100,83	100,59	101,13	100,54	100,67	100,31	100,34	100,30	100,74	100,78	100,21
July	102,80	109,80	119,22	105,00	105,29	100,91	100,38	100,07	101,90	100,84	100,53	100,57	100,47	100,56	100,43	100,40	100,37	100,69	100,60	100,26
August	104,10	110,30	121,02	105,60	106,24	101,13	100,55	107,14	102,39	101,38	100,79	100,68	100,58	100,52	100,53	100,76	100,60	100,57	100,63	100,37
September	103,90	112,80	122,32	107,40	106,04	101,17	100,82	154,30	102,74	102,05	101,16	100,87	100,87	100,87	101,09	100,76	100,77	100,67	100,66	100,58
October	105,00	119,90	119,33	116,40	105,05	101,23	100,85	107,43	102,16	101,89	101,31	100,91	100,96	100,74	100,71	100,61	100,86	100,81	100,57	100,63
November	108,60	125,60	115,62	112,50	104,63	100,93	100,68	104,31	101,53	101,47	101,06	100,86	100,84	100,67	100,63	100,56	100,86	100,47	100,42	100,65
December	110,50	126,90	111,61	111,90	103,01	100,72	100,61	106,28	101,14	101,18	100,92	100,67	100,59	100,38	100,48	100,45	100,74	100,12	100,21	100,48
by the december of the previous year																				
December	310,70	2673,44	741,80	269,00	216,30	117,82	108,11	199,54	139,15	118,49	112,73	110,85	109,19	107,37	106,41	106,01	106,54	107,96	109,65	104,95

Consumer price index for non-food products in the Russian Federation form 1991 to 2020

by the end of the period, in %

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
by the end of the prevous month										
January	100,87	100,44	100,42	100,27	103,20	100,67	100,47	100,30	100,64	100,23
February	100,32	100,33	100,44	100,41	102,06	100,78	100,20	100,13	100,26	100,04
March	100,49	100,46	100,40	100,68	101,43	100,81	100,22	100,16	100,25	100,48
April	100,48	100,41	100,35	100,64	100,88	100,60	100,17	100,37	100,19	100,44
May	100,82	100,38	100,25	100,46	100,54	100,42	100,15	100,88	100,21	100,25
June	100,42	100,23	100,20	100,37	100,33	100,46	100,11	100,41	100,17	
July	100,29	100,32	100,14	100,40	100,45	100,37	100,08	100,12	100,17	
August	100,53	100,40	100,53	100,47	100,75	100,41	100,14	100,22	100,17	
September	100,66	100,68	100,52	100,55	101,09	100,56	100,25	100,36	100,19	
October	100,71	100,68	100,49	100,64	101,00	100,54	100,30	100,45	100,31	
November	100,55	100,44	100,43	100,64	100,73	100,43	100,32	100,39	100,23	
December	100,31	100,27	100,22	102,25	100,43	100,30	100,31	100,24	100,14	
by the december of the previous year										
December	106,65	105,16	104,46	108,05	113,65	106,54	102,75	104,10	102,95	101,44[1)]

APPENDIX P VII: CPI SERVICES CHANGES ON MONYHLY BASIS FROM 1991 TO 2020 IN RUSSIA

Consumer price index for services in the Russian Federation from 1991 to 2020

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010
by the end of the previous month																				
january	103,20	230,00	150,00	137,72	122,68	108,05	102,34	101,65	104,13	103,37	104,63	107,47	104,42	104,13	108,78	106,17	104,71	105,40	106,32	103,94
february	105,20	140,00	132,00	121,52	119,34	105,64	103,59	101,04	103,17	102,97	104,27	102,73	104,16	101,63	102,23	101,01	102,60	101,36	101,42	101,02
march	105,50	118,00	128,79	116,82	110,48	104,30	102,48	101,23	101,91	101,45	103,44	103,70	101,67	100,56	101,22	100,72	100,57	100,63	100,58	100,36
april	121,50	131,20	140,00	131,82	112,22	105,01	101,58	100,98	103,13	102,14	102,80	102,40	101,78	101,99	100,82	100,58	100,51	100,96	100,26	100,22
may	103,90	117,80	134,80	112,72	111,15	102,16	101,97	101,05	102,14	101,34	101,76	100,97	101,47	101,38	100,79	100,60	100,49	101,01	100,31	100,35
june	103,50	139,10	117,30	111,41	108,73	101,13	101,00	100,56	103,48	103,02	102,53	101,64	101,22	100,89	100,92	100,68	100,61	101,10	100,46	100,42
july	104,40	120,80	129,29	113,30	109,68	102,31	102,27	101,22	103,13	103,77	102,90	101,79	101,91	101,31	100,91	100,61	100,64	100,91	100,80	100,55
august	101,90	110,52	149,78	109,92	107,86	102,71	101,05	101,17	101,93	103,00	102,26	102,53	100,73	100,98	100,77	100,75	100,53	100,94	100,40	100,29
september	101,80	110,90	124,80	113,40	107,10	101,61	101,21	103,38	102,02	102,77	102,55	102,76	100,89	100,63	100,90	100,45	100,44	101,04	100,08	100,03
october	102,60	128,88	124,30	110,52	108,91	103,93	101,15	101,60	102,04	102,40	101,91	102,51	100,80	101,20	100,69	100,41	100,13	100,01	99,94	100,02
november	103,90	122,60	123,00	110,50	106,61	102,72	101,13	101,25	101,71	101,58	101,47	101,85	100,40	100,83	100,61	100,48	100,58	100,66	100,13	100,21
december	103,40	116,20	115,60	111,50	102,95	100,80	100,74	101,80	100,91	101,61	101,35	101,08	100,91	100,96	100,83	100,73	100,85	100,96	100,49	100,42
by the december of the previous year																				
december	178,80	2220,52	2411,20	622,40	332,21	148,38	122,52	118,29	134,02	133,70	136,90	136,17	122,26	117,74	121,00	113,86	113,33	115,93	111,60	108,06

Consumer price index for services in the Russian Federation from 1991 to 2020

be the end of the preiod, in %

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
by the end of the previous month										
january	104,09	100,20	100,64	100,47	102,16	101,03	100,51	100,08	101,13	100,24
february	100,75	99,98	100,36	100,43	100,83	100,34	100,28	100,12	100,20	100,37
march	100,33	100,41	100,15	100,46	100,31	100,06	100,00	100,12	100,13	100,09
april	100,48	100,26	100,46	100,71	100,02	100,25	100,16	100,32	100,21	100,12
may	100,70	100,65	100,81	100,75	100,50	100,46	100,35	100,35	100,39	100,46
june	100,69	100,80	100,60	100,87	100,97	100,56	100,68	100,74	100,60	
july	100,62	102,72	103,08	101,41	103,00	101,65	101,59	101,28	100,93	
august	100,34	100,58	100,87	100,65	101,27	100,33	100,37	100,27	100,18	
september	99,91	100,96	100,11	100,28	100,02	100,09	100,12	100,24	99,77	
october	100,14	100,05	99,91	100,57	99,91	99,74	99,80	99,94	99,82	
november	100,09	100,04	100,21	101,16	100,16	100,04	100,12	100,00	100,11	
december	100,31	100,44	100,58	102,24	100,65	100,27	100,32	100,42	100,24	
by the december of the previous year										
december	108,72	107,28	108,01	110,45	110,20	104,89	104,35	103,94	103,75	101,28[1)]

APPENDIX P VIII: CPI CHANGES ON ANNUAL BASIS ON DISTRICT AND NATIONAL LEVELS FROM 2010 TILL 2020 IN RUSSIA

CPI general detailed

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Russian Federation (average)	108,8	106,1	106,6	106,5	111,4	112,9	105,4	102,5	104,3	103,04	103,37
Central Federal district	108,9	106	106,9	106,7	112	113,7	105,9	103,2	104,7	103,01	103,25
Northwestren Federal dictrict	109,2	105,8	106,1	106,6	112,5	113,1	105,1	103,1	104,1	102,95	103,38
South Federal District	109	106,1	106,6	106,6	111,9	112,6	105,7	102,1	104,5	102,67	103,37
North Caucasian Federal District	110,6	105,2	106,6	106,1	109,6	114,7	105,2	102,2	103,7	103,22	103,84
Volga Federal District	109,3	106,2	106,4	106,3	110,9	111,6	104,6	101,9	104,2	102,73	103,41
Ural Federal District	109,8	106,4	106,4	106,2	109,9	113	105,7	102,4	103,3	103,11	102,93
Siberian Federal District	107,9	106,3	106,7	106,1	110,8	111,6	105	102	104,3	103,58	103,28
Far Eastern Federal Disrtict	107,7	106,8	105,9	106,6	110,7	112	105,4	102,1	103,8	103,89	104,01

APPENDIX P IX: CPI FOOD CHANGES ON ANNUAL BASIS ON DISTRICT AND NATIONAL LEVELS FROM 2010 TILL 2020 IN RUSSIA

CPI food detailed

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Russian Federation (average)	112,9	103,9	107,5	107,3	115,4	114	104,6	101,1	104,7	102,58	104,19
Central Federal district	112,6	103,2	108	107,6	115,3	114,7	105	101,9	105,2	102,55	103,96
Northwestren Federal dictrict	113,8	103,3	106,7	107,7	117,7	114,1	105,1	101,6	104,5	102,12	103,78
South Federal District	114,2	103,7	107,7	107,9	116,5	113,9	104,2	100,3	105,4	101,95	103,69
North Caucasian Federal District	115,9	103,2	107,4	106,2	112,1	115,6	103,7	100,3	103,5	103,25	104,76
Volga Federal District	114,1	103,8	107,1	106,9	115,7	112,3	104,1	100,3	104,5	102,05	104,25
Ural Federal District	113,6	104,8	107,4	106,7	114,6	114,9	104,9	101,2	103,3	102,86	104,25
Siberian Federal District	111,3	105	108,2	106,9	114,7	112,3	104,3	100,5	104,4	103,25	104,69
Far Eastern Federal Disrtict	109,3	106	105,9	108,1	114,2	113,8	104,4	100,3	104,4	104,32	105,3

APPENDIX P X: CPI NON-FOOD CHANGES ON ANNUAL BASIS ON DISTRICT AND NATIONAL LEVELS FROM 2010 TILL 2020 IN RUSSIA

CPI non-food detailed

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Russian Federation (average)	105	106,7	105,2	104,5	108,1	113,7	106,5	102,8	104,1	102,95	103,14
Central Federal district	105	106,7	105,5	104,6	108,8	113,9	107	103,2	104,5	103,49	103,39
Northwestren Federal dictrict	105,5	106,5	105,4	104,7	109	115	106,3	102,9	104,1	102,81	103,1
South Federal District	104,5	106,1	104,5	104,1	108,4	114,2	106,7	102	103,7	102,4	102,96
North Caucasian Federal District	104,1	105,8	105	104,5	108,8	115,5	107,2	103,3	103,7	102,51	103,87
Volga Federal District	105,1	106,7	104,6	104,2	107,1	112,7	105,6	102,1	104,1	102,91	103,29
Ural Federal District	105,8	107,3	104,6	104,7	106,4	113	106,6	103,4	103,4	102,38	102,27
Siberian Federal District	105,1	106,6	105,5	104,2	107,9	113	106,5	102,4	104,6	102,68	102,57
Far Eastern Federal Disrtict	105,1	106,3	105,6	104,9	107,4	113,7	107	102,5	103	102,9	103,58

APPENDIX P XI: CPI SERVICES CHANGES ON ANNUAL BASIS ON DISTRICT AND NATIONAL LEVELS FROM 2010 TILL 2020 IN RUSSIA

CPI services detailed

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Russian Federation (average)	108,1	108,7	107,3	108	110,5	110,2	104,9	104,4	103,9	103,75	102,52
Central Federal district	108,6	109	107,2	108,2	112,1	112,2	105,6	104,8	104,2	103,05	102,26
Northwestren Federal dictrict	107,6	108,4	106,3	107,7	110,2	109,1	103,7	105,3	103,8	104,04	103,28
South Federal District	107,6	110,1	108,3	108,2	109,9	107,8	106,6	105,4	104	104,22	102,98
North Caucasian Federal District	111,2	108,5	108	108,4	105,4	110,9	104,9	104,6	104,1	104,22	101,95
Volga Federal District	108	109,2	108	108,5	109,5	109	104,1	104	104,1	103,43	102,47
Ural Federal District	110,4	107,3	108	107,7	109,5	110,7	105,7	102,8	103,1	104,28	102,03
Siberian Federal District	107,2	107,9	106,4	107,6	109,3	108,3	103,5	103,5	103,7	105,3	102,14
Far Eastern Federal Disrtict	108,9	108,7	106,6	106,8	110,6	107,4	104,6	104	104,1	104,48	102,85

APPENDIX P XII: THE OLIVYE INDEX OR THE 2019 PER EACH REGION OF RUSSIA AS WELL AS THE PRICE CHANGE IN % TO 2018 IN RUSSIA

OLIVYE INDEX

	Стоимость	Изменение стоимости к ноябрю 2018 г. (в %)
RUSSIAN FEDERATION	*326,47*	*4,30*
CHUKOTCKYI AVT.OKRUG	601,08	16,37
KAMCHATCKI KRAI	502,73	3,29
MAGADANCKI REGION	481,60	6,31
NENECKI AVT. OKRUG	471,04	-0,92
MOSCOW	436,99	5,97
REPUBLIC OF SAHA	433,19	4,49
MURMANSKI REGION	431,29	3,27
SAHALINSKI REGION	423,96	5,31
HANTI-MANSIISKI ANT. OKRUG	420,95	8,11
HABAROVSKI KRAI	412,03	4,71
YAMALO-NENECKI AVT. OKRUG	399,00	-2,53
PRIMORSKI KRAI	365,29	4,50
REPUBLIC OF KOMI	364,28	6,24
REPUBLIC OF KARELIA	355,93	11,01
SAINT-PETERSBURG	354,00	3,50
EVREISKAYA AVT. REGION	352,04	6,95
TYUMENSKI REGION	350,25	5,23
REPUBLIC OF CREMEA	349,02	2,77
KALININGRADSKI REGION	346,64	4,11
LENINGRADSKI REGION	345,61	4,26
VOLOGODSKI REGION	344,39	-0,98
ARHAGANGELSKI REGION	343,66	4,30
MOSCOW REGION	339,50	2,07
ORLOVSKI REGION	338,26	6,58
REPUBLIC OF ALTAI	336,98	12,88
TVESKAYA REGION	334,24	7,70
CHELYABINSKI REGION	333,59	2,94
AMURSKI REGION	332,60	7,18
KRASNOYARSKI REGION	332,41	3,35
SBERDLOVSKI REGION	328,85	0,72
ZABAIKALSI REGION	328,68	10,52
KURGANSKI REGION	325,89	5,06
IRKUTSKI REGION	324,96	7,25
REPUBLIC OF BURYATIA	324,78	11,22
SEVASTOPOL	320,70	3,00
TULSKI REGION	319,19	1,29
VLADIMISRKI REGION	314,03	5,24
PSKOVSKI REGION	313,60	7,19
PERMSKI REGION	312,47	7,58
KALUGSKI REGION	311,31	6,92
YAROSLAVL REGION	311,05	1,92
BRYANSKI REGION	309,94	2,19
REPUBLIC OF MARI-EL	309,62	4,05
SMOLENSKI REGION	309,00	7,30
REPUBLIC OF TYVA	308,50	-1,37
NOVOSIBIRSKI REGION	307,85	-2,02
ASTRAHANSKI REGION	304,77	3,04
REPUBLIC OF HAKASIA	303,91	3,32
KEMEROVSKI REGION	303,75	9,86
TOMSKI REGION	299,57	0,72
KOSTROMA REGION	297,08	14,36
ALTAISKI KRAI	295,79	9,59
VORONEZH REGION	294,70	6,52
SAMARA REGION	293,91	3,51
KURSKI REGION	293,51	3,08
VOLGOGRADSKI REGION	291,94	1,29
NIZHEGORODSKI REGION	289,21	3,73
ORENBURGSKI REGION	288,79	5,34
SARATOV REGION	286,77	4,77
ROSTOV REGION	286,53	3,06
KIROVSKI REGION	286,47	6,24
REPUBLIC OF BASHKORTOSTAN	285,43	2,30
REPUBCLI OF TATARSTAN	284,02	4,68
ULIANOV REGION	283,98	1,35
OMSK REGION	283,84	6,07
SLAVROPOL REGION	283,48	4,06
KRASNODAR REGION	282,84	3,53
PENSA REGION	282,07	1,74
REPUBLIC OF DAGESTAN	280,92	-4,57
NOBGOROD REGION	279,21	2,84
REPUBLIC OF NORTH OSETIA	279,14	5,74
REPUBLIC OF CHECHNYA	277,54	4,39
REPUBLIC OF KABARDINO-BALKARIA	273,60	10,14
ERPUBLIC OF UDMURTIYA	272,01	8,68
RYAZAN REGION	270,70	4,36
REPUBLIC AF ADIGEYA	270,28	2,08
REPUBLIC OF KALMYKIA	267,29	7,12
REPUBLIC OF KARACHAEVO-CHERKESSIA	263,05	0,98
REPUBLIC OF CHUBASHIA	262,06	0,76
REPUBLIC OF INGISHETIA	261,03	0,71
TAMBOV REGION	251,67	1,02
LIPESTKI REGION	251,34	0,83
REPUBLIC OF MORDOVIA	250,18	5,14
BELGOROD REGION	243,82	1,63

APPENDIX P XII: GDP STRUCTURE FOR ALL DISTRICTS IN % (2019) IN RUSSIA

(в текущих ценах, в процентах к итогу)

	Gross value added at basic prices	в том числе																			
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
		Agriculture, forestry, hunting, fishing and fish farming	Mining	Manufacturing industries	Electricity, gas and steam supply; air conditioning	Water supply; wastewater disposal, waste collection and disposal	Constructions	Wholesale and retail trade; repair of motor vehicles and motorcycles	Transport and storage	Activities of hotels and catering establishments	Information and communication activities	Financial and insurance activities	Real estate activities	Professional, scientific and technical activities	Administrative activities and related additional services	Public administration and military security; social Security	Education	Activities in the field of health and social services	Activities in the field of culture, sports, leisure	Provision of other types of services	Households as employers; undifferentiated activities of private households for the production of goods and services for their own consumption
Russia	100,0	4,1	13,5	16,8	2,9	0,6	5,4	14,2	7,3	1,0	3,0	0,5	10,0	4,3	2,3	5,6	3,0	4,0	1,0	0,5	0,0
Central FD	100,0	3,0	0,8	18,0	2,8	0,5	4,7	22,0	6,6	0,9	4,7	0,9	12,0	6,7	2,7	5,8	2,6	3,5	1,2	0,6	0,0
North-Western FD	100,0	2,8	7,3	18,3	2,9	0,8	4,7	11,8	10,1	1,1	3,5	0,4	12,8	4,8	2,8	5,9	3,2	5,1	1,2	0,5	0,0
South FD	100,0	9,0	5,9	13,8	2,9	0,8	6,2	13,5	9,6	2,0	2,2	0,2	11,9	2,5	2,1	6,7	3,5	5,2	1,3	0,7	0,0
North Caucasian FD	100,0	14,1	0,6	7,3	2,7	0,5	10,7	15,8	5,2	3,0	2,0	0,1	10,0	1,1	1,0	11,0	6,0	7,2	1,1	0,6	0,0
Volga FD	100,0	5,7	15,7	21,9	2,9	0,7	5,7	10,9	5,8	0,9	2,3	0,2	9,2	3,2	1,8	4,7	3,1	4,0	0,8	0,5	0,0
Ural FD	100,0	1,6	44,1	13,3	2,5	0,5	6,0	6,0	5,8	0,6	1,2	0,1	5,3	2,7	1,8	3,1	2,0	2,7	0,5	0,2	0,0
Siberian FD	100,0	4,2	17,7	21,1	3,5	0,5	4,6	9,3	7,9	0,8	1,9	0,2	8,4	2,7	2,5	5,6	3,5	4,4	0,7	0,5	0,0
Far-eastern FD	100,0	5,4	28,7	4,8	3,0	0,5	6,8	9,2	10,6	1,0	1,4	0,1	6,3	1,9	2,2	8,3	3,7	4,7	1,0	0,4	0,0

APPENDIX P XIV: STANDARD MISERY INDEX ESTIMATION BASED ON INFLATION AND UNEMPLOYMENT RATE ON NATIONAL AND DISTRICT LEVELS FROM 2010 TILL 2020 IN RUSSIA

Misery index

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Russian Federation (average)	16,1	12,6	12,1	12,0	16,6	18,5	10,9	7,7	9,1	7,6	9,5
Central Federal District	13,5	10,1	10,0	10,0	15,1	17,2	9,4	6,6	7,5	5,9	6,2
Northwestren Federal dictrict	15,1	10,9	10,1	10,9	16,6	17,8	9,7	7,2	8,0	6,5	7,1
South Federal district	16,6	13,1	12,8	13,1	18,1	19,3	12,1	8,3	9,8	7,9	8,7
North Caucasian Federal District	27,1	19,7	19,7	19,1	20,8	25,8	16,2	13,6	13,7	14,1	15,2
Volga Federal District	16,9	12,7	11,7	11,2	15,4	16,4	9,4	6,7	8,5	6,8	7,6
Ural Federal district	17,8	13,2	12,4	11,9	15,7	19,2	11,8	8,2	7,9	7,2	7,1
Silberian Federal district	16,6	14,4	13,8	13,3	17,8	19,3	13,0	9,7	11,1	9,4	8,9
Far Eastern Federal Disrtict	16,3	14,2	12,6	13,1	17,1	18,3	11,2	7,6	8,7	10,0	10,1

APPENDIX P XV: DATA FOR THE PERIOD OF 2010 TO 2019 FOR GRP GROWTH RATE AS WELL AS FOR THE PRIMARY VALUES, BASED ON WHICH MISERY INDEX COMPUTATION WAS MADE IN RUSSIA

Gross regional product per capita of the Rf in 1998 to 2019, rub

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Central Federal district	16 564,4	31 118,7	48 205,0	58 851,5	75 739,2	94 244,6	121 487,7	164 887,9	208 806,5	267 272,1	331 472,2	297 793,0	350 204,2	417 288,1	451 517,2	494 482,7	536 607,9	580 706,6	616 493,1	665 382,5	792 780,9	835 858,8
Northwestren Federal dictrict	16 592,8	27 948,9	40 564,9	50 157,8	63 297,1	78 466,3	106 667,8	130 846,1	160 590,9	202 974,4	248 742,7	251 018,3	289 611,4	350 764,2	383 339,4	403 612,9	430 130,6	520 253,4	556 774,7	582 716,4	706 615,6	752 847,2
South Federal District	9 529,7	16 313,0	23 417,9	30 388,9	37 122,4	44 227,0	55 215,5	67 566,0	86 428,1	114 085,8	144 633,8	144 046,0	168 773,2	200 306,5	229 214,5	256 444,6	255 076,2	283 856,1	304 869,8	326 304,6	384 256,8	400 883,7
North Caucasian Federal District	6 807,6	9 850,7	13 802,7	18 408,8	22 374,6	28 078,5	35 083,2	39 050,8	50 434,2	62 724,1	78 921,5	84 493,9	94 915,3	112 647,6	127 042,1	146 117,2	163 950,4	176 399,5	182 558,2	186 626,0	219 381,6	232 012,9
Volga Federal District	13 489,1	22 204,5	32 791,7	41 139,5	47 526,3	58 324,4	74 218,8	91 573,6	115 727,9	143 365,7	176 879,4	163 958,3	190 719,5	236 240,2	263 976,2	284 810,4	308 995,4	339 075,0	348 226,8	373 823,7	452 352,1	480 457,9
Ural Federal District	25 102,2	41 649,9	69 327,3	90 065,5	107 831,3	134 653,5	182 505,2	254 078,4	307 373,9	350 766,8	398 807,4	360 909,4	423 495,4	521 192,2	583 243,9	619 540,9	662 531,0	737 316,0	767 531,2	862 843,7	1 055 243,5	1 070 596,6
Siberian Federal District	15 095,1	23 485,6	34 893,0	43 055,2	50 622,8	61 979,9	85 348,1	103 308,6	130 346,4	160 685,1	184 543,0	181 395,6	222 853,7	258 724,1	278 948,3	298 171,0	331 412,9	369 286,3	383 599,4	422 538,2	505 859,0	535 321,0
Far Eastern Federal Disrtict	18 058,8	29 620,2	39 782,0	51 048,3	62 521,4	76 007,9	92 547,2	112 957,3	138 766,0	176 727,0	213 516,9	237 943,0	287 688,4	346 131,2	371 177,5	390 089,9	438 784,7	487 852,1	506 921,9	529 935,3	682 108,5	730 107,7

Uneployment

Dictrict/year	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 (february)
Central Federal District	7,8	6,0	5,1	5,1	4,7	4,3	4,0	3,1	3,6	5,8	4,6	4,1	3,1	3,3	3,1	3,5	3,5	3,4	2,8	2,9	2,9
Northwestren Federal dictrict	9,6	7,6	6,2	7,0	6,0	5,4	4,9	4,1	5,0	6,9	5,9	5,1	4,0	4,3	4,1	4,7	4,6	4,1	3,9	3,5	3,7
South Federal district	12,9	11,5	9,6	11,4	9,6	8,4	8,2	7,0	6,4	8,6	7,6	7,0	6,2	6,5	6,2	6,7	6,4	6,2	5,3	5,2	5,3
North Caucasian Federal District	20,4	18,7	17,4	17,2	18,8	17,1	22,6	19,2	15,7	16,0	16,5	14,5	13,1	13,0	11,2	11,1	11,0	11,4	10,0	10,9	11,4
Volga Federal District	9,8	8,4	7,7	7,7	7,9	7,4	6,5	6,1	6,2	8,6	7,6	6,5	5,3	4,9	4,5	4,8	4,8	4,8	4,3	4,1	4,2
Ural Federal district	10,1	9,2	8,1	7,4	7,4	6,7	6,8	4,9	5,5	8,1	8,0	6,8	6,0	5,7	5,8	6,2	6,1	5,8	4,6	4,1	4,2
Siberian Federal district	12,8	11,3	10,1	11,4	9,9	9,3	8,7	7,6	8,3	10,5	8,7	8,1	7,1	7,2	7,0	7,7	8,0	7,7	6,8	5,8	5,6
Far Eastern Federal Disrtict	12,6	10,2	8,7	8,5	8,9	7,9	7,4	6,6	7,7	9,2	8,6	7,4	6,7	6,5	6,4	6,3	5,8	5,5	4,9	6,1	6,1
Russian Federation (average)	10,6	9	7,9	8,2	7,8	7,1	7,1	6	6,3	8,4	7,3	6,5	5,5	5,5	5,2	5,6	5,5	5,2	4,8	4,6	6,1

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020 july
Rate	41,3	32,2	23,4	13,8	11,4	9,9	8,7	9	9,4	12,4	9,8	16,4	18,5	19,1	16,3	17,3	12,6	6,02	9,1	7,82	6,34

Inflation

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Russian Federation (average)	8,8	6,1	6,6	6,5	11,4	12,9	5,4	2,5	4,3	3,04	3,37
Central Federal district	8,9	6	6,9	6,7	12	13,7	5,9	3,2	4,7	3,01	3,25
Northwestren Federal dictrict	9,2	5,8	6,1	6,6	12,5	13,1	5,1	3,1	4,1	2,95	3,38
South Federal District	9	6,1	6,6	6,6	11,9	12,6	5,7	2,1	4,5	2,67	3,37
North Caucasian Federal District	10,6	5,2	6,6	6,1	9,6	14,7	5,2	2,2	3,7	3,22	3,84
Volga Federal District	9,3	6,2	6,4	6,3	10,9	11,6	4,6	1,9	4,2	2,73	3,41
Ural Federal District	9,8	6,4	6,4	6,2	9,9	13	5,7	2,4	3,3	3,11	2,93
Siberian Federal District	7,9	6,3	6,7	6,1	10,8	11,6	5	2	4,3	3,58	3,28
Far Eastern Federal Disrtict	7,7	6,8	5,9	6,6	10,7	12	5,4	2,1	3,8	3,89	4,01

APPENDIX P XV: DATA FOR THE PERIOD OF 2010 TO 2019 FOR GRP GROWTH RATE AS WELL AS FOR THE PRIMARY VALUES, BASED ON WHICH MISERY INDEX COMPUTATION WAS MADE IN RUSSIA

GDP Growth rate for calculation

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Central Federal district	0,18	0,19	0,08	0,10	0,09	0,08	0,06	0,08	0,19	0,05
Northwestren Federal dictrict	0,15	0,21	0,09	0,05	0,07	0,21	0,07	0,05	0,21	0,07
South Federal District	0,17	0,19	0,14	0,12	-0,01	0,11	0,07	0,07	0,18	0,04
North Caucasian Federal District	0,12	0,19	0,13	0,15	0,12	0,08	0,03	0,02	0,18	0,06
Volga Federal District	0,16	0,24	0,12	0,08	0,08	0,10	0,03	0,07	0,21	0,06
Ural Federal District	0,17	0,23	0,12	0,06	0,07	0,11	0,04	0,12	0,22	0,01
Siberian Federal District	0,23	0,16	0,08	0,07	0,11	0,11	0,04	0,10	0,20	0,06
Far Eastern Federal Disrtict	0,21	0,20	0,07	0,05	0,12	0,11	0,04	0,05	0,29	0,07

GDP Growth rate for calculation

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Central Federal district	17,6	19,2	8,2	9,5	8,5	8,2	6,2	7,9	19,1	5,4
Northwestren Federal dictrict	15,4	21,1	9,3	5,3	6,6	21,0	7,0	4,7	21,3	6,5
South Federal District	17,2	18,7	14,4	11,9	-0,5	11,3	7,4	7,0	17,8	4,3
North Caucasian Federal District	12,3	18,7	12,8	15,0	12,2	7,6	3,5	2,2	17,6	5,8
Volga Federal District	16,3	23,9	11,7	7,9	8,5	9,7	2,7	7,4	21,0	6,2
Ural Federal District	17,3	23,1	11,9	6,2	6,9	11,3	4,1	12,4	22,3	1,5
Siberian Federal District	22,9	16,1	7,8	6,9	11,1	11,4	3,9	10,2	19,7	5,8
Far Eastern Federal Disrtict	20,9	20,3	7,2	5,1	12,5	11,2	3,9	4,5	28,7	7,0

APPENDIX P XVI: ADJUSTED MISERY INDEX ESTIMATION ON NATIONAL AND DISTRICT LEVEL FROM 2010 TILL 2020 IN RUSSIA

					Misery index 2					
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Central Federal district	5,7	7,3	20,3	19,6	22,9	26,3	15,9	4,7	-2,5	8,3
Northwestren Federal dictrict	9,5	6,2	19,3	24,7	26,3	14,2	15,3	8,6	-4,2	7,7
South Federal District	9,2	10,8	16,9	20,3	34,9	25,3	17,3	7,3	1,1	11,4
North Caucasian Federal District	24,6	17,4	25,4	23,2	24,9	35,5	25,3	17,4	5,2	16,2
Volga Federal District	10,4	5,2	18,5	22,4	23,2	24,0	19,3	5,4	-3,4	8,4
Ural Federal District	10,3	6,5	19,0	24,8	25,1	25,2	20,3	1,8	-5,3	13,6
Siberian Federal District	3,5	14,7	24,5	25,5	23,0	25,2	21,7	5,6	0,5	11,4
Far Eastern Federal Disrtict	5,2	10,3	23,9	27,1	20,9	24,4	19,9	9,1	-10,9	10,8
Russia as a whole in current prices	6,9	-1	17,6	24,1	24,9	30,8	20,5	6,72	4,2	10,46
Russia as a whole in Basic prices			26,6	29,1	31,9	37,8	23,5	11,72	15,2	14,46

APPENDIX P XVII: CASH TURHOVER RATE AND CASH AND NON-CASH URNOVER RATE FOR 2010-2020 IN RUSSIA

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
M0	5168,18	5879,22	6365,94	6823,53	6733,68	7293,94	7860,63	8762,83	9211,57	11069,26
M2	20517,14	24123,28	27759,10	30111,31	31812,40	35465,38	39084,18	43384,37	47182,04	53694,70
GDP	**60114,0**	**68103,4**	**72985,7**	**79030,0**	**83087,4**	**85616,1**	**91843,2**	**103 861,7**	**109 241,5**	**106 967,5**
V0	11,6	11,6	11,5	11,6	12,3	11,7	11,7	11,9	11,9	9,7
V2	2,9	2,8	2,6	2,6	2,6	2,4	2,3	2,4	2,3	2,0
Infl	6,1	6,6	6,5	11,4	12,9	5,4	2,5	4,3	3,04	3,37

APPENDIX P XVIII: MODEL ESTIMATION OF THE CONNECTION BETWEEN THE BRENT PRICE CHANGE AND USD EXCHANGE RATE BASED ON OLS METHOD FOR 2015 TO 2019 IN RUSSIA

2015:

Model 1: OLS, using observations 1-17
Dependent variable: USD

	coefficient	std. error	t-ratio	p-value	
const	88.8567	5.01848	17.71	1.83e-11	***
Brent	-0.483685	0.0982901	-4.921	0.0002	***

Mean dependent var	64.45824	S.D. dependent var	5.012333
Sum squared resid	153.7538	S.E. of regression	3.201602
R-squared	0.617505	Adjusted R-squared	0.592005
F(1, 15)	24.21617	P-value(F)	0.000185
Log-likelihood	-42.84014	Akaike criterion	89.68028
Schwarz criterion	91.34670	Hannan-Quinn	89.84592

2016:

Model 1: OLS, using observations 16-02-01:16-12-29 (T = 13)
Dependent variable: USD

	coefficient	std. error	t-ratio	p-value	
const	89.1475	4.25233	20.96	3.22e-10	***
Brent	-0.509831	0.0898215	-5.676	0.0001	***

Mean dependent var	65.22308	S.D. dependent var	3.848200
Sum squared resid	45.23030	S.E. of regression	2.027769
R-squared	0.745473	Adjusted R-squared	0.722335
F(1, 11)	32.21750	P-value(F)	0.000143
Log-likelihood	-26.55052	Akaike criterion	57.10103
Schwarz criterion	58.23093	Hannan-Quinn	56.86879
rho	-0.130505	Durbin-Watson	1.992891

2017:

Model 1: OLS, using observations 17-01-09:17-12-21 (T = 13)
Dependent variable: USD

	coefficient	std. error	t-ratio	p-value	
const	56.3217	2.80890	20.05	5.20e-10	***
Brent	0.0437533	0.0496376	0.8815	0.3969	

Mean dependent var	58.78154	S.D. dependent var	1.142511
Sum squared resid	14.63057	S.E. of regression	1.153279
R-squared	0.065973	Adjusted R-squared	-0.018938
F(1, 11)	0.776963	P-value(F)	0.396923
Log-likelihood	-19.21427	Akaike criterion	42.42853
Schwarz criterion	43.55843	Hannan-Quinn	42.19629
rho	0.226932	Durbin-Watson	1.285394

2018:

Model 2: OLS, using observations 1-26
Dependent variable: USD

	coefficient	std. error	t-ratio	p-value	
const	62.5850	7.91257	7.910	3.86e-08	***
Brent	0.0124422	0.110755	0.1123	0.9115	

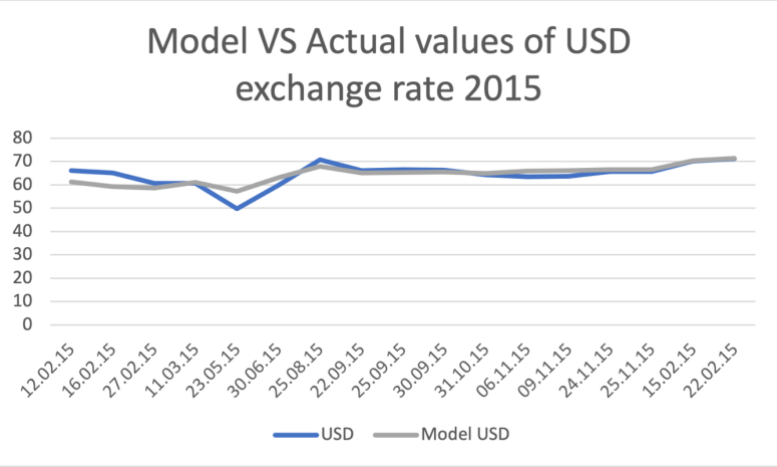
Mean dependent var	63.46885	S.D. dependent var	4.230258
Sum squared resid	447.1419	S.E. of regression	4.316354
R-squared	0.000526	Adjusted R-squared	-0.041119
F(1, 24)	0.012620	P-value(F)	0.911488
Log-likelihood	-73.87454	Akaike criterion	151.7491
Schwarz criterion	154.2653	Hannan-Quinn	152.4736

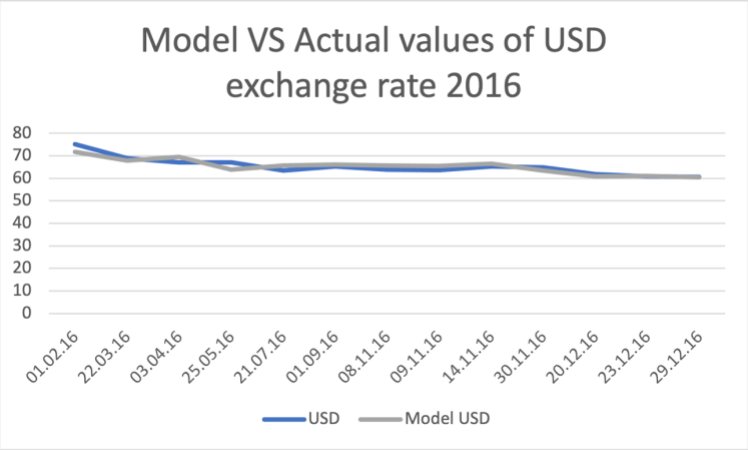
APPENDIX P XVIII: MODEL ESTIMATION OF THE CONNECTION BETWEEN THE BRENT PRICE CHANGE AND USD EXCHANGE RATE BASED ON OLS METHOD FOR 2015 TO 2019 IN RUSSIA

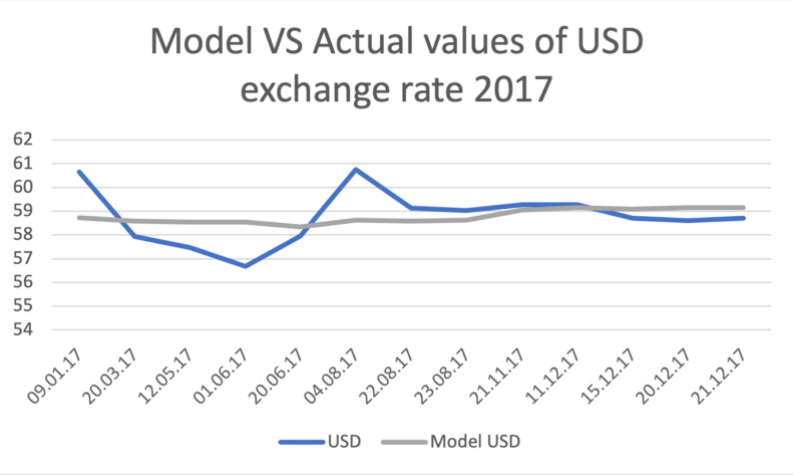
2019:

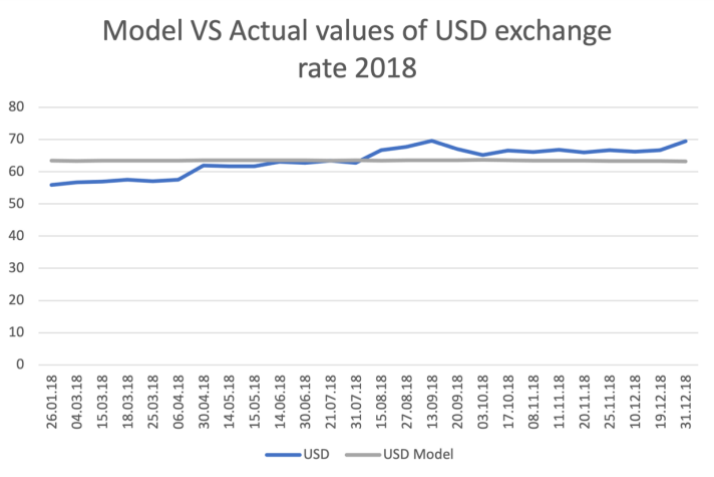
```
Model 1: OLS, using observations 1-33
Dependent variable: USD

             coefficient   std. error   t-ratio   p-value
  ---------------------------------------------------------
  const       89.4583      3.14313      28.46     8.74e-24 ***
  Brent       -0.407554    0.0707898    -5.757    2.45e-06 ***

Mean dependent var   71.78667   S.D. dependent var   5.501976
Sum squared resid    468.1450   S.E. of regression   3.886058
R-squared            0.516727   Adjusted R-squared   0.501137
F(1, 31)             33.14587   P-value(F)           2.45e-06
Log-likelihood      -90.58743   Akaike criterion     185.1749
Schwarz criterion    188.1679   Hannan-Quinn         186.1819
```

APPENDIX P XIX: THE GRAPHICAL RESULTS OF ESTIMATED MODEL AND ACTUAL VALUES OF USD EXCHANGE RATE FROM 2015 TO 2019 IN RUSSIA









APPENDIX P XIX: THE GRAPHICAL RESULTS OF ESTIMATED MODEL AND ACTUAL VALUES OF USD EXCHANGE RATE FROM 2015 TO 2019 IN RUSSIA