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Risk change of publicly listed Russian companies during the economic recession of 2014-2016 – A comparison between the locally listed and cross-listed companies

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Abstract

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The broadly criticised annexation of Crimea by the Russian Federation in 2014, increased tensions between the Western countries and Russia. Simultaneously as the geopolitical tensions with the Western countries and Russia worsen, the global oil markets faced an oversupply leading to an aggressive supply-driven price correction plummeting the global oil prices by up to 70%. The impact of the two shocks led Russia to an economic recession by the end of 2014, which lasted to early 2017. The objective of this study is to examine the impact of the two economic shocks on the strictly locally listed and cross-listed Russian companies systematic and total risk between 2012-2017, compare the risk change of the two types of companies, and determine whether the financial indicators explain changes in the companies risk market risk. The study includes a total of 62 Russian companies of which, 42 strictly locally listed companies and 20 cross-listed companies.

The results show that the total risk increased significantly during the recession period, on average, 67.9% for strictly domestic and 70.7% for cross-listed companies compared to the pre-recession period. The systematic risk decreased for both types of companies. The decrease was -1.18% for the locally listed and -24.11% for the cross-listed companies. However, the results are only significant for cross-listed companies. After the recession period, the risk total risk decreased by -18.7% for the strictly local companies and by -40.8% for cross-listed companies. Overall, the recession period had significantly stronger impact on the cross-listed companies total risk than on the strictly domestic companies. It was found that profit margin explains marginally the total risk change for both cross-listed and strictly local companies. The current ratio, ROE and ROA do not display a significant relationship with the total risk measure. It can be concluded that profit margin is the only financial indicator explaining changes in the total risk. However, all of the financial indicators display a marginal relationship with the systematic risk for the strictly locally listed companies. As for cross-listed companies, only ROE and ROA display a weak relationship with the systematic risk. The results from the regression analysis confirms, that the recession period had a significant impact in the total risk increase for the strictly domestic and cross-listed companies, unlike the firm-level factors.

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Venäjän Krimin miehitys vuonna 2014, lisäsi jännitteitä Länsimaiden sekä Venäjän välillä johtaen molemminpuolisiin sanktioihin. Samanaikaisesti, öljyn hinta romahti jopa 70% maailman markkinoilla ylitarjonnan seurauksena. Kahden ekonomisen shokin vaikutukset ajoivat Venäjän talouden taantumaan 2014 vuoden loppupuoliskolla, joka kesti aina 2017 vuoden alkupuoliskolle asti. Tämän tutkimuksen tavoitteena on selvittää pakotteiden sekä öljyn hinnan romahduksen vaikutukset kotimaassa listattujen sekä ulkomailla listattujen yritysten systemaattiseen sekä kokonaisriskiin 2012-2017 välillä, sekä vertailla mikäli ulkomailla listattujen yritysten markkina riski eroaa kotimaassa listattujen yritysten markkinariskistä. Tämän lisäksi myös tarkastellaan selittävätkö yritysten taloudelliset indikaattorit muutosta yritysten markkina riskissä. Tutkimukseen sisältyy yhteensä 62 Venäläistä yritystä, joista 42 on kotimailla listattua sekä 20 ulkomailla listattua.

Tämän tutkimuksen tulokset osoittavat, että kotimaassa listattujen yritysten kokonaisriski kasvoi taantuman aikana 67.9% ja ulkomailla listattujen yritysten 70.7% verraten taantumaa edeltävään periodiin. Systemaattinen riski väheni -1.18% kotimaassa listatuilla ja -24.11% ulkomailla listatuilla yrityksillä, tulokset ovat kuitenkin tilastollisesti merkitsevä vain ulkomailla listattujen yritysten osalta. Taantuman jälkeisenä periodina kokonaisriski väheni -18.7% kotimaassa listatuilla ja -40.5% ulkomailla listatuilla yhtiöillä. Johtopäätöksenä voidaan todeta, että taantuma vaikutti merkittävästi enemmän ulkomailla listattujen yritysten kokonaisriskiin kuin kotimaassa listattujen. Regressio analyysin tulokset osoittavat että yritysten tuottoprosentti on ainoa taloudellinen indikaattori, joka selittää kokonaisriskin muutosta niin kotimaassa kuin ulkomailla listattujen yritysten osalta. Yritysten current ratio, ROE sekä ROA eivät osoita tilastollisesti merkitsevää suhdetta kokonaisriskiin. Kotimaassa listatuilla yhtiöillä kaikki taloudelliset indikaattorit osoittavat marginaalista suhdetta systemaattisen riskin kanssa. Ulkomaalaisten yritysten osalta pelkästään ROE ja ROA on tilastollisesti merkitsevä 0.1 merkitsevyys asteella. Regressioanalyysin tulokset vahvistavat, että taantuma selittää merkitsevästi Venäläisten yritysten kokonaisriskin kasvua niin kotimaassa kuin ulkomailla listatuilla yrityksillä, toisin kuin yritystason tekijät.

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In Sydney, 23.6.2020

Peter Larionov

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1.INTRODUCTION

In 2014 the Russian economy suffered two significant shocks that led the country into an economic recession. Due to Russia's involvement in the Ukrainian crisis, as well as, the broadly criticized annexation of Crimea by Russia led the European Union (EU) and the United States of America (US) with their partnering countries to impose sanctions against Russia. During the same period, the global oil prices plummeted by up to 70 percent, a crucial source of income for the Russian government, increasing the magnitude of the economic downfall. This master's thesis focuses on the risk impact of the Russian economic recessions between 2014-2016 on the domestically listed Russian companies and cross-listed Russian companies trading on the UK or the US markets. By comparing the risk change of the strictly locally listed and cross-listed companies prior-, during- and after the recession. This chapter presents the background of the events leading to the economic recession in Russia, as well as the goals and limitations of the research. At the end of this chapter, the structure of this thesis is presented.

The beginning of the Ukrainian crisis can be dated to November 21, 2013, when President Yanukovych abandoned the association agreement with the EU under the pressure of the Russian government. The suspension of signing the agreement with the EU sparked protests in the capital city of Kyiv. On December 17, 2013, President Yanukovych agreed to a $15bn aid package from Russia, which increased the magnitude of the pro-European protests around Ukraine. By the mid-February of 2014, the protest had escalated to violent clashes between the government forces and the pro-European protestors. Due to the public pressure on February 21, 2014, President Yanukovych signed a compromise deal "Ukraine crisis mediation agreement" with the opposition leaders. Nevertheless, the opposition seized power on February 22, only a day after the agreement was signed. President Yanukovych fled to the city of Kharkiv and the next day the Ukrainian parliament named speaker Turchynov as interim president. Eventually, Yanukovych was granted an alyssum in Russia by President Putin.

Russian parliament approved on March 1, 2014, President Putin's request to use military force in Ukraine to protect Russian interests. The coup in Ukraine led to unrests in areas populated with ethnic Russians, especially the Autonomous Republic of Crimea. On March

16, 2014, Crimean authorities held a referendum to reunify Crimea with Russia. With more than 82 percent of the electorates participating, the vote resulted in favour of joining Russia backed by 97% of the voters. March 18 President Putin and the leaders of Crimea signed the "Agreement on the Accession of the Republic of Crime to the Russian Federation", and on March 21 President Putin held a ceremony in Kremlin, signing the laws on admitting Crimea to Russia to finalise the reunification (Kremlin 2014). Russia's actions in the Crimea and the support of the pro-Russia separatist in Eastern Ukraine sparked an instant outrage among the world leaders.

Soon after the Russian Federation illegally annexed Crimea, European Union (EU) and the United States of America (U.S) imposed the first round of sanctions on Russia. The initial efforts by the Western countries proved out to be ineffective to influence the Russian policies regarding Ukraine. The resistance from Russia to change its policies regarding Ukraine led to several rounds of strengthening of the sanctions, as well as, counter-sanctions introduced by the Russian government. The economic sanctions, low oil price, increased interest rates and the weakened Russian ruble drove Russia into a recession period by the last quarter of 2014.

Figure 1 Timeline of the main events during the Ukrainian crisis

The full impact of the sanction and the retaliatory counter-sanctions on the Russian economy is challenging to evaluate. As the sanctions were being imposed on Russia, simultaneously the global oil prices were rapidly declining. Foreign investors quickly withdrew the capital out from Russia, crumpling down the value of the ruble and raising the inflation rate. (Fritz, Christen, Sinabell and Hinz 2017) The Ukrainian crisis was widely covered in the Western media raising criticism against the Russian government. In the second chapter of this thesis, the impact of the sanctions and the declined oil prices are observed in greater detail to provide the reader with a better understanding of the two separate shocks.

1.1 Research objectives and limitations

The increased geopolitical tension between the Western countries and Russia did not only affect the individuals, companies and banks directly set under the economic sanctions but also had a severe indirect impact through the reduction of foreign direct investment and by worsening funding conditions for the companies and banks not directly targeted by the Western sanctions. The estimated negative effect of the gross capital income between 2014-2017 was $280bn. (Gurvich and Prilepskiy 2016) Five of the largest Russian banks, accounting for approximately 60 percent of the Russian banking sector, were set under the economic sanction significantly limiting the access to Western capital markets. Without a possibility to extend the foreign debts, the Russian banks were set to pay back $60bn within a year in June 2014. (Russell, 2018) The investor service company Moody's downgraded the Russian government's debt rating from Baa2 to Baa1 on October 17, 2014 (Moody's Investor Service 2020) By the end of 2014 the Russian banks were losing public trust as the customers withdrew $22bn of deposits within a week from Sberbank, the largest bank in Russia. The governments $17 billion bailout plan for the major banks helped to avert a complete financial crisis. (Russell 2018)

The main objective of this thesis is to examine the impact of the economic recession on the publicly listed Russian companies systematic and total risk. Also, to compare whether there are differences between the locally listed and cross-listed companies market risk levels. The aim is to understand the investor reaction to the increased uncertainty in the Russian political and economic environment and how it impacted the Russian companies systematic and total

risk. The financial indicators are used in the regression analysis to reflect whether the possible risk change can be explained using the movements in the profitability,- and liquidity ratios. The systematic risk is measured by observing beta and total risk by using the standard deviation (SD) of the company stock returns pre-recession and comparing them with the values during,- and post-recession. Financial indicators included in the study are the current ratio, profit margin, return on assets (ROA) and return on equity (ROE). Two dummy variables are used to represent the recession and post-recession period. The size of the companies measured by the average annual turnover for each period is also included in the study.

In the academic literature, the findings regarding the impact of sanction on target countries are inconsistent. The outcome has commonly been dependent on multiple factors, including the economic relationships between the target country and the country imposing the sanctions and the relative sizes of the opposing economies. The vast majority of the studies regarding Ukrainian crises and the sanctions imposed on Russia in 2014 observe the impact on a macroeconomic level (see, e.g. Shirov, Yantovskii and Potapenko 2015; Gurvich and Prilepskiy 2016; Korhonen, Simola and Solanko 2018), which has motivated this thesis to examine the impact on a company level.

Despite the Russian stock market being one of the largest emerging markets in the world, there are a fairly limited amount of studies examining the attributes of it. This study aims to provide evidence of the impact on the market risk levels on publicly listed Russian companies, together with a comparison between the strictly domestically and cross-listed companies. The research questions for this study are formatted as follow:

1. *Did the 2014-2016 financial recession period have a significant impact on the systematic and total risk of publicly listed Russian companies?*

2. *Is there a difference in the systematic and total risk between companies that are strictly listed in the Moscow stock exchange and companies that are cross-listed during the recession period?*

3. *Do financial indicators explain the company market risk changes for the strictly locally listed and cross-listed companies?*

4. *Does the recession period and post-recession period explain the changes in the systematic and total risk of the strictly locally listed and cross-listed Russian companies?*

Answering to the research questions provides insights into how the market risk of individual Russian companies changed during the turbulent period in the Russian economy and whether the investor reactions contrasted between the different stock exchanges during the increased uncertainty caused by the sanction and the economic recession.

1.2 Structure of the research

The second chapter of this thesis presents the historical development of the Russian economy. The chapter includes the main events affecting the economic state of the country and discusses the governmental policies and their outcomes. This chapter helps the reader to understand better the events leading to the 2014 economic recession in Russia and the macroeconomic factors that have had an impact on the industries in Russia. Chapter 2.1 introduces the dependency of the Russian economy on oil price development, and the shock of the declining oil prices in 2014 had on the Russian. In chapter 2.2, the sanctions set by the Western countries and the counter-sanctions imposed by Russia are introduced. As the second economic shock in 2014, it provides the reader perspective on the role the sanctions had in steering the Russian economy into recession. Chapter 2.3 deals with the role of the Russian ruble exchange rates on the economy and the correlation of the exchange rates with the oil prices. In Chapter 2.4, the development of the Russian securities exchange is introduced.

Chapter three presents relative theories supported by previous studies. The fourth chapter introduces the research methodology and the data used in the study, which is followed by the analysis of the results. Finally, chapter 6 present the concluding remarks and the and the

research questions are answered. Last, the limitations of this study are presented, and future research ideas are discussed.

2. RUSSIAN ECONOMY OVERVIEW

After the collapse of the Soviet Union at the beginning of the 1990s, Russia went through an enormous transformation. Communism was substituted with a multiparty democracy, and the centrally planned economy was replaced with a capitalist market economy. The first Russian president Boris Yeltsin introduced drastic economic reforms with privatization program, price liberalization and stabilization of the ruble. With the program, almost 70 percent of the Russian economy was privatized by the mid-1994.

The efforts to implement a market economy, while the foundations were still solidly built around centrally planned economy were turbulent. As the institutional structures around the market economy were notably weak. (Poirot 2001). In the result of the price control removal, the inflation rate soared with the annual inflation rate reaching 2506,1 percent in 1992. The government was finally able to stabilize the hyper-inflation in 1995, and by 1997 the inflation rate was down to 10,9 percent. (Nissanov 2017) Poirot (2001) concludes that integration of the poorly performing economy to the global markets in the hope of increasing competition in the financial sector only made the situation worse for the Russian economy and ultimately led to the second crisis in 1998. Russia took initial steps to enter the global financial markets in 1992 by joining the IMF and creating of a unified, convertible currency. The reforms on financial institutions were marginal, and often the improvements on regulation were overlooked. The regulation remaining weak, financial institutions increased the use of complex financial instruments growing the exposure of the financial system. During this period, the Russian government had started to offer Eurobonds in dollar denominations, and the bond market was opened to the non-resident foreign market in 1996, worsening the existing problems of the financial institutes. Declined oil prices hit the Russian economy in 1997, increasing the sale of debt, raising the current account obligations. By September 1998, the events had spiralled to the point where the Russian government was unable to meet its debt obligations and could not agree with future loan terms with the IMF.

The consequences of the 1998 financial crisis were severe for Russia. The inflation rate grew to 84,5 percent, and the annual GDP growth declined 4,6 percent (Nissanov 2017). The nominal value of ruble plunged by over 70 percent against the US dollar (Rautava 2004) With the default of the government bonds, numerous financial institutions declared

bankruptcy. The oil prices started to rise in 1999, supporting the recovery of the Russian economy. Reforms were carried out in the financial policies and institutions, building a more efficient capital market (Kuboniwa, Nakamura, Kumo and Shida 2019). Shleifer and Treisman (2005) argue that the actual economic performance during the crisis was not as catastrophic as the sharp decline in the GDP indicates. They believe that the official statistics under the Soviet power largely overstated the actual output at the beginning of the decade. The recorded GDP included military goods as well as incomplete construction projects and consumer products manufactured without an actual demand. They also mention the growth of the unofficial economy during the decade that was not captured in the GDP calculations. The actual living standards fell only slightly in the 1990s, and by some indicators, the living standards even increased.

The Russian economy quickly found a boost to its recovery from the rising oil prices in 1999. Also, the local companies competitiveness had increased significantly with the weakened value of the ruble. President Yeltsin unexpectedly resigned on January 1, 2000, making the Prime Minister, Vladimir Putin as an acting President and later to win the presidential election in the same year. (Shleifer and Treisman 2005) Under President Putin's regime, economic reforms and fiscal policies were carried out, improving the efficiency of the economy (Rautava 2004). The GDP growth rate was one of the highest in the world between 2000-2008. On average, the real GDP growth rate was around 7 percent during the period of high oil prices. (Benedictow, Fjærtoft and Løfsnæs 2013) The GDP per capita reached 12,000 USD in 2008, having had grown five-fold since 2002. (Sharma 2011)

The constant growth of the oil price from 2000 to the mid-2008 stabilized the Russian economy and practically all sectors in the economy saw growth. The government budget revenues surpassed the expenditures due to the increase in the collected taxes. Majority of the increased tax revenue came from oil extraction taxes, the oil and gas export duties. In addition, due to the high oil price, the government was able to raise the tax rates on the export duties and mineral extraction. (Tabata 2007) Russia was able to repay its debts and grow its foreign reserves. In total, the Russian government's reserve fund and national welfare fund had grown to $162 billion. The national gold reserves and cash reserves totalled close to $600 billion (Sharma 2011). The real wage in the country nearly tripled during the period, and consumption rates were high.

The Russian economy had widely thought to have been decoupled from the global markets and to provide a safe haven for international investors during tough times. Thus, it was believed that Russia could have avoided the contagion of the 2008 global financial crisis. However, through the shrinking global credit market, the capital inflow to Russia reduced by 40 percent compared with the previous year. The situation for Russia got worse when the global demand for raw materials had diminished as countries around the world had directly been affected by the crisis. Even though the Russian government had been able to pay off its debt by 2008, the Russian private entities had increasingly relied on foreign short-term debt. The controlled appreciation of the rouble increased the favourability of foreign loans. The annualized increase of the foreign debt of Russian banks was on average 50 percent between the end of 2000 and the third quarter of 2008 and foreign debt amount for the Russian banks totalled over $200 billion and for the Russian companies $300 billion by September 2008. (Sharma 2011)

The 2008-2009 global financial crisis impacted the Russian economy extensively. Measured by multiple financial indicators, Russia was among the worst-performing economies compared to other large economies. The global oil prices plunged in the mid-2008 along with the weak financial sector, steering the economy to a downfall. By relying on the federal reserves, the Russian government was able to moderate the impact of the crisis. The government managed to keep the employment rate high and to protect the financial system from a total collapse. Despite the government's efforts, the GDP decreased 7,8 percent from the previous year in 2009. The reforms on the financial sector and the high oil prices had enabled the rapid growth from the beginning of the century, but several profound issues on the Russian economy had been ignored, that magnified the impact of the crisis. The two most essential problems in the economy are the high level of corruption and the dependency on natural resources. (Åslund, Guriev and Kuchins 2010)

The recovery from the global financial crisis was relatively fast, but Russia failed to reach the growth levels prior to the economic crash. The GDP growth rate remained low compared to other emerging countries outside of EU due to structural limitations such as the lack of innovation, non-competitive markets and inefficient factor allocation. Majority of industries in Russia had suffered severely from the economic crisis and were lacking confidence in the economy. By 2013 the GDP growth level had fallen to 1,3 percent from 3,4 percent the year

before. (World Bank 2014a) The Russian economy suffered from stagnation between 2013 and 2014 mainly due to the unfavourable development on a number of world markets and the reduction of investment activities by major Russian companies (Shirov et al. 2015).

With already a weak economic outlook, the imposed sanctions and plummeting up to oil prices led Russia to face an economic recession by the end of 2014. The Russia-Ukraine tensions led to a severe depreciation of the ruble and increased the inflation pressure in the country. The growth of consumption rate slowed down from the prior year, and the investment activities reduced due to the uncertain economic environment resulting from the sanctions and the counter-sanctions.

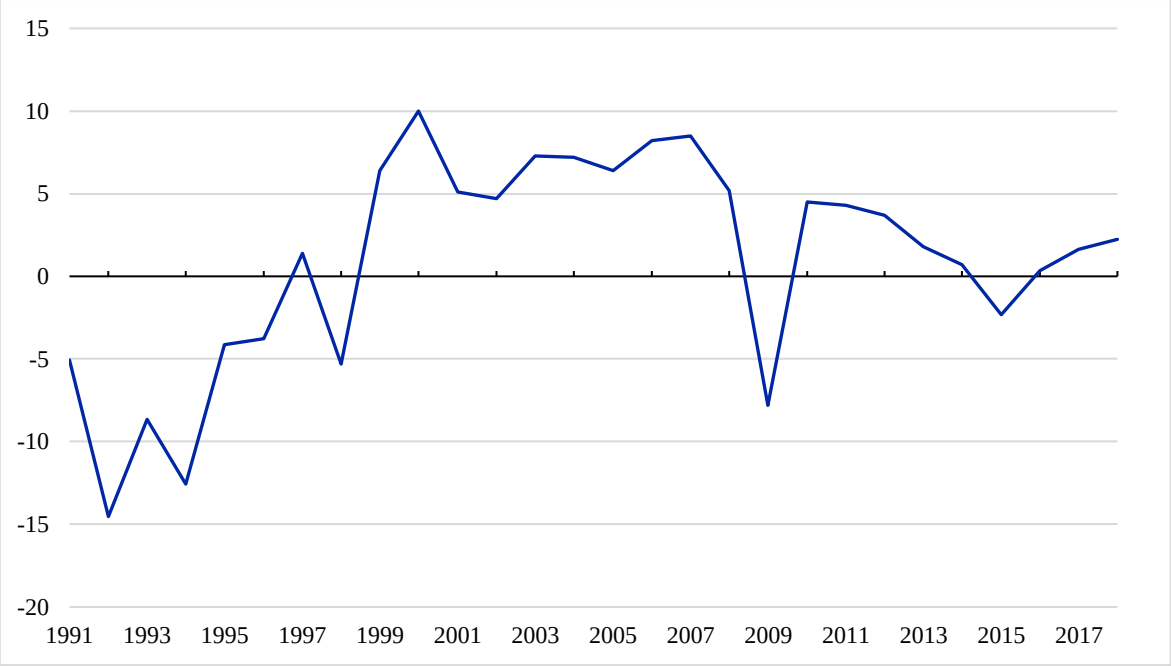

Figure 2 The annual percentage GDP growth rate between 1991-2018 source: The World Bank 2020b

The annual GDP growth rate in Russia between 1991-2018 is presented in Figure 2. The economic crisis after the collapse of the Soviet Union can be seen lasting until 1997. However, again in 1998, the economic crisis decreased the growth rate to negative. The impact of the increasing oil prices and the new governmental policies quickly turned the economy to proliferate, making the Russian economy as one of the fastest-growing economies in the world. The impact of the 2008-2009 global financial crisis is seen as a

strong V-shape in the line chart. The 2008-2009 global crisis had much more severe consequences on the Russian economy compared with the 2014-2016 recession.

In the following chapters 2.1.1-2.1.3, the impact of the low oil prices, the weak ruble and the sanctions are discussed in greater detail to provide the reader with a more comprehensive understanding in the factors leading to the economic recession in 2014. Last, the developments of the main Moscow stock exchanges are introduced.

2.1. Significance of natural resources for the Russian economy

For decades the Russian economy has been dependent on the revenues from oil and gas. The steady growth periods have been fuelled with high oil prices, and on the other hand, the low oil prices have led the country to financial stress. The leaders of Russia have learned from the mistakes of the past, to stabilize the economy by growing the federal reserves during growth periods that can be used to balance budget deficits throughout low oil price periods. During the booming oil prices of 2000-2008, the government was able to pay back its debts of over $130 billion to the Western governments and to grow the world's third-largest foreign exchange reserves. (Gaddy and Ickes 2010) The stabilization efforts, however, have not been successful in protecting the Russian economy sufficiently from the low oil prices in recent years.

As one of the world's largest producers and exporters of oil and natural gas, Russia is highly dependent on the price development of natural resources. In 2019 Russia was the second-largest producer of crude oil and natural gas and carried significant importance in the global energy markets accounting 12 percent of oil production and 18 percent of natural gas production in the world. Commodities account for nearly 60 percent of the country's export goods, while in 2000 the figure was 50 percent. (World Bank 2019c)

In addition to being a majority owner on some of the largest oil and gas companies in the country such as Gazprom and Rosneft, the Russian government receives large revenues from the oil and gas sector in taxes. The oil and gas revenues for the federal government are made up of the production taxes and export customs duties. Yearly, a part of the collected taxes is transferred to the federal budget expenditures. However, the maximum amount to be

transferred for the budget has been set at 3,7 percent of the estimated GDP for a given year the revenues remaining after the budget transfer is accrued in the reserve fund. The size of the reserve fund is set to amount 10 percent of the corresponding year's forecasted GDP. If the tax revenues reach the set requirement, all the remaining revenues are transferred to the National wealth fund. Between 2013 and 2018, on average, 44 percent of the federal budget came from oil and gas revenues. (Ministery of Finance of the Russian Federation 2020)

There are several research papers that study the influence of oil prices on the Russian economy (see, e.g. Cukrowski 2004; Benedictow et al. 2013; Rautava 2004; Kuboniwa 2012). Balashova and Serletis (2020) examined the relationship between oil prices and economic activity in Russia. By using Industrial Production Index (IPI), they were able to capture 95 percent of the total industrial output of Russia in their study. Balashova and Serletis (2020) found that all economic activity is led by the oil prices and positive shocks in oil prices increase the growth rate of economic activity in the country. However, the effect is short and within one year falls back to the standard level.

Studying the effects of oil prices and real exchange rates on Russian economy between 1995-2002 Rautava (2004) discovered that both the oil prices and the real exchange rate have an immense impact on the economy. Permanent increase (decrease) of 10 percent in oil prices resulted to a 2,2 percent increase (decrease) of the GDP growth level and appreciation (depreciation) of 10 percent of the ruble led to 2,7 percent decline (growth) of the GDP level in the long run. Benedictow et al. (2013) argue that there could also be excellent growth potential for the Russian economy without rising oil prices. However, pointing out that the growth rate would not be as high as with the support of the increasing oil prices.

Ito (2009) argues that the impact of the monetary shocks, as a consequence of the risen oil prices, actually have a more significant negative impact on the GDP growth than the positive impact of the increased oil price. He found that between 1997-2007 a one percent increase in oil prices increased the real GDP growth by 0,25 percent and a 0,36 percent increase to inflation rate over the corresponding 12 quarters. The monetary shock on the market through the interest rates had an immediate -0,52 percent impact on the real GDP growth rate.

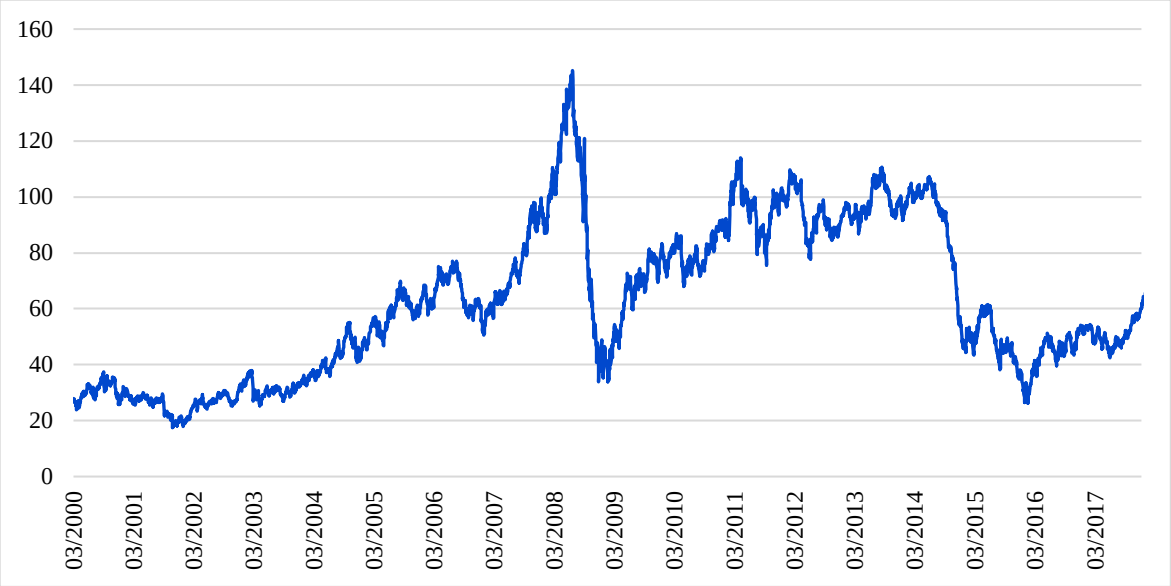

Figure 3 Evolution of Crude oil prices USD/bbl. Source: Yahoo Finance (2020)

The evolution of oil prices can be seen in Figure 3. The rapid growth period from the beginning of the century until mid-2008 is evident. The impact of the global financial crisis led the oil prices to drop dramatically, which can be seen as a spike in Figure 3. From early 2011 until June 2014, the global oil prices had remained relatively stable, averaging around $110 per barrel. However mid-2014 the prices started falling sharply, averaging $50 per barrel in 2015 and reaching a low of $29 in January 2016 (Ellwanger, Sawatzky and Zmitrowicz 2017).

The vast increase of oil production by the US had been largely offset by the decline of supply by the Middle East and North Africa until 2014. However, in 2014, Iraq increased its supply to a record high and the Libyan supply partially resumed, leading to an oversupply in the global oil market. Unlike in the past OPEC countries were reluctant to adapt their production to constrain the global oil supply. The rapid oversupply in the oil market led to one of the most extensive supply-driven price corrections in recent history. (World Bank 2014a) Since the price crash, the prices have stayed low in comparison with the prices prior June 2014.

2.2 Impact of the Western sanctions and counter-sanctions

Sanctions are commonly used as an instrument in international disputes. Nevertheless, in the academic literature, the effectiveness of the sanctions is often questioned (Lacy and Niou 2004). Hufbauer, Schott and Elliott (1990) state that in the majority of the cases sanctions are not effective and that the effectiveness of the sanctions often depends on goals set and policies used to pressure the counterparty. Whang (2010) suggests that the relationship between the parties involved with the sanctions have a significant effect on the success rate. Non-ally countries are much more resistant and do not comply as easily as a political ally. Kirshner (1997) argues that instead of concentrating on the success rate on the use of economic sanctions, the focus should be on which instances imposing sanctions is the correct policy and how to introduce the tactics effectively.

Governments use sanctions in order to carry out their foreign policy goals. For example to weaken (strengthen) other countries leadership or allies, effect on the political system or foreign policies of another country, change the capabilities of another country, promote an ideology, maintain or acquire allies, moderate or stop the violence of war, change the growth rate or economic system of another country, alter the tariff policies or to access (deny) the goods and services of another country, speed (slow) the economic recovery of another country from a war or effect other countries economic welfare (Baldwin 1985).

The actions of Russia, threatening the sovereignty and territorial integrity of Ukraine and the illegal annexation of Crimea in 2014, led the Western countries to take diplomatic measures to pressure Russia. As a response to the annexation of Crimea, the G7 countries announced their withdrawal from the G8 Summit that was planned to be held in Sochi, Russia in 2014. Instead, the Summit was held in Brussels, and Russia's membership of the group was suspended. (Debaere 2017) The negotiations of Russia joining the OECD and the International Energy Agency (IEA) were, as well, suspended. Since the measures that were taken proved out not to be efficient in deescalating the situation in Eastern Ukraine, more severe methods were introduced. (Tyll, Pernica and Arltova 2018)

At the end of March 2014, The EU, US and many of their partner countries including Canada, Australia, Japan, Norway and Switzerland imposed certain Russian citizens and

entities under economic and financial sanctions. The first round of sanctions included travel restrictions, asset freezes prohibiting business dealings with certain organisations and individuals. Also, all goods originating from Crimea or Sevastopol were placed under an import ban. To escalate the restrictive measures on Russia, the US introducing the first sectoral sanctions on July 16, 2014, just a day before the downing of the Malaysian Airlines flight MH-17 (Welt, Archick, Nelson and Rennack 2020). After the incident, the restrictive measures were, as well, increased significantly by the EU, adding specific economic sectors under the sanctions. (Korhonen et al. 2018). The EU announced on July 29, 2014, to limit the access of Russian state-owned financial institutions to EU capital markets, ban exports of dual-use goods, restrain arms trade and reduce access to sensitive technologies especially the oil sector. On September 11, 2014, the EU and US introduced reinforcing measures against Russia by broadening the sanctions, prohibiting EU nationals from providing loans to five state-owned Russian banks, as well as trading on instruments which maturity surpasses 30 days issued by the banks. Same restrictions were introduced to three energy companies and three defence companies. The economic sanctions, asset freezes and travel bans are reviewed every six months, requiring all of the 28 EU member countries approval of the measures for continual. (European council 2014a) The EU has continued to extend the sanctions against Russia; the latest extension was announced on March 13, 2020. The restrictive measures include 175 persons and 44 entities. (European Council 2020b)

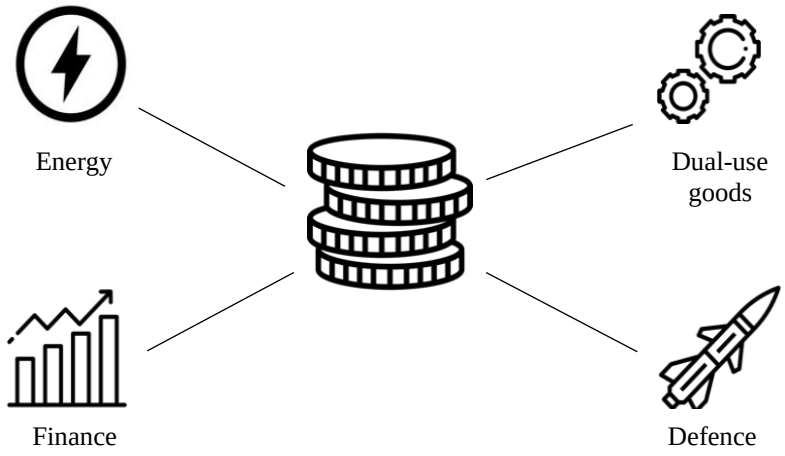

Figure 4 Sectors affected by the sanctions on Russia

The EU and Russia have a significant trade partnership that has been directed by a Partnership and Cooperation agreement since 1997 and renewed yearly from 2007. However, the European council decided to suspend the agreement talks in 2014 (Szczepanski 2015). In 2013, Russia accounted for 7,7 percent of total EU exports, being the fourth largest trading partner. The same year the EU was the most important export market for Russia with 42,4 percent of total exports being delivered the EU countries (Fritz et al., 2017) The main imports from the EU to Russia are transport equipment, chemicals, electrical good, medicines, agricultural products and machinery. Russia exports to EU have primarily consisted of mineral fuels, amounting 74,9 percent of total exports in 2014 (Szczepanski 2015).

With substantial ties to Russia trade, imposing sectoral sanctions on Russia raised concerns amongst the European leaders, on how the sanctions would affect the economies of the EU member countries. (Welt et al. 2020) Thus some compromises were made between the EU member countries to limit the effects of the sanctions on the member countries. For example, from the energy sector, only oil imports were set under the restrictions, exempting the gas sector, since many of the EU member countries are reliant on the gas supplies from Russia. Also, subsidiaries of blacklisted Russian banks in at least seven EU member countries were exempt from sanctions. (Szczepanski 2015)

The Russian government responded quickly to the sanction imposed by the Western countries in order to save its creditability among the Russian public. (Tyll et al. 2018) Poultry products, beef and pork, milk and milk products, fish, fruits and vegetables were barred from being imported into Russia from the US, EU, Australia, Norway, Albania, Montenegro, Iceland, Liechtenstein, Ukraine and Norway. The counter-sanctions represented a strong reaction from Russia, as the EU had been the biggest supplier of agri-food products, and Russia was the second-largest imported of the EU agri-food products. (Fritz et al., 2017) The counter-sanctions had an immediate negative impact on the living standards of Russian citizens as the country was heavily reliant on the food imports.

The overall trade between Russia and the EU had reduced from €326 billion in 2013 to €209 billion in 2015 (Giumelli 2017). During the same period, the Russian international reserves decreased by around one-third. As budget deficit got, larger much of the government

spending was covered with the international reserves. The European Commission's estimate that in 2014 the total financial impact of the sanctions and counter-sanctions to have been 40 billion euros and in 2015, a total of 50 billion euros (Szczepanski 2015). Shirov et al. (2015) estimated that the direct and indirect negative impact of the sanctions could have potentially reached 8-10 percent of the Russian GDP. However, the full impact of the sanctions is challenging to differentiate from the effect of the fluctuating oil prices on the economy.

Wang (2015) analysed the domestic and diplomatic impact of the Crimean crisis on Russia. She acknowledges the severe economic impact on Russia but states that the Crimean crisis has helped President Putin to raise the nationalism and patriotism among Russians. President Putin's support levels have risen sharply after the annexation of Crimea, surging 18 percent from the previous year in 2014, reaching 80 percent in total. The sanctions had no impact on Russians position in Ukraine due to the strong political interest it has in the country. In the result of the weakened relations with the Western countries, Russia shifted its diplomatic strategy towards East in an attempt to improve its relations with China, Vietnam, India and North Korea.

2.3 Impact of the declined oil prices and sanction on the Russian ruble

The Central Bank of Russia implemented a managed floating exchange rate regime since 1999. The foreign exchange rate policy allowed the central bank to level the influence of external conditions on the Russian financial markets. In 2005, the central bank presented the US dollar and euro basket as the operational indicator for the Russian exchange rate policy. The aim of the dual-currency basket was again to smooth the ruble exchange rate volatility against other major currencies. The value of the currency basket stayed stable during 2005-2008, due to the increasing weight of the euro. In February 2007, the currency basket was fixed at 0.45 euros and 0.55 US dollars. The global economic crisis between 2008-2009 pushed the central bank to modify its exchange rate policy framework. The central bank focused on moderating the depreciation of the ruble by allowing gradual depreciation of the ruble by widening the dual-currency band. Simultaneously the domestic foreign exchange market was intervened by the central bank, and the interest rates raised steadily to ease the depreciation and limit the capital outflow. A fixed band for the ruble value of the dual-

currency basket was announced in January 2009 with the upper limit set at 41 and lower limit set at 26 rubles, and in February 2009 a floating operational band was set at 2 rubles. The fixed band for the ruble value was later abandoned by the central bank in October 2010. (Bank of Russia 2020a; Bank for International Settlements 2020)

Between October 2010 to November 2014, the exchange rate policy was steered under the managed floating exchange rate system. The flexibility of the ruble was steadily increased, as the operational band was widened to 7 rubles in July 2012 and again in August 2014 the band was widened to 9 rubles. The steady shift to a more flexible ruble exchange rate helped the economic agents to gradually adapt to the increased level of volatility in the ruble's exchange rate. The exchange rate policy mechanism was ended by the Central Bank of Russia in November 2014 by removing the acceptable range of the dual-currency basket ruble value and the regular interventions in an attempt to stabilise the exchange rate. However, the central bank stated that it would intervene in the currency markets if the ruble exchange rate would threaten the financial stability in Russia. (Bank of Russia 2020a)

The Russian central bank rationalised the decision to switch to the floating exchange rate at the end of 2014 by stating that the floating exchange rate stabilises the economy naturally and thus is the key advantage over the managed exchange rate. As an example, the central bank mentioned the impact of the oil prices and the negative correlation between the oil prices and the foreign exchange rate of the ruble. As the prices decline, the ruble depreciates which boosts the exports and promotes import substitution in the country. On the other hand, when the oil prices grow the ruble strengthens, preventing the economy from overheating. (Bank of Russia 2020b)

The relationship between the oil prices and the USD/RUB exchange rate from 2012 until 2017 can be seen in Figure 5. It can be noticed that the exchange rate remained relatively flat before the shift to floating exchange rate. The decision to switch to the floating exchange rate came in the middle of the plummeting oil prices which can be seen as a sharp rise of the USD/RUB exchange rate in Figure 5. at the end of 2014. Tyll et al. (2018) studied the impact of the economic sanction on the Russian economy and the USD/RUB exchange rate finding that the exchange rate has almost an immediate reaction to any oil price shifts. The strong negative correlation can also be noticed on the figure. Dreger, Kholodilin, Ulbricht and

Fidrmuc (2016) found similar results claiming that the fluctuations in the oil prices, largely explain the development of the ruble. In their research, they also examined the influence of the sanction on the ruble exchange rate, stating that the strong deprecation of the ruble began from the conflict between Russia and Ukraine. However, the sanctions did not have an essential influence on the ruble value but rather the falling oil prices can largely explain the depreciation of the ruble.

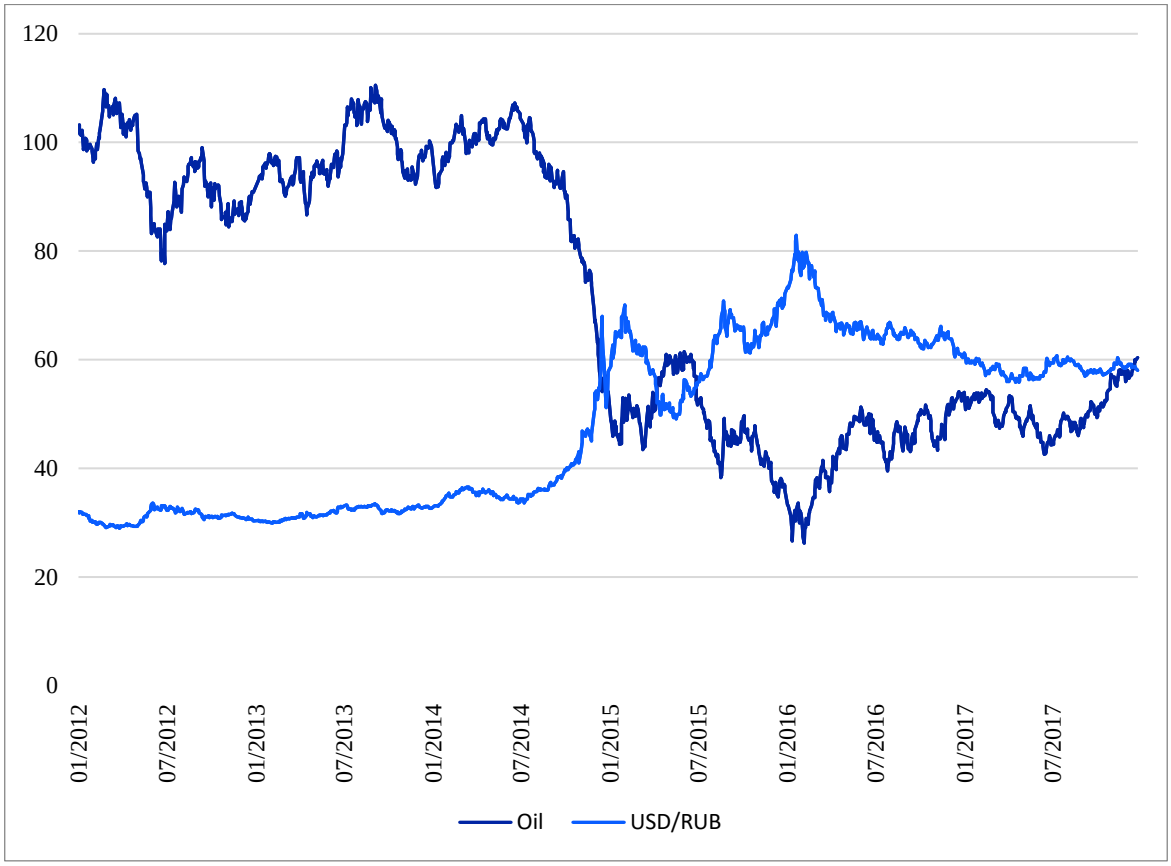

Figure 5 Crude oil price and USD/RUB development between 2012-2017. Source: Yahoo Finance

By the end of 2014, Russia was facing a currency crisis; a situation where the devaluation is caused by a speculative attack on the exchange rates, a rapid rise of interest rates or a situation where a large amount of international reserves is required to protect the national currency. The value of the ruble against the U.S dollar was crashing throughout the year. At worst, the ruble had diminished 108 percent of its value against the U.S dollar compared to the beginning of 2014. The central bank and the Russian government were able to stabilise the exchange rate for a short period by the end of 2014. However, soon after the ruble

continued to depreciate throughout the first quarter of 2015, reaching 69.66 RUB per USD on March 3, 2015, surpassing the absolute maximum of 2014 by 2.77 percent. (Rodionov, Pshenichnikov and Zherebov 2015)

2.4 The development of the Russian stock exchanges

The collapse of the Soviet Union created an environment for the establishment of the modern Russian stock exchange. Government assets were largely privatized, joint-stock companies and private companies were legalized driving the development forward. The first centralized exchange was founded in 1995, with the opening of the Russian Trading System (RTS) which introduced a wider variety of financial instruments to the Russian market. Companies were quickly seeking listing in Russia, by 1997 over 300 companies listed on the RTS and approximately 170 listed on MICEX. The stock market capitalization of RTS grew from $2,7 billion in 1995 to $134.2 billion in 1997. (Kuznetsova, Kuznetsov and Mirkin 2011)

The Asian financial crisis in July 1998 sparked the global commodity prices to fall sharply, affecting the Russian economy, which led to the default of the GKOs in August 1998. Government bonds accounted for around 85 percent of the capital market turnover. Foreign capital started to flow out from Russia, leading the stock market to collapse. On October 1998 the RTS index had fallen 5.8 times from the year before, and by the end of the year from 447 listed companies, there were only 106 that had survived the downfall. The market crash in 1998 had a significant impact on the Russian companies and stock markets. Plenty of Russian companies began to list on the more established foreign markets instead of their home market, because of the unpredictable nature of the Russian securities exchanges, which led a large number of Russian companies to list Depositary Receipts (DRs) on the LSE and the US securities markets. (Kuznetsova et al. 2011)

Until 2003, the US OTC used to be main market for Russian companies to list their shares. However, the US markets lost its position among the Russian companies, and only a handful of companies have decided to list on the US markets since. London began to draw more Russian companies becoming the main cross-listing destination for the Russian companies. (Wójcik 2011, 62) In 2011, the Russian companies accounted for 26 percent of all the foreign

companies listed in the UK markets, making the Russian companies a single largest group in the GDR sector by a clear margin (Peng and Su 2014)

With the strongest and largest companies surviving the market fall, the Russian securities market naturally became more stable. The stock market saw a quick recovery from the market crash, with the help of rapid growth of global oil prices and the devaluated value of the ruble that made the Russian companies more competitive in the global markets. The Russian markets grew aggressively during the bull market by reaching annually 30-40 percent growth rate between 2005-2007. The markets remained highly volatile, offering investors the excellent potential for high returns, attracting back foreign investors. By 2006 the RTS index had grown around 40 times, and the turnover had increased 55 times from the crisis period. The Russian stock exchanges retained their position as a leading market for the Russian companies with a growing trust from the companies. (Kuznetsova et al. 2011)

The Russian stock market faced yet another crisis at the end of 2008. Even though it was widely believed in Russia that the market was decoupled from the global markets, the 2008 financial crisis spread to Russia. The global oil prices collapsed, leading to the international investors to withdraw capital out from Russia. The RTS index has been closely following the price development of global oil prices since the beginning of the century. When the oil price plummeted at the end of 2008 the Russian stock markets followed by crashing down. By September the RTS index had fallen by almost 54 percent and over 70 percent of combined trading on Russian markets diminished. The market crash led MICEX and RTS to suspended trading on the exchanges for three consecutive days in mid-September, and on October 6, 2008, the Russian stock market faced the worst single-day drop with over 18 percent fall. The Russian securities market was one of the most severely impacted markets in the world. (Kudrin and Gurvich 2015)

In December 2011, the two major Russian securities exchanges MICEX and RTS merged into a single corporation called OJSC MICEX-RTS. The combined trading volume of merged exchanges reached USD 10,1 trillion by the end of the year, ranking the MICEX-RTS among the top 20 largest exchanges in the world. Also, making it the largest securities market in the Eastern-Europe. (Moscow Exchange, 2020)

The significance of the global oil prices and the foreign exchange rate on the performance of the Russian securities market is widely recognized in the academic literature (see, e.g. Goriaev and Zabotkin 2006; Fedorova and Pankratov, 2010; Ankudinov, Ibragimov and Lebedev, 2017; Kuznetsova et al. 2011; Hoffmann and Neuenkirch, 2017) Goriaev and Zabotkin (2006) states that in addition to the oil prices, also corporate governance, political risk and exchange rates have a significant role on stock returns in Russia. Kuznetsova et al. (2011) describe the Russian stock market as a large emerging market with multiple fundamental obstacles preventing substantial growth and stability. They claim the market is lacking modern investment opportunities, suffer high price volatility, has a shortage of diversification possibilities and a weak domestic market.

The share of state-owned enterprises (SOE) in the Russian stock market is relatively high compared to the rest of the world. In 2012, the SOEs accounted for 32,7 percent of the market capitalization on the Russian stock market. Only the Czech Republic with 45,5 percent and China with 42,9 percent had a higher SOE capitalization rate while the world average the same year was approximately 10,5 percent. (Abramov, Radygin and Chernova 2017) Kowalski, Büge, Egeland and Sztajerowska (2013) found that from the top ten best-performing companies in Russia, the SMOs accounted for 81 percent. Again, only the United Arab Emirates and China had a higher rate of SOE in the top top-performing companies.

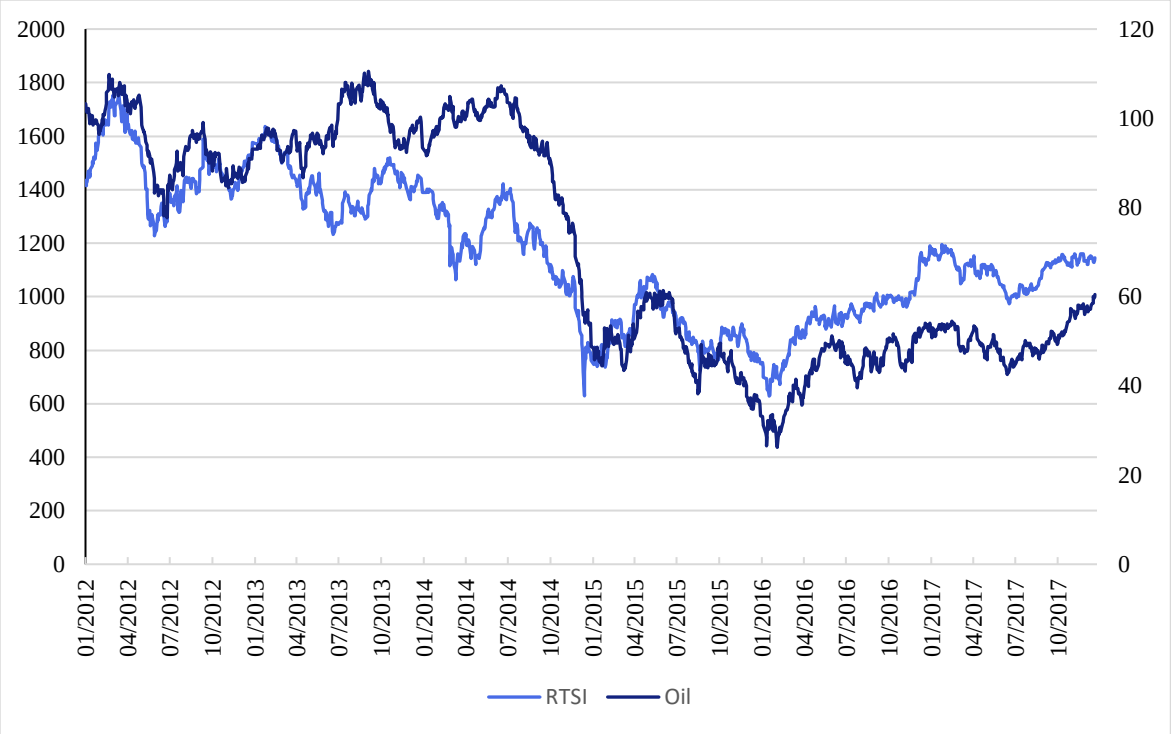

Figure 6 Crude oil price and RTSI development between 2012-2017 Source: Yahoo Finance

The relationship between the oil prices and the RTSI can be observed from Figure 6. It can be noted that the index reflects the movements in oil prices closely. From the beginning of 2012 until mid-2014, the index displays substantial volatility, and several spikes can be noted throughout the time period. The implementation of the first sanction can be seen as a sharp fall in the index price while the oil prices were on a positive trend. After the initial shock, the index nearly reached the levels prior to the sanctions. Nonetheless, the global oil glut in late-2014 led the oil prices to drop drastically, leading the RTS index to plummet with the oil prices. Since the significant drop, the correlation between oil prices and the RTS seems even stronger. The signs of economic recovery are visible by the end of 2016, with a sharp rise in the index value.

3. THEORY AND LITERARY REVIEW

This chapter first introduces a theoretical background and past academic literature around the relationship of the financial and macroeconomic variables with the stock market. After that, investor herding behaviour is explained with the support of prior empirical studies on the subject. Lastly, the concept of cross-listing is discussed and presented together with the motives to cross-listing.

3.1 Relationship between financial ratios and stock market valuation

Financial ratios are widely used to evaluate the performance and financial condition of a company. The effectiveness of financial ratios has been widely validated in empirical studies (Chen and Shimerda 1981). They are commonly recognized as being a precise method to evaluate the investment potential of a firm and allowing to gain insight on the company liquidity, liabilities and capability to generate a return on its assets. (Lai and Cho 2016) The statistical relationship between the stock returns and financial ratios has been a common area of research as the financial ratios are seen beneficial in forecasting the future rates of returns (Barnes 1987). Based on a large number of studies, Fama (1991) states that stock prices adjust proficiently to company-specific information.

Trejo Pech, Noguera and White (2015) analysed the relationship between the commonly used financial ratios utilized by equity analyst in Mexico and the stock returns. They discovered that the various financial ratios predict the 1-year stock returns; however, the financial ratios could not predict the two-year stock returns. The study included different financial ratios measuring profitability and margins, leverage and debt management, valuation and multiples, cash flow in addition to other variables (e.g. earnings per share and dividends per share). Babi (2015) found a significant relationship between earnings per share and the stock returns from companies listed on the Tehran stock exchange between 2008-2013. He also discovered that solvency and credit risk had a significant negative impact on the relationship between earning and returns.

Allozi and Obeidat (2016) analysed the relationship between the stock returns and financial indicators on manufacturing companies listed on the Amman stock exchange between 2001-2011. The study included eight financial indicators, five profitability and three leverage measures. Net Profit margin (NMP), Return on Asset (ROA) Return on Equity (ROE) and Earnings per Share (EPS) were used to measure the company profitability. Debt Ratio (DR), Debt to Equity Ratio (DER) and Interest Coverage Ratio (CR) to measure the leverage rate. The study revealed that ROE, ROA, EPS and GPM had a significant positive relationship with the stock returns during the observation period. None of the leverage indicators had an effect on the stock returns. Takamatsu and Lopes-Fávero (2019) found similar results by analysing the impact of accounting data in emerging countries. They state that higher profitability is linked with superior stock returns in the emerging markets.

3.2 Relationship between macroeconomic variables and stock market valuation

A financially healthy micro-level contributes to building a financially secure macro level, and on the other hand, favourable development of the macroeconomic variables helps the companies to function well. Thus it is crucial to maintain this financial equilibrium in order to grow and maintain the economic wellbeing. Globalization has made the economic equilibrium a world-wide problem as one nations financial issues can spread and impact the world's economy (Gutu, Strachinaru, Strachinaru and Ilie 2015).

The relationship between macroeconomic variables and stock prices has been widely covered in the academic literature, under the general assumption that the changes in the macroeconomic variables influence the stock returns through the impact on discount rates and future cash flows. (Muradoglu, Taskin and Bigan 2000) Macroeconomic variables such as industrial production, inflation rate, exchange rates, oil prices and interest rates have been often used to explain the relationship with the stock returns. The empirical studies on the relationship between the economic variables and markets had mainly concentrated on developed countries (see, e.g. Fama and Schwert 1977; Kaneko and Lee 1995; Chen, Roll and Ross 1986; Hamao 1988). However, there is an increasing number of studies conducted on emerging markets (see, e.g. Pal and Mittal 2011; Khandelwal 2018; Muradoglu et al. 2000).

Empirical studies provide evidence supporting the link between economic variables and stock returns. It has been found that the exchange rates impact the stock market through trade effect, as the domestic currency devaluates it increases the exports, provided that the demand for export goods is elastic, leading to the cash flows to grow and thus increases the stock prices. Changes in inflation are expected to affect the nominal risk-free rate and therefore impact the discount rates used in asset valuation. The co-movement of the stock prices and inflation is seen as more controversial. (Muradoglu et al. 2000) Though, the relationship has been found to be negative between inflation and the stock returns in a number of empirical studies (see, e.g. Pal and Mittal 2011; Fama and Schwert. 1977; Chen et al. 1986). Similar to the inflation rates, the nominal interest rates are as well expected to have a negative relationship with the stock prices. Geske and Roll. (1983) argue that measuring the co-movement between the short-term interest rates or unanticipated inflation with the stock returns are two ways to measure the same thing.

All company stock returns; however, do not react the same way to the changes in the economic indicators as the company characteristics affect the results. Maio (2014) examined further the impact of macroeconomic variables on stock returns by observing, whether small and value stocks have different effect to the changes in Federal Fund's rate policies imposed by the Federal Reserve bank, impacting the short-term interest rate, economic growth, employment rate and inflation rate. The results showed that small companies are significantly more impacted by the changes in the macroeconomic variables compared to large companies. Also, growth stocks are more impacted by the macroeconomic indicators compared to values stocks suggesting a negative correlation between inflation rate and growth stock and oppositely, positive for the value stocks.

3.3 Herding theory

During the past three decades, academic literature on herd-like behaviour has increased dramatically, studying the effects on the financial markets. The investor behaviour is described to be “animal-like” resembling lemmings imitative behaviour. Market participants are seen to participate in nonrational herd behaviour by some researchers. (Avery and Zemsky 1998) Hwang and Salmon (2004) describe herding as investors decision to rather imitate the decisions of others than to follow their assumptions and information of the

markets. Lux (1995) notes that aggressive self-reinforcing reactions of speculative investors on slight movements of assets value from the equilibrium cause undervaluation or overvaluation. He recognizes numerous microeconomic factors explaining the herd-like behaviour of investors. First, investors might truly behave illogically when making decisions. Second, traders could be trying to draw information from other investors behaviour which can be seen as contagion on the market. Last, the trader's reputation considerations can make an educated investor follow others. Some researchers argue that herd-like behaviour might be coincidental due to investors using the same information to make decisions, or the resembling actions might be incidental (Drehmann and Oechssler 2004).

Balcılar, Demirer and Ulussever (2017) studied the effects of the oil market on herding behaviour in emerging countries. He used the Markov switching time-varying parameter (MS-TVP) herding model to study publicly listed stock companies from Saudi Arabia, United Arab Emirates, Kuwait and Qatar between 2004-2014. The research considered time-variation in the level of herding, revealing dynamic pattern between calm and volatile market periods on herding and anti-herding behaviour. The results showed that during the volatile market periods, investors displayed herding behaviour, but the oil market returns and volatility did not correlate. The author did find a correlation between speculative oil market action and anti-herding behaviour in the stock markets.

According to Bowe and Domuta (2004) study that examined herding behaviour in the Jakarta stock market during the Asian financial crisis in 1997, foreign investors are more prone to herd-like behaviour compared to local investors at all times. The intensity of the head-like behaviour increased slightly during the financial crisis compared to pre- and after the crisis.

3.4 Cross-listing

The world’s capital markets have been immensely impacted by the increased level of globalization since 1980. This transition has been primarily driven by companies decision to cross-list on the foreign markets. (Ghadhab and Hellara 2015) Multiple benefits can motivate companies to pursue a listing on a foreign securities exchange. Such benefits can be for companies based on small capital markets to widen the investor base, growing demand and increase the liquidity of their stock. As well as improving the visibility and credibility

of the company in the chosen market area. (Saudagaran 1988) Companies from emerging markets have been listing their shares on more established markets like the US, the UK and Luxembourg for decades. Listing in more regulated markets offers more protection for the investors, as companies are required to follow the legal environment and disclosure all the essential information, which is vital for the investors. The terms foreign-listed and cross-listed are often used interchangeably. Although the term foreign-listed refers to corporations that's headquarter are in a different country than where the company's stocks are listed. However, it is unusual for a foreign-listed company not have its stocks to be traded in more than one exchange market. (Wójcik and Burger 2010)

One of the first studies on the motives for companies to list on foreign securities exchanges was conducted by Saudagaran (1988). He included in his research 481 multinational corporations from which 223 were listed on foreign markets, and 258 were not listed abroad. Examining the correlations between the company's relative size to the domestic capital market, the proportion of the revenues coming from foreign countries, the percentage of long-lived assets invested in a foreign country and the relative number of people employed in foreign subsidiaries. Finding that size, industry and nationality of a company influences the decision for a company to list on a foreign market. Also, companies that are more reliant on foreign customers and market are more likely to list abroad. He did not find a significant correlation found between the proportion of assets and employees in a foreign country and the decision to list in a foreign stock exchange. The results indicate that companies seeking to access broader capital markets or gain better visibility in foreign markets are more likely to list on foreign stock markets.

The most common way to list on a foreign exchange market is to use DRs. They are negotiable US securities issued by an American depositary bank that usually represent a non-U.S. company's equity. DRs can be listed on some of the world's main stock exchanges and be traded freely in the international markets. They also can be exchanged to the company's domestic shares at any time, which ensures the price link between the domestic and foreign markets. (Bank of New York Mellon 2020)

There are several different types of DRs for different capital markets, as well as different classifications. The most common types of DRs are the American Depositary Receipts (ADRs) and Global Depositary Receipts (GDRs). ADRs are traded on the US stock markets

(NYSE, NASDAQ) or the over-the-counter (OTC) market, whereas GDRs are typically traded outside of the US, often listed on the London Stock Exchange (LSE) or the Luxemburg stock exchange. DRs also have two general classifications – sponsored and unsponsored. With sponsored DRs a deposit agreement is made between the issuer company and a depositary bank which issues the DR. Sponsored DRs give the possibility to raise capital on the US stock markets. There are three levels of sponsored DRs, the first level being the simplest way to access the US markets. Level one does not require the full U.S. Securities and Exchange Commission (SEC) registration but restricts trading to only OTC market. Levels two and three require full registration with the SEC, as well as mandatory disclosure and reporting standards. Companies with level two or three programs are able to list their DRs on a US securities exchange. DRs issued without a formal agreement between the depositary bank and a non-American company are called unsponsored. They can be listed by one or several depositary banks. (Bank of New York Mellon, 2020) Some stock exchanges also offer the option for the foreign companies to list their shares on the stock exchange directly, but this is a much more unusual approach.

The impact of cross-listing on stock value was studied by Korczak and Bohl (2005). Their study included 33 cross-listings from Central and Eastern European companies between 1995 and 2004. They included 100 trading days prior and 325 after the cross-listing to observe the stock price reaction, trading volume and the risk exposure around the announcement date. The results revealed a significant and sharp increase in the market value of the cross-listing announcement. However, they found that the market value increase was stronger for companies with small stock markets. The cross-listing had a positive effect on the trading volume in the domestic stock exchange, with the increased credibility and information available. The study also shows that the company stock price adjusted faster to any changes in the fundamentals, which increased pricing efficiency.

A large number of studies examine the impact of cross-listing on the companies systematic risk. Karolyi (1998) surveyed studies on the motivations for companies to cross-list, and how cross-listing effects liquidity and market risk. A common discovery in the studies is that the betas decrease or remain the same in the firms home market but increases in the host-market. Also, the majority of the studies found similar results as Korczak and Bohl (2005) that the liquidity increases due to cross-listing.

Khindanova and Khindanov (2014) examined the performance of Russian GDRs on the LSE between 2005 until 2011. Comparing the performance of 31 Russian GDRs with five different stock markets: Russian Morgan Stanley Capital International (MSCI) index, US (S&P500), UK (MSCI), and the emerging markets (MSCI and Bank of New York Mellon index of Emerging Markets ADRs). They used daily portfolio rebalancing and buy-and-hold investment strategies to assess the performance under different investment scenarios. Finding that under the daily portfolio rebalancing strategy, the Russian GDRs performed similar to all of the markets but in the long term underperformed the UK, US and the Emerging Markets. Using the buy-and-hold strategy, the GDRs were outperforming all the other markets beside Russian; however, in the long term ended up to underperform.

Wójcik and Burger (2010) focused on studying the characteristics of the companies from BRIC countries cross-listing on the US, UK and Luxembourg stock exchanges. Some of the common characteristics found in the cross-listing companies are that they come from capital-intensive, export-oriented and quickly growing industries and are typically geographically concentrated in the leading financial centres. Supporting Saudagaran's (1998) findings Wójcik and Burger (2010), also found a connection with companies choosing to list on a host market that has strong existing trade with their home market.

3.5 Market risk change during a financial crisis

A major contributor to this thesis is a research paper written by Chira and Marciniak (2014), studying the risk change on locally listed and cross-listed companies in Greece, Ireland, Italy, Spain and Portugal during the European crisis between 2010-2012. Their dataset includes 92 domestically listed companies and 64 cross-listed companies from NYSE, NASDAQ and OTC exchanges. The risk change comparison was made by comparing the pre-crisis betas and standard deviation values with the crisis period values. The findings showed that while systematic risk increased significantly for both locally- and cross-listed companies, the total risk increased on average by 31,1 percent for the local companies and 77,86 percent for the cross-listed companies. To further explain their findings, Chira and Marciniak (2014) utilized the accounting data to find if the company fundamentals would explain the change in the total risk between local and cross-listed companies. Their finding showed a significant negative relationship between the profitability measures (ROE, ROA) and liquidity measure (current ratio) in the local markets. The results indicated that the risk

change for the locally listed companies could be explained by the changes in the company fundamentals, but not for the cross-listed companies. They conclude that during the crisis period, the investors in the U.S market exchanges penalized companies in the crisis area. This finding supports the herd-like behaviour and contagion effect between the economically weak markets in Europe. The investors withdrew their investments from the crisis impacted area without an actual worsening of the companies financials.

3.6 The sanctions impact on the Russian stock market

Nivorozhkin and Castagneto-Gissey (2016) observed the effects of the 2014 sanctions on the co-movements of the Russian stock market and a large sample of global markets. Their main focus was to study whether the sanctions on Russia had financial contagion on the markets of countries that are reliant on trade with Russia. The sample data included 18 different stock markets outside of Russia, between November 30, 2007, to April 15 2015, of which eight emerging markets, five frontier markets and six developed markets. Utilizing a non-linear DCC MGARCH model to test the correlations between the markets, they found that the sanction led the Russian market to decouple 83 percent from the global markets. The decrease in the market return correlation was exceptionally high with France, the US and Germany, ranging between 75,5 to 84 percent. Unexpectedly they did not find an increased correlation of the Russian market with countries that are inherently linked with Russian trade. The only market that showed signs of contagion effect was Brazil, with a 55 percent increase in correlation with the Russian market. However, Nivorozhkin and Castagneto-Gissey (2016) note that the drop in global oil prices or a simultaneous idiosyncratic risk factor could be an explanatory factor in the increased correlation between the two markets.

Ankudinov et al. (2017) analysed the stock returns extreme movements and the heavy-tailedness in the Russian stock market before and after the Western sanctions. The study used hourly stock returns of the MICEX index and its sectoral component indices covering different industries in Russia between January 2010 until June 2016. Their findings show that for nearly for all the component, indices volatility increased during the sanction period. Utilizing the log-log rank-size regression, the point estimated were obtained for right tail left tail and for the total sample. The point estimates for the total sample varied between 2,5 and 3,2 indicating heavy-tailedness of the Russian stock market compared with developed and

some emerging countries. Ankudinov et al. (2017) however note that there is no direct evidence that the sanctions have influenced the increase of heavy-tailedness the results could have been impacted by increased country-specific risk caused by the Crimean crisis as well as the oil price fluctuations.

A recent study by Kim (2019) examined the short-term impact of the 2014 economic sanctions on the pricing of Russian GDRs on the LSE main market. The study included 21 cross-listed Russian companies that had GDRs traded on the London stock exchange 50 days prior to the first round of economic sanction imposed on Russia on March 17, 2014, and 50 days after the initial sanctions. The regression model included dummy variables to indicate whether the Russian government had ownership in the company and whether the board of directors included foreign nationals. The results showed increased volatility around the announcement date of the sanctions in both exchange markets, indicating increment in risk for the Russian GDRs. Though, the increase was more evident on the London listing compared to the domestic market, narrowing the spread between the two markets. Surprisingly the turnover by volume remained unchanged after the implementation of the sanctions in both markets indicating that the investors did not withdraw their capital from Russian securities in fear of the sanctions, but rather the risk associated with Russian GDRs was reassessed by the investors. There was no evidence that the Russian government's ownership in a company or foreign national in the board of directors would have impacted the pricing of the securities.

The presence of herding behaviour in the Moscow stock exchange between 2008-2015 was studied by Indārs, Savin and Lubloy (2019). They found that herding behaviour is more evident during negative market returns than positive on the Moscow stocks exchange. Herding behaviour among investors is more pronounced when important macroeconomic news is released. During turbulent market periods, the herding behaviour is solely driven by non-fundamental information. However, during the announcements of the sanctions, herding behaviour was driven by fundamental factors. During extreme increases in oil prices, the investors exhibit herding behaviour without any reference to the fundamentals, but Indārs et al. (2019) did not find evidence of any sort of herding behaviour during rapidly decreasing oil prices. Overall the investors on the Moscow stock exchange do not display herding behaviour.

4. DATA & METHODOLOGY

This study examines quantitatively the impact of the 2014-2016 recession period in Russia on the publicly listed Russian companies market risk levels. First, the data and the variables that have been chosen to conduct this study are introduced, and the data collection methods are shortly explained. In the second part, the methodologies applied in this study are described and explained why they have been chosen.

4.1 Data

The data sample consists of historical stock prices and company key financial indicators of publicly listed Russian companies traded on; MICEX-RTS, LSE, NASDAQ, NYSE and the OTC market between January 3, 2012, and December 31, 2017. The pre-recession period used in this study covers 27 months before the economic recession, starting from January 3, 2012, lasting until March 17, 2014. The recession period is recognized to have started from the implementation of the first round of sanctions by the Western countries on March 17, 2014, for the purposes of this study. The recession period is regarded to have ended December 31, 2016, for the purposes of this study. The World Bank states that the Russian economy started to show signs of recovery from the recession in the end of 2016. The World Bank set moderate recovery expectations for 2017, driven by the stable growth of the commodity exporters and importers together with the risen oil prices and increased macroeconomic stability. (World Bank 2017e). The year 2017 is included in the study to provide a comparison point and is considered as a post-recession period in this thesis. It was decided not to include years past 2017, due to the limitations of available data for several companies included in the dataset. Extending the observation period would have resulted in a decrease of the sample data even further.

The companies included in this study have been identified by conducting a search on the Amadeus database meeting the following criteria's: the company is registered in Russian Federation, the company is publicly listed, trading on MICEX, RTS, NYSE, NASDAQ, LSE or OTC, has available accounts between 2012-2017 and available financial data for the entire period. The Russian DRs were identified using the Bank of New York Mellon DR directory, which was compared with the LSE directory of Russian and CIS country GDRs. All

companies with missing stock prices were further eliminated from the sample. The cross-listed companies have been removed from the strictly local data sample, leaving only companies strictly domestic companies in the data set. The final sample for the strictly local data sample includes 42 companies. The adjusted daily close prices for the strictly locally listed companies have been retrieved from Datastream in USD. The cross-listed data sample includes 20 companies, of which 9 companies are listed on the LSE main market, and 11 companies are listed on the US markets. From the US sample, eight companies are traded on the OTC, two companies on the NYSE and one company on NASDAQ. For the cross-listed companies, the daily adjusted close prices were obtained from Yahoo Finance in USD.

Table 1 Number of companies included in the study by industry

	Local	**Cross-listed**
Utilities	19	1
Industrials	3	
Farm Products	2	
Freight & Logistics	2	
Oil & Gas	2	6
Telecom Services	1	2
Steel	1	5
Agricultural Inputs	1	1
Asset Management	1	
Auto Manufacturers	1	
Beverages—Wineries & Distilleries	1	
Biotechnology	1	
Confectioners	1	
Drug Manufacturers	1	
Other Precious Metals & Mining	1	1
Packaged Foods	1	
Real Estate	1	1
Speciality Chemicals	1	
Speciality Retail	1	1
Software		2

Almost half of all the strictly local companies included in the sample data set are utility companies, which includes energy production and distribution companies. Despite a large

number of utility companies in the dataset, a wide variety of industries are included in the study. Noticeably only two oil & gas companies are represented in the local company sample, a majority of the large oil companies are traded on the foreign markets and hence are included in the cross-listed companies data samples.

Table 2 Average annual turnover in USD between 2012-2017

	Local	**Cross-listed**
Annual average turnover	1,826,298	13,353,747

As seen in Table 2., there are substantial differences between the sizes of the companies between the locally listed and the cross-listed companies measured by the average annual turnover. The average annual turnover for the locally listed companies was $1,826,298 between 2012-2017, as were, for the cross-listed companies it was $13,353,747 which is consistent with Saudagaran (1988) observation that typically large companies tend to list their shares on foreign markets.

For the beta calculations, the RTS index is used to represent the Russian domestic market, FTSE100 is used as a benchmark for the companies listed on LSE and S&P500 for the companies traded on the US markets. The RTSI and FTSE100 daily USD index prices have been retrieved from Datastream. The S&P500 daily index prices have been obtained from Yahoo Finance. RTS index includes the most liquid Russian stocks on the Moscow exchange and the oil & gas sector is allocated at 45 percent on the index, limiting the direct impact of declined oil prices on the index.

Figure 7. presents the daily logarithmic returns for the RTS index between January 2012 and December 2017. Compared with the FTSE100 (Figure 8.) and S&P500 (Figure 9.), the RTSI is much more volatile throughout the observation period. Few sharp spikes can be notices on the figure, one close to the sanctions announcement date and another one at the end of 2014. On March 3, 2014, just a few days after the Russian parliament had agreed to use military force in Ukraine to protect the Russian interest, RTSI plunged by -12.8 percent.

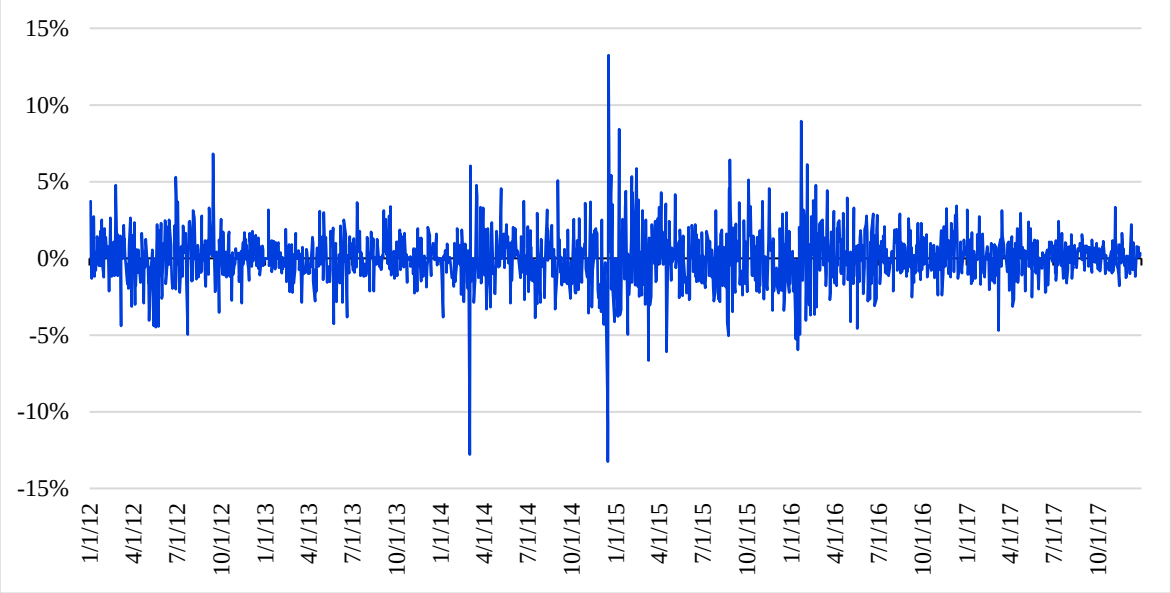

Figure 7. RTSI logarithmic daily returns in USD 2012-2017 source: Datastream

The second significant spike was caused by the Central bank's announcement to raise the interest rates to 17 percent on December 15, 2014. The news led the RTSI to decrease 10.67 percent on December 15, 2014, and the next day the downfall continued with a 13,26 percent drop. (Herszenhorn and Irwing, 2014) On December 17, 2014, the Central bank, however, unveiled a support package to the banks which helped to contain the devaluation of the ruble and increased the investor confidence on the Russian stock market as the RTSI had a 13.25 percent increase.

On Figure 8. a strong spike can be notices in June 2016. The increased volatility in the FTSE100 was the result of the Brexit vote held on June 24, 2016. In which the UK decided to leave the European Union. The FTSE100 fell by more than 8 percent, however, the impact is stronger on the figure due to the simultaneous drop in the pounds value.

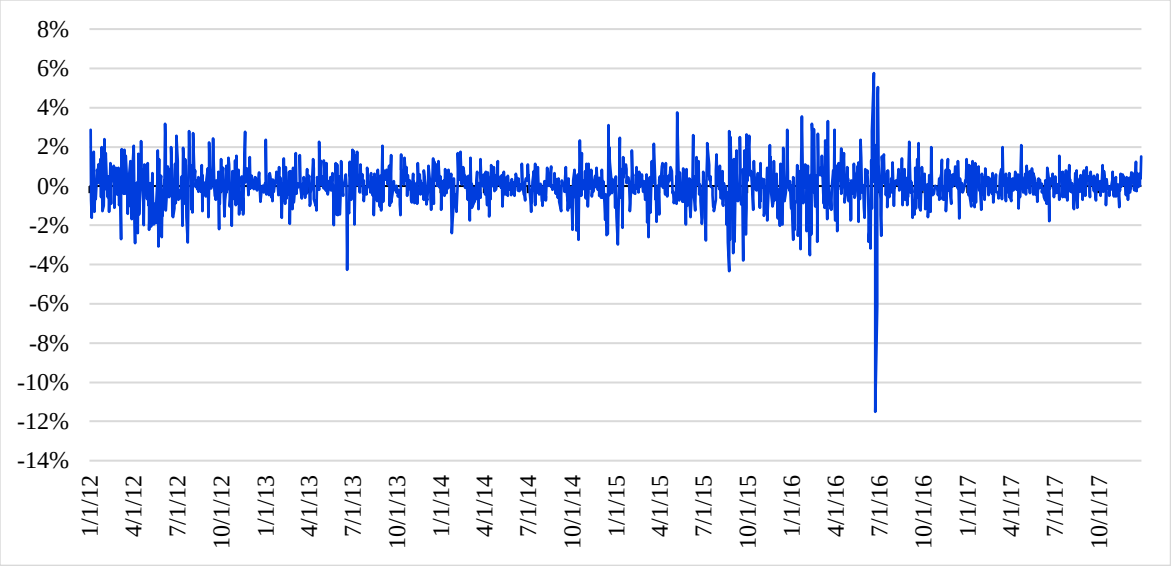

Figure 8. FTSE100 logarithmic daily returns in USD 2012-2017 source: Datastream

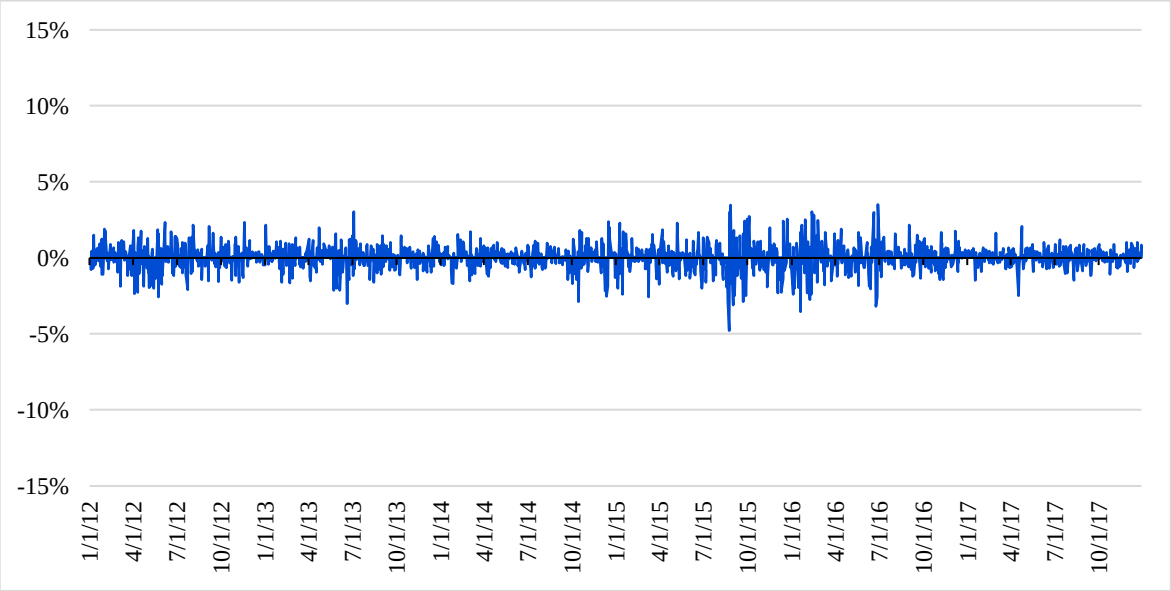

Figure 9. S&P500 logarithmic returns 2012-2017 source: Yahoo Finance

4.2 Methodology

In order to calculate beta and standard deviation for the stocks included in the study, the daily returns are calculated. Logarithmic returns have been chosen to be used in order to have normally distributed results enabling the use of standard statistical tests. The logarithmic returns have been calculated on the adjusted close prices, which takes into

account the dividend payments and applicable stock splits. The equation for the logarithmic returns can be seen in Equation 1.

$$R = \ln \frac{\mathrm{P}}{P_{t-1}} \quad (1)$$

Where R is the logarithmic return, P represents the price of the stock, and t is time.

Stock risk evaluation has been extensively researched in the academic literature. The total risk of a security is a construct of systematic risk which is related to the market and from specific risk, which is company-specific and does not relate with the market. The concept of measuring systematic risk using beta has a fundamental importance in practise and theory of finance and is used to measure the systematic risk of the sample companies in this thesis. (Baker, Rajaratnam and Flint 2016) Total risk is measured by using the standard deviation of the stocks logarithmic returns. Standard deviation measures the return dispersion in regards to the mean value of the returns and provides measurements regarding the stock's volatility.

Using the logarithmic returns of the company stocks and the relevant market index returns, the betas are calculated for the pre-recession, the recession and post-recession periods. The equation for the beta calculations can be found in Equation 2.

$$\beta = \frac{cov(R_i; R_m)}{var(R_m)} \quad (2)$$

Where β represents beta, cov(*R; M)* is the covariance between the market returns and stock returns and var(*M)* is the variance of the market return.

To measure the total risk of each company, the standard deviations are calculated for the time periods using the daily logarithmic returns with the following Equation 3.

$$\text{Std}=\sqrt{\frac{\sum_i^n=1\ (R_i-\overline{R_i})^2}{n-1}} \tag{3}$$

Where R_i is the value of the i^{th} point of the data set, $\bar{x}$ represents the mean value of the stock.

In order to test the significances of the changes between the time periods on the risk measures, the calculated betas and standard deviations are tested for normality using the Shapiro-Wilk test. The Shapiro-Wilk test was chosen, as it suits well to test a small sample size of less than 50 (Sen and Srivastava 2012, 105). The test statistic is given using Equation 4.

$$W = \frac{(\sum_i^n = 1\ a_i R_i)^2}{\sum_i^n = 1\ (R_i - \bar{R})^2} \tag{4}$$

Where R_i are ordered sample values, a_i are the constants produced from the covariances, variances and means of the sample from a normally distributed sample.

4.2.1 Panel regression

Panel data set consist of a combination of cross-sectional and time-series components, as the same cross-sectional units also called individuals i = 1,…,N, e.g. households, companies or countries are observed over time t = 1,..., T periods. Panel data is called either micro,- or macro panel depending on whether the cross-sectional unit consists of micro-units such as companies or macro units, for example countries. Panel data may be balanced, meaning that all the data observations are available for all time points or unbalanced if there are missing

observations in the data set. The mix of time series and cross-sectional components makes it possible to analyse intra-individual dynamics and inter-individual differences. (Das 2019)

Panel data possesses multiple advantages over cross-section or time-series data sets. First, typically panel data provides a vast amount of data points, consequently increasing the degrees of freedom compared to cross-section or time-series data. Second, panel data allows constructing of more realistic behavioural hypotheses. Third, the effects of the unobserved variables may be controlled when estimating a model as the information on intertemporal dynamics is included in the panel data set. Fourth, panel data provides micro-foundations for aggregate analysis. If the micro-units are heterogeneous, it can lead to the time-series properties of aggerate data to differ significantly from disaggregate data and therefore provide misleading results. Panel data, however, contains time-series observations for the cross-sectional individuals and thus can capture the heterogeneity issue. Last, in panel data, the central limit theorem can be used in a case where the cross-sectional units are independent to show that even for nonstationary series of the limiting distributions of many estimators remain asymptotically normal. (Das 2019)

A simple panel regression model can be seen in Equation 6. The random effects in the model are the unobservable heterogeneity terms u_i which are included in the v_{it} as seen in Equation 7.

$$y_{it} = \beta_1 + \beta_2 X_{2it} + \alpha_1 w_{1it} + v_{it} \tag{6}$$

Where y_{it} is the dependent variable, the constant term x_{1it} = 1, $\beta_2 X_{2it}$ represent one independent with variation across cross-section and time periods, w_{1it} is time-invariant and varies only across individuals. β_1, β_2 and α_1 are population parameters that do not have subscripts and are fixed across all time periods for all individuals. v_{it} is a combinations of two random error components defined in Equation 7.

$$v_{it} = u_i + e_{it} \tag{7}$$

Where u_i represents individual-specific random error component and e_{it} are unobserved individual and time-varying factors

Choosing the optimal estimation model for panel data possesses certain complications. The most typical issue using panel data is the endogeneity problem, which arises when the unobservable individual characteristics are correlated with the explanatory variables. In which case the OLS and random effects estimators are inconsistent. There are three different methods to deal with this issue, however, the most commonly used is the fixed effects estimator which eliminates the time-invariant variables and therefore removes the endogeneity problem. (Hill, Griffiths and Lim 2012, 640-645)

As mentioned before a crucial assumption in the random effects model is that the random error $v_{it} = u_i + e_{it}$ is not correlated with any of the individual variables. If this assumption is violated the least square and GLS estimators of the parameters in the random-effects model are biased and inconsistent. However, a key concept using panel data is that the parameters can be consistently estimated using the fixed effects model estimators. Hausman test can be used to test whether the error component u_i is correlated with any of the individual variables and hence test whether the random effects model can be used. The Hausman test compares the coefficient estimates between random-effects model and the fixed-effects model. The null hypotheses of the Hausman test is that the unique errors are not correlated with the regressors, and there is no difference between the random and fixed-effect models. In the case, the null hypothesis holds random effects model should be used. (Hill et al. 2012, 651-653)

In case the random error u_i = 0 for all the individuals, pooled OLS linear regression model is suitable to be used, as there is no correlation between sample individuals and no heterogeneity to take into account. The presence of heterogeneity can be tested by using the Breusch-Pagan Lagrange multiplier (LM) test where $H_0 : \sigma_u^2 = 0$ is tested versus the alternative $H_1 : \sigma_u^2 > 0$ hypotheses. If the null hypothesis is rejected, the random-effects model should be appropriate to be used as there are random individual disparities among the

sample members. If the null hypothesis holds a linear regression model, as seen in Equation 9. is appropriate to be used. (Hill et al. 2012, 651-652)

$$y_{it} = \beta_1 + \beta_2 X_{2it} + \alpha_1 w_{1it} + e_{it} \quad (9)$$

Where y_{it} represents the dependent variable, x_{1it} = 1, $\beta_2 X_{2it}$ is the independent with variation across cross-section and time periods, w_{1it} is time-invariant and varies only across individuals. β_1, β_2 and α_1 represents the population parameters that do not have subscripts and are fixed across all time periods for all individuals. e_{it} are the unobserved individual and time-varying factors.

The approach used in choosing the best estimator model for each regression can be found in Figure 10. As seen, first, the fixed and random effect models are run with beta and SD as the dependent variables together with all the independent variables. The coefficient estimates between the fixed effects and random effects model are then compared with each other using the Hausman test. In case the null hypothesis is rejected, the fixed effects model is used and alternatively if the null hypothesis holds the random-effects model is used.

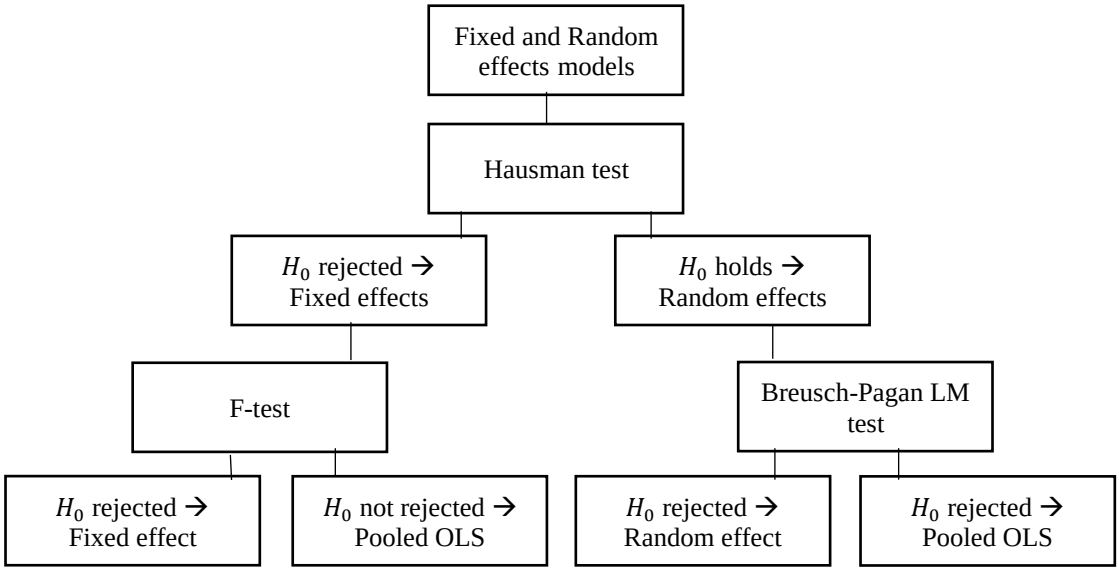

Figure 10 Approach for choosing the regression model.

4.3 Regression model

In order to test the relationship between the financial ratios indicators with the risk measures, the following regression function is used:

$$\beta\,(SD) = \alpha + B_1 CR + B_2 PM + B_3 ROE + B_4 ROA + B_5\, SIZE + B_6\, DURING + B_7\, POST + \varepsilon_{it}$$

Where, β is the beta, *SD* is the standard deviation, α represents the intercept, CR is the current rate, PM is the profit margin, ROE is the return on equity, ROA is the return on assets, $SIZE$ is the size of the company measured by the logarithmic average of turnover calculated for each period, *DURING* and *POST* are dummy variables indicating the recession and post-recession periods and ε_{it} is the error term.

For both, the strictly domestic and cross-listed companies the financial data has been retrieved in annual frequency between 2012-2017 from the Amadeus database in USD. Further, the average values have been calculated for each period; pre-, during-, and post-recession. The pre-recession period has been calculated by averaging data from 2012 and 2013, the recession period using 2014-2016 and the post-recession period includes the financial ratios from 2017.

5. RESULTS

In this chapter, the results of the risk change calculations are presented and evaluated. The average financial ratios are introduced by risk quartiles for both strictly domestic and cross-listed companies. Finally, the results of the panel regression analysis are presented and analysed. The statistical tests are performed by using Stata 16. software.

5.1 Risk analysis

The risk measures for each period have been tested for normal distribution using the Shapiro-Wilk test, finding that not all of the systematic risk measures are normally distributed across the periods. Therefore a non-parametric Wilcoxon signed-rank test is run in addition to parametric t-test to test the statistical significance of the change in the risk measures between the time periods.

The risk measure calculations for all three periods, together with the t-test and Wilcoxon sign-rank test values are presented in Table 3. The changes in both systematic and total risk have been calculated separately for the strictly domestic companies and cross-listed companies, between all periods. The systematic risk unexpectedly decreased for both strictly domestic and cross-listed companies across all the periods. For the strictly domestic companies the systematic risk decreased by only -1.18 percent during the recession period and -3.57 percent in the post-recession period; however, the changes in the systematic risk are not statistically non-significant for the strictly domestic companies. As mentioned before the RTS index experienced more volatility overall compared to the FTSE100 and S&P500, which may explain the insignificance of the systematic risk change for the strictly domestic companies. The systematic risk decreased on average for the cross-listed companies by -24.11 percent during the recession period. Both the t-test 3.79 and Wilcoxon sign-rank test 3.02 show that the systematic risk change is statistically significant at .01 significance level. The decrease of 8.23% during the post-recession period is, however, statistically insignificant.

The total risk of the cross-listed companies is on average, noticeably lower compared to the strictly domestic companies during all periods. As seen in Table 3., the pre-recession standard deviation for the cross-listed companies was 9.9 percent, as for the strictly domestic companies, it was 26.5 percent. The total risk increased for both types of companies during the recession period. However, the increase was slightly higher for the cross-listed companies compared to the strictly domestic companies. On average, the total risk increased for the strictly domestic companies by 67.9 percent, whereas, for the cross-listed companies by 70.7 percent. Both the t-test and Wilcoxon sign-rank test indicate that the risk increase is significant in both cases. On the other hand, during the post-recession period, the total risk decreased for both types of companies. The total risk on average decreased by -18.7 percent for the strictly domestic companies and by -40.8 percent for the cross-listed companies when compared to the recession period. Both tests indicate that the risk decrease is statistically significant for the strictly domestic and cross-listed companies. It is, however, important to note that the systematic risk, decreased significantly for the cross-listed companies in the recession and post-recession period, being evidently lower in the post-recession period compared to the pre-recession period.

The total risk declined considerably more for the cross-listed companies in the post-recession period, reaching its pre-recession levels. As for the strictly domestic companies despite the decrease in the total risk, it still remained significantly higher compared to the pre-recession period levels. A conclusion can be drawn that overall the recession period impacted the cross-listed companies significantly more than the strictly domestic companies.

Table 3. Changes in the risk measures between the pre-, recession and post-recession periods.

		Local	Cross-listed
Beta	**Pre-recession**	0.85	1.12
	During the recession	0.84	0.85
	Change % from the pre-recession	-1.18%	-24.11%
	t-test	0.21	3.79***
	Wilcoxon sign-rank test	0.11	3.02***
	Post-recession	0.81	0.78
	Change % from during-recession	-3.57%	-8.23%
	t-test	0.45	0.86
	Wilcoxon sign-rank test	0.76	0.71
SD	**Pre-recession**	26,5%	9.9%
	During the recession	44.5%	16.9%
	Change % from pre-recession	67.9%	70.7%
	t-test	6.86***	6.79***
	Wilcoxon sign-rank test	5.63***	3.92***
	Post-recession	36.2%	10.0%
	Change % from during-recession	-18.7%	-40.8%
	t-test	4.19***	6.58***
	Wilcoxon sign-rank test	4.79***	3.92***

*, ** and *** represent the significance level at 0.1 %, .05% and .01%.

Further, to investigate the risk change, the companies are divided into quartiles based on their underlying average risk measures from the entire observation period. The companies with the lowest risk measures belong in the Q1 and with the highest risk in the Q4. The average financial ratios for the entire sample period are calculated for each risk quartile. In an instance where the risk increase is conditioned by an unfavourable movement in the financial ratios, the change in risk perception for the companies can be assumed to have resulted from an actual worsening in the accounting data and thus are not associated with the sanctions and economic recession in Russia.

Table 4 Quartile statistics – average values by risk measures between 2012-2017

(a) Quartile statistics for domestic companies				
	Current ratio	Profit margin	ROE	ROA
Panel one: Total risk measured by standard deviation				
Q1 (low risk)	6.05	0.13	0.13	0.04
Q2	2.27	0.20	0.09	0.04
Q3	4.64	0.07	0.06	0.07
Q4 (high risk)	2.59	0.22	0.01	0.02
Panel two: Systematic risk as measured by beta				
Q1	2.20	0.16	0.17	0.08
Q2	6.21	0.15	0.13	0.08
Q3	3.46	0.25	0.02	0.01
Q4	4.15	0.04	-0.03	0.01
(b) Quartile statistics for cross-listed companies				
Panel one: Total risk measured by standard deviation				
Q1	2.01	0.43	0.27	0.12
Q2	2.51	0.21	0.25	0.09
Q3	2.46	0.25	0.13	0.07
Q4	1.21	0.32	-0.01	0.09
Panel two: Systematic risk as measured by beta				
Q1	1.92	0.33	0.09	0.09
Q2	2.38	0.27	0.20	0.13
Q3	2.43	0.29	0.16	0.08
Q4	1.47	0.32	0.19	0.08

The average values of the financial ratios by risk quartiles can be seen in Table 4. It appears that ROE is the only variable to have a linear relationship with the risk quartiles for both systematic and total risk. The relationship is visible for the strictly domestic companies and for cross-listed companies when measured by total risk. Also, ROA appears to be related to the risk measures; however, the relationship is not entirely linear as it is broken on several occasions. As for the other variables, the relationship between the risk measures and the underlying financial indicators is not evident, and on many occasions, the riskier companies have higher profitability ratios compared with less risky companies. The results indicate that the financial indicators do not explain the changes in the different risk quartiles. Overall, the strictly domestic companies appear to have, on average, higher liquidity ratio values and significantly lower profitability ratios compared to the cross-listed companies. Further, to examine the relationship between the risk measures and the financial indicators, panel regressions are run for the strictly domestic and cross-listed companies, including the pre-,

recession and post-recession periods. The size of the firms is included in the regression analysis, measured by the average turnover on each period.

5.2 Results from the regression analysis

The risk measures are regressed against the financial indicators, controlling for the firm size on each period. The regressions are run for both strictly local and cross-listed companies separately and also for both risk measures separately. In total, four different regressions are run; each regression includes the entire sample period. The best suiting regression model for each dataset has been chosen using the approach presented in Figure 10. The selected regression model is presented in Table 5. together with the Hausman test results. The data is adjusted for heteroskedasticity by using robust error terms. Pooled OLS was selected to be used in the regression for the strictly domestic companies with systematic risk as to the dependent variable. The null hypothesis for the Hausman test was not rejected at a .05 significance level; thus, the random-effects model was run. However, the result obtained from the regression showed no individual-specific random error components in the data. The Breusch-Pagan LM test was run, confirming that there were no random effects, thus the Pooled OLS was decided to be used. The regressions using the total risk measures as the dependent variable was ran using the fixed-effects model. The F-test null hypothesis was rejected at a .01 significance level, confirming that the fixed effects model should be used. Both of the regressions for the cross-listed companies are run using the random-effects model; in both instances, the Hausman tests null hypothesis holds.

The financial indicators help to explain the changes in the systematic risk for the strictly domestic companies to some extent. As seen in Table 5., ROE and ROA display a weak negative relationship at a 0.1 significance level, indicating that when the profitability ratios increase the systematic risk decreases as expected. Profit margin and current ratio, on the other hand, display a positive relationship with the systematic risk, indicating the opposite effect. Only profit margin is statistically significant at a 0.01 level from the financial indicators. The result shows that other variables hold constant, one percent increase in the profit margin increases the systematic risk by 0.29 percent. In addition, the results show that smaller companies have a lower systematic risk compared to larger companies. The R-

squared displays that overall the independent variables explain only 16 percent of the changes in the systematic risk.

For the cross-listed companies, only ROE and ROA display marginally significant negative relationship with the systematic risk at a 0.1 significance level. Also, neither the recession period nor the post-recession period has an impact on the systematic risk for the strictly domestic or cross-listed companies. The dummy variable for both time periods is not statistically significant.

Table 5. Regression analysis results on the entire period (2012-2017)

Financial ratio	Coefficient (*p*-value)	
	Dependent variable = Beta	**Dependent variable = SD**
(a) Domestic listed companies (N=126)	(Pooled OLS)	(Fixed effects)
Intercept	31.63 (1.66)	9.919 (1.63)
Current ratio	0.414 *(1.81)	-0.016 (-1.12)
Profit margin	0.288 ***(2.64)	0.039 ***(2.48)
ROE	-0.192 *(-1.80)	0.001 (0.09)
ROA	-0.691 *(-1.86)	0.008 (0.31)
Size	3.705 ***(2.90)	-0.370 (-0.88)
Recession	2.277 (0.34)	1.492 ***(2.90)
Post-recession	5.014 (0.74)	-0.905 **(-2.06)
F-test	-	5.37 (.000)
R-squared	0.16	0.40
Hausman test	12.99 (0.072)	25.32 (.000)
(b) Cross-listed companies (N=60)	(Random effects)	(Random effects)
Intercept	168.37 **(2.04)	4.67 ***(.6.27)
Current ratio	1.90 (0.36)	-0.11 (-1.41)
Profit margin	0.104 (0.34)	0.013 **(2.35)
ROE	0.414 *(1.77)	-0.006 (-1.37)
ROA	-1.82 *(-1.72)	0.021 (1.26)
Size	-4.595 (-0.92)	-0.168 ***(-3.13)
Recession	-8.49 (-1.27)	1.08 ***(4.16)
Post-recession	-7.69 (-0.67)	-0.368 (-1.38)
Wald chi-squared	21.7 (.003)	209.43 (.000)
Rho	0.655	0.103
Theta	0.613	0.138
Hausman test	5.24 (.6308)	4.09 (.7691)

*, ** and *** represent the significance level at 0.1 %, .05% and .01%. (t-stat)

The financial indicators do not seem to explain the changes in the total risk measures. For both, strictly domestic and cross-listed companies, the only statistically significant financial indicator is profit margin, at a .01 significance level for the strictly domestic company dataset

and at a 0.05 significance level for the cross-listed companies. Nevertheless, the relationship is weak for both types of companies. In addition to the profit margin, the size variable is highly significant for cross-listed companies. Larger cross-listed companies have a lower total risk during the observation period compared to the smaller companies.

The recession period dummy variables are highly significant for both the cross-listed and strictly domestic companies, confirming the results seen in Table 3. The recession period had a significant impact on the total risk increase for both the strictly domestic and cross-listed companies. The post-recession dummy variable is also significant for the strictly local companies, validating the total risk decrease.

For the fixed effects model, the F-test result is presented, showing that the fixed effects model provides better goodness-of-fit estimates than the Pooled OLS. The within R-squared of 0.4 shows that the independent variables explain significantly better the changes in the total risk than in the systematic risk for the strictly domestic companies. Overall the independent variables explain reasonably well the changes in the total risk for the strictly domestic companies.

The regressions for the cross-listed companies have been run using the random-effects model. Wald chi-squared, rho and theta have been presented in Table 5. for both regressions. The model fits the data much better, for the systematic risk than for the total risk. Rho, in the total risk regression, is low at 0.10, suggesting that the individual-specific errors do not account for a large proportion of the entire error variance. The rho value is significantly higher for the regression run on the systematic risk as the individual specific error explains 65 percent of the composite error variance. The Wald chi-square test shows that the explanatory variables in the model are significant in all regressions with a .01 significance level.

5.3 Robustness check

It could be argued that the financial indicators do not explain the changes in the systematic and total risk during the recession period and thus is impacting the results presented in Table 5. To examine whether the results differ significantly during non-recession periods, a similar

regression is run, including the pre- and post-recession periods. Again, the regression models have been chosen to each individual dataset, and the selected model is displayed in Table 6.

The results from the regressions can be seen in Table 6. There are no major changes to the regression results when observing systematic risk for strictly domestic or cross-listed companies. It can be noted that profit margin explains more of the change in systematic risk during the non-recession periods and also, ROA is displaying a significant negative relationship with the risk measure. Also, the size variable is highly significant, signalling that larger strictly local companies have on average higher systematic risk compared to the smaller ones for the strictly domestic companies. The R-squared did not increase significantly for the non-recession period regression indicating that the independent variables do not help to explain the changes better during the non-recession period.

For the strictly domestic companies, current ratio and ROA display a marginal significance at a 0.1 level, and the profit margin remains highly significant. Additionally, the size variable maintains a significant negative relationship with the total risk measure. When observing the results for the cross-listed companies, it can be noted that the relationship between the total risk and profit margin is not significant any more. The only variable remaining significant is the size variable, still maintaining the negative relationship with the risk measure, confirming that larger companies have a lower total risk on average. The robustness check confirms that the firm-level factors do not explain the changes in the systematic and total risk for the strictly domestic and cross-listed companies. However, it is evident that the recession period had a significant impact on the risk measures, explaining why the cross-listed companies were considerably more impacted.

Table 6. Regression analysis results, including non-recession periods.

	Dependent variable = Beta	**Dependent variable = SD**
(a) Domestic listed companies (N=84)	(Pooled OLS)	(Fixed effects)
Intercept	14.81 (0.57)	14.01 ***(3.04)
Current ratio	0.474 *(1.71)	-0.039 *(-1.77)
Profit margin	0.414 ***(.2.98)	0.054 ***(6.01)
ROE	-0.148 (-1.44)	0.018 *(1.86)
ROA	-1.064 **(-2.44)	-0.001 (-0.04)
Size	4.934 ***(2.75)	-0.773 **(-2.20)
Post-recession	5.225 (0.77)	-1.067 **(-2.53)
F-test	1.27 (0.234)	3.73 (.0001)
R-squared	0.208	0.37
Hausman test	20.49 (0.0023)	300.74 (.000)
(b) Cross-listed companies (N=40)	(Random effects)	(Pooled OLS)
Intercept	209.52 **(2.53)	4.30 ***(4.03)
Current ratio	1.010 (0.12)	-0.041 (-0.42)
Profit margin	-0.085 (-0.20)	0.089 (1.42)
ROE	0.711 *(2.23)	-0.002 (-0.35)
ROA	-2.138 (-1.59)	0.009 (0.41)
Size	-6.951 (-1.45)	-0.142 **(-2.27)
Post-recession	-9.21 (-0.68)	-0.321 (-1.41)
R-squared	-	0.32
Wald chi-squared	10.06 (.122)	-
Rho	0.624	-
Theta	0.519	-
Hausman test	5.52 (.4785)	6.16 (.4058)

*, ** and *** represent the significance level at 0.1 %, .05% and .01%. (t-stat)

6. CONCLUSIONS

In the final chapter of this thesis, the results from the statistical test are analysed and the research questions introduced in the first chapter are answered based on the results obtained. The contributions of this master's thesis on the existing literature are introduced and discussed. Last, the limitations of this study, together with the potential future research question topics are discussed.

The objective of this thesis is to examine the impact of the economic recession between 2014-2016 on the systematic and total risk of publicly listed Russian companies and whether the possible risk change differs between strictly domestically listed and cross-listed Russian companies. The observation period for this study includes 27 months prior to the first economic sanction imposed on Russia, 33 months during the imposed sanctions and economic recession, as well as 12 months after the recession. Overall the observation period covers January 1, 2012 – December 31, 2017. The theoretical background was constructed around the economic overview and development of the Russian economy to understand the relatively young but large emerging economy and the factors impacting the local market. Also, theories on herding behaviour and cross-listing are introduced in order to understand investor behaviour and the reasons behind cross-listing. Next, the aim is to provide answers to the four research questions that were formulated in the first chapter as follows:

1. *Did the 2014-2016 financial recession period have a significant impact on the systematic and total risk of publicly listed Russian companies?*

2. *Is there a difference in the systematic and total risk between companies that are strictly listed in the Moscow stock exchange and companies that are cross-listed during the recession period?*

3. *Do financial indicators explain the company market risk changes for the strictly locally listed and cross-listed companies?*

4. *Does the recession period and post-recession period explain the changes in the systematic and total risk of the strictly locally listed and cross-listed Russian companies?*

Answering the first question based on the results, it can be said that, there are statistically significant changes in the company market risk levels in both; strictly domestic and cross-listed companies. For the strictly domestic companies, the total risk increased by 67.9 percent compared to the pre-recession period and the systematic risk decreased by -1.18 percent. However, only the total risk increase is statistically significant; the lack of significance in the systematic risk can possibly result from the greater overall volatility of the Russian stock market compared with the FTSE100 and S&P500. Both the parametric t-test and non-parametric Wilcoxon sign-rank test were used to test the significance of the total risk decrease, and both test are significant at a 0.01 level. As for the cross-listed companies, the total risk increased by 70.7 percent, slightly more than for the strictly local companies. Surprisingly the systematic risk decreased during the recession period by -24.11 percent, and on average, was slightly lower than the benchmark indices FTSE100 and S&P500. Both the total risk increase and the systematic risk decrease are statistically significant at a 0.01 significance level. The results suggest that the cross-listed companies were significantly more impacted by the recession than the strictly domestic companies.

The answer to the second question is that the Russian companies total risks does differ between the strictly local and cross-listed companies during the recession period. However, the same cannot be said about the systematic risk as the results are not statistically significant for the strictly domestic companies. The strictly locally listed companies had a considerably higher total risk during the recession period, compared to the cross-listed companies. A possible explanation for the higher total risk is the size difference between the two types of companies. The strictly local firms average annual turnover between 2012-2017 was $1.8bn, whereas, for the cross-listed companies, it was $13.4bn. As noted by Maio (2014), smaller companies stocks are more severely impacted by the changes in the macroeconomic variables and thus are more sensitive. On average, the standard deviation for the strictly domestic companies was 44.5 percent, whereas, for the cross-listed companies, it was 16.9 percent during the recession period.

Based on the results from the regression analyses, the answer to the third question is that only the profit margin explain the changes in total risk for both, strictly domestic and cross-listed companies. Profit margin displays a strong positive relationship with the systematic risk for the strictly domestic companies. The other financial indicators included in the study; current ratio, ROE and ROA do not help to explain the changes in the total risk and display only a marginal relationship with the systematic risk. The results differ significantly from Chira and Marciniak (2014) study, which found that current ration, ROE and ROA had a significant negative relationship with the total risk during a financial crisis period for the strictly domestic companies. Unlike in Chira and Marciniak (2014) study, this study does not find evidence that investors would have penalized the cross-listed companies in foreign markets due to the economic recession.

Lastly, it can be concluded that the total risk of the publicly listed Russian companies did significantly increase during the economic recession period. It can be also concluded that the changes in the total risk can be largely explained by the recession. The cross-listed companies were overall much greatly impacted by the recession period, compared to the strictly local companies. This study does not differentiate the impact of the sanction or the oil prices on the risk change. Based on prior literature, the economic sanctions had a severe impact on the Russian economy (Gurvich et al. 2016; Giumelli 2017; Szczepanski 2015). However, as Shirov et al. (2015) note, the impact of the sanctions is difficult to differentiate from the declined oil prices. The signs of economic recovery in Russia in 2017, can be seen to have positively impacted the total risk in both the strictly domestic and cross-listed companies in the post-recession period.

This study has multiple contributions to the existing literature. First, using company-level data contributes to the earlier studies, by analysing the impact of the recession period from a different viewpoint than the vast majority of the studies. Second, this study contributes to the sparse research on cross-listed Russian companies by making a comparison between the strictly locally listed and cross-listed companies. Also, to the knowledge of the author, there are no similar studies conducted on the Russian market.

6.1 Limitations and further research

There are several limitations to this study, and the results may have been affected by several possible biases. First, it can be said that the sample size included in this study is relatively small. The main reason for the small sample size is due to limited and reliable information for Russian companies. A large number of companies initially identified to have been active throughout the observation period were missing a large amount of data and therefore, were decided to be eliminated from the data sample. Second, the limitations in data gathering resulted in annual frequency to be used in the regression instead of quarterly frequency. However, Chira and Marciniak (2014) study on the impact of the European crisis on the company risk profile, as well, used annual data including only one year's financial data to represent the crisis period in their study. More high-frequency data would help to capture more information about the impacts of the individual shocks of the sanctions and declined oil prices such as Kim's (2019) study which focused on the 50 days prior and after the first set of sanctions. Third, the study is conducted only in one country and does not include countries that might have been impacted by the geopolitical tensions with Russia or by the increased uncertainty in Russia.

When considering future research, many ideas come to mind. By concentrating on specific events throughout the Ukrainian crisis and narrowing the observation period, the possible data sample could be broader and in higher frequency, enabling a more in-depth analysis of direct the impacts. The research could be limited to include only companies directly set under the sanctions and compare them with companies that were not affected directly by the sanction. It could also be interesting to include the Commonwealth of Independent States (CIS) countries in the study, due to their close economic ties with Russia.

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APPENDICES

Appendix 1. Correlation matrix of the independent variables.

Local	Current ratio	Profit margin	ROE	ROA	Size	Recession	Post-recession
Current ratio	1						
Profit margin	0.098	1					
ROE	0.178	0.071	1				
ROA	0.489	0.227	0.714	1			
Size	-0.512	0.012	0.165	0.025	1		
Recession	0.004	0.052	-0.087	-0.044	-0.053	1	
Post-recession	0.046	0.012	0.099	0.061	-0.013	-0.5	1
Cross-listed							
Current ratio	1						
Profit margin	0.086	1					
ROE	0.121	0.182	1				
ROA	0.229	0.444	0.711	1			
Size	0.009	-0.360	0.154	-0.016	1		
Recession	0.086	0.029	-0.097	-0.065	-0.033	1	
Post-recession	-0.221	-0.015	0.107	0.005	-0.018	-0.5	1