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Department of International Relations

Master Thesis

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Economic change in Russia: Oil dependency

Master thesis

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Declaration

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References

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Abstract

This thesis concentrates on the case of Russian economy and assessment of its dependence on oil. Russia is often cited as an example of country suffering from resource curse as its natural wealth forms significant share of country's exports and revenues. Thesis will first concentrate on factors determining current state of Russian economy. Presence of the symptoms of Dutch disease in the Russian economy will be studied using the Vector error correction model (VECM) applied on the real effective exchange rate of country (REER). Thesis will also contain an assessment of Russian institutional environment to check for other symptoms of resource curse theory. Analysis of latest federal budget will be used to evaluate the sustainability of Russian federal finances. The thesis is concluded by discussion of results and possible paths of future development of Russian economy.

Abstrakt

Tato diplomová práce se zaměřuje na případ Ruská federace, její ekonomiky a posouzení její závislosti na ropě. Rusko bývá často uváděno jako příklad země trpící na prokletí přírodních zdrojů, protože její nerostné bohatství tvoří významnou část exportů a příjmů země. Práce se nejprve zaměří na faktory určující současný stav ruské ekonomiky. Přítomnost projevů holandské nemoci v ruské ekonomice bude zjišťován pomocí aplikace vektorového modelu korekce chyb na reálném směnném kurzu země. Práce bude rovněž obsahovat analýzu ruského institucionálního prostředí na projevy dalších symptomů teorie prokletí zdrojů. Analýza posledního federálního rozpočtu bude provedena za účelem posouzení udržitelnosti ruských veřejných financí. Práce je zakončena diskusi výsledků a možnostmi dalšího rozvoje ruského hospodářství.

Keywords

Russian Federation, Dutch disease, resource curse, Vector error correction model, institutional environment, real effective exchange rate

Klíčová slova

Ruská federace, Holandská nemoc, prokletí přírodních zdrojů, Vektorový model korekce chyb, institucionální prostředí, reálný směnný kurz

Title

Economic change in Russia: Oil dependency

Název práce

Hospodářská změna v Rusku: závislost na ropě

1. Introduction

1.1. Structural outline of the thesis

This thesis aims to examine the dependence of Russia's economy and its economic development on its richness in natural resources. Despite recent declines, natural resources continue to form a significant proportion of Russian exports.[1] Moreover, revenues from them represent a considerable share of Russian federal budget. Assessment of this dependence will be performed using a special type of vector autoregression model, specifically the vector error correction model. This model will be applied on the time series data, which will contain development of Russian real effective exchange rate against oil prices, and other relevant indicators that usually influence the strength of national currency.

The relationship between the development of oil prices and performance of Russian economy, its macroeconomic indicators, public finances, competitiveness on the global scale is worth of study due to the importance that Russia continues to hold on the world stage, especially in the field of international relations and diplomacy. Its importance in the European space is even higher. Energy imports from Russia represent significant portion of European Union's total energy imports. European Union could theoretically survive without Russian supplies, but its global competitiveness would decline. Primary reason for importing Russian oil and gas for European customers is its price, which is currently lower than any viable alternative.[2] This mutual dependence is likely to continue with Nord Stream 2 being under construction or as evidenced by the deal between Gazprom and European Commission.[3]

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[1] According to MIT, in 2016 mineral products formed 56% of Russian exports, with crude petroleum alone forming 28% of Russian exports, refined petroleum 16% and natural gas another 6%. For details, see: https://atlas.media.mit.edu/en/profile/country/rus/. According to MIT, the share of minerals on Australian export was 50% (https://atlas.media.mit.edu/en/profile/country/aus/).

[2] For example, pipeline gas from Russia is as much as 25% less expensive than liquefied natural gas (LNG) imported from USA or Persian Gulf. There have been several new LNG terminals built in Europe in recent years, but most are working below capacity. For details, see: https://www.ft.com/content/e9a49e8c-852c-11e8-a29d-73e3d454535d.

[3] Agreement between the two in May 2018 concluded seven-year-old anti-trust dispute, enabling more flexibility for gas buyers in Europe. For details, see: https://www.bloomberg.com/news/articles/2018-05-24/russia-tightens-grip-on-europe-s-gas-supply-with-gazprom-deal

The implications resulting from the found resource dependency of Russian economy on will be discussed as well, together with the dependence of Russia on its European customers, latest diversification efforts pursued by Russia in this area, and sectors of Russian economy that hold the biggest growth potential.

In the first chapter of the thesis' body, a more detailed outline of the rationale for the selection of the topic is discussed. This chapter is followed by a comprehensive discussion of Russian economy – its specifics and geographical predispositions. Also, the historical development in the 20th and beginning of 21st century will be discussed as the current state of affairs is to a large degree result of this development. The international sanctions will also be discussed in this chapter, together with the topics of inequality and inflation, demographic health of Russian population and research and development expenses. Problems in these areas together with often-cited problem of corruption and bribery in Russia represent significant obstacle to improvement of Russia's welfare.

Next chapter of the thesis consists of review of academic literature and academic views on the various aspects and implications resulting from richness of natural resources on the economic, social, and institutional realities of affected country. Topics of resource curse and Dutch disease will be discussed in bigger detail.

The following chapter includes the empirical analysis of dependency of Russian economy on the above-mentioned endowment of natural resources and comparison with other works performed in recent years on the Russian case. This chapter will include outline of the latest federal public budget and analysis of its revenues. The quality of Russian governance, corruption and bribery, rule of law will be analysed using the Worldwide Governance Indicators and comparing Russia's progress with its post-communist peers will be performed. Discussion of the results will conclude this chapter. In the end, chapter on the new development opportunities for Russian economy, will conclude the thesis.

This thesis aims to fill the void on the latest development of the Russian economy, especially in the face of the rather volatile development of the global oil prices in the recent years and the international sanctions and countersanctions that were gradually

put into effect by Russia and Western countries since 2014 and are still in place. The aspect of international relations, mainly between Russia and the European Union, other importers of Russian commodities and energy resources will also form part of the thesis.

Research questions

Is Russia's real effective exchange rate significantly dependent on the oil prices?
Is Russia's under-average economic growth result of institutional weakness?

Hypotheses

On the basis of performed statistical modelling it can be concluded that Russia's REER is significantly dependent on the development of oil prices. Russian institutions, and quality of governance is low and contributes to low economic growth.

1.2. Selection of the topic

Russian Federation, the most significant and legal successor of USSR[4], has been understandingly also the most studied post-Soviet republic in the academic circles. Also among the journalists and in the mass media it plays the most prominent role. It continues to be one the most globally studied countries by political, economic, and military experts. Russia remains to be the focus of detailed attention also from politicians as it has maintained important role in the international arena and is one of the major geopolitical actors. Its diplomatic importance has resurged after year 2000 and further increased in the recent years, especially in the area of Middle East, where

[4] Russia has declared itself the successor state of USSR in the end of 1991. It was easy to understand as it held majority of both Soviet population (51%) and area (77%) at the time of dissolution of USSR. Other former constituent Soviet republics accepted this move. This entailed both rights and obligations for the country, i.e. Russia acquired USSR's permanent seat in the UN Security Council, all Soviet embassies, reserves; but also assumed the Soviet debt and other commitments.

is Russia deepening relations with all major regional actors; while at the same time, the influence of USA in the region is declining.[5]

The focus of academics-economists and economic journalists is often concentrated on the resource curse and its demonstration on the case of Russia, its economic progress, quality of its institutions, and general socio-economic conditions. Resource curse is not unique to the case of Russia, but Russia is one of the most cited examples of a country suffering from this phenomenon. It should be noted that endowment with resources is no fatality, and the resource curse is not universal. There are several cases of countries rich in resources that were not harmed by their endowment and even managed to use the resource-generated revenues in an effective manner. The most prominent examples are the cases of Australia, Botswana, Canada, and Scandinavian countries.[6] There is an ongoing discussion, not only in academic sphere, but also among politicians and journalists, to which extent is Russia's well-being dependent on its natural resources and revenues generated by their exports. One can often read in newspaper that the economy of Russia is comparable by size to the economy of Italy or Texas, entities with much smaller population.[7] This is true in terms of nominal GDP[8] that is useful when measuring the size of Russian economy on the global level, where different domestic price levels do not matter, and its power to trade with other countries. When measured by GDP figures adjusted by purchasing power parity, reflecting the size of Russian economy in the real terms, it is significantly bigger than the two above-mentioned examples, being on the 6th place overall in the global comparison.[9] Even the top politicians often dismiss Russia to be a poor country that

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[5] Both Barack Obama, especially during his second term, and Donald Trump followed incoherent policy when dealing with Middle Eastern issues.
[6] Ahrend, R. (2006). p. 1.
[7] For example, see editorial in Forbes by Frank Holmes: *Which Has The Bigger Economy: Texas Or Russia?* (https://www.forbes.com/sites/greatspeculations/2018/04/17/which-has-the-bigger-economy-texas-or-russia/#ebd79c170b93) or statement from US senator Lindsay Graham that Russian economy is the size of Italy (https://www.politifact.com/truth-o-meter/statements/2014/jul/27/lindsey-graham/graham-russia-has-economy-size-italy/).
[8] When measured by this indicator, Russia's economy is the eleventh biggest in the world, smaller than Canada (35 million people) and bigger than South Korea (51 million people). See: https://data.worldbank.org/indicator/NY.GDP.MKTP.CD?order=wbapi_data_value_2013+wbapi_data_value+wbapi_data_value-last&sort=desc&year_high_desc=true
[9] Russia occupies sixth spot between Germany (82 million people) and Indonesia (240 million people) based on the 2017 GDP PPP in international dollars figures by the World Bank

produces nothing competitive on the global market.[10] This leads to a confusion among the general public exposed to these proclamations, not knowing the difference between nominal and real GDP. The confusion stems from misunderstanding of how can Russia exert such power and influence in the global politics, and why its international actions do not correspond to its perceived backwardness, as it is being presented as a small and weak economy with uncompetitive domestic producers.

Russia's richness in natural resources entails both benefits and minuses. On the one hand, oil and natural gas extraction and processing are capital-intensive industries with resources often being difficult to extract, resource extraction has become quite technology-intensive; however, only small fraction of labour force is needed to generate certain revenue stream from exports.[11] On the other hand, this relative simplicity compared to other sectors of the economy often tends to lead to rent-seeking behaviour, conflicts over the distribution of this easily accessible wealth, and other forms of pathological behaviour among economic actors. These conflicts harm general economic growth because productive resources are drawn into these fights.[12] In addition, earnings from the sale of resources tend to be relatively volatile, what is bad for longer-term economic planning and management of public funds.[13] Another common phenomenon, which countries with abundant mineral resources suffer from, is described under the term of Dutch disease - appreciation of real exchange rate, which makes other sectors of economy less competitive on both international and domestic market.

Furthermore, Russia is since 2014 subject of various financial, economic, personal, and diplomatic sanctions[14] that put further pressure on both oil and non-oil sectors of

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(https://data.worldbank.org/indicator/NY.GDP.MKTP.PP.CD?order=wbapi_data_value_2013+wbapi_data_value+wbapi_data_value-last&sort=desc&year_high_desc=true).

[10] For example, see Barack Obama's statement from the end of his term in December 2016 that Russia "doesn't produce anything that anybody wants to buy, except oil, gas and arms". Link: (https://www.cnbc.com/2016/12/16/obama-says-russians-cant-change-us-or-weaken-us.html).

[11] Ahrend, R. (2006). p. 3-4.

[12] Oomes, Nienke and Kalcheva Katerina (2007). p. 4.

[13] Ibid, p. 4.

[14] Sanctions were imposed on Russia by United States, European Union, Australia, Canada, and Japan following the Ukraine crisis, annexation of Crimea by Russian Federation and downing of flight MH17 above eastern Ukraine.

its economy. Sanctions contribute to hindering of Russian progress, especially by banning the export of potentially sensitive technologies with so-called dual use into Russia and restricting access of Russian banks to Western capital with its lower interest rates. These sanctions are still in place and the outlook for their potential lifting is rather unfavourable with further setbacks happening in the meantime, for example poisoning of Sergei Skripal in United Kingdom, which was determined by British authorities to be perpetrated by Russian secret service.

In 2001, Russia was included into the group of BRIC countries[15], group of emerging countries that due to their size and untapped potential were expected to become the major actors in the field of global economy. These economies were at the time among the fastest growing emerging markets. The countries put together rather arbitrarily in the sense that the countries were and still are rather heterogeneous. India and China were the two most populous nations with potential to become the biggest exporters of manufactured goods and services, while Brazil and Russia were deemed to hold bigger importance thanks to their endowment with natural resources, large area and low population density. Thanks to this, they aspired to become the largest global suppliers of raw materials and commodities. Currently, the group is still heterogeneous as China succeeded in developing its potential, but India is significantly lagging behind Chinese success. On the other hand, both Brazil and Russia recently experienced recession[16] and their economic growth is currently subpar.

In conclusion, Russia is an important member of international community and its importance on the global stage surpasses its population and size of economy. It is also a country of natural riches and therefore a useful case to analyse when trying to find a country that might be suffering from resource curse.

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[15] Term was coined by World Bank economist Jim O'Neill based on the names of the group countries – Brazil, Russia, India, and China. For details, see: http://www.goldmansachs.com/our-thinking/archive/archive-pdfs/build-better-brics.pdf.

[16] Brazil experienced recession in 2015-2016, Russia in 2014-2015. Brazil's situation is complicated by the domestic political instability with leading politicians accused and jailed for corruption and conflict of interests.

2. Economy of Russia

The main determinant affecting the current situation of Russian economy is the historical development in the last hundred years, which significantly affected its sectoral and spatial composition. The main historic events of the 20th century had also significant impact on Russian human capital leading to waves of emigrants, among whom the upper classes of society were overrepresented.

Abundance of Russia in the natural resources is impressive by all measures. The most important out of them have been oil and natural gas as they provide Russia not only with economic benefits, but also they can potentially serve as a leverage against the countries dependent on energy imports from Russia. This relationship is mutual, what can be seen in Russia's diligent activity to diversify the portfolio of its export markets. Thanks to the abundance of resources, Russian economy is highly dependent on the exports of resources, in particular on oil and natural gas. This is not unique to only Russia, as countries with similar endowment of resources are dependent on their export, too.[17] The geography has been not only generous to Russia. The subchapter on Russian geography recapitulates the academic views on economic implications of geographic reality, concluding that the long distances, harsh climate, and uneven population distribution are significant characteristics that form an obstacle to higher economic growth.

The discussion about the need of restructuring of Russian economy has been ongoing since the early 2000s, when Russia and other oil producers benefitted from substantial rise in the oil prices. Chapter will therefore also look at how the diversification efforts have been more successful in the diversification of markets to which is Russia able to export its natural resources. The international sanctions that are affecting Russia will be presented in bigger detail at the end of chapter.

[17] For example, in 2016 minerals and fuels represented a significant 43.3 percent of total Australian exports (Thirlwell, 2017). The most significant of Australia's exported primary resources are iron ore, coal, gold, and natural gas.

2.1. Historical trajectory of Russian economy

Russian economy has been for majority of 20th century subject to the application of Marxist economic theory, which in the case of Russia resulted in deliberate ignorance of services sector, as the central planners preferred orientation on heavy industry with significant share represented by armaments industry. The development goals, prices in the economy, and strategies to reach these goals were also planned centrally and usually arbitrarily regardless of the real needs. It is difficult to assess the trajectory of Russia in the 20th century, as there is lack of comparable time series for majority of economic indicators. This partially stems from the changes of borders of Russian Empire, Soviet Russia, RSFSR as a republic of Soviet Union, and independent Russia. Furthermore, Soviet statistics focused on data for the whole country; statistics were often secret, manipulated.[18]

Russia is still recovering from the horrible setbacks that Russia, and in general whole Soviet Union, had to endure in the 20th century. Some of these crises were caused by external factors and powers, but some of them were inflicted by the leaders of country.

In certain circles of Russian population, there is a tendency to portray Soviet economy as more successful than it really was; this interpretation of Soviet economic miracle is very misleading. Its proponents usually make their point based on comparison of the late Soviet economy versus the performance of Russian economy in the transformation years of 1990s, which were the years of economic collapse. Comparison of early post-Soviet period with the years of Leonid Brezhnev[19] is, of course, unfavourable for the post-Soviet market economy. The collapse of Russian economy in the 1990s was, however, to a partial extent caused by the breakup of the USSR as an economically unitary entity, and to a large degree caused by the inefficiencies of Soviet economy and perpetual ignorance of its structural problems. While it is true that handling and management of the transformation by the Russian

[18] Smirnov (2015). p. 131.
[19] This period (1964-1981) was in fact a period of economic and social stagnation, but in comparison with recession of 1980s and depression in 1990s, these years create a sense of nostalgia.

leading decision-makers was abysmal and contributed to the longevity of the depression, the Soviet economy did not perform to the best of Russia's potential (see figure 1). The graph also illustrates the three big depressions in 20th century – WW1 and Civil war, WW2 and depression of late Soviet and early post-Soviet period.

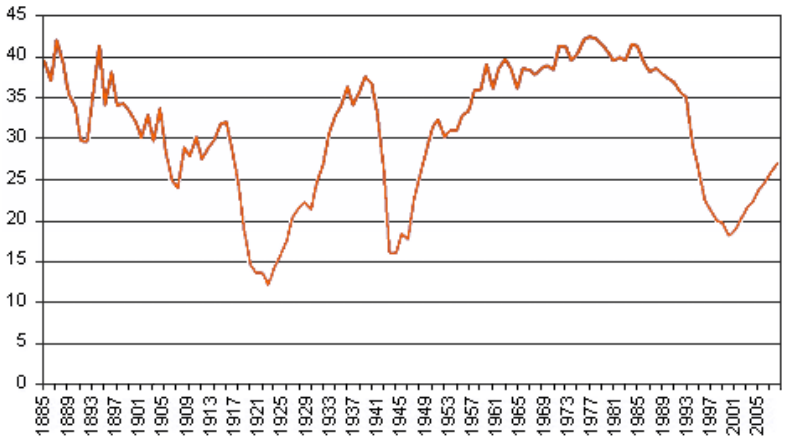

Figure 1: GDP per capita of Russia as a percentage of USA GDP per capita, 1885-2006 (source).

The Stalin-era recovery was only return to the late Tsarist levels of income relative to other countries in the world. The missed opportunity of 20th century that communism caused in Russia can be illustrated on work done by British economist Angus Maddison and his calculations of the historical GDP per capita in Geary-Khamis 1990 international USD. Maddison performed his estimates for majority of current countries and for many historical countries dating back before First World War. Maddison's calculations show that Russia before the Soviet experiment was on level of development comparable with several peripheral European countries that are today among high-income economies.[20] In 1913, the last normal year before the outbreak of First World War, Madison estimated GDP per capita of former USSR territory to be 1,414 Geary-Khamis USD, while comparable figure for Greece is 1,177 and for Portugal 1,250 USD.[21] Based on this indicator and other indicators, such as literacy

[20] Maddison Project Database, version 2013. Bolt, J. and J. L. van Zanden (2014). For database, see: https://www.rug.nl/ggdc/historicaldevelopment/maddison/data/mpd_2013-01.xlsx

[21] Figure for territory of current Russia per Madison does not differ significantly from the average for the former USSR, as USSR encompassed both territories that were more developed than Russian territory, and less developed.

rates, we can conclude that before First World War was Russia at the similar stage of economic development as Portugal and Greece.

The first of catastrophes in the 20th century was First World War and, even more devastating event has been the Civil War that break out in Russia following the Bolshevik revolution and armistice with the Central Powers. The casualties and demographic losses in general resulted from the conflict and disruption normal life, Red and White terror, left millions of dead and caused significant emigration.[22] The Stalinist purges of the late 1930s with the deaths of hundreds of thousands people also hindered recovery from the depression of 1914-1921.

The next economic contraction occurred following the Axis invasion of USSR. Again, this event caused even bigger non-economic losses as Soviet suffered 26 million killed soldiers and civilians. Post-war situation was made worse by the drought that hit Russia in 1946 and led to the last famine recorded in Russian history.[23] Post-war expansion lasted until 1979, when industrial activity decreased by 0.4%, railway transportation decreased by 4% and completions of new residential units decreased by approximately 7%.[24] After long period of rapid urbanization, extensification of agriculture, the Soviet growth model was systematically unable to provide incentives for individuals and businesses to improve efficiency. It was obvious that Soviet economic model has run out of possibilities to secure further growth and a constant crisis of the system was imminent. With the revolution in Iran and the Iran-Iraq war that began in September 1980, oil prices increased significantly, what might have helped to save the Soviet economy, at least for the foreseeable future.[25] Some scholars claim that it was the decrease of the oil prices in the second half of the 1980s that was the primary reason of the Soviet Union's economic collapse together with the

[22] During the Civil War, large part of Russian intelligentsia left the country in the fear for their lives. In 1934, there were according the Nansen International Office for Refugees about one million Russian refugees in Europe (http://eprints.uwe.ac.uk/33611/1/EWhiteRussianRefugees.pdf).
[23] Famine of 1946-1947 was the third major famine that occurred in USSR, the previous were 1921-1922 and 1932-1933. It was caused by several repeated under-average harvests, as harvests of 1942-1945 were also low compared to the harvests before WW2. For detailed info on Russian harvest, see: (http://www.gks.ru/free_doc/doc_2015/selhoz15.pdf).
[24] Smirnov (2015). p. 140.
[25] Ibid, p. 140.

increasing expenses for the war in Afghanistan.[26] On the other hand, there are voices that oil revenues helped to prolong the authoritarian Soviet regime and that the real reasons of the economic collapse were systemic, internal, and inherent to the economic model pursued by USSR and not directly related to external events of the 1980s.[27]

The additional time that was given to Soviet economy by rising oil revenues was not used effectively and no restructuralization took place in the early 1980s. The growth of industrial production in the period of 1980-1988 never exceeded 1.5-1.7% and vague reforms of Mikhail Gorbachev together with the enthusiasm that his appointment brought were not enough to overcome the structural problems. Consequently, in the last three years of USSR (1989-1991), industrial production decreased cumulatively by 12%.[28] Profound economic transformation, reforms and restructuralization of Russian economy were needed, the voluntary dissolution of USSR by its elites points to the realisation of this need. Breakup of USSR brought another problem to the list of problems that Russia had to cope with as the economic links with former republics were disrupted. Moreover, Russian goods and services were uncompetitive in the global comparison and Russian market was flooded with imported goods that destroyed domestic production unable to deal with sudden competition. The difficulties linked to the transformation of economy after decades of central planning were aggravated by the dissolution of the unified economic market, market that has existed in the approximately same borders for prior seventy years.

Years of 1992-1996 were thus continuation of the late-Soviet depression, with the economic activity in Russia decreasing by additional almost 50% in the course of five years.[29] Only Ukraine among the all post-Soviet republics suffered from similar level of economic downturn. The short-lived economic recovery of 1997 was interrupted very early. In 1998, Russia was affected by the Southeast Asian financial crisis; decrease of oil prices and virtually non-existent international reserves meant devaluation of Russian rouble, default on treasury bills and bonds, and bankruptcy of

[26] Gaidar (2007).
[27] Ross, M. (2012). p. 93.
[28] Smirnov (2015). p. 141.
[29] Ibid, p. 142.

several large commercial banks.[30] Devaluation of rouble helped domestic producers to become more competitive, what in combination with rising oil prices led to the longest economic conjuncture in the post-Soviet Russia.

Whereas in 2000, Russian GDP per capita by purchasing power parity was only 6,800 USD, even below the global average of 7,900 USD. By 2008, Russia managed to overtake the global average with average GDP per capita of 20,200 USD (65% above the global average that was at the time estimated to be 12,200 USD.[31] The well-being of population increased accordingly, real wages increased by 3.4 times, and real pensions by 2.8 times.[32] This period of economic conjuncture lasted only ten years, interrupted by another crisis, this time of global size. While in the pre-crisis period from 2000 to 2008, the average annual growth of Russian GDP was 6.9%, after the crisis (2009-2017) it slowed down to 0.6%, with the per capita growth rate being very similar (see Table 1).[33] The growth rate dropped around the world, and Russia's growth after the crisis is not dissimilar to the development in other significant oil producers, such as Saudi Arabia or United Arab Emirates. Of course, it is not obvious from the absolute GDP growth and not per capita figures, as Russian population was stagnating in this period, while population of Saudi Arabia and United Arab Emirates continues to grow quickly.

Table 1: Average annual GDP per capita growth (annual %) of Russia compared to other countries in the two nine-year periods divided by the impact of 2008 global financial crisis

Country/Group of countries	2000-2008 average	2009-2017 average
Russian Federation	7.3	0.4
Saudi Arabia	1,3	0.6
United Arab Emirates	-3.3	-0.5
India	5.0	6.1
China	9.8	7.6

[30] Ibid, p. 144.
[31] For details, see: https://data.worldbank.org/indicator/NY.GDP.PCAP.PP.CD?end=2017&locations=RU-1W&start=1990&year_high_desc=true
[32] Kudrin, A. and Gurvich E. (2015). p. 30.
[33] For details, see data: https://fred.stlouisfed.org/series/NAEXKP01RUA657S and for per capita growth: https://data.worldbank.org/indicator/NY.GDP.PCAP.KD.ZG?end=2017&locations=RU-1W&start=1990&year_high_desc=true

United States	1.4	0.8
European Union	1.9	0.6

With the increases in the oil price in the pre-2008 crisis years, Russia was receiving significant surplus oil and gas revenues. According to Kudrin and Gevrich (2015), in the nine years of 2000-2008 they accounted for 0.9 trillion USD.[34] These revenues helped Russia to reduce taxes in other sectors of economy, increase public investments by 200% by 2008, Russia was also able to partially repay its government debt[35], and establishment of the Stabilization fund was possible to accumulate the surplus money as a reserve for the crisis times.[36] In the early 2000s, government was focusing on improving the legislation, as new Tax Code, Labour Code were approved. Since the mid-2000, government's involvement in the economy started to increase by the creation of public corporations and development institutions.[37] There has not been enough focus on improving efficiency in the economy, but rather on expansion of production. Currently is Russia classified as an upper-middle income economy by World Bank. The largest problems of Russian economy are usually mentioned to be the dependence on its natural resources.

Russia in recent years attempted to lowers the dependency of its public finances on the revenues from oil and natural gas rents. The reform of the Russian federal budget is visible when looking at the so-called budget rule adopted by the Russian Ministry of Finance. It was set in 2013 and ruled that all oil and gas budget revenues resulting from the oil price exceeding 90 USD per barrel should go into the Reserve fund rather than to the budget.[38] In 2018, the corresponding figure was set to only 40 USD per barrel as Ministry decided to set the threshold price rather strictly, in order to be ready for a potential crisis. This measure helped Russian economy to stabilize itself, accumulate

[34] P. 32.
[35] The debt was reduced from 161 billion USD to 41 billion USD in 2000-2008 period.
[36] Kudrin, A. and Gurvich E. (2015). p. 32-33.
[37] Ibid, p. 37.
[38] For more details about the budget rule, see: https://iz.ru/640293/inna-grigoreva/biudzhetnoe-pravilo-bet-po-vvp-i-infliatcii.

foreign-currency reserves and make domestic economic activity less dependent on exogenous oil prices and less oil-price driven.[39]

Due to the aging of the population, a pension reform was announced by the federal government in June 2018 during the World Football Cup. Currently, the pension fund needs yearly a subsidy worth of approximately 2.5 percent of GDP.[40] Russian government has been deferring the reform of pensions for a few years, but the life expectancy of Russians has been increasing steadily[41] and the pension system of Russia has grown to be too demanding on the public finances, with significant overhaul needed. The life expectancy is still low for a developed country, but the retirement age is at the lowest level of any developed country. Therefore, the retirement age was planned to increase from current 60 years for men to 65 years and from 55 years for women to 63 years; the increase was envisaged to be phased over the period of ten and sixteen years for men and women respectively.[42] It is one of the reforms that Russian economy desperately needs to become more competitive and efficient, albeit it is a very unpopular measure at any time and in any country. The retirement age increase will not lead to lower public expenditure, but will also help Russia to cope with the declining working-age population. Despite softening[43] of the law by Vladimir Putin following the public protests, his popularity declined and stays at levels not seen since 2011-2012.[44]

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[39] For more details, see: https://www.forbes.com/sites/kenrapoza/2017/07/06/sorry-senator-mccain-russia-no-longer-just-a-gas-station-masquerading-as-a-country/#267770f322f0.
[40] Economist (2018).
[41] The latest figure from World Bank puts life expectancy at birth for Russians at 71.6 years, the corresponding figure from Russian Statistical Office for 2016 is 71.9 years and in 2017 it puts it at 72.7 years. The average world figure according to WB is 72.0 years. For more details, see https://data.worldbank.org/indicator/SP.DYN.LE00.IN?end=2016&locations=RU-1W&start=1960&view=chart.
[42] Economist (2018).
[43] Retirement age for women will increase only to 60 years, instead of 63 (https://www.reuters.com/article/us-russia-putin-pension-age/russias-putin-offers-women-a-better-pensions-deal-after-popularity-hit-idUSKCN1LE0VY).
[44] In September 2018, trust in Vladimir Putin was expressed by 39% of polled, decrease of 20 pp since November 2017 (https://www.theguardian.com/world/2018/oct/08/trust-vladimir-putin-declines-steeply-among-russians-poll-shows-pension-changes).

Another important reform that is being prepared by Russian government is increase in the value-added-tax from 18% to 20%[45] and an overall tax reform of the oil industry. Since 2019, Russia will gradually decrease export duties on crude oil and oil products with their full abolishment in 2024; simultaneously, oil-drilling taxes are to be raised with the final tax burden for the producers that at the same time export their production to remain the same.[46] On the other hand, it will be the domestic refineries that will lose state subsidies of around 1 trillion roubles, as the government is aiming to stimulate refinery upgrades.[47] Belarus and Kazakhstan, the closest Russian trade partners, will be affected as well, as they currently import Russian crude oil tax-free and pay export duty only on fuels they produce and export outside of the Eurasian Economic Union.[48]

In the 39th edition of Russia Economic Report, published by the World Bank in May 2018, the organization has noted the recovery of Russia's economy in 2017, with the chief reasons identified as the improved macro-economic stability and gradual monetary loosening.[49] The performance was also supported by the global economic growth, which is according to the World Bank expected to peak in 2018. Global recovery helped Russian exports, with the growth in the sector of non-oil goods and services. One of the main problem of Russia, according to the World Bank, is the lack of free trade agreements with countries outside former USSR, number of easily accessible markets for Russian producers is therefore very low.

2.2. Implications of geographical reality on Russian economy

It is difficult to disassemble the economic performance of a country from the inevitabilities that result from its geographical reality. Russian economic performance

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[45] For details, see: https://www.ey.com/gl/en/services/tax/international-tax/alert--russia-to-increase-standard-vat-rate-from-18--to-20--as-of-1-january-2019.
[46] Khrennikova (2018).
[47] For details, see Slav (https://www.bloomberg.com/news/articles/2018-07-25/russian-oil-getting-ready-for-biggest-tax-overhaul-in-20-years).
[48] Khrennikova (2018). In the case of Belarus, this was a form of indirect subsidy to the regime of president Lukashenko. Subsidy was estimated to cost Russian budget around 140 billion roubles annually (https://www.vedomosti.ru/economics/articles/2018/03/16/753928-promedleniya-nalogovim-manevrom).
[49] World Bank (2018).

is seriously affected by its climate, location, and low population density. Russia suffers from serious underpopulation. It is the country with the largest land mass in the world, but its population is only tenth largest in the world, lagging behind countries with much smaller area, such as Bangladesh, Pakistan or Nigeria. Its population of approximately 147 million inhabitants[50] is too small for the area of more than 17 million square kilometres.[51] It is true that having a high population density may translate into lower quality of life from resulting overcrowdedness, noise, traffic and pollution; the opposite extreme has serious consequences as well. The biggest determinant of current allocation in Russia is the legacy of the Soviet experiments and of the central planning that often arbitrarily selected regions for development ignoring the local realities and trying to change them[52]. Russian geography resembles the geography of Canada, but more detailed comparison of these two countries shows the difference between the two; the territories of these two countries are almost equally cold, but Russian Arctic is more densely populated, while Canada has its population concentrated along the southern border with the United States[53]. The least-densely populated region of Canada, Nunavut, has population density of less than 1.5 people per 100 km^2, while Chukotka Autonomous District, least-densely populated region of Russia, has density of seven people per 100 km^2 and Sakha Republic, the largest federal subject, has respective population density of 30.5 people[54].

The USSR tried to develop distant regions by centrally planned development of the sparsely populated areas accompanied by incentives for the population to move to these areas. As soon as the support for these projects and initiatives stopped, these town and settlements have started to deteriorate and people are moving from Far East to the more climatically pleasant parts of Russia[55] and from the rural areas to Moscow and

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[50] Including Crimea that is de-facto controlled by Russia, although this is disputed by the majority of international community.
[51] The population density of Russian Federation is only 8.4 per square kilometer.
[52] Markevich, A. and Mikhailova T. (2012). *Economic Geography of Russia*. p. 25.
[53] Treivish, A. (2005). *A New Russian Heartland: The Demographic and Economic Dimension*. P. 133.
[54] Ibid, p. 141.
[55] Krasnodar Oblast has been one of the leaders in the population increase resulting from the migrant arrivals from other parts of Russia. In general, it is the Central, Northeastern and Southern Federal districts of Russia that have positive migrant movement in the intra-Russian migration.

other big cities[56]. Only regions, which offer highly paid jobs in mining of resources, continue to attract population despite harsh climate. Russia now, therefore, consists of archipelago of economically responsive hubs that must be interlinked over the hinterland to function effectively as one economic entity[57]. It is vast distances from major cities isolate at least half of the Russian population from educational, economic, and social opportunities[58]. Russia thus suffers from regional inequality, where leading regions offer significantly better quality of life compared to the hinterland, with place of residence being the most important determinant of an individual's economic prospects[59].

This is despite the fact that the network of schools, hospitals, and transport infrastructure is quite dense when calculated relatively for population, but when calculated for area the density is insufficient. Due to the fact the Russian population lives scattered over this immense area – many regions are underpopulated, but inhabited nevertheless, therefore it is the density relative to the area that indicates the real need for the infrastructure. The transport costs over vast distances are also higher. Hence, the federal, and regional governments, and local authorities have to spend far higher share on the basic infrastructure than they would otherwise and the results are still not adequate in the international comparison. This bears significant consequences on the Russian economy, resulting in spatial monopolies and segmented markets[60]. Therefore, entrepreneurs cannot benefit from the size of the full Russian market and the consumers cannot enjoy the resulting economies of scales (with the exception of non-physical goods and services).

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[56] Rural areas all over the world suffer from depopulation as the people move to cities in a search of better life conditions. The outflow in Russia is more intensive as in Europe, because Russian rural areas are quite dissimilar from their European counterparts. Main reason is the distance from the closest big city and the resulting implications.
[57] Dienes, L. (2002). p. 443.
[58] Ibid, p. 444.
[59] Markevich, A. and Mikhailova T. (2012). p. 26.
[60] Dienes, L. (2002). p. 455.

2.3. Research and development

Russia's expenditure on research and development are very low from the global point of view.[61] Furthermore, in the post-Soviet period has Russia suffered from a wave of brain drain, which was most pronounced in the 1990s and early 2000s.[62] While the overall effect might be smaller than expected, the outflow of academics in the fields of mathematics, physics and chemistry has almost threatened established academic schools.[63]This has led to Russia underperforming in the field of international science, when approximated by the Nature Index,[64] Russia's position when measured by the fractional count is the 18th place, that is below Israel and slightly above Denmark, countries with population smaller than agglomeration of Moscow.[65]

Russian science is underfinanced and underperforming, a state of affairs that has negative overall implications on the performance of Russian economy, its efficiency and competitiveness on the global scale. The situation has started to change in the recent years. For example, the salaries of all workers in scientific organization increased in first six months of 2018 by 42% compared to the same period of prior year, the corresponding figure for researchers has been 71% increase and academic staff's salaries increased by 114%.[66] This increase was not coincidental; it is directly related to the May 2012 decree no. 597 issued by Russian president Vladimir Putin that was aimed to increase the average salary of workers in scientific organizations to 200% of the average salary in the respective federal subject by 2018. The salary increases during the years following the issue of the decree have been anaemic, and only when the deadline was approaching, the money were found for this remuneration increase

[61] World Bank puts Russia R&D expenditure figure at 1.13 percent of GDP in 2015. The corresponding global average is almost double - 2.23 percent of the global GDP. For more details, see WB database: https://data.worldbank.org/indicator/GB.XPD.RSDV.GD.ZS?locations=RU-1W&year_high_desc=true.
[62] For example, in 1997 Russia recorded migration loss of 39 thousand people with Germany and 8 thousand with USA (http://www.demoscope.ru/weekly/ssp/rus_mig_int.php).
[63] Korobkov. Zaionchkovskaia (2012). p. 327.
[64] The index compiled by Nature Research, a proxy for high-quality scientific output measured by articles published in 82 science journals (https://www.natureindex.com/faq).
[65] For details, see: https://www.natureindex.com/country-outputs/generate/All/global/All/score.
[66] Martynova, S. and Tarasenko, I. (2018a).

and the goals set in the decree could be achieved in majority of regions and on the federal level.[67]

Russia could gain very much from higher investments into research as its potential in the area of human capital is above average. For example, Russia is leader among 32 upper-middle income countries covered by the Human Capital Index of World Economic Forum and out on the overall 16th place among 130 countries assessed by the latest 2017 edition of the report. World Economic Forum argues that human capital is, at least in the long-term, one of the most important determinants of an economic and social success.[68] This index is made of four components: deployment, capacity, development, and know-how. These components are made of indicators, such as literacy, attainment rate of primary, secondary and tertiary education, employment rates, high-skilled employment share, etc. These indicators do not translate automatically into economic success; they are only necessary condition that needs to be further built on and in this area is Russia significantly lagging behind.

The success that can be brought by research and development can be shown on the nuclear-reactor exports in which has Russia achieved global dominance, as Rosatom[69] supplies slightly above 50 percent of the new world nuclear reactors. Despite the Fukushima disaster, nuclear energy continues to be significant source of energy and especially many developing nations are building new reactors to satisfy their growing energy needs.

World economy is starting to feel the impact of the fourth industrial revolution. With every revolution, it is more important than before to invest into research and development. The focused should be aimed especially at the field of artificial intelligence. Practically all developed countries suffer from the decrease in working-age population and Russia is no exception to this trend. The higher share of elderly on

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[67] Martynova, S. and Tarasenko, I. (2018b).
[68] For details, see: http://www3.weforum.org/docs/WEF_Global_Human_Capital_Report_2017.pdf.
[69] Rosatom is the Russian state-owned corporation that specializes in nuclear energy development and export of nuclear technologies. Its contract's partners are as diverse as Finland, Hungary, India, China, Argentina, or Sudan. For more details, see: https://www.economist.com/graphic-detail/2018/08/07/russia-leads-the-world-at-nuclear-reactor-exports

the population, the higher will be the need for automatization and robotization. Russia needs to step up its research and development efforts in order to successfully compete in the changing world and to improve living standards of its population.

2.4. Inequality and inflation

Income inequality is an issue in many resource-based economies. This problem is commonly associated with Latin American countries. Russia is also suffering from inequality. To a large extent, it is in the Russian case caused by the so-called wild economy of the transition decade of 1990s, when rent-seeking behavior was

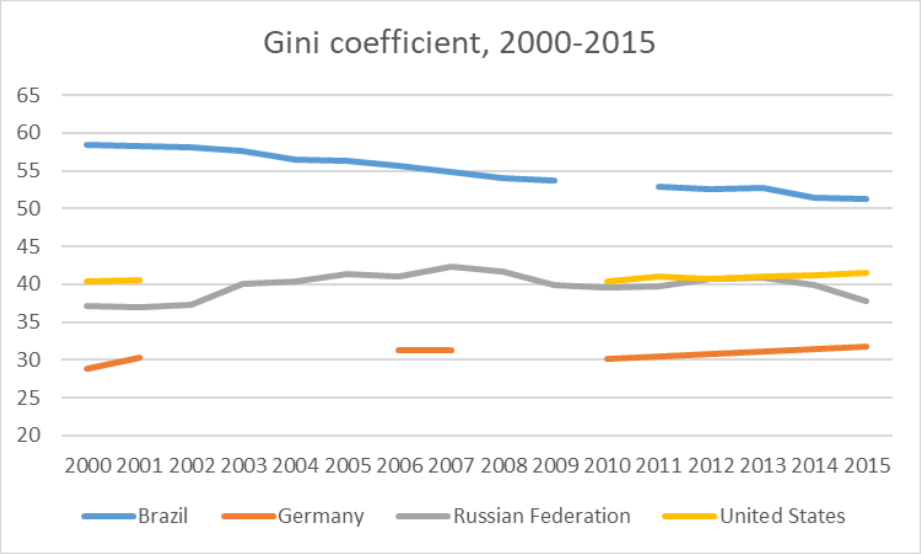

Figure 2: Comparative development of Gini index in Russia, Brazil, Germany and USA (based on data from: https://data.worldbank.org/indicator/SI.POV.GINI?end=2016&locations=RU-US-DE-BR&start=1979&view=chart)

"rewarded" with economic success what led to the dismantling of previous relatively egalitarian society.[70] Russia's Gini coefficient[71] was in 2015 estimated by World Bank

[70] It is usually the post-communist countries in Central-Eastern Europe, such as Slovenia, Ukraine, Czech, and Slovak Republic, and Scandinavian countries, such as Finland or Norway, that are the least unequal in the world. For details, see: (https://data.worldbank.org/indicator/SI.POV.GINI?end=2015&start=1979&year_high_desc=false).

[71] Gini coefficient measures the extent to which the distribution of income among individuals in society differs from perfectly equal distribution. For details, see: https://stats.oecd.org/glossary/detail.asp?ID=4842

to be 37.7, slightly lower than the US figure of 41.5, or Brazil's figure of 51.3 (see Figure 2). Nevertheless, compared to other post-communist European countries, the level of income inequality is very high. It is also higher level of inequality than found in Western European countries, which re-distribute more wealth among the citizens thanks to their stats of being welfare states.

The income inequality is the primary reason why is Russia considered a poorer country than i.e. Romania or Latvia, despite having higher GDP (PPP) per capita.[72] This is connected to the fact that average value is always less representative for the general population than the median value. In the case of high inequality, the mean number differs from median even more as the distribution is less homogenous and more skewed. This inequality is also geographical, stemming from the size of Russia and unequal distribution of population. Therefore, rich regions[73], such as Moscow, Saint Petersburg with their suburbs and regions of the Far North where majority of Russian oil and gas is extracted, and wealthy individuals skew Russia's average figures.

Figure 3: Inflation in Russia, 2000-2018 (from: https://tradingeconomics.com/russia/inflation-cpi).

[72] IMF estimates the 2017 figure for Russia at 27,900 USD, while Latvia has corresponding figure of 27,300 USD and Romania 24,000 USD.
[73] Six out of the total 83 federal subjects of Russia, cities of Moscow, Saint Petersburg, Moscow and Tyumen oblasts, Khanty-Mansiisk and Yamal-Nenets autonomous districts produced almost half of Russia's GDP in 2011, although holding around 18 percent of the population (https://themoscowtimes.com/articles/6-regions-produce-almost-half-of-gdp-15916)

Russian economy has been for long time characterized by high levels of inflation (see Figure 3). High levels of inflation were typical for other transitioning countries. But in majority of cases, the high levels of inflations were quite short-lived. Due to the high levels of inflation had Russia done the last monetary reform. It was effective on 1 January 1998, with exchange rate being 1000:1. Since then the levels of inflation have decreased, but still remained above levels experienced by developed economies. Reasons for this are various, with the most significant drivers of inflation being the state-regulated prices in natural monopoly sectors of gas and electricity distribution, which were subject to increases to decrease the difference against the international prices.[74]

The Russian public has been traditionally very anxious about the increasing price level. It is a known psychological fact that people feel that inflation is higher than are its levels reported by the statisticians. The last surge of inflation was experienced by Russia in late 2014-2015, when effect of economic sanctions and the plunge in the oil prices converged, this was followed by depreciation of Russian rouble[75] and inflation hit its maximum of 22 percent in February 2016. In June 2018, the annual inflation slowed to 2.3 percent, what is the lowest level recorded in the post-Soviet period.[76] For the foreseeable future are Russian federal budgets based on expected inflation of 4%. Keeping the inflation below 4% is also one of the goals in the May 2018 decrees of Vladimir Putin.[77]

2.5. Demographic situation

Apart from increasing life expectancy that seems to be finally catching up with the levels normal for countries with similar level of income, is Russian demography facing tremendous challenges. The challenge that is most threatening for further economic development is the fact that Russia is suffering from the natural decline of population.

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[74] Tabata (2016).
[75] Main driver of inflation in post-2014 era according to Tabata (2016).
[76] BNE Intellinews (2018).
[77] For details, see: http://en.kremlin.ru/events/president/news/57425.

The natural decline has been recorded in all post-Soviet years with the exception of three years period of 2013-2015.[78] The overall population growth is positive only thanks to the migration surplus[79], but the enduring natural decline poses significant challenges for the Russian economy. Following the dissolution of USSR and economic transition in the early 1990s, the birth rate in Russia decreased significantly[80], Russian demography underwent so-called Russian cross as death rate increased significantly and number of deaths exceeded the number of births[81]. The echo impact of this development has started to manifest itself in the recent years as the less numerous post-Soviet generation enters the labour market. This has led not only to the decrease of the working-age population, but the birth rate started to decrease again as the number of potential mothers is also declining. It is possible that in the following years even the migration surplus will not be able to outweigh the natural decline and Russian population may start to decline. The immigrants to Russia have been to a large extent ethnic Russians repatriating from Kazakhstan, other Central Asian republics, Baltic states, and Ukraine. The flows of ethnic Russians is drying up as there are significantly less Russians living in the post-Soviet space than ten or twenty years ago. The increase in living standards in the Baltics and Kazakhstan was another reason for slowdown of immigration from these countries. Long-term migration of non-Russians into Russia is problematic to accept for Russian society, therefore it seems that Russia can expect a decade of demographic slowdown.

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[78] For details, see: http://www.demoscope.ru/weekly/ssp/rus_components.php.
[79] The overall population growth in Russia has been recorded every year since 2009. Migration surplus of Russian population is positive mainly due to migratory flows from Ukraine, Kazakhstan, Armenia, and Central Asian republics. Immigrants from Ukraine and Kazakhstan are usually ethnic Russians repatriating to Russia, while immigrants from Armenia and Central Asia are mostly economic migrants. For details, see: http://www.demoscope.ru/weekly/ssp/rus_mig_int.php.
[80] For the general assessment of birth rate. The total fertility rate in Russia decreased from 2.007 in 1990 to its absolute minimum of 1.157 in 1999. Since then, there has been a partial recovery to 1.777 in 2016. For details, see: http://www.demoscope.ru/weekly/ssp/rus_tfr.php.
[81] Pant, H. (2017). p. 2.

2.6. Implications of natural resources on international relations of Russia

Despite its relatively small population, Russia remains to be an important actor on the field of the international relations. Its diplomatic and military power is also much higher than a country of a similar population and economic development would be expected to command and have at its disposal. For example, the amount of the trade in goods between Russia and the European Union is smaller than trade between EU and Switzerland, country albeit geographically closer to the Union, but having only 7.5 million inhabitants.[82] In 2017, Russia has been only the fourth largest trade partner for the European Union, after United States, China and Switzerland. The Russian position in the trade in services is even smaller; in this regard, Russia is only sixth largest trade partner for the EU.[83]

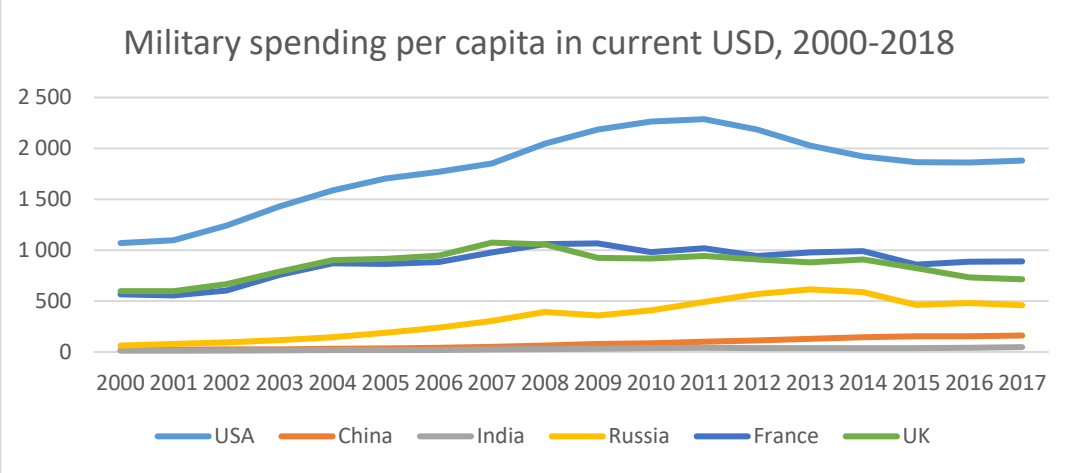

Figure 4: Comparison of military spending of Russia and other major powers (source: SIPRI (2018))

Russian importance on the international stage stems from its over-performance in the field of military technologies, from the historical tradition, and the richness in the natural resources. Thanks to the historic tradition, Russia has traditionally well-developed relations with many Asian, Middle Easter, or Central American countries. Russia is one of the largest producers of weapons in the world, in 2017 it has also become the second biggest arms exporter in the world. When compared to other major

[82] For details, see: http://ec.europa.eu/eurostat/documents/2995521/8765917/6-26032018-AP-EN.pdf/0a4e2aea-1654-4c0d-92b1-c44ac844726f.
[83] For detailed geographical composition of EU trade in services, see: http://ec.europa.eu/eurostat/statistics-explained/index.php?title=International_trade_in_services

world militaries, Russian military spending is estimated by Stockholm International Peace Research Institute (SIPRI) to be around 500 USD per inhabitant. The comparatively low military spending (see Figure 4) is possible by the fact that military producers in Russia are mainly state-owned, therefore Russian military buys its equipment at the lowest possible prices, and hence it is more modern and better equipped than armies of other countries that spend comparable amounts of money on their military, such as UK or France.

Dependence of the Russian economy on oil and natural exports and the generated revenues is best demonstrated in the way how it handles the export channels of these resources. This is true mainly for the natural gas, as more than 80 percent of Russia's crude oil are transported by oil tankers.[84] The opposite is true for the natural gas, where the LNG terminals are mainly under construction, and majority of exports is done via pipelines.[85] In 2013, Russia allowed other companies than Gazprom to export natural gas, but only gas produced on the offshore fields and exported in the form of LNG.[86] Although, Russia aims to further develop its LNG export capabilities, they will never replace the pipelines as the primary export channel. This is the main reason why is Russia so keen on building and developing the pipeline network. Another impetus for the developing of pipelines comes from the international relations between Russia and the transiting countries. Construction of new pipelines makes sense from Russia not only from the geopolitical point of view, but also from the economic point of view;[87] in the case of Nord Stream, and Nord Stream 2, the economic benefits are not negligible. As the pipeline lies on the seabed in the international waters, there are no transit fees connected to the transport of gas from Russia to Germany. In addition, Nord Stream beginning in Baltic port of Vyborg lies closer to the fields in northern Russia and northwestern Siberia, than the border with Ukraine. Therefore, the transit costs in

[84] For details, see: https://www.eia.gov/todayinenergy/detail.php?id=33732.
[85] https://www.spglobal.com/platts/en/market-insights/articles/lng/2018-russia-lng-exports
[86] For details, see: https://www.reuters.com/article/russia-lng-exports/russias-rosneft-faces-restrictions-on-lng-exports-idUSL5N0J536J20131120.
[87] For details, see: https://www.repository.cam.ac.uk/bitstream/handle/1810/242076/cwpe1051.pdf;sequence=1

the Russia itself are lower for Gazprom. Of course, intra-Russia savings would not be sufficient for construction of new pipeline.

Oil abundance of Russia has several implications for the European Union. In 2016, EU-28 imported 545.9 million tonnes of crude oil, with 32% of the total imports covered by Russian supply.[88] The composition of EU energy imports based on the country of origin has slightly changed in the recent years, but Russia maintained its position of being the leading exported of natural gas, crude oil, and solid fuels into the bloc for the last ten years.[89] In 2016, the latest year for which are the detailed EU-level data available, Russia provided 39.9% of natural gas imports, 31.9% of crude oil imports, and 30.2% of solid fuels imported by the European Union.[90]

In the European Union, voices for increased diversification in the energy sector supplies have become louder in the course of last two decades. Just as Russia attempts to increase its potential network of customers, the European Union is trying to decrease the amount of imported Russian gas. International events of the recent years, such as Russian annexation of Crimea and conflict in Eastern Ukraine, and the series of Russia-Ukraine gas disputes that predated[91] the current Ukrainian crisis, has brought attention to the dependence of European Union on Russian natural gas supplies.

This coincides with serious and far-reaching development that is simultaneously happening in the North Sea. Production of oil and natural gas in the European Union has never been sufficient to satisfy its own energy needs; with the decrease of production in the United Kingdom, the Netherlands, and Denmark, has the reliance on the energy imports only increased. In addition to that, the historically largest and, from political and strategic point of view, the most acceptable partner – Norway, although increasing its exports, it alone cannot satisfy the rising European demand. In 2017, the gas exports from Russia to Europe and Turkey grew by 8.1 percent to record 193.9

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[88] For details, see: https://ec.europa.eu/eurostat/web/products-eurostat-news/-/DDN-20181227-1?inheritRedirect=true&redirect=%2Feurostat%2F
[89] European Commission (2018). p. 35.
[90] Ibid, p. 36.
[91] The disputes between Russia and Ukraine were linked to the Russian claims that Ukraine is not paying for Russian gas and is even diverting the supplies intended for European countries for the domestic needs.

billion cubic metres.[92] Another important internal development in the EU is the increasing environmental awareness and the phasing out of coal, the most environmentally harmful fossil fuel, out of European energy mix. Moreover, following the Fukushima nuclear disaster, there has been phasing out of nuclear power plants in Germany and in other countries no reactors will be built to replace those that are approaching end of their useful life.[93]

The projects in energy sector usually take years to finish, therefore Russia has been continuing to negotiate with European countries even in the period of worst relations. This is evidenced by the feasibility project for Nord Stream, that began already in 1997. Project was complicated because of the fact that the pipeline on its way from Vyborg to Greifswald in north-eastern Germany was projected to pass through exclusive economic zones of Finland, Sweden, and Denmark. Under the Espoo Convention, consultation and approval from these countries was needed.[94] Construction started in April 2010 and the first pipeline was put into operation in November 2011, with the second line finished year later. The construction of a new pipeline linking Russia directly with Western Europe was not a pleasant news for Central and Eastern European transit countries. The ongoing project of Nord Stream 2 would even more decrease the importance of Ukraine, Slovakia, and Poland for the transit of Russian natural gas.

A similar pipeline bypassing Ukraine, Slovakia, and Poland was to follow the Nord Stream, this time in the basin of the Black Sea. Pipeline called South Stream had been projected to link southern Russia directly with Bulgaria, Serbia, Hungary and Austria. Project was abandoned because it was non-compliant with the EU legislation on energy market – Third Energy Package, which included segregation of energy suppliers from

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[92] For details, see: https://www.ft.com/content/7b86f4be-f08e-11e7-b220-857e26d1aca4.
[93] France, the Europe's leading nuclear power, has decided to shut down 14 of the total 58 nuclear reactors by 2035. For details, see: https://www.powermag.com/in-energy-policy-pivot-france-will-shutter-14-nuclear-reactors/
[94] For details on planning and construction of first stage of Nord Stream, see link: https://www.nord-stream.com/the-project/planning/.

network operators.[95] Bulgaria and Serbia have been in particular keen on the project, as it would entail several benefits for these two countries, the most important being the transit fees. Especially Bulgaria was the target of the actions of European Commission, which has even started infringement procedure against the country for its continuation in the project. Bulgarian government has expressed its dissatisfaction with the failure of the South Stream, as it has even undermined it domestic political position and eventually resulted in the end of Bulgarian ruling coalition. Other EU members, such as Austria and Hungary have also expressed their support for the continuing of the project and possible exceptions from the EU legislation for it.[96]

Russia realized that the project of South Stream is under these circumstances not viable and decided to use the already-built infrastructure on the Russian side of the Black Sea. Gazprom adjusted the course of the pipeline slightly and give the project a new name – Turkish Stream. Although the project was temporarily halted following the Russia-Turkey confrontation over Syrian civil war, countries have eventually managed to overcome their differences and continue with the practical realization of the first pipeline string. Balkan countries are heavily negotiating to prolong the pipeline further into the Balkan Peninsula, making them even more dependent on the Russian energy imports.[97] Bulgaria is reviving project of Belene nuclear power plant, with Hungary and Romania already building new nuclear reactors, showing the need for new energy sources in the impoverished region.[98]

Following the cancellation of South Stream, Russia has realized that for a repletion of success with Nord Stream in the project of Nord Stream 2 it needs to apply all

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[95] For European Commission document on the pipeline and legislation, see: https://ec.europa.eu/energy/sites/ener/files/documents/swd_2013_0177_en.pdf

[96] For details on the Hungarian and Austrian actions trying to save the project, see: https://www.novinite.com/articles/161053/EC+Explains+South+Stream+Procedures+Against+Bulgaria

[97] Balkan countries are suffering from the lack of domestic energy resources and bet on renewable sources of energy is quite risky – in 2017, several Balkan countries were hit by a severe drought with a negative impact on the electricity generation. In Albania, the electricity generation in Q1 2018 doubled compared to the prior year. For more details, see http://www.intellinews.com/index.php/albania-hikes-electricity-generation-in-q1-142327/.

[98] For details, see: http://www.intellinews.com/comment-eu-conference-in-sofia-highlights-the-balkans-looming-energy-crisis-141555/.

possible persuasive and diplomatic ways. Gazprom has managed to hire Gerhard Schroder, the former German Chancellor, to become the face of the project in Germany and to handle the negotiations. The dissent among the new member countries of the EU for the Nord Stream 2 has followed shortly. In addition, there are internal voices within the EU institutions that the Nord Stream 2 project is not needed as the current capacities for either importing Russian natural gas, or energy imports in general are sufficient. The only practical result of Nord Stream 2 would be the rearranging of the flow of Russian natural gas within Europe – a zero-sum game with the losers being EU-member countries of Poland, and Slovakia, and non-member Ukraine.[99]

In addition to that, Gazprom is building another international natural gas pipeline. The Power of Siberia pipeline that will supply natural gas to the north-eastern China with a line to Vladivostok. Completion of the Power of Siberia and of Turkish Stream pipelines is scheduled for the end of 2019. Both these pipelines will significantly increase the Russian export options. Another project – Nord Stream 2 – should increase the capacity of the Baltic Sea pipeline from Russia to Germany by 100 percent to 110 billion cubic meters, more than half of all natural gas exports to the European Union.[100] The works on Nord Stream 2 project begun in the summer of 2018 and the works are to be finished by the end of 2019.[101] In November 2018, over 200 kilometres of pipeline were laid as the project progresses according to plans.[102]

In the beginning of 2018 a second pipeline supplying China with Russian oil has begun operating, doubling the capacity of the existing pipeline to 30 million tons annually.[103] Even more ambitious project that embodies the pivot of Russia towards China is the Power of Siberia, with total investment for the project estimated to amount to 55 billion USD.[104] This was preceded by the conclusion of 400 billion USD contract

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[99] European Political Strategy Centre (2017).
[100] For details, see: https://www.ft.com/content/914ea146-ac42-11e8-94bd-cba20d67390c.
[101] For details, see: https://www.bloomberg.com/opinion/articles/2018-11-27/nord-stream-2-the-right-and-wrong-response-for-america
[102] For details about Nord Stream 2 construction, see: https://www.nord-stream2.com/media-info/news-events/
[103] For details, see: https://www.bloomberg.com/news/articles/2018-01-01/second-chinese-crude-oil-pipeline-linked-to-russia-s-espo-opens.
[104] For details, see: https://ig.ft.com/gazprom-pipeline-power-of-siberia/.

between Russian natural gas monopoly Gazprom and Chinese National Petroleum Corporation, contract was concluded for 30 years, starting in 2018, with Gazprom binding itself to deliver 38 billion cubic meters of natural gas annually.[105] With the Power of Siberia nearing completion and expected to be put into operation in the second half of 2019, there are discussion ongoing about new project – Power of Siberia 2. This should connect Siberian fields with Western China and supply the country with addition 30 billion cubic meters of natural gas.[106]

To conclude, the lower significance of the oil and natural gas revenues for the Russian economy together with the higher number of countries linked to the Russian network means that Russia can pursue bolder actions on the international scene. European dependence on Russian energy imports is here to stay at least in the short term, what enables Russia to not fear a potential total economic and diplomatic cut-off from the EU. Russia is particularly active in the Middle East, where it serves as an intermediary between Israel and Iran. The Syrian Civil war has almost managed to oust the Syrian president Bashar Assad, but the support he received from Hezbollah, Iran and from Russia has managed to turn the tide of the conflict in the favour of the Syrian government. Russia's involvement might not have been that important on the ground, and the aerial support alone would not be decisive, but it was Russian diplomatic activities and negotiations linked with its permanent seat in the UN Security Council that were one of the key reasons why Syrian president remains in power.[107] Russian position in the Middle East is strong also due to Russian agricultural exports into the region, a topic that is discussed in Chapter 5.

[105] For details, see: https://www.ft.com/content/d9a8b800-e09a-11e3-9534-00144feabdc0
[106] For details, see: https://www.energy-reporters.com/consumption/siberia-pipeline-93-complete-gazprom/
[107] One of the partial successes of Russian diplomatic offensive has been the approval from Israel to the Syrian government forces to advance on the Syrian-Israeli border on the Golan Heights.

2.7. International sanctions

Sanctions that are currently imposed on Russia are the result of Russian involvement and actions during the Ukraine crisis. Economic sanctions became the primary instrument by which are Western countries exerting pressure on Russia to re-evaluate its foreign policy.[108] On 21 November 2013 decided Ukrainian president Viktor Yanukovych to not sign association agreement with the EU.[109] Year 2014 could be pronounced as annus horribilis[110] for the Russian Federation. It was the year of Winter Olympic Games in Sochi, which were planned mainly to improve Russian image in the eyes of the global public. The events of the year have evolved rather unfavourable for Russia. The protests in the Ukraine against the president Viktor Yanukovych have turned deadly, with the outcome of the Euromaidan being the rejection of Customs Union membership, and a geopolitical reorientation of Ukraine towards European Union and North Atlantic Treaty Organization. The unrest that followed has grown and led to Yanukovych leaving the country of 23 February 2014 during the Winter Olympic Games in Russian Sochi.[111]

After this, pro-Russian and anti-revolution act-ivists started to appear in cities of southern and eastern Ukraine, and on Crimean peninsula; armed men took over Crimean peninsula and closed the border with the rest of Ukraine. Russia has reacted on this development by occupation of Crimea, where a referendum on joining to Russia soon took place. The calls for sanctions on Russia have appeared immediately in USA and in the EU. The first sanctions were concerned with suspension of military cooperation, and diplomatic summits and investment talks. First major economic sanctions were the restriction placed on export of American goods with possible dual use in enhancing Russian military capabilities.[112] Russia tried to use the pro-Russian sentiment in the eastern Ukraine eyeing a similar outcome, this effort was not

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[108] Connolly, R. (2018). P. 173.
[109] For details, see: https://www.nytimes.com/2014/02/16/world/europe/a-ukraine-city-spins-beyond-the-governments-reach.html?_r=0
[110] Horrible year.
[111] For details, see: https://www.theguardian.com/world/2014/feb/23/ukraine-crisis-secession-russian-crimea
[112] For overview of sanctions, see: https://www.rferl.org/a/russia-sanctions-timeline/29477179.html

successful. Another worsening of situation happened after the flight MH17 was shot down over the conflict zone in eastern Ukraine, probably by the pro-Russian fighters. This is when all EU members agreed on restricting access of Russian state-owned bank to capital markets, and an embargo of dual-use goods and sensitive technologies, usable in the oil sector.[113] These sanctions were met on 6 August 2014 by Russian countersanctions, banning the import of most foodstuffs from USA, EU, Canada, and Australia.

Oil prices reached their peak in June 2014 and declined significantly for the rest of the year.[114] As foreign capital was leaving the country and Russian companies were turning their holdings into foreign currencies, rouble has started to collapse. Since the application of sanctions on Russia, Russian Central Bank has been pursuing a flexible policy of interest rates, which was needed to save the Russian currency from further depreciation in the year-end of 2014, when the key interest rate was raised to 17%.[115] The depreciation of rouble meant that oil revenues received in dollars were, after exchanged to roubles did not decrease as much, enabling Russia to keep its budget deficit low (see Figure 5).

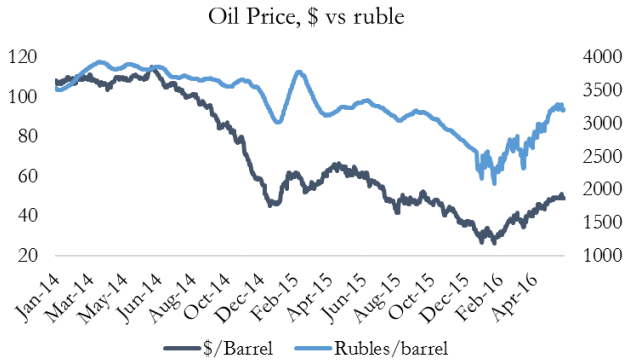

Figure 5: Oil price development in USD and RUB per barrel (from: https://www.fpri.org/article/2018/05/how-russia-survived-sanctions/

[113] For the Council regulation concerning the restrictive measures following Russian destabilization of Ukraine, see: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=uriserv:OJ.L_.2014.229.01.0001.01.ENG
[114] Connolly, R. (2018). P. 173.
[115] For details, see: https://www.reuters.com/article/2014/12/15/us-russia-cbank-rates-idUSKBN0JT2II20141215

Despite declines in real wages[116] and in disposable income has been Russian macroeconomic situation stable, its foreign reserves sufficient to cover for repayment of foreign-denominated debt. International sanctions imposed on Russia are unlikely to be lifted. On the other hand, new sanctions are also improbable. Russia has already suffered the main impact of sanctions as the sanctions are in effect for more than four years. Loss of access to Western technologies will be felt for longer time than other measures imposed by Western countries. Nevertheless, Russia has overcome the worst period of 2014-2015 and is unlikely to capitulate now when its economy resumed growth and also disposable income of Russians is increasing.[117]

2.8. Stabilisation funds

Stabilisation funds have been established by many countries with significant revenues from export of natural resources to smoothen the government revenues, spending and growth over the commodity-price cycle[118]. In the ideal case, the fund should be managed by an entity with no vested interest in spending the money in an irresponsible way. In addition, the rules for accumulation, investment, and spending of the funds should be transparent, strict, and set clearly and ideally in advance.[119] It was in the early 2000s when Russia realized that an oil reserve fund would help her to balance its fiscal spending, savings, and would make the government policy planning easier, therefore smoothing the potential decreases in oil revenues. Stabilization fund was established at the beginning of 2004. [120] It was to receive the surplus from the oil revenues and to finance the federal budget if oil prices fall below the forecasted price on which was the federal budget set. In 2008 it was divided into two parts: a Reserve Fund (with portfolio in low-yield, but highly liquid securities, to be spent when oil prices decline) and National Welfare Fund (portfolio with riskier assets).[121] The reserve

[116] Real wages in 2015 fell by 9.5% (https://tradingeconomics.com/russia/wage-growth).
[117] Ibid.
[118] Ahrend, R. (2006). p. 6.
[119] Ahrend, R. (2006). p. 6.
[120] Semko, R. (2013). p. 70.
[121] Semko, R. (2013). p. 70.

fund was terminated on 1 February 2018 as it was largely depleted to cover budget deficit of 2017.[122] The remaining reserves of the Reserve Fund were merged with National Welfare Fund, which was also determined to pursue a more riskier approach, as it has suffered from very low returns. Similar shifts in investment strategy were undertaken by Norway; the record low interest rates on the market caused Russia to gain only 1.3% cumulatively since 2008, when the National Welfare Fund was established.[123] It is obvious that stabilisation fund has helped Russia to overcome periods of low oil prices as envisaged by the economic experts. Without these reserves would have Russian economy experienced more profound downturn following the price declines of late-2009 and 2014.

[122] For details, see: https://www.reuters.com/article/us-russia-funds/russias-finance-ministry-fully-spent-its-reserve-fund-in-2017-idUSKBN1EZ13R

[123] For details, see: https://www.bloomberg.com/news/articles/2018-03-22/russia-looks-to-follow-world-s-biggest-wealth-funds-into-stocks

3. Review of literature

Concept of natural resource curse is based on the hypothesis that resource-rich countries grow slower than resource-poor countries.[124] Many countries rich in natural resources, such as Nigeria, Venezuela, Angola, and Equador have failed to achieve prosperity.[125] On the other hand, countries in East Asia while having almost none or relatively few natural resources have managed to develop into the most developed countries in the world. Most resource curse scholars do not argue that states with natural resources would perform better without them, they instead focus on attempting to explain why many of them do not prosper.[126]

According to Ahrend, in the 1950s and 1960s economists generally considered the richness on natural resources to be helpful in facilitating a rapid economic development.[127] The optimistic view on the resources was prevalent until early 1980s.[128] It was at this time when term Dutch disease was coined to refer to the decline of Dutch manufacturing following the natural gas discovery. This was popularized by the work of Corden and Neary.[129,130] The resource curse thesis was established by the case study of Alan Gelb in 1988, as he found that economies exporting oil in the period of 1971-1983 experienced worse efficiency of domestic capital formation than countries that were not receiving oil windfalls.[131] The resource curse as a term was first coined by Richard M. Auty in his book Sustaining Development in Mineral Economies: The Resource Curse Thesis (1993) to describe on the first glance counterintuitive relationship between the abundance of natural resources and slower economic growth compared to countries without natural resources.[132]

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[124] Oomes, Nienke and Kalcheva Katerina (2007). p. 4.
[125] Ibid.
[126] Badeeb, Ramez & Lean, Hooi Hooi & Clark, Jeremy. (2016). P. 4.
[127] Ahrend, R. (2006). p. 2.
[128] Badeeb, Ramez & Lean, Hooi Hooi & Clark, Jeremy. (2016). P.5.
[129] Corden (1982),
[130] Corden and Neary (1984).
[131] Badeeb, Ramez & Lean, Hooi Hooi & Clark, Jeremy. (2016). p. 6.
[132] Badeeb, Ramez & Lean, Hooi Hooi & Clark, Jeremy. (2016). *The Evolution of the Natural Resource Curse Thesis: A Critical Literature Survey*. P. 1.

Following these works, a series of cross-sectional studies was performed by Jeffrey Sachs and Andrew Warner. In their work they found a robust negative relationship between growth of real GDP per capita and the share of resource exports on GDP in a sample of 97 countries. This was later confirmed by Gylfason (2004) that found natural resources to have negative impact as he found that countries with natural resources suffer from higher level of corruption and inequality, less foreign investment, less political liberty, and education than resource-poor countries.

The most common cited mechanism that threaten economies rich in natural resources are the risk of Dutch disease, dependence on price of resources and resulting vulnerability to external shocks and the risk of developing institutional pathologies.[133] Tompson (2005) argues that it is state ownership that is the reason behind economic underperformance resource-rich countries.

Works on Russia are divided whether Russia suffers from Dutch disease. For example, Oomes and Ponamorenko (2015) found that Russian real exchange rate is strongly affected by the oil price and that the more a Russian region depends on oil, the more acute symptoms of Dutch diseases it shows.

3.1. External vulnerability

According to Ahrend, the most common cause of crises in emerging economies is the externally induced shocks resulting from rapid fall in the prices of main commodities exported by the affected country, as prices of natural resources tend to be more volatile than prices of manufactured goods or services.[134] Responsible macroeconomic management based on conservative assumptions about the commodity prices and strict fiscal discipline is very useful in overcoming the price shocks and smoothening the boom-and-bust cycle, which the commodity prices movements

[133] Ahrend, R. (2006). p. 1.
[134] Ahrend, R. (2006). p. 5.

resemble and which are followed by the resource-based economy if the situation is not managed accordingly.[135]

Volatility of commodity prices reduces economic growth, irrespective of the trends in prices.[136] Frankel (2010) found that commodity price volatility imposes risk and transaction costs on the economy. Humphreys et al. (2007) argue that behavior of international lenders worsens the impact of price fluctuations, because when prices fall lenders demand repayment and force reductions in expenditures.[137]

3.2. Dutch disease

The term Dutch disease has been coined to refer to situation when country experiences significant, and usually sudden, development of a resource sector and as a result due to the inflow of revenues, the exchange rate appreciates above previous equilibrium levels. In addition, higher wages in the extraction sector may put pressure on wages in other sectors of economy.[138] As the prices of inputs, such as materials and labour rice due to competition from natural resource sector, therefore these sectors suffer from higher production costs. Together with the appreciation of currency, this development makes the other sectors of economy less competitive in the international markets and sectors contract. Humphreys et al. (2007) call this adverse effect "resource pull effect". Corden and Neary (1984) call this effect resource movement effect, the second effect (spending effect) describes the impact of higher aggregate demand in the economy following the windfall of oil revenues, the demand for domestic services goes up, while prices of oil that are international stay the same. This causes again the real exchange rate appreciation.[139] Combined effect of these two effects is summarized in the Table 2.

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[135] Ahrend, R. (2006). p. 5.
[136] Badeeb, Ramez & Lean, Hooi Hooi & Clark, Jeremy. (2016). P. 8.
[137] Badeeb, Ramez & Lean, Hooi Hooi & Clark, Jeremy. (2016). P. 8.
[138] Ahrend, R. (2006). p. 9.
[139] Oomes, Nienke and Kalcheva Katerina (2007). p. 8.

	Output	Employment	Wage	Price
Resource movement effect				
Oil sector	+	+	+	Given
Manufacturing sector	-	-	+	Given
Services sector	-	-	+	+
Spending effect				
Oil sector	-	-	+	Given
Manufacturing sector	-	-	+	Given
Services sector	+	+	+	+
Combined effect				
Oil sector	indeterminate	indeterminate	+	Given
Manufacturing sector	-	-	+	Given
Services sector	indeterminate	indeterminate	+	+

Table 2: Summary of Dutch disease symptoms and effects (from Oomes, N. and Kalcheva, K. (2007))

The combined effect on the economy is indeterminate, depending on the size of both effects as they go in opposite direction in oil and services sector. Therefore, if oil sector employs few workers or if the labour mobility is low, then spending effect will outweigh the resource movement effect. The combined effect on manufacturing is always negative.

Dobrynskaya and Turkisch (2010) found Russia to be exhibiting some effects of Dutch disease – real appreciation of rouble, rise in real wages, decrease of employment in manufacturing, but they conclude that Russia does not suffer from Dutch disease as manufacturing nonetheless increased; in addition, appreciation of rouble could be explained by the Balassa-Samuelson effect of increased productivity of manufacturing sector. This is confirmed by Ahrend (2005) who notes that industrial sector has increased production. Ellman (2012) notes that the inefficiency of Soviet industry means that productivity gains could be obtained easily and that this catching up might be the reason why was manufacturing output increasing despite appreciation of rouble. Oomes and Kalcheva (2007) conclude that diagnosis of Dutch Disease for Russian economy is unconfirmed despite presence of several symptoms.

3.3. Poor institutional quality

The resource curse does not have to have only economic channels of affecting economic growth. Lam and Wantchekon (2002) found that countries with mineral wealth suffer from political Dutch disease as they call the mismanagement of funds by the elites. Elites empowered by the windfall of resource revenue abuse their power by widening income inequality as they distribute this wealth among their immediate circle.[140] In addition to that, Leite and Weidmann (1999) found that abundance of natural resources creates opportunity and incentives for rent-seeking behaviour and are an important factor in determining level of corruption that negatively affects economic growth. Such conflicts are focused on securing the rents created by resources rather than generating new wealth. Tornell and Lane (1999) show that state with weak institutional infrastructure in the case of windfall money, powerful groups struggle for these funds what leads to voracity effect and reduction of economic growth.

Also Gylfasson (2004) found empirically that natural resources correlate with corruption. Incentive may lead to governments and private agents to engage in rent-seeking behaviour, or even lead to civil war.[141] Martin and Subramanian (2003) found not the Dutch disease, but waste and corruption and their effect on institutional quality to be the reason behind poor economic performance of Nigeria. Isham et al. (2005) also found that it is the effect of minerals wealth on socioeconomic and political institutions that hinders the economic growth.

Arezki and Brückner (2011) found in their paper somewhat counterintuitive trend, they found that increases in oil rents increase corruption and deteriorate political rights, while civil liberties improve. According to them, political elite has incentives to extend civil liberties to evade redistribution and conflict. Ross (2018) notes that oil wealth makes autocratic governments more stable and therefore less likely to transition to democracy. Iimi (2007) argues that quality of regulation, transparency and

[140] Badeeb, Ramez & Lean, Hooi Hooi & Clark, Jeremy. (2016). p. 6.
[141] Oomes, N. and Kalcheva, K. (2007). p. 6.

accountability of public sector are most important for growth and effective management of natural resources.

3.4. Middle-income trap

Concept of middle-income trap is a term that originated in the area of development studies and of development policy. In particular, it entered the academic dictionary following the financial crisis that hit East Asia in 1997-98m after which worries that the slow economic recovery will continue and thus the affected countries will stay in the middle-income category.[142] It is generally used to describe the situation in which countries that used to enjoy high economic growth when advancing to the middle-income status slow down, experience subpar growth, and seem to be stagnating – this is a result of a new economic model needed different from the one that they used successfully when advancing from low to middle-income category. There is no consensus if this is a universal phenomenon or it occurs at specific income level.[143] The concept is recently much discussed in regards to the new members states of European Union – joiners in 2004 and 2007. At least some of these countries despite the access to the cohesion and development EU funds seem to be stuck in their middle-income status, lagging behind the old members in the amount of research and development, innovations, quality of education, and life-wide education.[144] Additional cases, which came into the spotlight in the recent decades, have been the Latin American countries as only Chile, Uruguay, and Trinidad and Tobago surpassed the middle-income trap, while Argentina and Venezuela, countries that have been middle-income countries already in 1950, are suffering from decade-long lasting income stagnation.[145]

Russia is one of the countries that was downgraded from the status of high-income country back to the upper-middle income category. This happened according the World

[142] Im, F. G. and Rosenblatt, D. (2013). p. 2.
[143] EBRD (2018).
[144] EBRD (2018).
[145] Melguizo Angel et al. (2017).

Bank in 2015[146], while Russia has been promoted to the high-income status only in 2012[147]. Currently is Russia's level of income significantly below the latest threshold of GNI per capita of 12,056 USD[148] or more, having the GNI per capita calculated by the Atlas method of only 9,230 USD, what is even below the world average of 10,366 USD.[149] Low economic growth of Russia might be not only due to dependence on oil, but also due to middle-income trap and need to find new development model as many other countries trapped in this category have found out.

[146] For details, see World Bank: *New country classifications by income level: 2016-2017* (https://blogs.worldbank.org/opendata/new-country-classifications-2016).
[147] For details, see World Bank: *New country classifications* (http://blogs.worldbank.org/opendata/node/1859)
[148] See: https://datahelpdesk.worldbank.org/knowledgebase/articles/906519#High_income
[149] See: https://data.worldbank.org/indicator/NY.GNP.PCAP.CD?locations=RU-1W

4. Methodology

For analysis of time series data, various models and estimation techniques exist. Univariate time series, series with a single time-dependent variable, is less complicated to analyse, this can be performed by using more general autoregressive (integrated) moving-average model (ARMA and ARIMA) or their special cases, which are autoregressive (AR) or moving-average (MA) model. The estimation can be performed using ordinary least squares (OLS) method, or maximum likelihood (ML). ARIMA cannot be estimated using OLS method.

Multivariate time series describe time series, in which each variable changes with time depending on its past values, but is also dependent on other variables. One of the most common methods for multivariate time series is vector auto regression (VAR), which means that each variable is a linear function of past lags of other variables and of its own lagged values. VAR model is generalisation of AR model, enabling analysis and forecasting of a vector of time series. VAR model was introduced by Christopher Sims[150], with most influential work (Macroeconomics and Reality published in 1980.[151] Sims argued that vector model is needed as the oversimplification that variable is important only for one side of the market was unsustainable.[152] All variables in the VAR model have to be of the same order of integration, similar to OLS and other standard regression techniques that require all variables to be covariance-stationary – I(0).[153] However, the condition on stationarity in VAR model is less strict, the variables can be also non-stationary – I(d), with $d > 0$, and if they are cointegrated, then the error correction term should be added into VAR, transforming the model in Vector error correction model (VECM).[154] If the variables are not cointegrated, they first have to be differenced d times. For univariate series augmented Dickey-Fuller test (ADF) exist to

[150] In 2011, Christopher Sims received Nobel Memorial Prize in Economic Sciences for his work and contribution to economic science.
[151] Christiano, L. (2012). p. 1082.
[152] Ibid, p. 1083.
[153] For more details, see: https://www.stata.com/manuals13/tsvecintro.pdf
[154] For more details, see Kestel (https://www.empiwifo.uni-freiburg.de/lehre-teaching-1/summer-term-13/Material%20Time%20Series%20Analysis/var13.pdf).

check for stationarity of data. For multivariate time series data similar test exists – Johansen test.

One of the main predictions of Dutch disease theory is that higher oil prices lead to appreciation of currency.[155] This thesis will test this prediction on the case of Russia and its real effective exchange rate (REER).[156] The real appreciation of currency is expected from any capital inflow into the country, with revenues from commodity exports being often the reason behind the capital inflow; only in cases when the funds fully are saved or fully sterilized, the appreciation is not expected.[157] This is the case even if country has open capital markets and free floating exchange rate. Oil prices are determined in highly centralized global market, and even OPEC is unable in recent years to determine the price in a significant and enduring way. Therefore, oil price is an exogenous source of fluctuation of real exchange rate for Russia and other oil producers. It can be argued that Dutch disease and the appreciation of REER following the increase in oil price is only a special case of so-called Balassa-Samuelson effect.[158] This term refers to the effect found typically in emerging markets catching up with the developed countries. In countries that experience relatively higher increase in productivity of sectors producing goods tradeable on the world market than in the non-tradeable sectors (typically services), a similar appreciation of REER is expected.[159] This is caused by the fact that goods tradable on the global market should follow the law of one price as in the ideal case arbitrage[160] should eliminate all differences.

In order to test for the relationship between oil price increases and appreciation of the real exchange rate, this thesis employs a Behaviour Equilibrium Exchange Rate (BEER) model.[161] BEER model is used in estimating equilibrium REER, describing modelling strategy that attempts to explain the effect of relevant economic variables on

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[155] Oomes, N. and Ponamorenko, O. (2015). p. 7.
[156] REER is calculated as weighted average of bilateral exchange rates that are adjusted by relative consumer price indices.
[157] Chen, Y. and Rogoff, K. (2002). p. 17.
[158] Oomes, N. and Ponamorenko, O. (2015). p. 8.
[159] Ibid, p. 8.
[160] Arbitrage refers to practice of buying of product, asset, goods, in order to sell it immediately to profit from the difference on different markets.
[161] BEER model was used in their analysis of Russian REER by Oomes and Kalcheva (2007).

the actual behaviour of REER.[162] BEER can be in principle used to explain cyclical movements in the REER and states that the exchange rate should be determined by the productivity changes and the resulting impact on the relative prices of non-traded and traded goods.[163] The real effective exchange rate of Russia has appreciated substantially after 1999, with reaching its maximum in 2013.[164] The question is whether it was the effect of oil prices, or it had other reasons, such as government consumption, productivity differential, and net international reserves.[165]

4.1. VECM model

There has been a growing discussion in the academic and journalistic circles about the credibility of the statistical indicators published by the Russian Statistics Office (Rosstat).[166] Some question the reliability of the data and argue that the reported figures are far too optimistic. On the other hand, there are voices that argue that the reported figures are underestimating the real development. The Rosstat is still a recognized institution and there is no need to worry about reliability of data used in this VECM model. For the VECM model employed in the thesis, data on labour productivity in Russia were taken from Rosstat, data on REER were taken from Bank for International Settlements, while the Brent oil price was taken from U.S. Energy Information Administration, and data on government spending as a percentage of GDP was taken from World Bank.

The analysis is performed on quarterly time series data, starting in Q1 2003 and ending in Q4 2017, therefore on 60 observations, using lag of 4 determined by the test disregarded the first 4 observations, therefore final VECM was modelled on 56

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[162] Clark, P. and MacDonald, R. (1998). p. 5.
[163] Oomes, N. and Ponamorenko, O. (2015). p. 7.
[164] For details, see: https://data.worldbank.org/indicator/PX.REX.REER?locations=RU.
[165] Oomes, Nienke and Kalcheva Katerina (2007). p. 10.
[166] For details, see *The improving economic situation in Russia: reality or creative statistics?* https://www.osw.waw.pl/en/publikacje/osw-commentary/2017-05-05/improving-economic-situation-russia-reality-or-creative or *Russia's May industrial output rises extremely above forecast* https://www.nasdaq.com/article/russias-may-industrial-output-rises-extremely-above-forecast-20180618-00832

observations. The variables of government spending as a share of GDP and of labour productivity differential between manufacturing and services sector labour productivity were included as control variables following Kalcheva and Oomes (2007). The analysis is done using 4 variables: oil price *(Oil)*, *REER*, productivity differential defined as difference between manufacturing and services productivity (*Diff*), and share of government spending on GDP *(Spend)*. The analysis was performed using logs of variables. Both pictures and HTML tables from Stata will be included.

varsoc logREER logOil logSpend logDiff			
Selection-order criteria			
Sample: 176 - 231	Number of	obs =	56
lag LL LR df p FPE	AIC	HQIC	SBIC
0 411.472 5.6e-12	-14.5526	-14.4965	14.4079
1 568.48 314.02 16 0.000 3.7e-14	-19.5886	-19.3081	18.8652*
2 593.636 50.312 16 0.000 2.7e-14	-19.9156	-19.4108*	18.6136
3 600.465 13.658 16 0.624 3.8e-14	-19.588	-18.8589	17.7074
4 632.565 64.199* 16 0.000 2.2e-14*	-20.163*	-19.2095	17.7037
Endogenous: logREER logOil logSpend logDiff			
Exogenous: _cons			

```
. varsoc logREER logOil logSpend logDiff

Selection-order criteria
Sample:  176 - 231                        Number of obs      =        56
```

lag	LL	LR	df	p	FPE	AIC	HQIC	SBIC
0	411.472				5.6e-12	-14.5526	-14.4965	-14.4079
1	568.48	314.02	16	0.000	3.7e-14	-19.5886	-19.3081	-18.8652*
2	593.636	50.312	16	0.000	2.7e-14	-19.9156	-19.4108*	-18.6136
3	600.465	13.658	16	0.624	3.8e-14	-19.588	-18.8589	-17.7074
4	632.565	64.199*	16	0.000	2.2e-14*	-20.163*	-19.2095	-17.7037

```
Endogenous:  logREER logOil logSpend logDiff
 Exogenous:  _cons
```

Annex 1: Result of varsoc command on the dataset

Data were analysed using software Stata v15. To test for cointegration or fit cointegrating VECMs, we need to specify how many lags are to be included.[167] This is

[167] For details on VECM in Stata, see: https://www.stata.com/manuals13/tsvecintro.pdf

performed in Stata using command *varsoc*. The result (see Annex 1) shows that 4 lags are needed for this model as Hannan–Quinn information criterion (HQIC) method selects 2 lags, Schwarz Bayesian information criterion (SBIC) method uses 1 lag, and sequential likelihood-ratio (LR) uses 4 lags.

After specification of amount of lags, test for cointegration using the Johansen's method implemented in *vecrank* are possible. We have to specify with how many lags we want to test for cointegration using the results from the previous test. Johansen test show that there is one cointegrating relationships. Johansen's testing procedure starts with the test for zero cointegrating equations, based on that it accepts the first null hypothesis that is not rejected. In the output below, we strongly reject the null hypothesis of no cointegration. And fail to reject the null hypothesis of at most one cointegrating equation.[168] Thus we accept the null hypothesis that there is one cointegrating equation.

vecrank logREER logOil logSpend logDiff, lag(4)			
Johansen tests for cointegration			
Trend: constant Number	of obs	=	56
Sample: 176 - 231	Lags	=	4
5%			
maximum trace critical			
rank parms LL eigenvalue statistic value			
0 52 593.66277 . 77.8041 47.21			
1 59 620.4131 0.61533 24.3034* 29.68			
2 64 628.87569 0.26084 7.3782 15.41			
3 67 631.49679 0.08936 2.1360 3.76			
4 68 632.5648 0.03742			

[168] See: https://www.stata.com/manuals13/tsvecintro.pdf

```
. vecrank logREER logOil logSpend logDiff, lag(4)

                    Johansen tests for cointegration
Trend: constant                                      Number of obs =      56
Sample:  176 - 231                                            Lags =       4
------------------------------------------------------------------------------
                                                              5%
maximum                                          trace    critical
  rank    parms       LL       eigenvalue  statistic    value
    0       52      593.66277           .     77.8041    47.21
    1       59       620.4131     0.61533     24.3034*   29.68
    2       64      628.87569     0.26084      7.3782    15.41
    3       67      631.49679     0.08936      2.1360     3.76
    4       68       632.5648     0.03742
------------------------------------------------------------------------------
```

Annex 2: Result of vecrank – Johansen test for cointegration

Following that, VECM can be fitted using command *vec.* If there are more cointegrating equations or more lags, as is the case in our analysis, then we have to specify this in the command. We can also use option *noetable* to suppress estimation table for short-run parameters.

. vec logREER logOil logSpend logDiff, lags (4) rank (1) noetable	
Vector error-correction model	
Sample: 176 - 231 Number of obs =	56
AIC =	-20.05047
Log likelihood = 620.4131 HQIC =	-19.22318
Det(Sigma_ml) = 2.80e-15 SBIC =	-17.91662
Cointegrating equations	
Equation Parms chi2 P>chi2	
_ce1 3 985.5678 0.0000	
Identification: beta is exactly identified	
Johansen normalization restriction imposed	
beta Coef. Std. Err. z P>z [95% Conf.	Interval]
_ce1	
logREER 1	.
logOil -.3211686 .0214947 -14.94 0.000 -.3632975	-.2790397
logSpend -.041842 .0641382 -0.65 0.514 -.1675505	.0838666
logDiff .673832 .3021226 2.23 0.026 .0816825	1.265981
_cons -1.292877	.

```
. vec logREER logOil logSpend logDiff, lags (4) rank (1) noetable

Vector error-correction model

Sample:  176 - 231                              Number of obs     =         56
                                                AIC               =  -20.05047
Log likelihood =  620.4131                      HQIC              =  -19.22318
Det(Sigma_ml)  =  2.80e-15                      SBIC              =  -17.91662

Cointegrating equations

Equation           Parms    chi2     P>chi2
------------------------------------------------
_ce1                   3   985.5678   0.0000
------------------------------------------------

Identification:  beta is exactly identified

                Johansen normalization restriction imposed

------------------------------------------------------------------------------
       beta |      Coef.   Std. Err.      z    P>|z|     [95% Conf. Interval]
-------------+----------------------------------------------------------------
_ce1         |
     logREER |          1          .       .       .            .           .
      logOil |  -.3211686   .0214947   -14.94   0.000    -.3632975   -.2790397
    logSpend |   -.041842   .0641382    -0.65   0.514    -.1675505    .0838666
     logDiff |    .673832   .3021226     2.23   0.026     .0816825    1.265981
       _cons |  -1.292877          .       .       .            .           .
------------------------------------------------------------------------------
```

Annex 3: Result of VECM model

Based on the VECM analysis, we can conclude that the relationship between oil price and real effective exchange rate of Russia is significant (see Annex 3). Johansen identification scheme has placed constraint on logREER. The results of the first equation indicated existence of significant and equilibrium relationship between the logREER a logOil. This significant relationship is only one out of many symptoms of Dutch disease. It can be argued, in line with recent articles on the resource curse that the socio-political aspects of resource curse are equally important and country does not have to suffer from full Dutch disease in order to experience growth lower than resource-poor countries. These aspects are analysed in the next subchapter. The data on the labour productivity used in analysis show that productivity in manufacturing is increasing, the opposite would be the case for country fully affected by Dutch disease.

4.2. Quality of governance

This subchapter aims to analyse both de facto and de iure quality of Russian institutions. De facto quality will be measured using Worldwide Governance Indicators[169] and de iure using the Ease of Doing Business ranking. Institutional weakness is being referred as one the symptoms of resource curse, which consequently causes lower growth due to inefficient institutions, regulation and commitment to the policies. This seems to be confirmed on the Russian case by the analysis of development of government effectiveness as measured by the World Bank. World Bank measures through six indicators the quality of governance in practically all countries. These indicators are useful for cross-country comparison and for evaluating a trend over longer time periods as they are compiled from above 30 data sources.[170] The values of indicators range from -2.5 (weak) to 2.5 (strong) allowing for detailed comparison of evaluated countries. According to Ross, the case of Russia illustrates how oil-induced development and windfalls from oil export can increase popularity of an elected incumbent, who then has the opportunity to gradually remove checks and balances on his own constitutional powers.[171] On the other hand, Ross acknowledges that Russia is the only country that managed to combine a solid budget transparency with considerable oil wealth.

For the scope of this thesis and Russian institutional quality assessment, I decided to look more closely on four of the Worldwide Governance Indicators, specifically those that deal with rule of law, corruption, quality of regulation, and general effectiveness of government and to compare them with the best and worst performer of the new EU-joiners – countries that joined the EU in 2004 and 2007. The comparison

---

[169] These indicators are: Voice and Accountability, Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, and Control of Corruption (https://datacatalog.worldbank.org/dataset/worldwide-governance-indicators).
[170] For full description of methodology, see: http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1682130
[171] Ross, M. (2012). p. 90.

is performed over the years 2000-2017, to evaluate the progress of Russia versus other post-communist countries.

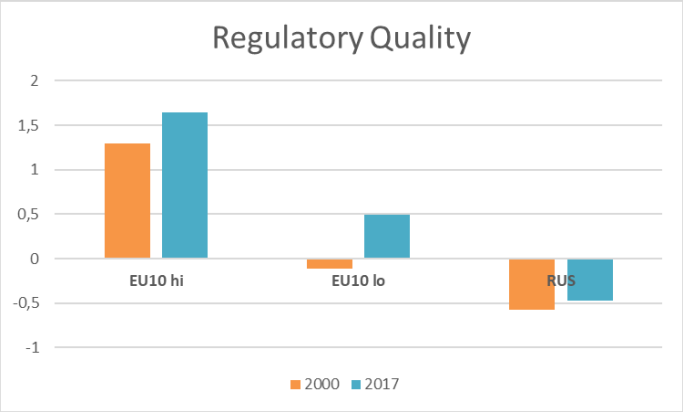


Figure 6: Development of regulatory quality in Russia compared to best (EU10 hi) and worst (EU10 lo) new EU performer (source of data: https://datacatalog.worldbank.org/dataset/worldwide-governance-indicators

Regulatory quality deals with the perception of how is government able to implement regulation that does not stand in the way of private sector development and does not hinder entrepreneur activities.[172] The progress achieved by Russia in this aspect has been very minimal in the studied 18 years (see Figure 6), and the difference between the value for Russia and worst EU-10 performer being the highest out of the four indicators studied in bigger detail. In addition, it is worth mentioning that in this indicator, the difference between the best and worst performer in the EU-10 is the lowest compared to other indicators. This fact points to the harmonization and implementation of common regulation across the European Union leaving less space for divergent trends in this indicator.

The indicator of Rule of Law deals with the perception of independence of courts and police, confidence in the fair process, quality of contract enforcement, and protection of property rights.[173] In this indicator, Russia's progress has again been only minimal (see Figure 7), with the difference on worst performer – Bulgaria increasing

[172]For details on the calculation of indicator, see: http://info.worldbank.org/governance/WGI/rl.pdf.
[173]For details on the calculation of indicator, see: http://info.worldbank.org/governance/WGI/rq.pdf.

in the studied period. It is worth mentioning that best performer (Malta) has experienced decline in the perceived rule of law and its quality.

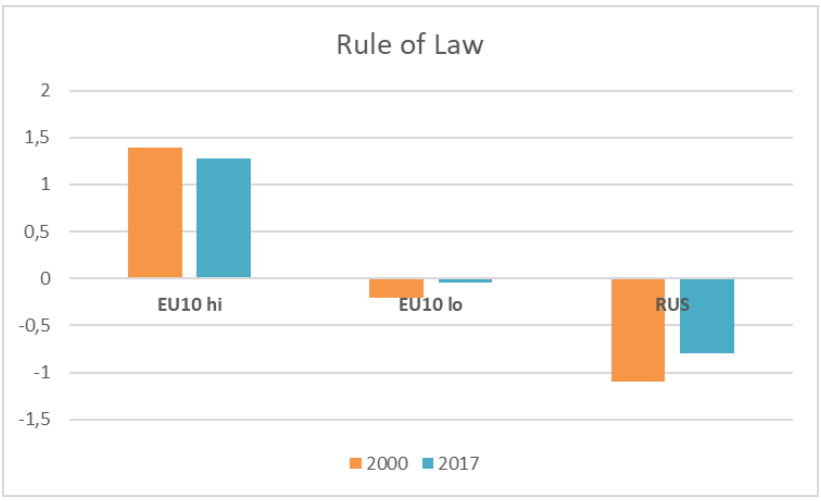


Figure 7: Development of rule of law in Russia compared to best (EU10 hi) and worst (EU10 lo) new EU performer (source of data: https://datacatalog.worldbank.org/dataset/worldwide-governance-indicators

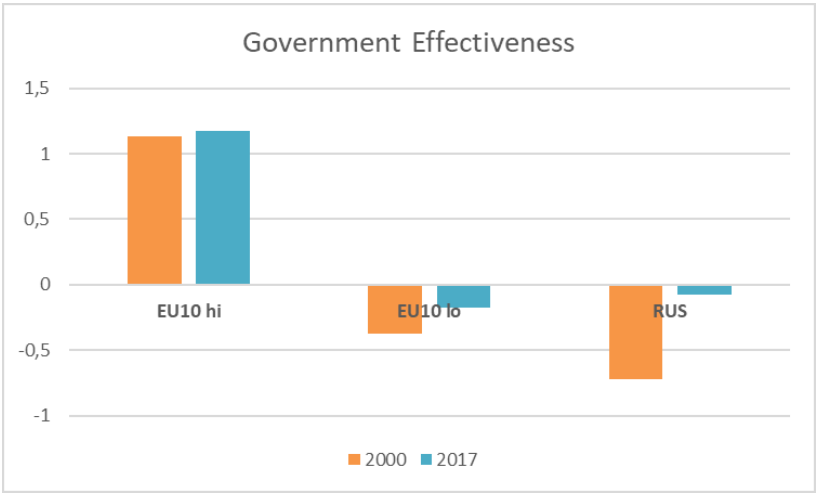


Figure 8: Development of government effectiveness in Russia compared to best (EU10 hi) and worst (EU10 lo) new EU performer (source of data: https://datacatalog.worldbank.org/dataset/worldwide-governance-indicators

Only in the indicator of government effectiveness[174] (see Figure 8) has Russia managed to perform better than the worst-performing new EU-joiner, which was in this

[174] This indicator measures the perceived quality of public institutions, civil service, formulation of policies, their implementation and credibility of commitment to the declared policies. For details, see: http://info.worldbank.org/governance/WGI/ge.pdf

case Romania. In the studied period it has experienced significant improvement, pointing to professionalization of its public services.

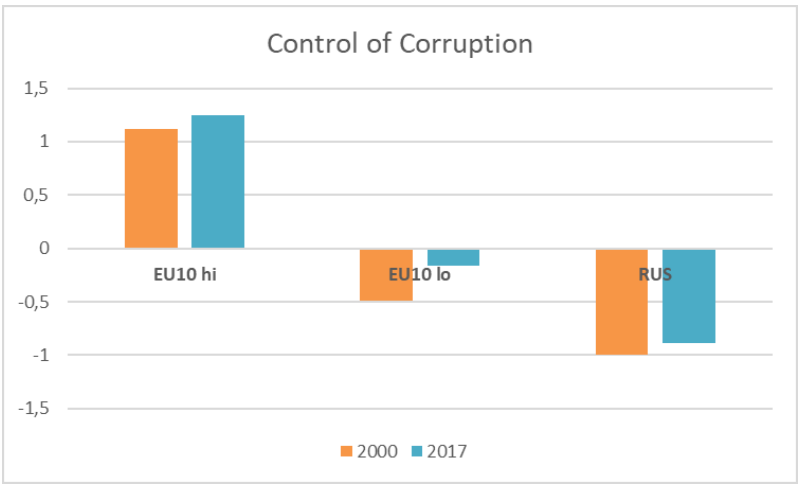


Figure 9: Development of control of corruption in Russia compared to best (EU10 hi) and worst (EU10 lo) new EU performer (source of data: https://datacatalog.worldbank.org/dataset/worldwide-governance-indicators

In the indicator of control of corruption[175] (see Figure 9) has Russia barely managed to improve in the covered period and significantly lags behind worst EU-10 performer – Bulgaria. This seems to confirm the view that corruption is one of the most significant problems of Russia, with impact on practically all spheres of public life, hindering economic cooperation and limiting the general trust in Russian society.

Analysis of Worldwide Governance Indicators points to the gaps, that have been present already in 2000, but have widened since then, between perceived quality of Russian governance compared to post-communist countries that joined the European Union. Similar progress could have been obtained also by Russia. With the exception of government effectiveness, the other three indicators point to existing pathologies within Russian institutions that erode the public trust, slow down economic development, and keep Russian economy lagging behind its geographical peers.

[175] This indicator measures the perceived corruption of public sector, misuse of power for obtaining private gain, embeddedness of public institutions with private individuals and their interests. For details, see: http://info.worldbank.org/governance/WGI/cc.pdf

It is not an easy task to reform a resource-based economy in a country of the size of Russia. Among the measures that are most commonly advised to facilitate the diversification of economy is improvement of basic framework business conditions, reducing the burdens imposed by heavy regulation and thus fostering the competition by making the life of small and medium enterprises easier.[176] One task, which was set as a matter of economic planning is the simplification of setting and operating the business as measured by the Ease of Doing Business index – ranking performed also by World Bank. This indicator is very useful, as among the economists, there is a consensus that the higher the freedom and ease of operating the business in a country, the more opportunities its economy to develop further has. It can also be used as an approximation of de iure institutional quality and obstacles to business. The index is often a target of criticism for being too simplistic and oblivious to unmeasurable phenomena, this can be said, however, about all international rankings. In 2012, Vladimir Putin, outlined a plan to improve Russia's position from the mediocre 118th position to 50th place by 2015 and 20th in 2018. It is characteristic that this is a centrally planned process and even a national priority, just like it is in the case of India. The latest version of Doing Business report (2018)[177], released in October 2017 placed Russia on the 35th place out of 190 countries assessed. The goal of reaching 20th place in 2018 is probably not realistic to achieve as the higher the ranking, the more difficult it is to improve incrementally by so much that Russia could overtake 15 countries.

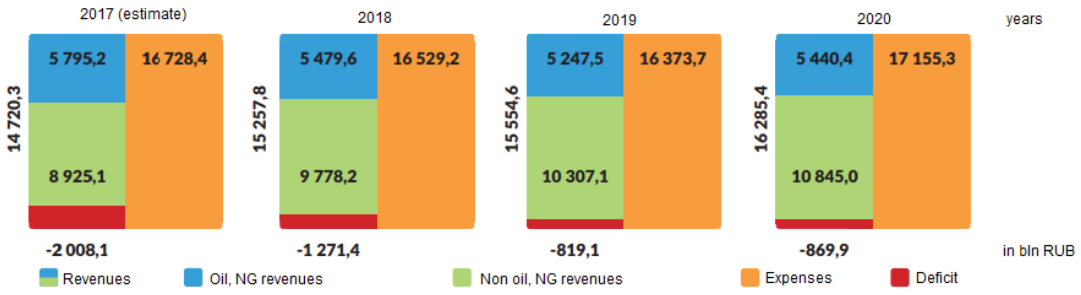
It can be concluded, that the theoretical quality of institutions in Russia has improved in the recent years. The practical quality as perceived by economic actors has not followed this trend. This might be due to lags in public perception and reality, or because the central administrative measures do not trickle down to the practical situations.

4.3. Russian budget for 2018 and estimate for 2019-2020

[176] Ahrend, R. (2006). p. 606.
[177] For the report, see link: http://www.doingbusiness.org/content/dam/doingBusiness/media/Annual-Reports/English/DB2018-Full-Report.pdf

Analysis of Russian budget could be helpful in assessing the dependence of federal finances on the oil prices. Russia was in the 2000s able to repay majority of inherited Soviet debt – the debt of central government declined from 62% of GDP in 2000 to 6.5% in 2008; since then, it has increased slightly – to 14% in 2016, but still very low compared to other developed countries.[178] Russian budget for fiscal year 2018 was approved on 24 November 2017 by Russian Duma. It was based on a conservative prices of the Urals brand of oil, the average price of Urals barrel for year 2018 was forecasted to be 43.8 USD, lower than the preliminary 2017 price (at the date of budget preparation) of 46.6 USD per barrel.[179] The final average price in 2017 was higher as it amounted to 53.03 USD due to increase in the last two months of 2017.[180] The prices were set very conservatively in order for budget to be more flexible in case of volatility of oil price and not require cuts in expenditure. Therefore, the budget has been approved with a deficit of 1.3% GDP. It is important to note, that all revenues from oil exports resulting from the oil price above the benchmark price based on which was the budget prepared, are considered to be unsustainable and according to the budget rule set by Russia in 2016 are supposed to be set aside.[181]

The average price in 2018 was also significantly higher than the budget assumption for 2018 – 70.01 USD per barrel.[182] The break-even price of oil to balance the public budget in 2018 was approximately 53 USD, what is significantly less than Saudi Arabia



[178] For development of Russian debt in time, see: https://data.worldbank.org/indicator/GC.DOD.TOTL.GD.ZS?locations=RU&view=chart
[179] Ministry of Finance of Russian Federation (2017). p. 4.
[180] For details, see: https://www.minfin.ru/ru/press-center/?id_4=36465&area_id=4&page_id=2119&popup=Y
[181] For details, see: https://www.acra-ratings.com/research/230
[182] Ibid.

Figure 10: Main characteristics of federal budget 2018, preliminary budgets 2019 and 2020, and 2017 budget (from https://www.minfin.ru/common/upload/library/2017/12/main/BDG_2018_FINAL.pdf)

(88 USD) or United Arab Emirates (48 USD).[183] Therefore, the planned deficit of 1,271 billion RUB (1.3% of GDP) turned into a budget surplus of approximately 2.5% of GDP.[184] In the budget for 2018, the oil- and natural gas-related revenues[185] were estimated to amount to 5,480 billion RUB, forming thus 36% of all budgeted revenues, compared to 37.4% in the 2017 budget (for detailed composition of 2017-2020 budgets, see Figure 10).[186]

Thanks to the better than expected development of the oil and natural gas revenues into the public budget, Russia could somewhat relax its fiscal discipline and announce new *Executive Order On National Goals and Strategic Objectives of the Russian Federation through to 2024* (called also May decrees), which was signed by President Vladimir Putin in May 2018.[187] These goals are concerned with the state of Russian demographic situation and healthcare, poverty, digital technologies, transport, and are aimed to improve the living standards of Russian population, its well-being, and create

[183] For details, see: https://indianpunchline.com/opec-and-russia-reset-oil-market-ignoring-trumps-urgings/
[184] The budget deficit without the oil and natural gas related revenues would amount to 6.4% of GDP, this would be deficit lower by 0.4 pp compared to the planned 2018 budget. For details, see: https://rueconomics.ru/369502-minfin-rasskazal-o-proficite-byudzheta-rf-po-itogam-2018-goda.
[185] These are composed of extraction taxes (3,548 billion RUB) and of export duties (1,932 billion RUB).
[186] Ministry of Finance of Russian Federation (2017). p. 4.; Ministry of Finance of Russian Federation (2016). p. 5.
[187] For details, see: http://en.kremlin.ru/events/president/news/57425.

for them conditions in which they could realize themselves up to their full potential. If implemented efficiently, then Russia should see its welfare to increase substantially.

Figure 11: Russia's military expenditure as a percentage of total spending have increased to their maximum in 2016 (source: SIPRI)

The proportion of oil and gas revenues of 36% percent of total government revenues is slowly decreasing. In addition, the oil price that breaks-even the budget is decreasing, as in 2014 it has been around 100 USD, compared to the above mentioned 53 USD for 2018 budget.[188] This was caused by various factors, such as depreciation of rouble, decrease of military spending[189] (see Figure 11), and higher non-oil revenues into the budget. Further decrease of military spending as a proportion of government expenditures would balance Russian finances at even lower oil price. In conclusion, this is a positive development pointing to disassembling of Russian fiscal health on the oil prices.

5. Competitive sectors of Russian economy

In this chapter, thesis aims to outline the sectors of Russian economy that are becoming and/or have the potential to become pillars of Russian growth and therefore

[188] For details, see: https://www.ft.com/content/1a106c00-9740-11e5-95c7-d47aa298f769,
[189] In 2017, military spending decreased by one fifth compared to prior year. Further decrease should happen during next five years (https://www.businessinsider.com/struggling-russia-cuts-military-spending-could-weaken-its-forces-2018-5).

should be the focus of the federal government, as they hold the potential in the process of further restructuralization and development of Russian economy.

In principle, it is feasible to develop a modern and competitive economy based on revenues from natural resource exports; the diversification of economy is needed to develop a shock-resilient economy.[190] However, diversification is easier said than achieved, tried unsuccessfully by many countries. Furthermore, it is a long-term process with no success guaranteed. Economists usually agree what initiatives and strategies do not work, with failures often resulting from fiscal irresponsibility and large-scale investments into unviable pet industrial projects.[191] An example of similar mismanagement of funds could be demonstrated on the research and development investments allocated to the project of Skolkovo[192], while the investments into actual research and development were stagnant.

5.1. Agriculture and food processing

Russia has a unique position and potential in the field of agriculture. Thanks to its enormous area and diversity of climate zones across the country, it has vast areas suitable for cultivation of virtually all globally important cereals, except of rice. Although climate change has negative impact on the agriculture and forces producers to adapt to new conditions to at least some degree anywhere around the world, and this need may become even more pronounced in the future, rendering some of the Russian croplands agriculturally worthless, even bigger areas would become more productive. In this respect would Russia along with a few countries, which currently suffer from harsh climate, such as Canada, Mongolia, Kazakhstan, and majority of European countries, could significantly gain from a climate change, mainly thanks to increases of productivity in all sectors of economy.[193]

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[190] Ahrend, R. (2005). p. 605.
[191] Ahrend, R. (2005). p. 606.
[192] Skolkovo was supposed to become a high tech business area, Russian Silicon Valley. Its results are so far not impressive compared to the amount of money that was put into the project.
[193] Burke, M., Hsiang, S. M. and Miguel, E. (2015). p. 238.

Furthermore, Russian yields per hectare are mediocre and responsible for relative Russian underperformance in the agricultural sector. For example, thanks to combination of cropland expansion and intensification can be wheat production, only in European part of Russia, potentially increased by additional 9-32 million tons[194]. The growth in wheat exports has been very impressive and in the 2017-2018 season it reached the post-Soviet maximum. According United States Department of Agriculture (USDA), in 2017/18[195] season Russia exported 41 million metric tons of wheat[196]. The estimate for 2018/19 season is lower, amounting for 35 million metric tons. This amount would still, however, manage to maintain the leading position for Russia overtaking the US exports of 29 million tons in the same time period.

The similar position was achieved in export of other types of grain, in Russian case barley and corn. Russia has thus became in 2017-2018 the largest grain exporter in the world. Furthermore, the exports of agricultural products have overcome the arms exports, with arms exports amounting to 15 billion USD in 2017, while the produce earned Russian producers more than 21 billion USD, development leading Russia to reinstate itself into the position of world's largest agricultural supplier, position that Russia[197] enjoyed before First World War.[198] This could have been achieved not only by higher harvests in recent years and resurgence of agriculture, but as well by lower intensity of animal husbandry, especially pigs and livestock, compared to the levels in the late USSR. In the field of agriculture and food-processing industry has Russia significant potential. It is even more pronounced when taking into consideration the climate change and the vulnerability of harvests on the weather. Russia holds significant water resources and in significant part of the country the average yields are still rather low due to harsh weather conditions. Therefore, with necessary investments into irrigation and higher use of fertilizers, the agricultural output of Russia could be at

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[194] Schiehorn et al. (2014).
[195] USDA tracks agricultural output using July/June year in an effort to approximate the agricultural season and the agricultural cycle. Therefore, 2017/18 season refers to the time period starting in July 2017 and ending in June 2018.
[196] USDA (2018), p. 21.
[197] This was, however, in times of Russian Empire, which included other agriculturally valuable regions, such as Ukraine, Kazakhstan, and Poland.
[198] For details, see: http://www.ved.gov.ru/eng/general/news/19/23530.html.

the very minimum maintained at current levels. It was only in calendar year 2017 when Russia harvested 134 million tons of grain and managed to overcome the all-time grain harvest record of 127 million tons set in 1978 by RSFSR; the previous post-Soviet record of 121 million tons was achieved in 2017.[199] Further improvement of yields and intensification of agriculture could make Russia dominant supplier of not only grain, but other commodities.

Russian grain exports are especially important for Middle Eastern countries, such as Egypt, country whose population is approaching 100 million people[200] and in 2017 has become the biggest consumer of Russian agricultural products.[201] Thanks to the geographical proximity of Egypt to the Russian breadbasket and ports in the region of Black Sea, Russia is able to offer a competitive price, securing almost two thirds of the Egyptian wheat imports.[202] Other significant importers of Russian wheat are Turkey, Bangladesh, Nigeria, Yemen, and Sudan.[203] Another significant agricultural commodities exported by Russia are corn and barley, supplying the main importers, such as Saudi Arabia, Iran, Algeria, South Korea, and Turkey.

Especially in lower-income countries reliant on food imports, the food prices are sensitive factor influencing the political stability as a relatively higher share of households' income is spent on buying the foodstuff. It was increases in prices of rice, cereals, and sugar that were the most important factor in angering the population and the main reason behind the revolts against Egyptian President Mubarak or in Tunisia.[204] Countries supplying the world market with basic food commodities therefore at least theoretically hold significant geopolitical leverage.

A subcategory of agriculture that is growing in importance is the organic food. Russia holds significant potential in this respect. Especially Russian Far East has the

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[199] For details, see: https://tass.ru/ekonomika/4867061.
[200] Egypt has strong domestic production of wheat, but due to its high population and unfavorable conditions on majority of its territory, significant imports are needed and country is largest wheat importer in the world.
[201] For details, see: https://www.bloomberg.com/news/articles/2018-02-26/with-bread-loaves-and-fish-russia-is-a-food-export-powerhouse.
[202] For details, see: http://www.worldstopexports.com/wheat-imports-by-country/.
[203] For details, see: http://ab-centre.ru/news/eksport-zerna-iz-rossii-v-2016-godu-itogi.
[204] Claflin, K. W. and Scholliers, P. (2013). p. 2022.

potential to be the place, which thanks to its low population density, pollution, can provide exactly what the Chinese customers demand. In China, the demand for the organic food has been growing due to the rise of middle class and food safety concerns. Russia can thus become a supplier of not only basic agricultural commodities, but also of more expensive organic products.

5.2. Civil aviatics

Another extremely perspective sector of Russian industry is the civil avionics sector. Russia is famous for its production of military airplanes and helicopters, which it exports mainly to Asian and Middle Eastern countries. Both global and domestic demand for the civil airplanes is growing, but Russia has let it civil aircraft construction to collapse following the dissolution of USSR. Production increased to 40 airplanes in 2010, but since then it has not changed by much; in 2017, only 42 civil airplanes were produced in Russia. Three quarters of the current civil aircraft production are represented by model Sukhoi SuperJet-100. Irkut MS-21, a larger plane for 150 to 210 passengers, that should enter serial production in 2018, should reinforce Russian civil airplane production. The share of domestic components in MS-21 should also be higher than in Sukhoi Superjet-100, which had originally around 75 percent of import origin, a figure that was much less before the 2014 sanctions.

The global amount of the commercial aircraft deliveries set record in 2017, as 1,740 airplane-orders have been delivered to the customers around the world. The order backlog is equivalent to over 9 years of production.[205] In addition, there are no signs of weakening in the demand, the global passenger traffic is growing steadily and is projected to grow even further. Russia is holding talks with China on joint production of new models. This would be beneficial for both countries as Chinese airlines are expanding and both countries would like to break the duopoly of Airbus and Boeing,

[205] For more details on the development of airplane production, see: https://centreforaviation.com/analysis/reports/record-global-aircraft-deliveries-in-2017-boeing-ahead-of-airbus-again-but-behind-on-order-backlog-393914

as these two companies delivered 1,481 planes out of total global production of 1,740 airplanes in 2017.[206]

5.3. Transport

Russia holds significant potential also in the area of freight transport. The development of the ports in the Arctic basin and construction of new icebreakers to accompany the rising ship transport in these waters is under way. Russian Arctic waters are still not usable for regular container ships, with the first ship only testing the route at the end of summer 2018[207] as Russian Northern Arctic route could decrease the time needed to connect European ports with East Asian ports. The climate change is also evidenced on the case of a tanker that reached Russian Arctic terminal Sabetta in December 2017 without company of icebreakers.[208] So far the majority of traffic in the waters is goods transported along the route, with transit being minimal in comparison.[209] The terminal Sabetta was put into operation in December 2017. Other terminals are soon to follow as the Russian Arctic route is becoming more popular. Climate change and further investments into infrastructure in the area as envisaged by May 2018 decrees of Vladimir Putin could make this route a significant alternative to Suez Channel.[210]

Further development of the railways, particularly in the Russian Far East is also one of the strategic goals in the decrees from May 2018.[211] Thanks to its size and location in the northern part of Eurasian landmass, Russia is a country that is practically impossible[212] to by-pass when transporting the goods between Eastern Asia and

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[206] Ibid.
[207] For info on sailing of ship Venta Maersk, see: https://www.bbc.com/news/business-45271766.
[208] For more details, see: https://www.independent.co.uk/environment/arctic-sea-route-first-ship-no-icebreaker-winter-icebergs-ice-shelf-teekay-russia-a8208596.html
[209] 9.74 million tons of goods were transported along the route, while only 194 thousand to transit (https://www.maritime-executive.com/article/boom-times-for-russia-s-arctic-ports).
[210] For details, see: http://en.kremlin.ru/events/president/news/57425.
[211] Ibid.
[212] The alternative routes through Central Asia, Iran, and Turkey, or Transcaucasia (including ferries) are much longer and the transport by them takes more time also due to crossing of more borders.

Europe, and majority of the East Asia-Europe transport is currently being carried via Russia and Kazakhstan.

The time needed to transport a standard ship container by rail from the eastern border to the western border should be cut down to seven days and the transport capacity of the Baikal-Amur and Trans-Siberian railways is planned to be increased by additional 50 percent by 2024 according to May 2018 decrees. According to Russian Railways, these two routes have already seen an increase of transport capacity by a third in 2013 to 2017.[213] The construction of the Baikal-Amur railway was planned since the times the Trans-Siberian railway was assessed to be insufficient for the connection of European Russia and the Far East. The Baikal-Amur was opened in 1984. Following the boom in transport along Russian railways, significant investments went into this railway, as majority of its length is only single-track. Especially the transport capacity of the Baikal-Amur railway is reduced by various bottlenecks on the railway[214], which are slowly being eliminated by the government in efforts to increase the transport capacity.

Currently, it is reported that China is subsidizing[215] the railway transport across Russia in order to increase the amount of freight that Chinese businesses decide to send by rail instead of the less expensive, but more time-consuming ship transport. Subsidies are needed due to the fact that the price of rail transport is approximately three to four times higher than shipping costs by sea from ports on the eastern coast of China.[216] Therefore, products that are transported by rail are often high-value products, for which the price differential is incomparable to the value of the goods. Moreover, railway transport is much more competitive for Chinese businesses located in Chinese

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[213] For details, see: https://www.railwaygazette.com/news/infrastructure/single-view/view/increasing-capacity-on-the-bam-and-trans-siberian-routes.html

[214] An example could be removal of the bottleneck in the area of Baikal Tunnel, which was since its completion in 1985 a single-track tunnel, by putting of second tube into operation in 2019. For details, see: https://www.tunneltalk.com/Russia-09Aug2018-New-parallel-tube-for-Baikal-Tunnel-on-the-BAM-Railway.php. This will help to increase the traffic capacity of the section by 150% (http://en.kremlin.ru/events/president/news/56980).

[215] Chinese authorities are currently subsidizing the railway transport by around 2,000 USD per TEU (https://www.railjournal.com/in_depth/can-china-europe-rail-freight-continue-to-prosper-without-chinese-subsidies).

[216] International Union of Railways, and Roland Berger (2017). p. 5.

hinterland, i.e. in Western China, that have to transport the goods thousands of kilometres to the ports on the Chinese east coast in order to ship them to Europe. The transported volume through the Eurasian rail has significantly increased from 25,000 TEU[217] in 2014 to 145,000 in 2016 and 240,000 in 2017, with significant increases expected to continue in the future.[218.219] China is subsidizing the railway transport in order to diversify the transport options as a part of its New Silk Road initiative; at the current stage, it is not competition to other forms of transport, but rather a complementary option.

Thanks to the increased traffic and improvements on the rail networks in Russia, Kazakhstan, and Mongolia, the efficiency of rail transport increased and transit times have been reduced significantly, punctuality has been increased as well.[220] The current unprofitability of the railway transport and need for subsidies is to a large extent caused by the fact that the traffic flow is imbalanced as cargo bound for East Asia is of significantly less volume than the volume of goods headed to Europe; containers returning eastbound are often empty, making the transport less efficient and more costly for the cargo companies.

Despite the increases in the recent years, share of rail transport on the overall trade between Asia and Europe is about 1%, with overwhelming portion of freight (above 90%) transported by ships.[221] It remains to be seen how the ongoing investments into railways in Russia, and measures to decrease the time spent by trains on borders of European countries, will decrease the transport time, which would make the railway transport even more competitive vis-à-vis sea shipping.

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[217] TEU, or twenty-foot equivalent unit, is a standard unit of capacity measurement in container transportation.
[218] Ibid, p. 6.
[219] For details, see: https://www.railjournal.com/in_depth/can-china-europe-rail-freight-continue-to-prosper-without-chinese-subsidies
[220] International Union of Railways, and Roland Berger (2017). p. 6.
[221] Ibid, p. 5.

6. Final word

The relationship between oil price and REER is significant. Other aspects of resource curse are also present in Russia, especially institutional weakness and corruption. Thesis points to the fact, that despite the progress in improving the efficiency of its economy and focus on the development of non-oil sector of the economy, Russia still has a long journey to make in this respect. The growth in the global demand for oil and natural gas is slowing down. In addition to this development, the prices of oil are expected to remain quite steady in the future between 50 and 80 USD per barrel. However, adjusted for the inflation the prices will be slowly decreasing. Good news is that the break-even price for Russian budget is lower than the conservative estimates of oil prices. Break-even price of Russian budget decreased due to two simultaneous trends, the first being the depreciation of rouble since 2014, and the other was the improved fiscal discipline.

Russia needs more investments into research and development. Currently, the science and education expenses of the federal budget are very low. Russian scientific output is seriously lagging behind the majority of comparable countries. Bearing in mind the aging of Russian population and the decrease of working-age population, developments that are present in practically all developed economies, Russian economy needs huge investments into automation and robotization.

When it comes to exports of oil and natural gas, Russia's position is stronger than it has been back in 2009, when Russia was hit with the prior crisis. Nord Stream has been built in the meantime, Nord Stream 2 is under construction. Power of Siberia and Turkish Stream are currently being laid and expected to fully operate in 2020. LNG terminals that have been built or are under construction will be able to supply any customer willing to pay the market price. Furthermore, there is a trend ongoing in many developed countries from nuclear and coal power to renewable energy backed by gas power plants. All these developments have given Russia a far more favourable negotiating position then it had ten years ago.

In addition, it has been subject of sanctions that are making further development more difficult to propel and finance. It appears that it has managed to lower its

dependence on oil and natural gas exports to level that their prices are not critical to the overall success of Russian economy and its public finances. It still has an untapped potential that would help not only to increase the economic growth that is currently very slow, but also to decrease the economic regional inequality. Finally yet importantly, Russia should use its diplomatic power to conclude more free trade agreements around the world as currently it has free trade only with members of Eurasian Economic Union and with Vietnam. Talks with Iran and China are already ongoing. Easier access to the international markets would facilitate the competition and help the potential Russian exporters.[222]

Measures taken by the Russian government in the direction of liberalization of the gas-exporting companies are definitely a step in the right direction. Existence of monopolies lowers the efficiency and Russia needs to improve productivity and profitability of mining sector of its economy. Russia is a country of tremendous potential. This is a fact that all scholars can agree on. It has underwent a particularly difficult transition from the centrally planned economy, in the 20th century Russia lost significant portions of population due to both from non-self-inflicted and self-inflicted disasters, which were followed by waves of emigration. Considering the difficulties Russia is facing, its high military expenses, and internal problems, its growth is comparable to other countries with significant mineral exports.

[222] Ahrend, R. (2006). p. 607.

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Institute of Political Studies

Diploma thesis project

Diploma thesis proposal:

Economic change in Russia: Oil dependency

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Supervisor: PhDr. Irah Kučerová, Ph.D.

Study programme: International Relations

Faculty: Faculty of Social Sciences, Charles University

Thesis's title in Czech: Hospodářská změna v Rusku: závislost na ropě

Thesis's title in English: Economic change in Russia: Oil dependency

Keywords in English: Russia, GDP, fiscal revenues, crude oil price, REER, VECM

Keywords in Czech: Rusko, HDP, fiskální příjmy, cena ropy, REER, VECM, teorie prokletí přírodních zdrojů

Motivation and characteristics of the topic

Academic debate about the effects of natural resources abundance is ongoing and scholars usually agree on the assessment that a resource curse is not inevitable. Russia as one of the most resource-rich countries tends to be shown as one of the foremost illustrative cases of a country suffering from the resource curse. Russia belongs among the largest exporters of fossil fuels in the world. Obviously, Russian mineral exports do not consist entirely of oil, but it is the price of oil (and natural gas that is linked to the price of oil) that notably influences Russian fiscal health and economic cycle. In the year 2015, Russia accounted for 12.3 % share of the global oil production, while being the second biggest exporter. Global oil prices have fallen sharply in the second half of 2014, leading to significant financial problems of the major oil producers, Russia notwithstanding.

Major oil exporters tend to be highly dependent on these revenues and governments use them to finance the fiscal deficits. Russia is also suffering from this issue. The importance of oil industry means that for a proper understanding of the overall state of Russian economy it is crucial to understand the level to which is Russia dependent on the oil exports. There is an ongoing debate on how Russia should diversify its economy and modernize its structure with scholars disputing about the progress made in this respect as this problem has been part of the discussion for some time.

Thesis will attempt to offer an authentic image of the Russian budget, GDP growth and economic cycle, and export basket in the light of the latest downturn in oil prices. Many journalists and analysts take an interest in writing about this topic, but their texts are in some cases suffering from bias or they do not use the latest data and thus coming to conclusions that may not be correct. According to Bordoff and Houser (2014), mineral resources account for 68 percent of Russian exports. It will be interesting to research on how is the importance of oil exports changing and how is the latest downturn in oil prices affecting the restructuralization of Russian economy.

Theoretical framework

Theory of resource curse assumes that there is a negative relationship between exports of raw materials and both economic and political development. Part of the effect on the economy of such a country was observed in the late 1970s on the case of Netherlands and hence was named the *Dutch disease*, referring to the negative effect of the exchange rate appreciation on the competitiveness of exports. Additional problem for the economy stems from the fact that prices of natural resources are volatile-prone and thus limit the ability of governments to plan the investments, debt management and development of other sectors of the economy. Moreover, the rent-seeking models point out how is the development of oil industry impeding investments in other sectors of the economy.

Political aspects of the resource curse are equally grave and significant. Among the political scientists that entered the field of natural resources politics is Michael Ross, Paul Collier, Hossein Mahdavy, and others. Political scientists focus how the abundance of resources increases inequality of distribution of wealth in the society, may increase the probability of conflict and its length. Another negative effect is the implications that the wealth has on the institutions, the level of democracy, and reasonable behaviour of the elites and how it enables them to behave irresponsibly without having to face the consequences.

Virtually every country that heavily relies on exports of natural resources is looking for ways how to eliminate these negative effects. Scholars in the field agree that the resource curse can be corrected by competent government policies. Russia was applying its fiscal and monetary politics, as its former finance minister Alexei Kudrin did realize that Russia needs to restructuralize its economy and that appreciation of real effective exchange rate (REER) is having negative implications on this process.

Thesis will study the relationships between oil price, REER, and the economic cycle of Russia and its fiscal budget to assess to which amount is Russia dependent on the oil price and assess the effects of the abundance of natural resources on Russia´s economic power.

Research questions

Thesis will consider the following research questions:

Is Russia suffering from the resource curse?

How did the latest development of the oil price affect the structure of Russian economy and budget?

Which sectors of Russian economy are most competitive in the global comparison?

Hypothesis

On the basis of the observation of macroeconomic indicators can be concluded that Russian economy is currently undergoing a significant diversification and that the influence of the oil price on the Russian budget is lower than is conventionally assumed.

Methodology

Empirical analysis with use of concepts like magic quadrangle, real exchange rate, and use of Vector error correction model (VECM) to analyze the effects of oil price and REER of Russian rouble on the structure of Russian exports a on the fiscal revenues (multivariate time series analysis).

Structure of the thesis

Introduction

1. Literature review
2. Theoretical framework
3. Methodology
4. Empirical analysis
5. Results and discussion

Conclusions

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