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The Cost of Sanctions: Western Sanctions' Impact on Russian Financial Markets during the Russia/Ukraine Crisis in 2014-2015

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Abstract

This thesis investigates the effect of the US and the EU sanctions on the Russian financial markets during the Russia/Ukraine crisis in 2014-2015. The success of various types of international sanctions is a long debated question that could not be answered definitely thus far. To shed more light on the topic we take a new approach by looking at the impact of the sanctions on the main Russian stock market index in RUB (MICEX) and the exchange rate (RUB/USD) and try to identify to what extent the recent drop in Russian stock market in USD of over 40% can be explained by the sanctions. We construct a unique sanctions' index in order to test whether a relationship between the reactions in the financial markets and the sanctions can be established, while controlling for other market factors, such as oil price, government bond yields and major global equity indices. Our results show that the stock market reacted ambiguously to the US sanctions and related sanctions' triggering events and negatively to the EU sanctions and related events, which we explain mainly by the varying complex market expectations. The sharp fall in the ruble, that explains most of the downturn in the USD quoted Russian equity index (RTS), cannot be linked to the sanctions, but is instead closely connected to the coinciding decrease in the oil prices.

Keywords: financial markets, stock market, exchange rate, sanctions, emerging markets, Russia, Ukraine, static multiple linear regression, finite distributed lag multiple linear regression

JEL Classification: C30, F31, F51, G15

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List of Abbreviations

CB	Central Bank
CDS	Credit Default Swap
EU	European Union
EUR	European Union Euro
FDL	Finite Distributed Lag
GDP	Gross Domestic Product
H1	Hypothesis 1
H2	Hypothesis 2
H3	Hypothesis 3
H4	Hypothesis 4
MICEX	Moscow Interbank Currency Exchange
MSCI	Morgan Stanley Capital International
OLS	Ordinary Least Squares
RT	Russia Today
RTS	Russia Trading System
RUB	Russian Ruble
UK	United Kingdom
US	United States of America
USD	United States Dollar
WTI	West Texas Intermediate

1. Introduction

This section talks about the issue of sanctions as an important international politics tool. It outlines the importance of the research topic, defines the core study question and describes the structure of the paper.

Sanctions have been an important tool in international politics for a long time and the question of how effective they are has been almost as old. Earliest evidence of the use of sanctions as an instrument to weaken another nation or change its behavior can be found in 432 BC in the Middle East (Hufbauer, et al., 2007) and it remains a widely used tool today as evidenced by the current events surrounding the conflict between Russia and Ukraine. The widespread use of sanctions, especially since 1914, has led to a reconsideration of the question of how effective sanctions can be in achieving foreign policy goals. This question is problematic for three different reasons and could not be answered satisfactorily despite a large amount of research. First of all, it is often not clear what goal the sanctions are trying to reach (e.g. the goal could be a change in regime, but could also just be for the political effect at home). Secondly, it is hard to determine the strength of the sanctions' impact and if they really are the reason for a change in policy (e.g. the US did sanction South Africa during apartheid, but the impact is generally considered to be very small (Hufbauer, et al., 2007)). Thirdly, the sanctions often differ in their nature (e.g. economic sanctions, travel bans, etc.), which makes it very difficult to judge about the usefulness of sanctions in general as well as about any particular type of sanctions.

The recent events in Russia and Ukraine¹ have brought up the question of how useful sanctions are and what role they can play in international politics. In this thesis we closely examine the impact of the sanctions, both by the US and the EU but also by Russia against the Western world², on the Russian stock market and exchange rate. While this does not answer the question of how useful sanctions are in general, it can provide valuable insights into the effect that sanctions have on financial markets. With the recent fall in share prices in the Russian market (in USD) of more than 40% during 2014, several voices claimed (Picardo, 2014), that the effect of the sanctions has been proven to be very strong, while others remain more skeptic (Yueh, 2014). We remain cautious, given that the movement of an equity index is dependent on a large group of variables, including, but not limited to the world economy performance, interest rates and commodity prices. Thus the focus of this thesis is the question of how much of the bear market can be attributed to the sanctions and

¹ From here on we will use the term Russia/Ukraine crisis to refer to the conflict surrounding Russia and Ukraine, started in February 2014 with the Crimea annexation by Russia and still ongoing in May 2015

² We refer to the US and the EU when using the term Western world

how much can be explained by other factors, in particular coinciding low oil prices. We split our research question into two parts. The central question is to identify the effects on the stock market caused by the sanctions and the second part is to test the same for the RUB/USD exchange rate. We believe that focusing our analysis separately on the equity index in local currency and on the exchange rate is crucial in order to accurately isolate the impact of the sanctions. We also try to identify which particular types of sanctions have the strongest impact on the markets and come up with possible explanations for this.

We believe that the financial markets provide an interesting field for testing possible effects of sanctions due to their reactions' speed, especially compared to lagging economic variables. This link is further supported by the forecasting function of the stock market for the general economic development (Fama, 1990), (Estrella & Mishkin, 1998).

The paper has the following structure. First, we provide useful background information about the topic (2.), including a deeper explanation of relevant terminology (2.1.) and an overview of the literature on sanctions (2.2.) as well as the Russian stock market (2.3.) and the Russia/Ukraine crisis (2.4.). Based on the literature and the crisis description we develop our hypotheses and explain our methodology (3.). We suspect that sanctions actually have little explanatory power over the equity market and the exchange rate movements. To test the hypotheses we utilize the background information and construct variables to represent the sanctions as well as other driving factors of the Russian stock market (4.). We control for these important market drivers when testing for the impact of the sanctions. Based on the regression analysis we present our results and explain in details the findings for each of our four hypotheses and comment on the limitations (5.). This is in the end followed by the summary and conclusions (6.).

2. Background Information

In the following section we describe the most agreed on definition and classification of sanctions as well as how we classify the sanctions in this thesis. We then analyze prior literature and research on the topic of sanctions and try to point out the shortcomings of previous studies that this paper aims at eliminating based on the unique sanctions evidence during the Russia/Ukraine crisis. We also provide the in-depth analysis of the Russian stock market. The section ends with an outline of the key events and overall development of the ongoing Russia/Ukraine crisis.

In the following sections we aim at providing all the information necessary for developing a deeper understanding of the topic and thus crucial for the successful study.

2.1. Sanctions Terminology and Classification

Sanctions are a widely used term to describe actions by one party aimed at another to change its behavior by using different tools. The Oxford dictionary defines sanctions as: “Measures taken by a state to coerce another to conform to an international agreement or norms of conduct, typically in the form of restrictions on trade or official sporting participation.”(Oxford Dictionary, 2015). As various types of sanctions lie at the core of this research, we want to set a clear definition and understanding of the concept based on the leading prior research. We follow Hufbauer in the definition of economic sanctions: “[...] the deliberate, government inspired withdrawal, or threat of withdrawal, of customary trade or finance relations” (Hufbauer, et al., 2007). The goal of sanctions usually is to change foreign or domestic policy in a target country. A country or group of countries initiating the sanctions, often referred to as a sender, can employ a variety of sanctions to reach this goal. Broadly speaking economic sanctions can be grouped into three different subgroups:

- Trade sanctions

These sanctions are used to limit or fully cancel the trade of the target nation with other nations. This can happen by either limiting the export to this country (often for a special area like military components as seen recently during the embargo on Iranian special technology sector (BBC, 2014)) or by limiting the imports from this country by not accepting certain goods anymore (as seen during the first Iraq crisis and the following oil for food programs (United Nations, 2015)).

- Financial sanctions

Financial sanctions can be grouped into two different sections. On one hand it can mean a limited access to capital markets in the sender countries, on the other hand it also often includes a limitation

on export financing into the target country, which in turn affects business decisions. Both types have been used by the US and the EU against Iran to prevent further nuclear power research (BBC, 2014).

- Asset freezes/travel bans

This type of sanctions is targeted towards a smaller group of people. Offshore assets outside of the target country (e.g. bank accounts or real estate) are temporarily frozen, and thus are not accessible to the owners of these assets. Travel bans are also directed at a certain group of individuals, not allowing them to travel to certain countries (most often the sender countries or their allies). This tool has for example been used against North Korea (Takenaka, 2014).

In our research we set slightly different classification of sanctions based on the specific types of restrictive measures that have been applied during the conflict. This is based on the number of events that occurred during the crisis to reflect the development of the sanctions. In particular we define two main types of sanctions that have been used throughout the Russia/Ukraine crisis:

- Visa bans or asset freezes, representing travel and asset restrictions on Russian government officials and certain entities;
- Economic sanctions, incorporating any trade or capital limitations on Russian government or companies by the West or vice versa.

One crucial issue that arises during the study, as already mentioned before, is the problem of defining successful sanctions and foreseeing possible outcomes. This problem also becomes apparent when considering the economic sanctions literature.

2.2. Literature Overview

Sanctions are a widely used tool in international politics, especially since 1914 and thus a considerable amount of literature has been written on the topic. While there is an agreement on the definition of sanctions as a tool to achieve political objectives (Barber, 1979), (Galtung, 1967), the critical question remains how useful and effective sanctions have been and can be. To answer this question sanctions have been analyzed both from a theoretical as well as a practical point of view. The most comprehensive empirical work has been written by Hufbauer, Schott, Elliott and Oegg, studying more than 200 cases of economic sanctions since 1914 (Hufbauer, et al., 2007). Their findings about sanctions and their success rate have been used widely in politics and academia. In their study they find overall that in 34% of the studied cases sanctions have been successful. However, critics argue, that their success assessments are subjective and thus flawed, and often the goals have only been

achieved when used with other tools, such as military power (Pape, 1997). Other empirical works find some evidence of sanctions having an impact on trade patterns (Caruso, 2003), but a general agreement on the success rate of sanctions and their impact has not yet been found. Both arguing sides often even cite the same cases as a reference for their opposing views. While critics point out the questionable results or the casualties in the society (Galtung, 1967), (Knorr, 1975), (Losman, 1979) the advocates see sanctions as the humane alternative to military actions with decent chances for success (Rogers, 1996), (Daoudi & Dajani, 1983), (Martin, 1992). The differences between the various sanctions' cases, the time frame and the assessment methodology seem to be the main reasons for the opposite opinions (Jentleson, 2000).

The definition of success is another key problem as already pointed out. Often the goals of sanctions are not clearly communicated and could be something else than told to the public. In addition to that, the success can also depend on the time frame (Dizaji & van Bergeijk, 2012). The longer the time frame, the more likely a change in politics is, but since politicians naturally change over time, this might not be attributed to sanctions. On the other hand, sanctions seem to wear off over time, showing less impact on macro variables and political systems over a prolonged period (Dizaji & van Bergeijk, 2012).

The impressive empirical findings of Hufbauer's study have been the best source of comparison between theoretical approaches and real world findings. The findings are for example the basis for Dashti-Gibson analysis of the determinants of success of economic sanctions (Dashti-Gibson, et al., 1997). In their study financial sanctions have the greatest chance for success, but the success is also highly dependent on the stability of the target country. They define the critical success variables as cost to the target, length of the episode and the political-economic stability of the target. The study also has implications for our research in terms of pointing out the additional level of complexity to the analysis of the sanctions against Russia, since its political system and stability might be different from the usual target countries (which have historically been third world countries in most of the cases (Hufbauer, et al., 2007)). Given that "Substantively, the model suggests that sanctions are likely to succeed the greater the costs imposed, the shorter the sanction's episode and the weaker or more unstable the target is" (Dashti-Gibson, et al., 1997) the sanctions against a less stable target country could play out differently compared to more common cases.

The topic has also been approached from a more theoretical angle (Kaempfer & Lowenberg, 1988). Kaempfer and Lowenberg conclude that it is important to target a specific group of people that

influences or makes the decisions instead of the whole country. This is due to the evident side effect of sanctions on the society of the target country, when sanctions often affect less well off citizens stronger (Allen & Lektzian, 2012), (Peksen, 2014). It is also noteworthy, that this paper discovers a “rally around the flag” effect, which could work counterproductive and unite a target country against a sender, which is also supported by empirical evidence (Morgan & Schwebach, 1997) and theoretical aspects implied by the availability of resources to possible challengers to the regime (Oechslin, 2014). Given recent polls in Russia (The Associated Press, 2014) showing increased support for the government, this scenario might play a role in our study as well.

More recent forms of sanctions such as asset freezes or the use of the International Monetary Fund (IMF) are less well researched and their success or failure is thus even harder to evaluate (Rogers, 1996). This might be also a reason why to our knowledge there is very little research done about the influence of sanctions on financial markets. On one hand stock markets have only developed recently in many countries outside of the developed world (Perotti & Oijen, 2001) and the targets of sanctions have usually been less developed countries, thus the reaction of a functioning stock market often could not be tested. On the other hand, the target countries often did not have a free floating currency, which also made it difficult to test for the effects on the exchange rate (Hufbauer, et al., 2007). Thus, to our knowledge there is little quantitative research about the effects of sanctions on the stock market or exchange rate in the target country and this is what his thesis aims at improving.

2.3. The Russian Stock Market and Its Characteristics

The following part is structured into two different sections. First we describe the Russian stock market and its history as well as some of its special characteristics. We also explain why the ownership structure of major Russian companies makes it an interesting case for the study of the impact of the sanctions. In the second part we explain what factors are driving the Russian stock market in general, to account for the other factors in our study.

Evidently the crisis has a significant impact on Russia (according to the statements by the US and the EU high level officials). Nevertheless, the visible depreciation of the currency and the stock market might be a coincident or might be explained better using other factors instead of the sanctions. Thus it is vital to control for the other factors moving the stock market in order to isolate the sanctions effect. To identify those factors we examine historic findings about the Russian stock market and its driving forces in more detail in the following section.

2.3.1. Russian Stock Market

The stock market of a country represents, at least partly, the wellbeing of its economy. This link can be closer or looser, depending on different circumstances, such as structure of the industry (listed companies to non-listed companies), size of the market, general acceptance of the stock market, ownership structure, legal framework and history. The link has been studied for a long time by different authors with slightly different results (Bosworth, et al., 1975), (Gjerde & Sættem, 1999), (Claessen, et al., 2000). While the magnitude and time lag of the connections between the stock market and the economy seem to vary over time, it is clear that the most liquid and largest corporations by market size (and often by other factors, such as employees or turnover, which often correlate strongly with the market capitalization) are a representative of the country's economic success. The link can also be approximated by the relationship between the GDP and the total market capitalization of all listed stocks. In this measure Russia has been in line with other developing countries (World Bank, 2015). The stock market is also often considered an important leading indicator for economic activity within a country (Estrella & Mishkin, 1998), (Beaudry & Portier, 2006), thus it can provide valuable information about possible future developments in the real economy.

It is important to understand the origins and specifics of the Russian market to better evaluate the impacts of the sanctions on it. The Russian equity market is relatively new compared to markets in the developed world. Given Russia's past as a communist regime, the stock market was only introduced in 1994 (Goriaev & Zabotkin, 2006), (Clarke, 2007). The turbulent years of the political and economic change starting in 1991 transformed the country from a communist planned economy with no shares at all to a free market economy, albeit with some special traits (Boycko, et al., 1995), (Radygin, 1995). Due to the nature of the privatization, Russia's economy was radically changed after these years. By July 1994 two thirds of the Russian industry was privately owned and more than 40 million Russians had become shareholders (Boycko, et al., 1995). Russia's privatization can be grouped into four different periods: commercialization (1987-92), mass privatization (1992-94), cash privatization (1994-97) and selective privatization (2000-10) (Glazunov, 2013). Each phase accounted for a different approach to privatization and different frequency of privatization. Most firms have been listed during 1992-1994. For the purpose of this paper it is important to note that after the takeover of the current regime, privatization was massively slowed down and in some cases even reversed (Glazunov, 2013).

One of the specifics of the Russian equity market is the ownership structure. This factor is especially important since shareholders would be the first victims of decreasing stock values. Our analysis indicates that a disproportionally large share of stocks is in the hands of people with close ties to the government or owned by the state itself (see Figure 8 in the appendixes for an overview of the central shareholders of the ten largest Russian companies by market capitalization). The relatively small free float of the companies (Moscow Exchange, 2015) indicates, that a decrease of stock prices will hit a small group of wealthy owners harder than it would in other countries with large free float. The relatively small free float is not unusual in developing countries, as pointed out by the World Bank (Claessen, et al., 2000), but seems to be especially true in Russia. The data on the ownership structure is often limited and beneficiary owners are often not obvious. A look at the ten largest index weights in the MICEX reveals that none of the companies have a free float of above 60% and 80% have below 50% free float (Moscow Exchange, 2015). The government is the largest shareholder for 40% of the ten most valuable stocks and even the remaining companies are often controlled by the people considered to be close to the leadership of Russia (Figure 8 in the appendixes). Even companies with no direct ownership links to the state are often controlled by supporters of the government or at least influenced by the government. An example of this is Norilsk Nickel, one of the largest mining groups in Russia, currently owned by Vladimir Potanin and Oleg Deripaska. President Putin was able to place Vladimir Stzhalkovsky, a former KGB cornel as temporary CEO, even though the government did not own any shares at that point in time (Glazunov, 2013). In combination with the ties between the oligarchs and President Putin (Harding, 2007), (Buckley, 2012) it shows how close the remaining business elite and the ruling powers still are. This is one of many examples showing the high level of influence of the government on corporate affairs. This is also remarkable, because one of the explicit goals of the privatization following the political change 1991 was to depoliticize the economic system and limit the state influence (Boycko, et al., 1995). While this motivation was clearly visible in the years following the political change with Boris Yeltsin in 1991, more recent actions could be partially described as a trend in the other direction. Key industries, especially in the energy sector, are again under strong influence of the state. This process is often described as state consolidation, which started in the last years of Boris Yeltsin's gouvernement and was further enforced with the election of Vladimir Putin in 1999 (Myant & Drahokoupil, 2011). Under his rule the state increased its influence on the economy, often with the help of the judicature. A good example of this, often not transparent process, is the asset split of Yukos (Myant & Drahokoupil, 2011). Other examples include the cases surrounding former oligarchs Boris Berezovsky and Vladimir Gusinsky (Myant & Drahokoupil, 2011). While this is by no

means a sound statistical analysis, the evidence of different cases point towards close ties between the economy and the state. The close link also means that any decrease in stock values is affecting the government directly or indirectly. This could make those sanctions more effective that aim at decreasing the stock values of Russian companies. It also highlights the significance of our research question. If sanctions are the reason for a decrease in stock value, their impact on Russia could be bigger than in other cases (different structure of the stock market or ownership structure), which in turn would make the case for a higher probability of success for the sanctions.

2.3.2. Factors Driving Russian Stock Market

Our analysis focuses on the Russian financial markets, especially the equity market. To better understand the impact of the sanctions on the stock market it is crucial to first understand what drives the Russian stock market in general. These factors can then be used to form our independent variables to identify the isolated impact of the sanctions on the equity index and the exchange rate.

The first trading on Russian stock market occurred in the summer of 1995 (Goriaev & Zabotkin, 2006) on the Russian Trading System (RTS), a dealership market. With the launch of the first Russian stock index the RTS in September 1995, Russia's stock market was born. In the following years the RTS established itself as the primary index. In 1997 the Moscow Interbank Currency Exchange (MICEX) was founded as an order driven market, and became the second major index for Russian companies. Today the MICEX is a market capital weighted index, including the 50 most liquid stocks in the Russian market, denominated in RUB, while the RTS works with the same methodology, but is calculated in USD (Moscow Exchange, 2015). Comparison between the indices included in the study can be found in Figure 1.

Only by carefully excluding other factors one can make judgments about the effect of the sanctions on the stock market. The relatively short time frame, also impacted by several serious crises, such as the default in 1998 or the global financial crisis in 2008, makes it hard to find constant factors driving the returns. Nevertheless, according to various prior researches, the world indices, the interest rates environment and the oil price have been crucial factors, driving returns since the inception of the index (Goriaev & Zabotkin, 2006), (Anatolyev, 2009), (Hayo & Kutan, 2005). We examine each factor more closely in the following paragraphs.

Based on cointegration tests the Russian stock market seemed initially to be relatively independent from world markets, and country risk was the predominant risk factor (Lucey & Voronkova, 2008), which is also confirmed by other approaches (Saleem & Vaihekoski, 2008). However, during the last

five to ten years correlation between major indices increased worldwide (Mornigstar, 2012), (Preis, et al., 2012), (Bekaert, et al., 2009) and thus it is likely that the Russian index today is also closely related to other indices, as it is true for other emerging markets (Neaime, 2012). Thus, world markets and especially emerging markets could influence the Russian stock market.

Another potential factor is the interest rates environment. The interest rates can be used as a proxy for the price of money, since they measure the cost for investors to borrow money. Interest rates can be seen as the minimum rate of return required to make a profitable investment (Walsh & Woodford, 2003), (Modigliani & Miller, 1958). This measure has some flaws, for example it does not factor in if the money is actually available for all market participants at this rate, but it can serve as a good approximation. After the financial crisis in 2008 the theory of a strong connection between asset prices and interest rates has gained further support (Rudd, 2009), (Ferguson & Schularick, 2011), (Barlevy, 2007). We take this into account by both controlling for domestic interest rates as well as the US yields in our analysis.

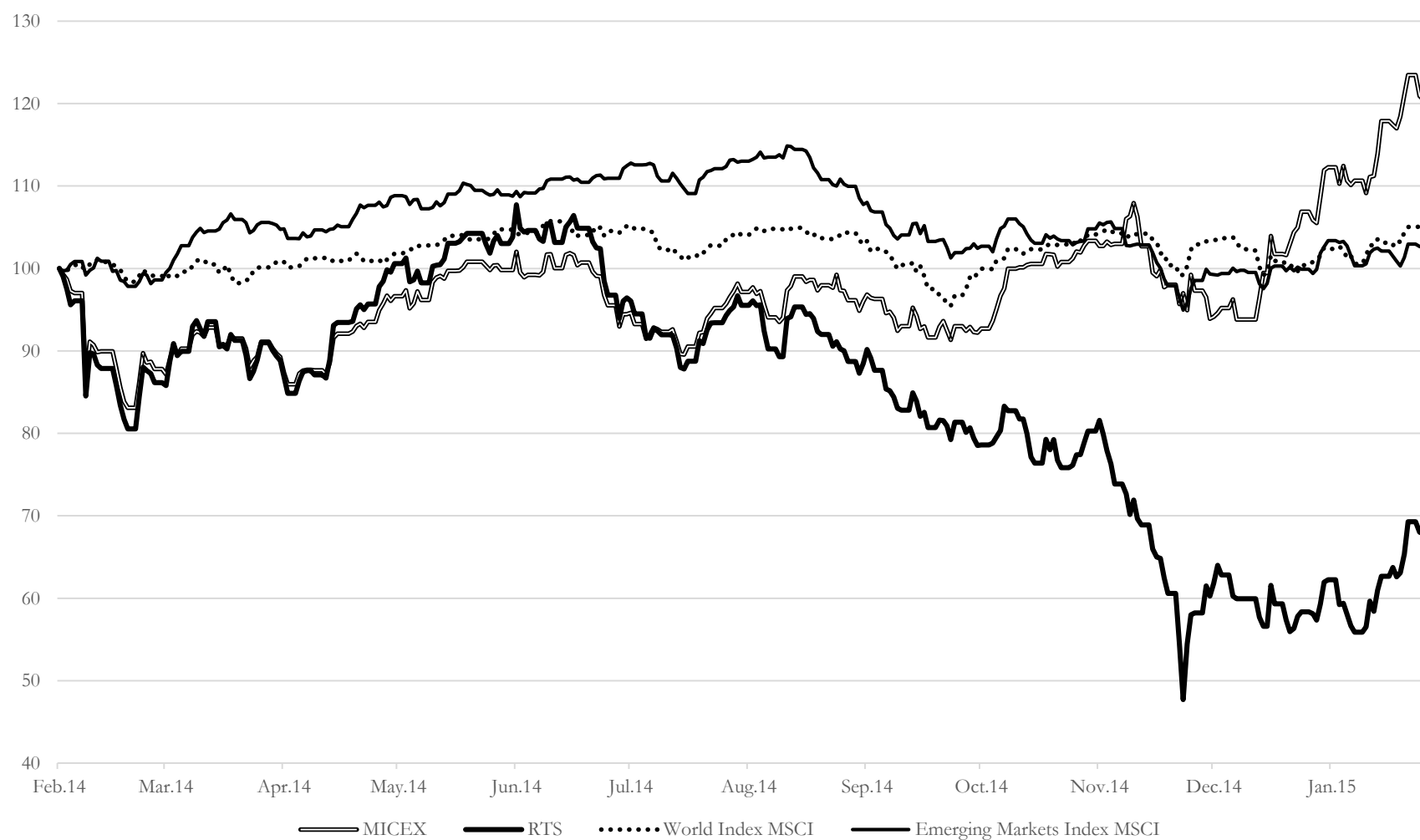
One other critical factor is the structure of the Russian economy. Based on the classification by the Moscow Exchange, more than 40% of the companies earn most of their income in the energy sector, followed by around 20% in the financial industry (Moscow Exchange, 2015). This large bias towards energy, which is mirrored on the state level, is the main reason why commodity prices could play a huge role in the Russian stock market development (Benedictow, et al., 2013), (Rautava, 2004). Moreover, HSBC estimates that more than 70% of the revenues are from oil and gas business for the Russian state (HSBC Global Research, 2015), a number that is also backed up by the US government (US Energy Information Administration, 2014). The fall in oil prices over the last 15 month could have a major influence on the stock market performance and be the reason for the downfall of the asset prices. This would be a factor speaking against the impact of the sanctions. Thus we include the movement of the oil price as an additional factor in our analysis.

On top of that it is likely that in the long run macro variables such as GDP growth or inflation are also the returns drivers, a link that has been found in different countries, for example in the US (Chen, et al., 1986). Significant impact on monthly returns of several macro factors, such as interest rate spreads, inflation and industrial output, has been found in the Chen study. This link is however not very strong and other researchers in other countries could not always confirm its existence (Gay, 2008). Based on the time frame examined in this paper, the impact of macro variables is expected to explain significantly less, because short-term valuations show relatively little relation to long run

macroeconomic fundamentals (Tangjitprom, 2012), especially when looking at daily returns. The factors and their significance seem to also depend on the specific country and the methodology used, see for example studies about Saudi Arabia (Kalyanaraman, 2015), Turkey (Acikalin, et al., 2008) or Bangladesh (Quadir, 2012). Given that most of the time series on a macro level are only available on a quarterly basis, we believe their explanatory power will most likely be insignificant. Various researches also point out, that factors influencing stock markets change frequently and thus different factors explain market behavior sometimes well, and sometimes almost have no impact (Anatolyev, 2009), a phenomenon often referred to as structural instability (Peresetsky, 2012). Nevertheless, we keep those factors in mind throughout our study.

Together these factors are used to capture most of the explainable movement in the Russian market. Overall, we expect these factors (excluding the oil price) to have relatively little explanatory power, given that daily returns tend to be very noisy, especially in developing markets (Cont, 2001). Nevertheless, we choose to control for these factors in order to filter out random results from coincident co-movements in the market.

Figure 1 Major indices development over the analyzed period



Source: Bloomberg

Description: the 25th of February is when the analysis starts and it is represented by a 100

2.4. The Crisis

Prior to analyzing the effect of sanctions in greater detail, we would like to outline the time period explored during the study. We discuss the Russian/Ukraine crisis development in order to gain deeper understanding of the topic.

Russia and Ukraine have a shared history containing devastating wars and peaceful periods (Magocsi, 2010). The current crisis is partially built on this, because as a result of the shared history South-Eastern Ukraine has a large Russian minority (Kaplan, 2014). Russian officials allege that the protection of this ethnic minority was one of the main motivations for Russia's interest in the political and economic development of Ukraine, its annexation of Crimea and support for the rebels in Donbas. It is out of the scope of this paper to explain the reasons behind the current dispute or its roots. Nevertheless it is important to note that Russia always had interests in Ukraine even after its independence with the breakdown of the Soviet Union and the current crisis is at least partly based on the previous developments.

The Russia/Ukraine crisis has been evolving since November 2013. The particular period included into our analysis is the 25th of February 2014 – 18th of February 2015. We split the whole conflict into several distinct stages, which helps to adopt a structured approach to our analysis. The six stages are classified as follows:

- Kyiv protests stage (November 2013 – February 2014);
- Crimea conflict stage (February 2014 – April 2014);
- Donbas conflict stage (April 2014 – May 2014);
- Anti-terrorist operation stage (May 2014 – September 2014);
- Minsk 1 stage (September 2014 – February 2015);
- Minsk 2 stage (February 2015 – ongoing).

Now we would like to discuss every of the six stages in greater detail and explain how developments within every time period factor into the analysis. The detailed timeline of the analyzed period can be observed in Tables 2-5 and Figures 3-7, along with the selection of the events included in the analysis.

- Kyiv Protest Stage (November 2013 – February 2014)

On the 21st of November President Yanukovich's cabinet abandoned plans to sign long-awaited Association Agreement with the EU. The decision sparked first protests in the capital city of Kyiv, initially started by the students and later joined by hundreds of thousands of people from all regions of the country, which eventually caused President Yanukovich to leave his post and flee the country on the 22nd of February. During this stage of the conflict no Western sanctions were imposed, thus it is excluded from our analysis sample (BBC, 2014).

- Crimea Conflict Stage (February 2014 – April 2014)

After President Yanukovich left Ukraine the conflict in Crimea began. On the 27th of February armed unmarked men occupied key administrative buildings in Crimea's capital city of Simferopol and main Crimean transportation hubs. The Crimean annexation was formalized by an internationally unrecognized referendum on the 17th of March. The day after the referendum Crimea was absorbed into Russia (BBC, 2014).

During this stage of the conflict the US and the EU leaders made their first strong statements condemning Russian actions and threatening Russia with significant economic cost and isolation in case of escalation. On the 6th of March President Obama issued Executive Order 13660 that authorized sanctions on individuals and entities contributing to the instability in Ukraine. The Order was the first official move by a Western nation towards imposing economic cost on Russia for aggression in Ukraine (US Department of State, 2015). Among other it stated:

"I, Barack Obama, President of the United States of America, find that the actions and policies of persons - including persons who have asserted governmental authority in the Crimean region without the authorization of the Government of Ukraine - that undermine democratic processes and institutions in Ukraine; threaten its peace, security, stability, sovereignty, and territorial integrity; and contribute to the misappropriation of its assets, constitute an unusual and extraordinary threat to the national security and foreign policy of the United States, and I hereby declare a national emergency to deal with that threat."

Both the US and the EU issued first travel bans and asset freezes following those statements (European Union Newsroom, 2015).

- Donbas Conflict Stage (April 2014 – May 2014)

Following the Crimea annexation the unrest in the East of the country started to escalate. In early April people, who allegedly later would become the core of Russian backed militia, occupied government buildings in multiple cities in East regions of Donetsk and Luhansk. On the 15th of April, following the unrest, Ukrainian acting President announced the anti-terrorist operation to combat Russian backed rebels. First unsuccessful attempt to deescalate the conflict and bring it into the diplomatic space were made when Ukrainian and Russian leadership met in Geneva for the first time after the conflict erupted. On the 11th of May rebels in Donetsk and Luhansk hold a referendum in the region mimicking the one in Crimea two month earlier (BBC, 2014). During the period both the US and the EU sanctions were expanded to include additional Russian officials and entities. Moreover, the US imposed economic sanctions, i.e. trade limitations on 13 Russian entities, for the first time following a large snap military exercise along the Ukrainian border on the 24th of April (US Department of State, 2015).

- Anti-Terrorist Operation Stage (May 2014 – September 2014)

During the fourth stage of the conflict the so called anti-terrorist operation first launched on the 15th of April turns into a full scale war with Russia, which played an active role in supplying arms and soldiers to help the rebels oppose the Ukrainian government according to the multiple statements by the US, EU, Ukrainian and NATO officials. Presidential election in Ukraine was held in early June, which fortified the position of the new Ukrainian government and allowed them to gain authority. At the same time Ukrainian military was strengthened thanks to the significant investments by the state, private volunteer groups and foreign allies. Both of these factors added to the escalation of the fighting. Ukrainian government forces managed to recapture significant parts of the territory by mid-summer including rebels' stronghold city of Sloviansk, which was freed on the 5th of July (Center for Strategic & International Studies, 2015). Intense fighting resulted in dramatic increase in the number of dead and wounded soldiers as well as civilians (BBC, 2014). Moreover, multiple Ukrainian aviation units were shot down by the rebels, who were unqualified to handle sophisticated anti-aircraft weapons supplied by Russia. The most notable incident was the downing of the Malaysian Airlines passenger flight MH17 on the 17th of July (Center for Strategic & International Studies, 2015).

The event triggered the strongest reaction from the Western nations to date. Multiple additional sanctions were put in place by both the EU and the US in July including visa bans and asset freezes extensions as well as economic sanctions targeting key sectors of the Russian economy, such as

defense, oil and gas and the financial sector (US Department of State, 2015). Among other the new economic sanctions banned sanctioned companies from accessing Western capital markets and prohibited exports of key technologies for oil and gas exploration in Russia. Notably, this was the first time the EU turned to such strong measures (European Union Newsroom, 2015). As a response to the expansion of Western sanctions Russia banned all food imports from the EU and the US on the 7th of August (BBC, 2014).

- Minsk 1 Stage (September 2014 – February 2015)

The continuous escalation of the conflict and intense fighting raised concerns in the EU and the US, which sought diplomatic solution to the conflict. The first peace agreement was signed between the rebels and Ukrainian representatives in the Belarusian capital of Minsk on the 5th of September (BBC, 2014). The agreement facilitated immediate ceasefire, withhold of heavy weaponry to create a 30-kilometer buffer zone, the release of prisoners and provided international community with hopes for peaceful resolution of the conflict and the end to the fighting (BBC, 2014). Although the agreement looked promising on paper, it failed to halt the fighting, which erupted immediately on the next day – the 6th of September. The failure of the first Minsk agreement triggered additional visa bans, asset freezes and economic sanctions from both the EU and the US introduced in mid-September. The fighting in Eastern Ukraine continued with varying intensity till the end of February in 2015.

- Minsk 2 Stage (February 2015 – ongoing)

The failure of Minsk 1 agreement and continuing fighting, which by early 2015 took the lives of over 5000 victims (UN News Centre, 2015), led to strong support in the US Congress to provide Ukraine with lethal defensive military aid. The decision was strongly opposed by the German Chancellor Angela Merkel, as the Chancellor believed it would only escalate the fighting and would push the peaceful resolution of the conflict over the horizon. The raise of the serious debate about supplying Ukraine with lethal military aid made leading European countries push for the implementation of a new peace agreement. With Germany being the main arbiter and supporter of the decision, Minsk 2 Protocol was signed in Minsk on the 15th of February, essentially duplicating Minsk 1 Protocol signed in September 2014. International community's skepticism towards the agreement was supported the day after Minsk 2 was signed when the rebels launched an offensive on the strategic Eastern Ukrainian city of Debaltseve, which was eventually captured by the rebels several days later (Center for Strategic & International Studies, 2015). The immediate failure of the Minsk 2 Protocol was

followed by the extension of visa bans and asset freezes by the EU on the 16th of February. Since then the fighting in Eastern Ukraine eased and Minsk 2 was claimed to be enacted (European Union Newsroom, 2015). No further sanctions were introduced by the US or the EU to date, thus the 16th of February is the last date included in our analysis sample.

The international community of states was faced with the difficult task to react to these military actions in Crimea and Eastern Ukraine. As already pointed out, the sanctions have been a tool to try to change policy in the target country without the use of military force. In this case it was clear that a military conflict could be potentially devastating, based on the military power and nuclear capacity of Russia. Economic sanctions are more successful if a larger part of the economic counterparties of the target countries are participating. Any trade bans or asset freezes will be weakened if the target country can rely on other parties to provide the desired goods or services (this is also sometimes referred to as a “black knight” effect in sanction literature (Hufbauer, et al., 2007)). Thus the EU and the US tried to act as cohesively as possible. This process is politically challenging, especially for the EU, which often struggles to unite the different national interests. In this conflict some countries have large trade connections with Russia, for example Italy and Germany, while others have little trade and yet a third group of states already had disagreements with Russia in the past and might favor an even harder political path (e.g. Poland), (Larsen, 2014), (House of Lords: European Union Committee, 2014). As already pointed out economic sanctions are not uncontroversial within academia and their impact is difficult to predict. Different motives and goals on a national level further complicate the creation of effective economic sanctions. The EU itself projected a modest effect of its sanction on Russia’s economy of 0.6% in 2014 and 1.1% in 2015 decrease in GDP growth, while damaging its own economy by 0.2-0.3% per year (Norman, 2014). Thus, another reason for the research would be to actually assess the feasibility of such claims.

3. Methodology and Hypotheses Development

In the following section we develop the key hypotheses that we test in the remaining parts of the study. We also describe the methodology used for the purpose of the study as well as develop the general mathematical view of the used models.

The purpose of our research is to identify what impact the different sanctions have on the Russian financial markets. As a proxy for the Russian economy we use two measures from the financial markets: Russian stock market performance in local currency and the RUB/USD exchange rate. We believe both measures play an important part in defining economic performance of an emerging market economy as well as present high frequency data for such analysis being possible. Even though the stock market is the focus point of the thesis we believe it is also important to consider the exchange rate to account for a foreign view on the targeted economy and thus we include the exchange rate as dependent variable of second order.

The stock market is a complex system, influenced by many different factors. Given the historic mixed results of sanctions we expect the sanctions to have little explanatory power over the stock market movements. This impression is based on the mixed historical results of sanctions (see Section 2.2.), the internal stability in Russia (shown in the high level of support for the government in recent polls (The Associated Press, 2014)) as well as the high degree of noise in returns of the emerging economy stock market (Antoniou, et al., 1997). Even though some firms, especially specifically targeted ones, might experience price reactions due to decreased future earnings or possible funding problems, we expect the index as a whole to be relatively untouched by that. This is also based on the note that the different nations have different goals, leading possibly to less effective sanctions. In addition to that multiple EU leaders have repeatedly said that the political door remains open, and that they do not want to punish ordinary Russian people (Larsen, 2014). This could also lead to less strict sanctions, and thus the influence on the stock market could be limited. Instead we expect other factors to explain the market movements and the observed bear market. Based on our findings about the Russian market, outlined in more detail in Section 2.3., we believe the most likely candidates are other world indices (mainly MSCI World and MSCI Emerging Markets), the oil price and interest rates environment. If that is the case, the current impression that Russia is under increased pressure because of the sanctions from the Western world is only partially true. While Russia's worsening economy is no secret (Elliott, 2014), (O'Brian, 2014) and has been pointed out by Western media repeatedly, this might be due to other reasons. If the alternative factors are better in explaining the stock market movements, the downturn could be coincidental rather than the result of the sanctions.

Thus, we form two hypotheses about the sanctions' impact on the stock market that we test throughout the paper:

H1: The Western sanctions on Russia have no explanatory power over the movements in the Russian stock index in RUB MICEX.

H2: Other factors, in particular MSCI World and MSCI Emerging Markets indices, oil price and interest rate environment, hold explanatory power over the movements in the Russian stock index in RUB MICEX.

Furthermore, we test the impact of both sanctions and other factors described above on the RUB/USD exchange rate. Multiple researches prove the link between ruble exchange rate and the oil price – Russia's main export (Benedictow, et al., 2013). Oil is responsible for around 70% of the export revenues for the Russian economy (US Energy Information Administration, 2014) and thus it would not be surprising to find an impact of the oil price on the exchange rate in our study. To our knowledge there is no link established between potential economic sanctions' impact on an exchange rate of a sanctioned state besides anecdotic evidence. This could be mainly due to two reasons. Either there is just no connection or the countries researched did not have a free floating liquid exchange rate market and thus research was not feasible until now. A second factor that we deem as likely to be significant is interest rates. The connection between the exchange rate and domestic and foreign interest rates is complex (Cuadra & Sapriza, 2008), but the opportunities to invest (the yields) and the price to borrow money in a certain currency could influence the movement of the exchange rate. Given that both domestic and foreign investors are owners of Russian securities and assets, we believe both interest yields could be important. Based on these notions we form two hypotheses about the impacts on the exchange rate that we test throughout the paper:

H3: The Western sanctions on Russia have no explanatory power over the movements in the RUB/USD exchange rate.

H4: Other factors, in particular oil price, hold explanatory power over the movements in the RUB/USD exchange rate.

Next we develop the methodology and specific models to test the above hypotheses and to find any potential links between the sanctions and Russian financial markets. In particular, we would like to explain the rationale for choosing multiple linear regression analysis in the study and we also develop the general view of the models used for the analysis.

For the purpose of the study we construct multiple linear regression models of two types. We start with building static models to identify any potential connections between the dependent and independent variables occurring on the same day or week. Then we turn to a finite distributed lag model (FDL) to examine potential lagged connections between the variables in up to one time lag (Wooldridge, 2013). In both cases we use ordinary least squares (OLS) method to estimate the nature of the existing relations.

It is generally believed OLS is not the preferred method for time series analysis models. Indeed classical assumptions do not hold completely when applying OLS to time series data as opposed to cross sectional data. In particular, the absence of serial correlation among residuals assumption is often broken due to the autoregressive (AR); moving average (MA) and seasonal dynamic processes present in time series data (Mitchell, 2010).

Nevertheless, there is an abundance of linear regression OLS based studies of equity markets (Johnsen, 1996). Researchers seem to prefer simple and reliable statistical modeling approaches to complex modeling in cases where additional cost of coming up with more sophisticated models outweighs the benefit of slightly reduced noise and slightly more precise results.

The construction of a sophisticated model that is able to produce reliable forecast of emerging market equities under external economic and political sanctions environment is not the purpose of this study. The analytical part of the paper merely aims at describing the impact of the sanctions and other market factors on the Russian equity market and the exchange rate and estimating the relative magnitude and sign of such impact. Thus, for the purpose of the study we find estimating multiple linear regressions with OLS to be a sufficient method capable of providing objective and unbiased results.

The general view of our static multiple linear regression model is as follows:

$$Y_t = VUS_t + VEU_t + EUS_t + EEU_t + ER_t + OP_t + WI_t + EMI_t + USY_t + RY_t \quad (1)$$

where:

Y_t – dependent variable, either Russian stock index in local currency MICEX or the RUB/USD exchange rate daily or average weekly returns;

VUS_t - dummy variable, represents the US visa bans and asset freezes either triggering event or announcement and enforcement;

VEU_t - dummy variable, represents the EU visa bans and asset freezes either triggering event or announcement and enforcement;

EUS_t - dummy variable, represents the US economic sanctions in a form of trade limitations or ban from capital markets either triggering event or announcement and enforcement;

EEU_t - dummy variable, represents the EU economic sanctions in a form of trade limitations or ban from capital markets either triggering event or announcement and enforcement;

ER_t - dummy variable, represents Russian embargo on Western food;

OP_t - next period future oil price daily or average weekly returns;

WI_t - World Index MSCI daily or average weekly returns;

EMI_t - Emerging Markets Index MSCI daily or average weekly returns;

USY_t - the US treasury yield daily or average weekly values;

RY_t - Russian eight year bond yield daily or average weekly values.

As outlined before we also use finite distributed lag model (FDL) to examine any potential lagged connection between the variables. FDL model has a general view as follows:

$$Y_{t+1} = VUS_t + VEU_t + EUS_t + EEU_t + ER_t + OP_t + WI_t + EWI_t + USY_t + RY_t(2)$$

where:

Y_{t+1} - dependent variable, either Russian stock index in local currency MICEX or the RUB/USD exchange rate daily or average weekly returns during the next time period;

VUS_t - dummy variable, represents the US visa bans and asset freezes either triggering event or announcement and enforcement;

VEU_t - dummy variable, represents the EU visa bans and asset freezes either triggering event or announcement and enforcement;

EUS_t - dummy variable, represents the US economic sanctions in a form of trade limitations or ban from capital markets either triggering event or announcement and enforcement;

EEU_t - dummy variable, represents the EU economic sanctions in a form of trade limitations or ban from capital markets either triggering event or announcement and enforcement;

ER_t - dummy variable, represents Russian embargo on Western food;

OP_t - next period future oil price daily or average weekly returns;

WI_t - World Index MSCI daily or average weekly returns;

EMI_t - Emerging Markets Index MSCI daily or average weekly returns;

USY_t - the US treasury yield daily or average weekly values;

$R Y_t$ - Russian eight year bond yield daily or average weekly values.

Moreover, we run two scenarios regarding the sanctions classification as explained in Section 4.1. All Western sanctions variables are split into two to isolate the effect of triggering events from the announcement or enforcement of the sanctions. The comprehensive overview of the models used in our study can be found in Table 1.

Table 1 Description of the models built for the analysis

		Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7	Model 8
	Dependent variables								
	MICEX returns								
	RUB/USD returns								
	MICEX returns								
	RUB/USD returns								
	Independent variables sanctions								
	Events US visa bans & asset freezes								
	US visa bans & asset freezes		*		*				
	Events EU visa bans & asset freezes								
	EU visa bans & asset freezes		*		*				
	Events US economic sanctions								
	US economic sanctions		*		*				
	Events EU economic sanctions								
	EU economic sanctions		*		*				
	Russia economic sanctions								
	Events US visa bans & asset freezes								
	US visa bans & asset freezes		*		*				
	Events EU visa bans & asset freezes								
	EU visa bans & asset freezes		*		*				
	Events US economic sanctions								
	US economic sanctions		*		*				
	Events EU economic sanctions								
	EU economic sanctions		*		*				
	Russia economic sanctions								
	Independent variables economic factors								
	Oil price percentage changes								
	World Index MSCI returns								
	Emerging Markets Index MSCI returns								
	US treasury yield								
	Russia 8 year government bond yield								
	Oil price percentage changes								
	World Index MSCI returns								
	Emerging Markets Index MSCI returns								
	US treasury yield								
	Russia 8 year government bond yield								

Source: Own analysis

Notes: Shaded area represents variables included into the respective model; white star signifies that triggering events were incorporated into the sanctions' variables as explained in Section 4.1; the outlined models structure is used both for static models and FDL models; black shading in the far left column represents daily returns and white – average weekly

Description: The table provides the overview of the models analyzed during the study

4. Variables Construction and Data Gathering

The following section aims at explaining how the sanctions' index has been constructed for the purpose of the study. As the quality of any OLS regression is based on the data quality it is crucial to find the right data to represent our variables. Thus we finish the section by laying out what data we used to represent the different variables in our regression and the reasoning behind choosing those.

Now we discuss and explain our choice of the sanctions' variables that have been chosen as explanatory for the analysis. We then follow with describing data gathering approach, descriptive statistics and we also explain why we leave macroeconomic factors out of the statistical analysis.

4.1. Sanctions' Variables

In our analysis we have constructed five sanctions' variables representing visa bans and asset freezes from the EU, visa bans and asset freezes from the US, economic sanctions from the EU (trade bans and capital restrictions), economic sanctions from the US (trade bans and capital restrictions) and economic sanctions from Russia (trade bans)³. The above variables can be grouped into two different categories of sanctions that have been used in this conflict:

- Visa bans and asset freezes

This category includes travel restrictions on people willing to go to the sender's country. It also includes asset freezes imposed on certain individuals. Asset freezes sanctions include bank account freezes or other belongings, such as real estate or vehicles.

- Economic sanctions (trade bans (import/export) and capital restrictions)

The economic sanctions consist mainly of trade restrictions on imports and exports of certain goods as well as restrictions on capital flows. The restrictions on capital flows are often linked to certain limits in refinancing in the sender's country.

One of the main problems when pinpointing the effects of sanctions is based on their complexity. Usually sanctions follow particular events and are used to show the disagreement with the behavior of the targeted nation. In an ideal case one could thus cluster the sanctions into the triggering event, a formal announcement and finally enforcement of each round of sanctions. These dates then could be tested to see when the market reacts the strongest and could also help to identify the types of

³ We believe those sanctions represent the majority of the restrictive measures imposed on Russia during the Russia/Ukraine crisis and thus are responsible for the major impacts on its economy

sanctions with the largest impact. In reality we acknowledge that this clear separation is often not possible. Multiple events can be the trigger for a certain round of sanctions. Before the sanctions are officially announced, rumors often exist and the market might have already reacted if the rumors are deemed credible. On top of that certain events can only be in hindsight seen as a triggering event, like it has been the case with the downing of the civil airplane MH17. It is often not clear what has been a triggering event or could be seen as a triggering event by market participants.

To account for such issues and to make sure that we are able to identify and isolate the unbiased effects we construct two types of models⁴. The first type of models includes two versions of sanctions' variables. The first version represents the triggering crisis events that we believe led to a certain type of sanctions later. The second version includes sanctions' announcement or enforcement date. In the second type of models we combine the triggering events variables and the announcement/enforcement variables together. Such approach is not aimed at isolating or measuring the difference between the impact that triggering events and announcement/enforcement events have on our dependent variables, but it helps to analyze the core problem of the study from multiple perspectives, which helps to eliminate the noise and find all hidden connections. During the study we essentially assume that the market treats a triggering event with the same seriousness as sanctions announcement or enforcement event due to expectations about later sanctions and construct two types of sanctions' variables accordingly. The general view of our models and types of variables included into each can be seen in Table 1. The detailed account of the events and sanctions included into the analysis can be found in Tables 2-5 and in Figures 3-7.

The time window also presents a problem since some sanctions are issued on the weekend, or during closing hours of the Russian stock market. Thus we exclude the weekends since the stock market is closed on these days. Instead we take the last and the next trading day before and after the weekend to account for the reactions. We also split our analysis between daily returns and average weekly returns to use different time windows to take any diffusion into account.

The sanctions' index is constructed in the form of dummy variables with ones representing the days on which sanctions' event happened and the day before and after the event. For the analysis on a weekly level dummy variables count the number of events that happened during a week ranging from zero to five events per week. Thus, weekly sanctions' variables are constructed not as binary

⁴ Variable representing Russian food embargo is not analyzed under the scenario of separated triggering events as it was a onetime occurrence with no clear triggering event

dummy variables but as variables ranging from zero to five, with zero representing that no sanctions related events happened in a given week and five stating that a given week was particularly intensive with sanctions related events happening on five out of seven days. Such methodology helps to account for the magnitude of a given week and helps to yield more precise results of our regressions.

This sanctions' index is then used to explain movements in the Russian index (MICEX) and the RUB/USD exchange rate (which essentially represents the RTS index, quoted in USD). As already explained, we split the equity index and the exchange rate to see better the effects on the index values and what they are driven by. This split is often not done in the media, which can lead to misinterpretation, since the RTS has less importance for domestic investors. Unfortunately, the sometimes cited decrease in value for large shareholders in Russian companies (Meyer & Reznik, 2015) is often calculated from a USD perspective and thus mixes the forex and the equity market developments together.

Table 2 Key crisis events; MICEX and RUB/USD change on a crisis event day; key statements by Western officials on the day (Feb-Mar 2014)

Date	Major crisis events	MICEX	RUB/USD	Quotes
27-Feb	Pro-Russian gunmen seize key buildings in Simferopol	-1.42%	-0.60%	<i>Barack Obama: "Any violation of Ukrainian sovereignty would be deeply destabilizing. There will be costs". (The New York Times)</i>
1-Mar	Russian parliament allows President Putin to deploy the military abroad	-10.79%	0.69%	<i>Barack Obama: "[Just days after the world came to Russia for the Olympic games, it would invite the condemnation of nations around the world]". (BBC)</i>
3-Mar	Violent protests in Donetsk	-10.79%	0.69%	
6-Mar	President Obama issues Executive Order 13660 that authorizes sanctions; heads of the EU discuss the Crimean situation	-0.97%	-0.98%	<i>Jay Carney: "Depending on how the situation develops, the United States is prepared to consider additional steps and sanctions as necessary." (Time)</i>
16-Mar	Crimean referendum	3.74%	-0.21%	
17-Mar	EU and US (Executive order 13661) authorize visa bans and asset freezes against key Russian officials	3.74%	-0.21%	<i>Steffen Seibert: "Russia is isolated to a large degree in its recognition of this so-called referendum". (Reuters)</i>
18-Mar	President Putin signs a bill to accept Crimea into Russia	4.06%	-0.74%	<i>Joe Biden: "It's a simple fact that Russia's political and economic isolation will only increase if it continues down this dark path". (Deutsche Welle)</i>
20-Mar	Additional visa bans and asset freezes from the US; first entity Bank Rossiya sanctioned	0.11%	-0.45%	
21-Mar	Additional visa bans and asset freezes from the EU	-1.00%	0.03%	<i>Angela Merkel: "[Russia risks] massive economic and political harm [if it doesn't change course]". (Bloomberg)</i>

Source: Bloomberg Terminal, US Department of State, European Union Newsroom, news reports

Notes: If on the day of an event there was no trading, daily returns over a net trading day are shown; exchange rate is shown in reverse, thus positive return means RUB depreciation and vice versa; the following US and EU officials have been quoted to prove the significance of the triggering events included in the analysis: US President Barack Obama, White House Press Secretary Jay Carney, Press Secretary of the German Chancellor's Office Steffen Seibert, US Vice President Joe Biden, German Chancellor Angela Merkel, US Secretary of State John Kerry, UK First Secretary of State William Hague, German Parliamentary Foreign Policy Spokesman Philipp Missfelder, other senior EU officials

Description: The table outlines the timeline of the Ukrainian crisis and the reaction of the Russian stock index in RUB MICEX and the RUB/USD exchange rate to the events; events included in the analysis are noted with a dashed rectangular and furthermore supported by the quotes of senior US and EU officials made on or around the date; furthermore, days on which sanctions were announced or enforced are marked in bold

Table 3 Key crisis events; MICEX and RUB/USD change on a crisis event day; key statements by Western officials on the day (Apr-May 2014)

Date	Major crisis events	MICEX	RUB/USD	Quotes
7-Apr	Protesters occupy government buildings in Donbas	-2.36%	-0.26%	
14-Apr	Protest escalation in Eastern Ukraine including future rebels stronghold city of Slovyansk	-1.29%	-0.45%	
15-Apr	Ukrainian acting President announces "anti-terrorist operation"	-2.52%	0.86%	
17-Apr	Unsuccessful Geneva talks - first attempt for a diplomatic resolution of the crisis	0.53%	-0.11%	
24-Apr	Russia announces new military trainings along the border	-2.15%	-0.74%	<i>John Kerry: "If Russia continues in this direction, it will not just be a grave mistake, it will be an expensive mistake". (CNN)</i>
28-Apr	US imposes trade limitations on 13 Russian entities; additional visa bans and asset freezes on Russian officials and entities	1.49%	1.06%	<i>Barack Obama: "The next phase — if, in fact, we saw further Russian aggression, including troop incursions into eastern Ukraine — [could be sanctions against broad sectors of the Russian economy]". (Washington Post)</i>
29-Apr	EU expands visa bans and asset freezes on Russian officials	0.43%	0.11%	
2-May	Protests in Odesa end with significant civilian casualties caused by a fire	-0.09%	0.01%	
11-May	Donbas referendum	0.28%	0.63%	
12-May	EU expands visa bans and asset freezes on Russian officials	0.28%	0.63%	<i>William Hague: "It's very important for us to demonstrate that we are ready for that third tier of sanctions, far-reaching sanctions". (Bloomberg)</i>
25-May	President Poroshenko elected	-2.21%	0.64%	
27-May	Air offensive in Donetsk airport by Ukrainian military	-2.21%	0.64%	
Source:	Bloomberg Terminal, US Department of State, European Union Newsroom, news reports			
Notes:	If on the day of an event there was no trading, daily returns over a net trading day are shown; exchange rate is shown in reverse, thus positive return means RUB depreciation and vice versa; the following US and EU officials have been quoted to prove the significance of the triggering events included in the analysis: US President Barack Obama, White House Press Secretary Jay Carney, Press Secretary of the German Chancellor's Office Steffen Seibert, US Vice President Joe Biden, German Chancellor Angela Merkel, US Secretary of State John Kerry, UK First Secretary of State William Hague, German Parliamentary Foreign Policy Spokesman Philipp Missfelder, other senior EU officials			
Description:	The table outlines the timeline of the Ukrainian crisis and the reaction of the Russian stock index in RUB MICEX and the RUB/USD exchange rate to the events; events included in the analysis are noted with a dashed rectangular and furthermore supported by the quotes of senior US and EU officials made on or around the date; furthermore, days on which sanctions were announced or enforced are marked in bold			

Table 4 Key crisis events; MICEX and RUB/USD change on a crisis event day; key statements by Western officials on the day (Jun-Aug 2014)

Date	Major crisis events	MICEX	RUB/USD	Quotes
14-Jun	The rebels down Ukrainian military plane carrying 49 people	-0.48%	-0.69%	
14-Jul	The rebels down Ukrainian transport plane	-1.09%	-0.03%	
16-Jul	EU suspends EBRD programs in Russia, US imposes economic sanctions on Russian key companies, further expands visa bans and asset freezes on Russian officials	-0.07%	-1.02%	<i>Barack Obama: "We have repeatedly made clear that Russia must halt the flow of fighters and weapons across the border. We have to see concrete actions and not just words". (BBC)</i>
17-Jul	The rebels down Malaysian Airlines flight MH17	-2.31%	-0.05%	
21-Jul	European leaders agree over the weekend that economic sanctions can be tougher	-2.67%	-0.59%	
25-Jul	EU expands visa bans and asset freezes on Russian officials	-1.45%	0.00%	
29-Jul	Additional economic sanctions from the US	0.58%	-0.31%	<i>Barack Obama: "Because we are closely coordinating our actions with Europe, the sanctions we are announcing today will have an even bigger bite." (NBC)</i>
30-Jul	EU expands visa bans and asset freezes on Russian officials and entities for the first time	0.90%	-0.18%	<i>Philipp Missfelder: "The chancellor decided that a clear signal must be sent [to Russia] after the shooting down of the civilian plane". (Financial Times)</i>
31-Jul	Economic sanctions from the EU	-0.18%	-0.07%	<i>Senior EU official: "[After imposing the sanctions] we will for sure have an effect and a very substantial and concrete effect on Russia". (Reuters)</i>
7-Aug	Russia bans Western food imports	-0.08%	0.36%	
27-Aug	Major Russian troops movement into Ukraine - NATO reports	0.32%	-0.59%	
28-Aug	Additional Russian troops movement into Ukraine	-1.67%	0.45%	<i>Angela Merkel: "This [stronger Russian presence in Eastern Ukraine] shows that we will have to discuss the question [about further sanctions] at the European Council meeting". (Wall Street Journal)</i>

Source: Bloomberg Terminal, US Department of State, European Union Newsroom, news reports

Notes: If on the day of an event there was no trading, daily returns over a net trading day are shown; exchange rate is shown in reverse, thus positive return means RUB depreciation and vice versa; the following US and EU officials have been quoted to prove the significance of the triggering events included in the analysis: US President Barack Obama, White House Press Secretary Jay Carney, Press Secretary of the German Chancellor's Office Steffen Seibert, US Vice President Joe Biden, German Chancellor Angela Merkel, US Secretary of State John Kerry, UK First Secretary of State William Hague, German Parliamentary Foreign Policy Spokesman Philipp Missfelder, other senior EU officials

Description: The table outlines the timeline of the Ukrainian crisis and the reaction of the Russian stock index in RUB MICEX and the RUB/USD exchange rate to the events; events included in the analysis are noted with a dashed rectangular and furthermore supported by the quotes of senior US and EU officials made on or around the date; furthermore, days on which sanctions were announced or enforced are marked in bold

Table 5 Key crisis events; MICEX and RUB/USD change on a crisis event day; key statements by Western officials on the day (Sep 2014-Feb 2015)

Date	Major crisis events	MICEX	RUB/USD	Quotes
05-Sep	Minsk 1 protocol signed	1,19%	0,60%	
06-Sep	Truce does not hold - shelling of Mariupol	-0,67%	-0,10%	<i>Senior EU official: "The ambassadors agreed on a package of sanctions against persons and sectors of the Russian economy" (Reuters)</i>
08-Sep	EU economic sanctions extended - Council decision	-0,67%	-0,10%	
11-Sep	President Obama announces new economic sanctions	-1,29%	0,03%	
12-Sep	Economic sanctions from the US (Executive Order 13662) and the EU (those decided on the 8th of September); EU extends asset freezes and visa bans on Russian officials	0,61%	-1,54%	
16-Oct	Unsuccessful talks between President Putin and President Poroshenko in Milan	-1,22%	-0,23%	
23-Oct	Ukrainian PM says Russia may try to disturb coming Parliament elections	-0,09%	-0,50%	
02-Nov	Elections in separatists area	0,18%	0,53%	
05-Nov	Two teenagers killed in shelling in Donetsk	0,27%	-0,78%	
12-Nov	NATO reports Russian troops entered Ukraine	-0,06%	-1,11%	
14-Nov	Cold reception for President Putin at G20 forum	0,57%	-0,92%	
04-Dec	EU economic sanctions amended (technical change)	-1,54%	0,73%	
12-Feb	Minsk 2 protocol signed	2,22%	0,07%	
15-Feb	Battle of Debaltseve continues; breach of ceasefire	-2,04%	0,73%	<i>Angela Merkel: "The situation [ceasefire] is fragile". (Deutsche Welle)</i>
16-Feb	EU extends visa bans on Russian military officials and popular singer	-2,04%	0,73%	

Source: Bloomberg Terminal, US Department of State, European Union Newsroom, news reports

Notes: If on the day of an event there was no trading, daily returns over a net trading day are shown; exchange rate is shown in reverse, thus positive return means RUB depreciation and vice versa; the following US and EU officials have been quoted to prove the significance of the triggering events included in the analysis: US President Barack Obama, White House Press Secretary Jay Carney, Press Secretary of the German Chancellor's Office Steffen Seibert, US Vice President Joe Biden, German Chancellor Angela Merkel, US Secretary of State John Kerry, UK First Secretary of State William Hague, German Parliamentary Foreign Policy Spokesman Philipp Missfelder, other senior EU officials

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4.2. Data Gathering

As already pointed out in Section 2.3., we choose different measures to control for other than the sanctions in the returns of the Russian market. All data are extracted from Bloomberg, except macro variables, which are extracted directly from the official authorities, such as the Russian Central Bank or the Russian government websites (Central Bank of Russia, 2015). We generally calculate daily returns using daily closing prices:

$$R_d(t_0, t_1) = \frac{P_{t1} - P_{t0}}{P_{t0}}$$

The average weekly returns are calculated as the simple averages of the daily returns in the respective period:

$$R_w(t_0, t_1) = \frac{1}{n} \times \sum_{d=1}^n R_d$$

We generally use returns instead of price levels to construct a stationary time series, which allows comparison between different indices (Cont, 2001), (Brock, et al., 1995).

- Equity indices

The Russian market, as already pointed out in Section 2.3., has two main indices, the MICEX and the RTS, both tracking the 50 largest companies in Russia. In this thesis we differentiate between the movements of the domestic stock market and the forex market, thus it is more useful to use the ruble denominated MICEX. We extract daily returns data over the whole period, using daily closing prices. The data is available for most of the period in the desired frequency except for some days with no trading⁵. As explanatory variables we choose two different indices computed by MSCI. Those indices should represent a broad range of countries and industries to control for the general development of the world economy and the most important exchanges. One of the best known and most used is the MSCI World, an index including large and mid-caps from 23 developed countries (MSCI, 2015). Due to weighting after market capitalization it is heavily dominated by the US stocks, with a weight of over 55%. To take Russian economic position more into account we thus add a second MSCI index, to cover the general developments in the emerging markets. The MSCI Emerging Markets includes the largest stocks from 23 different emerging countries, with China as

⁵ This could for example be due to a public holiday in Russia

the biggest country, representing 23% of the capitalization in March 2015 (MSCI, 2015). It is also important to note that Russia only contributes 3.9% to the index, thus the potential overlap with our MICEX variable is very limited. With these two indices we control for the general market movements in the most important markets.

- Exchange rate

There are different ways to measure a currency development. It could for example be the change in value compared to a certain basket of goods. This could be measured by comparing how much a certain good costs at different points in time, often measured as inflation. It could also be measured relatively to a major currency or against a basket of different currencies (Schumpeter, 1982). In this case we choose the USD as a reference currency because of its status as the world reserve currency (Prasad, 2014) and its dominance in international trade, especially in the oil industry, where most of the oil is sold in USD since 1973 (Oweiss, u.d.), (Katusa, 2012). We quote the currency pair as RUB/USD, providing the amount of ruble one would get for one USD on the exchange. Technically pairs can be quoted both ways, but generally developing market currencies are quoted in USD (see for example Bloomberg, Reuters or many exchange sites). We use the same methodology in calculating returns as for the equity indices.

- Oil price and exclusion of other commodities

Measuring commodity prices can be difficult, because they are not listed and traded like bonds or stocks (Teweless & Frank, 1988). One has to differentiate between the physical goods stored at a specific location and the futures contracts, which secure the right to receive a delivery in the future. On top of that different qualities or types (for example different sorts of wheat or oil with different levels of sulfur) could be traded at different locations. This complicates finding a proxy for the Russian oil exposure. There are two widely accepted oil futures markets: West Texas Intermediate Light Sweet Crude Oil (WTI), usually traded for the US market and Brent Crude Oil for the European market (CME group, 2015), (Horsnell & Robert, 1993) as well as many other, less traded versions (Kaufmann & Ullman, 2009). We choose a generic futures index provided by Bloomberg on Brent Crude Oil as a best measure. First, we choose Brent over WTI, because most of the Russian oil is imported to Europe and thus the European prices have a higher importance for Russia and even some of its gas exports are linked to the development of the oil prices (Fidler, 2015). Second, a future contract is usually more liquid than the spot price (Teweless & Frank, 1988). The relationship between spot and futures prices can be complex and change over time (often referred to as futures

formation) (Pindyck, 2001) but since Russia sells most of its oil on longer dated contracts (Fidler, 2015), we believe futures markets will better represent the effects than the less traded spot market. This metric simulates buying the most liquid future contract on oil, and rolling it into the next contract before the contract expires. A higher liquidity should resemble a more efficient market, which processes information faster and provides us with the best proxy for the revenues of oil companies and the Russian state. The roll over effects while exchanging contracts from an expired one to a new one often play a surprisingly big role over longer periods of time, but it is technically very challenging to exclude this effect while using futures as a pricing tool. This measure has also been used by other papers about the Russian stock market (Goriaev & Zabotkin, 2006). In summary we believe this proxy to be sufficient enough to control for the influence of changing commodity prices.

- Cheap money effect variables

The price of money can have a significant influence on exchange rates and on asset prices. For our study we extract yields for the US and Russia in their respective domestic currency. We quote this measure in yields instead of prices for the ease of comparison. There are two main difficulties when choosing appropriate measurements for yields. The first is that there are different maturities and terms, forming the yield curve for each country. Depending on the expected yield movements this curve appears- in different shapes (Brandt & Kavajecz, 2004). Thus it is important to select the same maturities if possible. In our case we choose the 10-year US treasuries, often regarded as benchmark for the US yields (Guerkaynak, et al., 2007), because of its widely agreed on importance as “money price” indicator (Amadeo, 2014). The Russian market is missing a widely agreed benchmark index and we choose the 8-year RUB denominated index because of the data availability and the relatively equal maturity compared to the US selection. The second issue is similar to the contracts for commodities. Both bonds are contracts with expiration dates, thus an index needs to roll over a contract once it comes close to expiration or can be grouped into another maturity group. For example the generic index for US 10-year bonds changes the underlying bonds frequently to represent bonds that actually are close to a 10-year maturity. This is less of a problem for bonds compared to commodities, because as a financial good that is standardized and tradable in both long and short positions the relationship between different maturities is more straightforward and the rolling effect is usually very small. For both our choices Bloomberg provides a generic index, which rolls over the current contract into the most liquid contract close to the desired maturity. We see both indices as sufficiently good proxies for the cost of money in the respective country.

- Exclusion of macroeconomic variables

Macroeconomic variables yield mixed results when used as explanatory variables for the stock market or the exchange rate (Acikalin, et al., 2008), (Asprem, 1989). We extracted several macro variables such as GDP, industrial output and central bank interest rates to test for significance. As expected, the time frame of the analysis and also the time lag of macro variables lead to their slower adaption and to insignificance in all of our tests. Thus, we excluded those variables and only report their movements as a general overview for the economic development during our selected timeframe in Section 4.4.

4.3. Data Description

The study is based on one-year sample of MICEX and the RUB/USD exchange rate daily and average weekly returns as well as on the independent variables discussed in Sections 2.3. and 4.1.

Table 6 Descriptive statistics

	Daily				Weekly			
	Median	Mean	SD	# of obs.	Median	Mean	SD	# of obs.
Dependent variables								
MICEX	0,00%	0,06%	1,34%	359	-0,03%	0,08%	0,72%	53
RUB/USD	0,00%	0,17%	1,62%	359	0,21%	0,25%	0,95%	53
Independent variables sanctions								
Events US visa bans & asset freezes	N/A	N/A	N/A	17	N/A	N/A	N/A	7
US visa bans & asset freezes	N/A	N/A	N/A	15	N/A	N/A	N/A	6
Events EU visa bans & asset freezes	N/A	N/A	N/A	31	N/A	N/A	N/A	12
EU visa bans & asset freezes	N/A	N/A	N/A	27	N/A	N/A	N/A	13
Events US economic sanctions	N/A	N/A	N/A	20	N/A	N/A	N/A	9
US economic sanctions	N/A	N/A	N/A	13	N/A	N/A	N/A	6
Events EU economic sanctions	N/A	N/A	N/A	14	N/A	N/A	N/A	6
EU economic sanctions	N/A	N/A	N/A	12	N/A	N/A	N/A	6
Russia economic sanctions	N/A	N/A	N/A	3	N/A	N/A	N/A	1
Independent variables other market factors								
Oil price	0,00%	-0,14%	1,40%	359	-0,17%	-0,21%	0,73%	53
World Index MSCI	0,00%	0,02%	0,49%	359	0,07%	0,02%	0,30%	53
Emerging Markets Index MSCI	0,00%	0,01%	0,59%	359	0,08%	0,01%	0,37%	53
US treasury yield	2,47%	2,40%	0,26%	359	2,45%	2,40%	0,26%	53
Russia 8 year government bond yield	9,49%	10,15%	1,92%	359	9,45%	10,23%	2,00%	53

Source: Own analysis

Notes: All variables are represented by relative measures; weekends are excluded in the weekly average results; on daily level the day before and the day after an event are included as part of the variable, if event happens on a weekend - the prior or next trading day are included into the variable

Description: The table provides key descriptive statistics for all variables used in the analysis

Table 6 provides key descriptive statistics of both dependent and independent variables as well as provides interesting insights into the frequency of the occurrence of different types of sanctions. As it can be seen in the table in the column summarizing number of observations, over the analyzed period there was the highest number of instances related to the EU visa bans and asset freezes followed by the US visa bans and asset freezes, the US economic sanctions and the EU economic sanctions. There was only one instance of sanctions on the Russian side in a form of Western food embargo, which explains limited impact that those had on the stock market or exchange rate, proven in later sections.

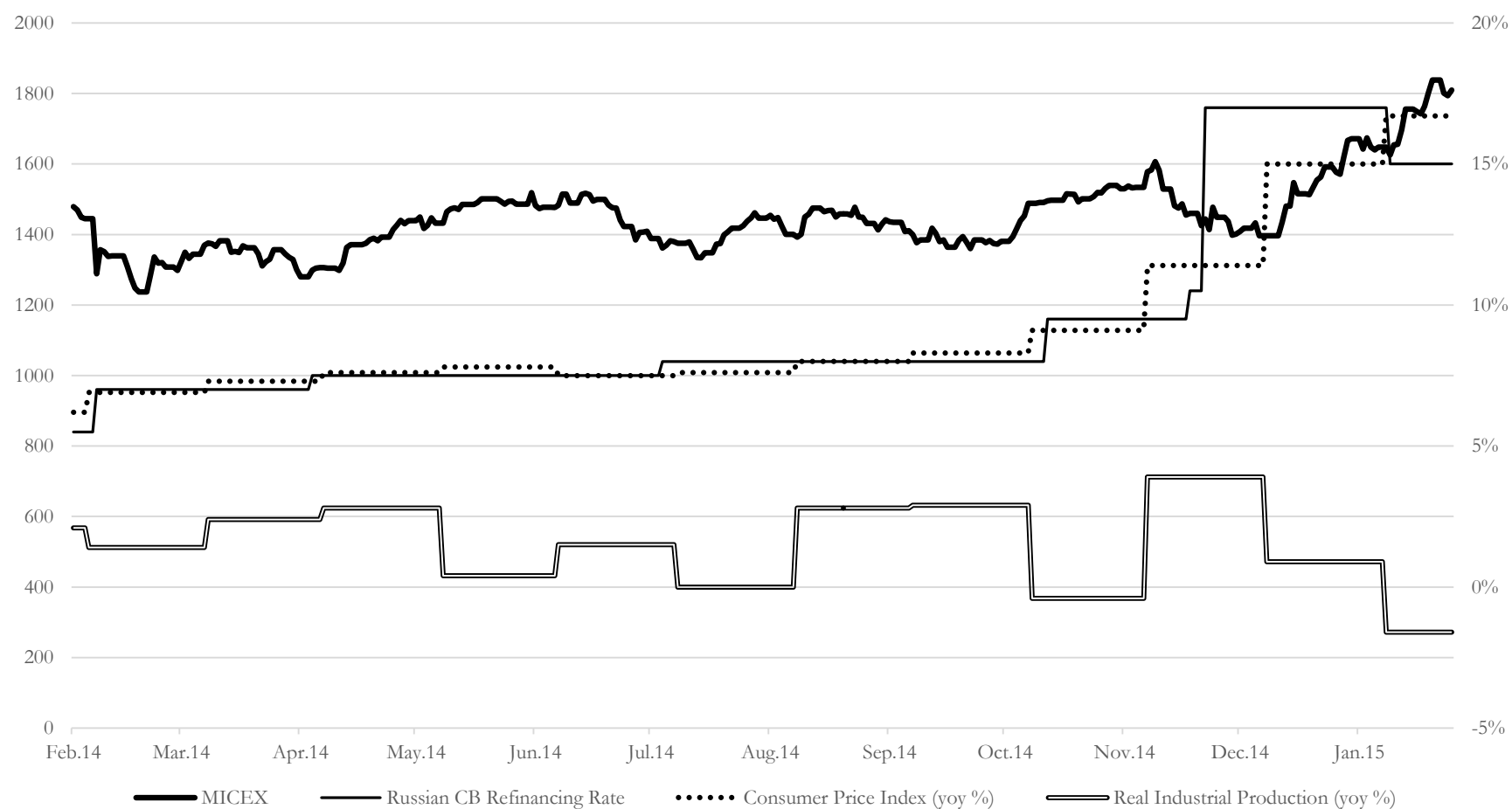
4.4. Macroeconomic Environment Factors

The macroeconomic environment has a mixed impact over the long run stock market performance as discussed before. As outlined in Sections 2.3., other studies (Chen, et al., 1986) show the relation between the stock market and economic data over longer horizon, using low frequency stock return data.

Although conceptually it makes sense to control for macroeconomic factors in our models in order to isolate the sole impact of the sanctions, we find it inconvenient from a technical perspective to apply chosen statistical analysis methods to identify the impact of those variables. The technical difficulty is driven mainly by the interpretation issues. Chosen macroeconomic factors have monthly frequency (or even lower) in contrast to daily or average weekly frequency of other variables included in the model. Thus stock market prices factor in macroeconomic information on the day of the announcement and its impact fades away until the next announcement. This can be observed in Figure 2 in particular in Central Bank refinancing rate changes. During December-January 2014 Central Bank of Russia has made two dramatic changes to its base rate. First it increased the rate by 650 basis points to 17% on the 16th of February and later it reduced it to 15% on the 30th of January. In both cases one can observe significant stock market reaction on the same day, but this does not persist as other information plays a more important role in prices development.

Based on the above observations we exclude macroeconomic factors from our models to focus on same frequency data for the ease of interpretation.

Figure 2 MICEX development and major economic indicators



Source: Bloomberg, official Russian agencies websites

Description: The graph represents MICEX development (left axis) and corresponding macroeconomic statistics (right axis) over the period

5. Results and Analysis

In the following section we report our findings and outline their interpretation. Every academic study unfortunately is done within certain limits without which the research would not be possible. We also outline the limitations of our study.

Following rigorous regression analysis we find partial connections between the sanctions and the stock index as well as between other factors and the index as suggested by H1 and H2. We also identify no links between the sanctions and the exchange rate and prove that the exchange rate is driven mainly by the oil price as suggested by H3 and H4. More specifically, our results prove that there are some connections between the sanctions and the Russian stock market but significantly more between the sanctions' triggering events and the index. The connections can be negative as well as positive depending on the type and timing of an event. Such mixed results are supported by the graphical analysis of MICEX development over the period presented in Figures 3-7. The graphs depict MICEX reaction to the key triggering events and sanctions' announcement or enforcement by both the US and the EU over the period. As can be seen from the graphs the index reacted both positively and negatively throughout the period, which mirrors the results provided by the regression analysis. With regards to the exchange rate analysis, we find no connection between the sanctions and the exchange rate, which is mostly driven by the oil price as hypothesized (graphs depicting exchange rate reaction to sanctions' triggering events as well as sanctions' announcement or enforcement dates can be found in Figures 9-13 in appendixes).

5.1. Results for Identifying Connections between the Sanctions and MICEX

H1: The Western sanctions on Russia have no explanatory power over the movements in the Russian stock index in RUB MICEX.

The coefficients estimated for sanctions' variables with no lag reported in Table 7 prove that Western sanctions as well as Russian food embargo have no impact on the Russian stock market daily and average weekly returns. However, when the analysis is performed with up to one time lag some influence can be found both on daily as well as weekly level. In particular, events that triggered the US and the EU visa bans and asset freezes were reflected in the MICEX level. The US visa bans and asset freezes triggering events causes MICEX to go up by 0.035% and the EU visa bans and asset freezes triggering events lead MICEX to decrease by 0.041% on the next day on average. The fact that adverse events that have high probability of yielding Western response in a form of

sanctions can lead to both positive and negative daily returns is surprising and will be explained further in the following subsections.

Moreover on a weekly level both lagged models, those that isolate and blend in triggering events, yield some results. Table 7 presents the effect that the US and the EU visa bans and asset freezes triggering events have on MICEX average weekly returns with one week lag. The results resemble the effect on the daily returns in sign but not in magnitude. The US visa bans and asset freezes triggering event causes MICEX to increase by 0.015% where the EU visa bans and asset freezes lead MICEX to decline by 0.017%. Again mixed signs raise some question about the impact of the sanctions on the Russian stock market. When triggering events are integrated into the sanctions' variables the significance seems to migrate to the economic sanctions. Table 7 shows that Western economic sanctions' impact Russian stock market average weekly returns with one week lag. Again the signs prove to be the same as in previous results with the US economic sanctions having positive impact on the index, causing MICEX to go up by 0.003% and the EU economic sanctions lead to 0.005% decrease. We believe the logic of mixed signs is the same as under the previous models and we try to explain it in the following subsection.

5.2. Interpretation of the Identified Connections between the Sanctions and MICEX

In this subsection we aim at giving economic interpretation of the interesting results found above and provide a real world perspective on such results. In particular we want to focus on explaining two key findings:

- The EU sanctions (both triggering events and announcement/enforcement) have negative impact on MICEX while the US sanctions (both triggering events and announcement/enforcement) yield positive change;
- Explanatory power of the sanctions on MICEX daily returns and average weekly returns can be identified only with up to one time period lag.

Starting with the first finding we see throughout the crisis consistent signs of market participants being more skeptical towards the unity and stance of the EU member states on implementing tough sanctions in response to Russian aggression in Ukraine. There are several key reasons for such logic. First of all, the EU comprises of 28 member states, each of which has to give its permission for a new round of sanctions being introduced. Such degree of decision making complexity and

bureaucracy obviously makes it more difficult to come up with a timely and strong response to Russian actions, as even admitted by the EU officials (“It is increasingly difficult to build European unity over the relatively tough actions, which we have to acknowledge today including the sanctions”, Donald Tusk, 20th of March 2015) (Szary, 2015). Second, the EU has significant economic ties with Russia, with Russia being the third trading partner of the EU and the EU being the first trading partner of Russia by volume (European Commission, 2014). Such close economic interdependence makes it more difficult to come up with measures that would have an impact on Russian economy without significantly hurting the recovering EU economy. This problem of conflicting goals and interference with self-interests is a common difficulty when dealing with sanctions (Hufbauer, et al., 2007). This is evident in the fact that it took the EU three month longer to implement the first economic sanctions (trade limitations and ban from capital markets) than the US. Thirdly, Russia uses a range of methods to fuel disagreements inside the EU (Oliver & Wagstyl, 2015). In particular, it uses its economic influence on the Central and Eastern European member states that heavily depend on Russian energy supply (Troianovski, 2015). It also acts as a reliable financier of populist far right or left wing parties in the EU, with a EUR 40 million loan to France’s Le Pen (Lichfield, 2014) and early 2015 symbolic reception for Greece’s new government (Herszenhorn & Alderman, 2015) being the examples of such actions. Finally, Russia spends significant amounts of money on modern day propaganda produced by such state controlled media as Russia Today (Bidder, 2013). RT is TV channel controlled by the Russian state authority that broadcasts Russian point of view on the Russian/Ukraine crisis in foreign language in the range of the member states and the US (Gaouette, 2015). Such methods aim at changing public opinion in the EU and the US and thus leaving European politicians with smaller public support for the sanctions. In combination these factors make it significantly more difficult to apply drastic sanctions. Since these facts are well known by market participants, the expectations towards the EU sanction have most likely been relatively low.

Our findings indicate that market participants relied on the above arguments and did not expect any significant response from the EU in a form of harmful sanctions. Although true to some extent, Russian methods proved to be less effective than anticipated by the market. The EU surprised the market by maintaining strong unity on the topic of Russian sanctions and by constantly increasing its stance. Thus, when an event linked to the potential EU sanctions or sanctions themselves occurred the market was negatively surprised which is resembled in the negative connection between the sanctions’ variable and MICEX performance.

Contrary to the EU sanctions' expectations, we believe the market expected stronger actions from the US government. While the US could allow stronger measures than the EU from the very beginning of the crisis, which is evident in early introduction of the real economic sanction (trade limits) on the 28th of April, the market expected tougher response based on the following logic. First of all, the US has far less trade with Russia than the EU (BBC, 2014). This in turn allows introducing harsh measures that would hurt Russian economy without hurting the US. Secondly, the US Congress is filled with hard line Republican politicians constantly expressing support for tough action on Russia. Senator John McCain among other has stated in March 2014: "It's time we woke up about Vladimir Putin. It's time this administration got real. We are on the verge of possibly of seeing a move to re-assert the old Russian empire, which is Mr. Putin's lifelong ambition" (ABC News, 2014). Thirdly, despite the complication of the US politics, it is still easier for the US leadership to make and enforce decisions than for the EU 28 member states, which have to agree unanimously. Thus, we believe a positive market reaction to the US sanctions or related triggering events can partially be explained by either expectations that the event would be worse, or the notation that the worst might be over now (Schneider & Troeger, 2006). This could have been the case for example after the Crimea annexation, when market participants might have believed the crisis would end after this event.

Another reason for the surprising result could be the timeframe of our analysis. It is difficult to distinguish between the market reactions to certain events with our methodology, which could be different depending on the nature of the event. Figures 3-7 show a graphical representation of the events and sanction and the MICEX index. We can see that some events/sanction seem to trigger a negative market reaction, while others seem to produce no market reaction or even a positive one. The different nature of the events can explain why some events might trigger a positive market reaction (based on previous expectations) while others trigger a negative reaction. A negative expectation can be based on a worse than expected event or because the event came as a negative surprise. A good example would be to compare the Crimea referendum and the downing of the MH17 plane. In the first case the market could have anticipated the event and the market had thus certain expectations that played a crucial role in determining the market reaction. On the contrary the downing could not be foreseen and thus the market could have had only very few expectations about this event (aside from expectations about a possible escalation of the crisis). Thus it is less likely that this event was already priced in by the market contrary to the Crimea referendum case. Therefore it is likely that the final result of the regression analysis is a mixture of different effects, which could

only be decoupled further in separate event studies, which is out of the scope of this paper. An alternative would be to separate the events into more subgroups, but due to the small sample size this would not yield significant results. This result of relative little impact and unpredictable returns has also been found in other studies investigating the effect of war on stock returns (Schneider & Troeger, 2006), which in theory should have most likely a stronger effect on future cash flows than sanctions alone.

It is important to mention that our analysis yields stronger results when looking at sanctions' variables that include both economic sanctions and related triggering events, which indicates that the events are the driving factors to the results in this case and not the imposing of the sanctions. The combined variables yielding stronger results than the variables excluding the related triggering events and including only the sanctions also indicate a smaller contribution to the developments of the index from the actual act of imposing the sanctions.

The second major finding deals with the lagged connection between the sanctions' variables and MICEX. We find two key reasons that could explain such relation. First, emerging stock markets, including Russian stock market are believed to be less efficient than developed stock markets (Antoniou, et al., 1997), (Lim, 2011). Thus, it generally takes more time for the Russian market to absorb news and factor them into the valuations. This can explain the fact that adverse events are priced into the index with one-day lag. Second, there is significant evidence of spillover effects between various stock markets, shown in the increased correlation between world indices (Neaime, 2012). The evidence of sanctions related events having one week lagged effect on MICEX can be partially explained by the existing spill over from the European markets. One also has to note that R^2 for the lagged relations is only 9% for daily returns and around 28% for average weekly returns, thus the explanatory power, especially for daily returns is quite low. Thus we remain skeptical about the strength of the connection.

5.3. Results for Identifying Connections between the Other Factors and MICEX

H2: Other factors, in particular MSCI World and MSCI Emerging Markets indices, oil price and interest rate environment, hold explanatory power over the movements in the Russian stock index in RUB MICEX.

Table 7 presents evidence that partially support existing link between the other selected market factors and MICEX. Other market factors coefficients reported in Table 7 prove that Russian stock

index can be mainly explained by the movements in the world equity markets. In particular 1% increase in MSCI World Index yields c. 0.4-0.5% increase in MICEX on the same day, when analyzed on the daily basis. The result does not change much with different classification of the sanctions, as sanctions have no influence on the Russian stock market daily returns. The index has no explanatory power on the next day or in general average weekly returns.

MSCI Emerging Markets Index influences MICEX both daily and average weekly returns but has no impact on the lagged returns. Table 7 shows that 1% increase in the index yields c. 0.7% increase in MICEX daily returns and that same increase has c. 0.9-1.0% increase in the average weekly returns with no lag.

Furthermore, we find evidence of the cheap money effect on Russian stock market performance. The increase in the US treasury yield tapers MICEX growth by c. 1.4-1.8%. The effect is identified on the next day for daily returns and on the same week for average weekly returns. Russian yields have no such impact.

It should be also mentioned that according to our study oil price has no explanatory power on the Russian stock market performance on daily or weekly level.

5.4. Interpretation of the Identified Connections between the Other Factors and MICEX

We find the above results to be equally interesting and would like to discuss the following issues in more detail:

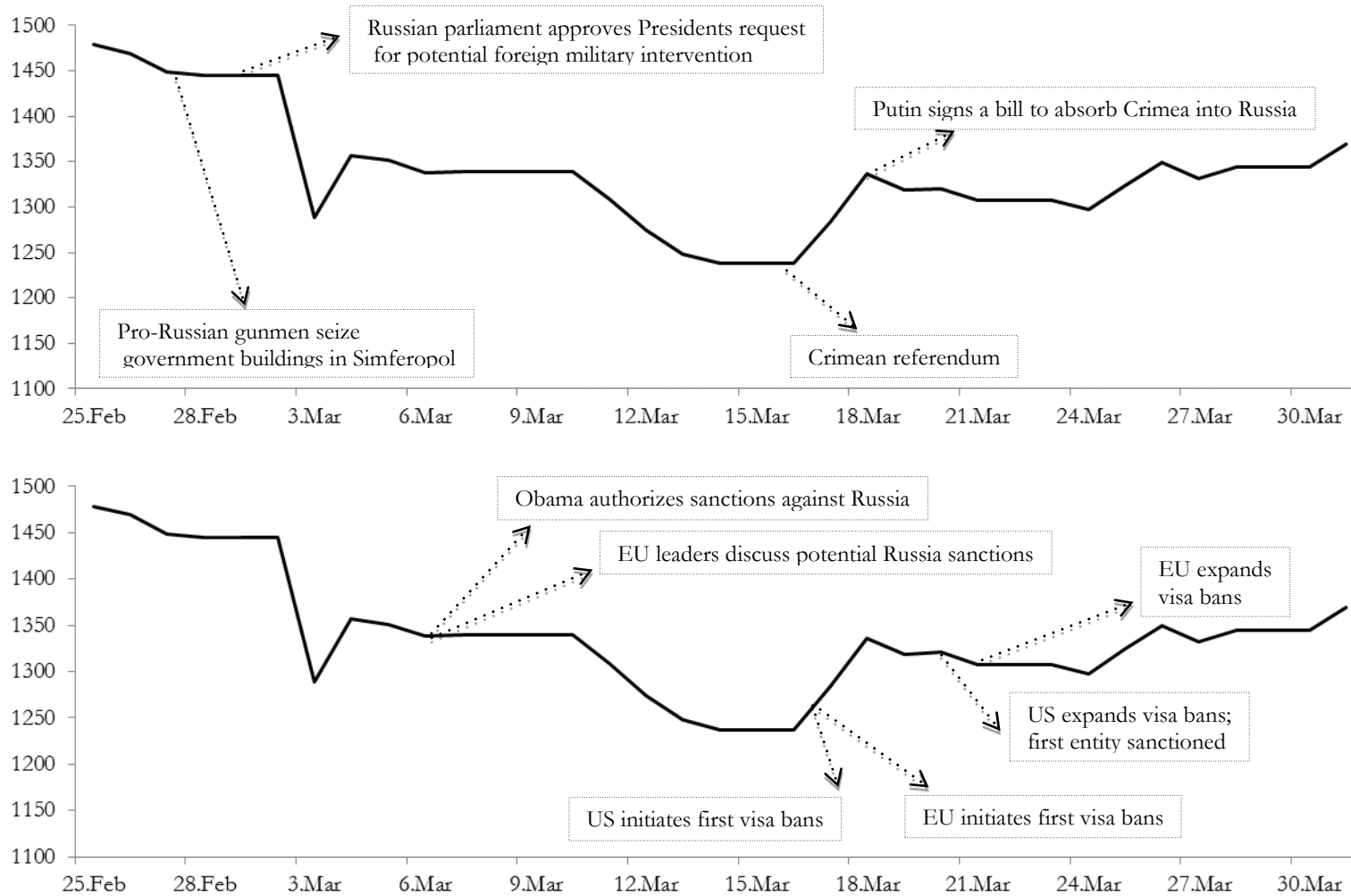
- Oil price has no explanatory power over the Russian stock market developments;
- Russian bond yields have no explanatory power on the Russian stock market.

It comes as a surprise that oil price has no explanatory power over the daily or average weekly stock returns, despite its large influence on the Russian economy and its exports. While it is difficult to pinpoint the exact reasons for that we see several possible explanations. First, it could be that the negative effect is already factored into the exchange rate movement, a fact that we look into in more detail in H4 results explanation. This would mean that domestic and foreign investors have a different perception on the impact of oil prices, because only the foreign investor is impacted first hand by the exchange rate. Another factor might be that the companies often rely on long lasting contracts to sell their commodities (Franza, 2014), thus short time variations in the price might be

perceived as less impactful for the stocks. It could also be that the low valuation compared to other energy stocks from emerging markets (Pavliova, 2014), (Rao & Strohecker, 2014) already factors in most of the uncertainty about the oil price, and thus the discount applied to many oil stocks is already deep enough so further shocks of the oil price have less of an impact. A more general problem with stock data is its high level of noise (Black, 1986). Thus it could be that due to the relatively short period of time the importance of oil price gets lost in the general noise.

The government bond yields are usually an important factor for a stock market in the respective country (Asprem, 1989), (Blanchard, 1981), (Giovannini & Jorion, 1987). Normally the general economic development, especially inflation, and the interest rate cycle of the central banks are the most important factors for the interest rate (Romer & Romer, 2000), (Cox, et al., 1985), which are also important for the stock market. Thus, at first glance it might be unexpected that the Russian yields are not significant for the Russian stock market. We see mainly two possible explanations for this. Firstly, yields also represent a view on a default probability of the debtor (Aguilar & Gopinath, 2006), (Cuadra & Sapriza, 2008), especially once the solvency becomes an issue. With Russia's default in 1998 (Duffie, et al., 2003) still in mind of some investors we believe that the volatile yields during our observed period could be a sign of increasing worries about potential Russian default. This is also supported by the high credit default swaps spreads during the crisis, at points showing higher spreads for Russia than for Pakistan or Guatemala, countries which are rated worse by credit rating agencies than Russia (Rao & Flasseur, 2015). This indicates a high degree of fear from market participants, since it shows high demand for insurance against a possible default. This could distract the link between the stock market representing the companies and the interest rates for government bonds and explain why the regression shows no explanatory power. Secondly, the Russian Central Bank did several interventions during the crisis, distorting the movements of the interest rates. It raised the key interest rates several times, most spectacularly in December 2014 with a 650 basis point hike from 10.5% to 17.0%, trying to influence the exchange rate (Tansas & Andrianova, 2014). It also actively bought and sold Russian financial assets, further influencing the market (Aleksashenko, 2014). We suspect this and the already mentioned noise problem might be the reasons why there is no connection between the interest rates and the stock market in our regressions. It could be that at a lower frequency with less noise the link appears (as shown in other research on quarterly data (Jones & Kaul, 1996), but due to the relative short time period this is not practical for this study.

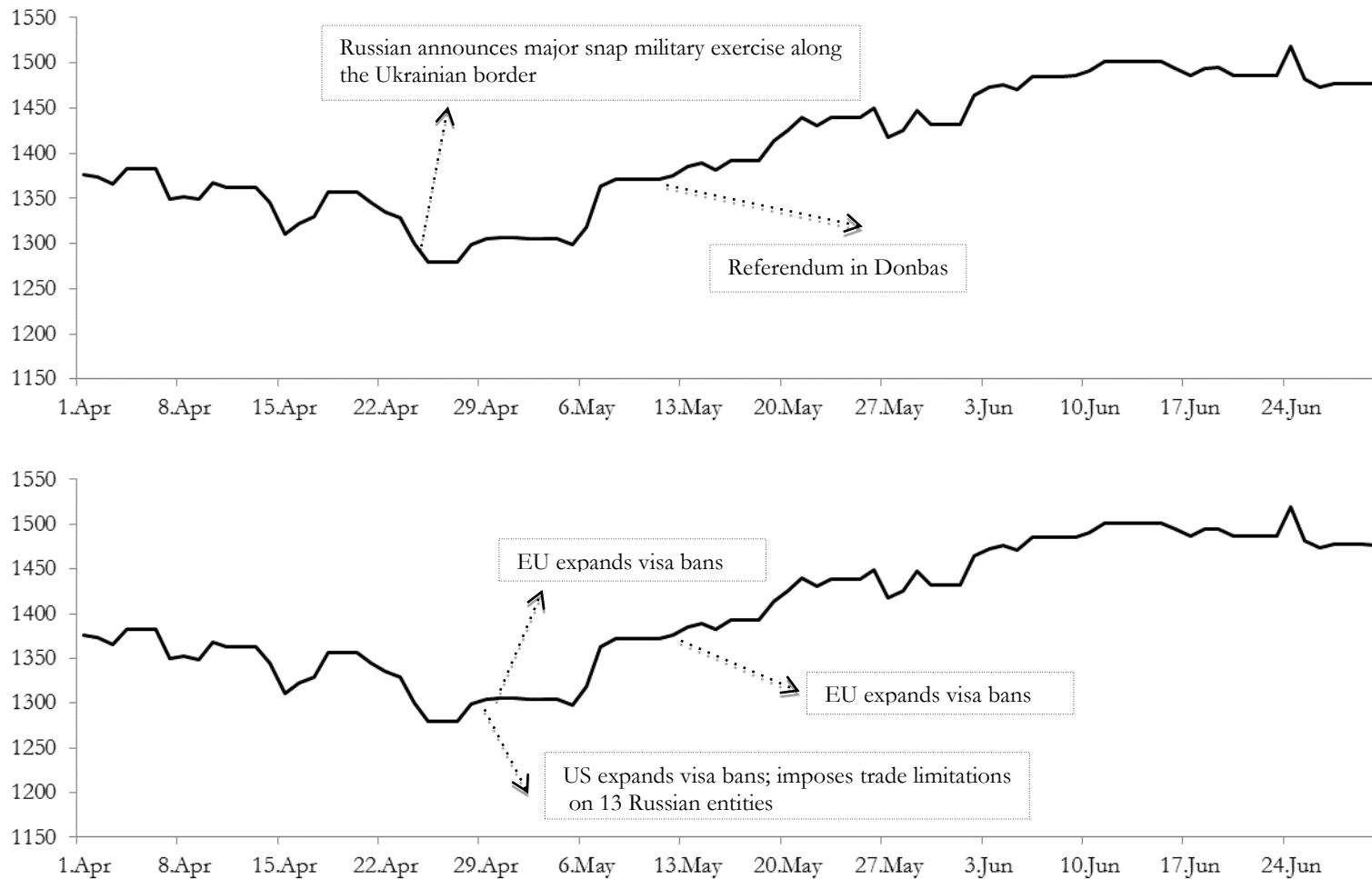
Figure 3 Russian stock market performance in RUB; key triggering events and sanctions over the period (Feb-Mar 2014)



Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The top graph depicts the development of the Russian stock market index MICEX in RUB and the crisis triggering events that happened during the period, and the bottom graph depicts the same index and the sanctions imposed by the US and the EU during the period

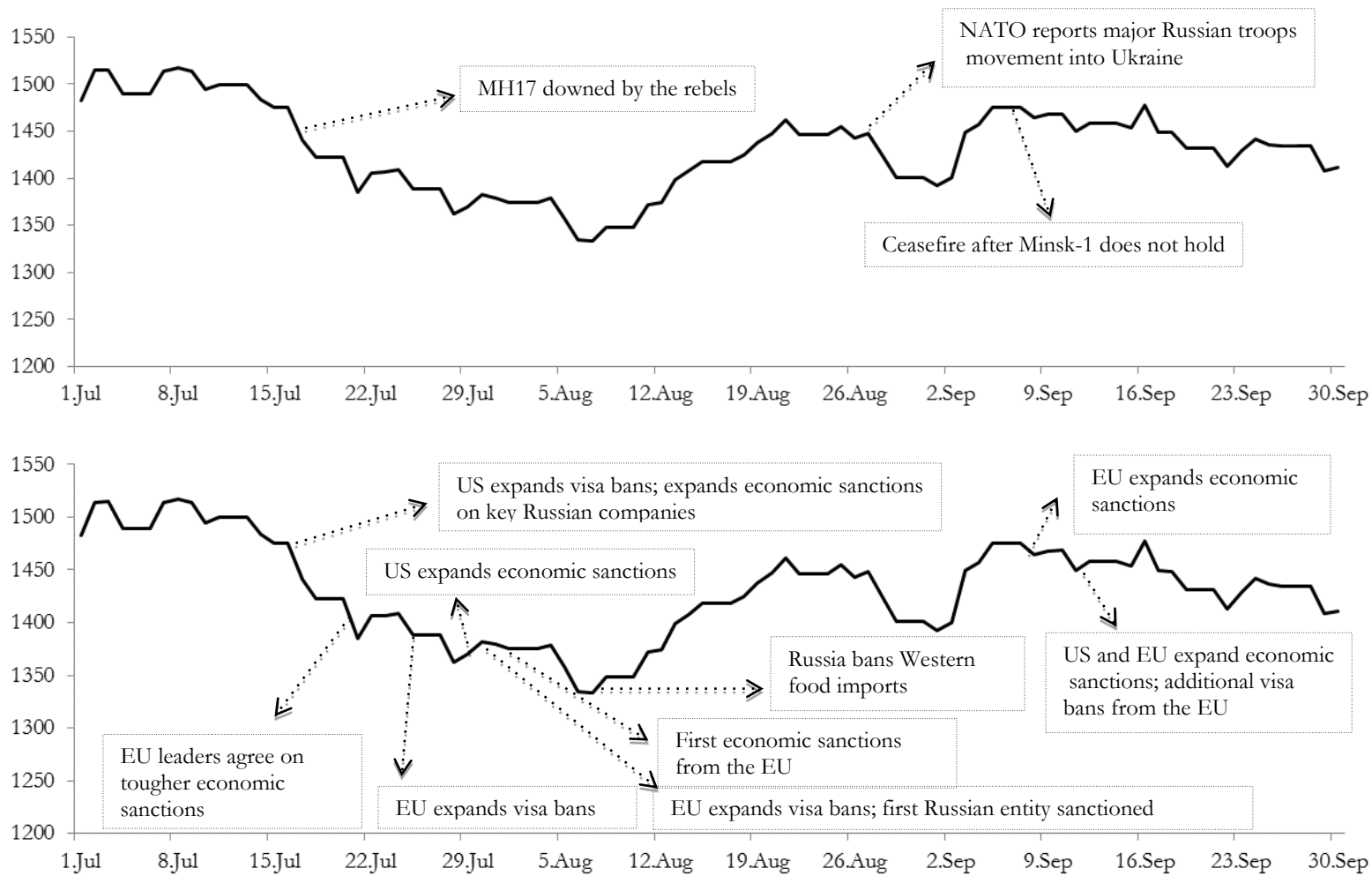
Figure 4 Russian stock market performance in RUB; key triggering events and sanctions over the period (Apr-Jun 2014)



Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The top graph depicts the development of the Russian stock market index MICEX in RUB and the crisis triggering events that happened during the period, and the bottom graph depicts the same index and the sanctions imposed by the US and the EU during the period

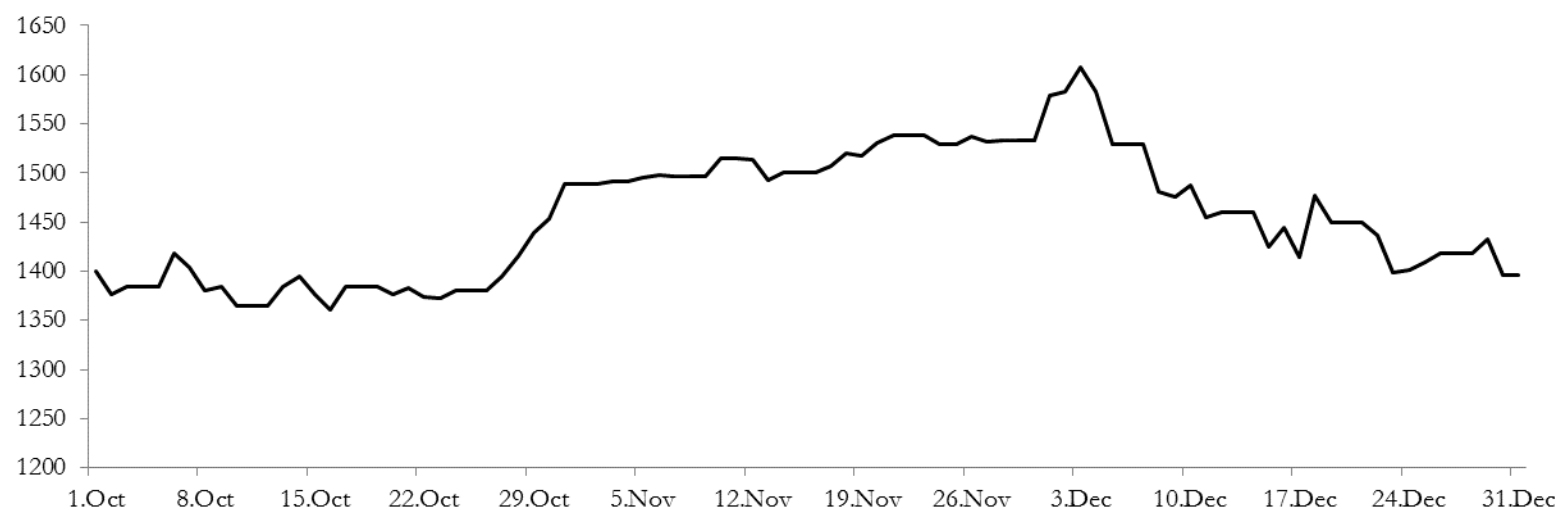
Figure 5 Russian stock market performance in RUB; key triggering events and sanctions over the period (Jul-Sep 2014)



Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The top graph depicts the development of the Russian stock market index MICEX in RUB and the crisis triggering events that happened during the period, and the bottom graph depicts the same index and the sanctions imposed by the US and the EU during the period

Figure 6 Russian stock market performance in RUB (Oct-Dec 2014)⁶

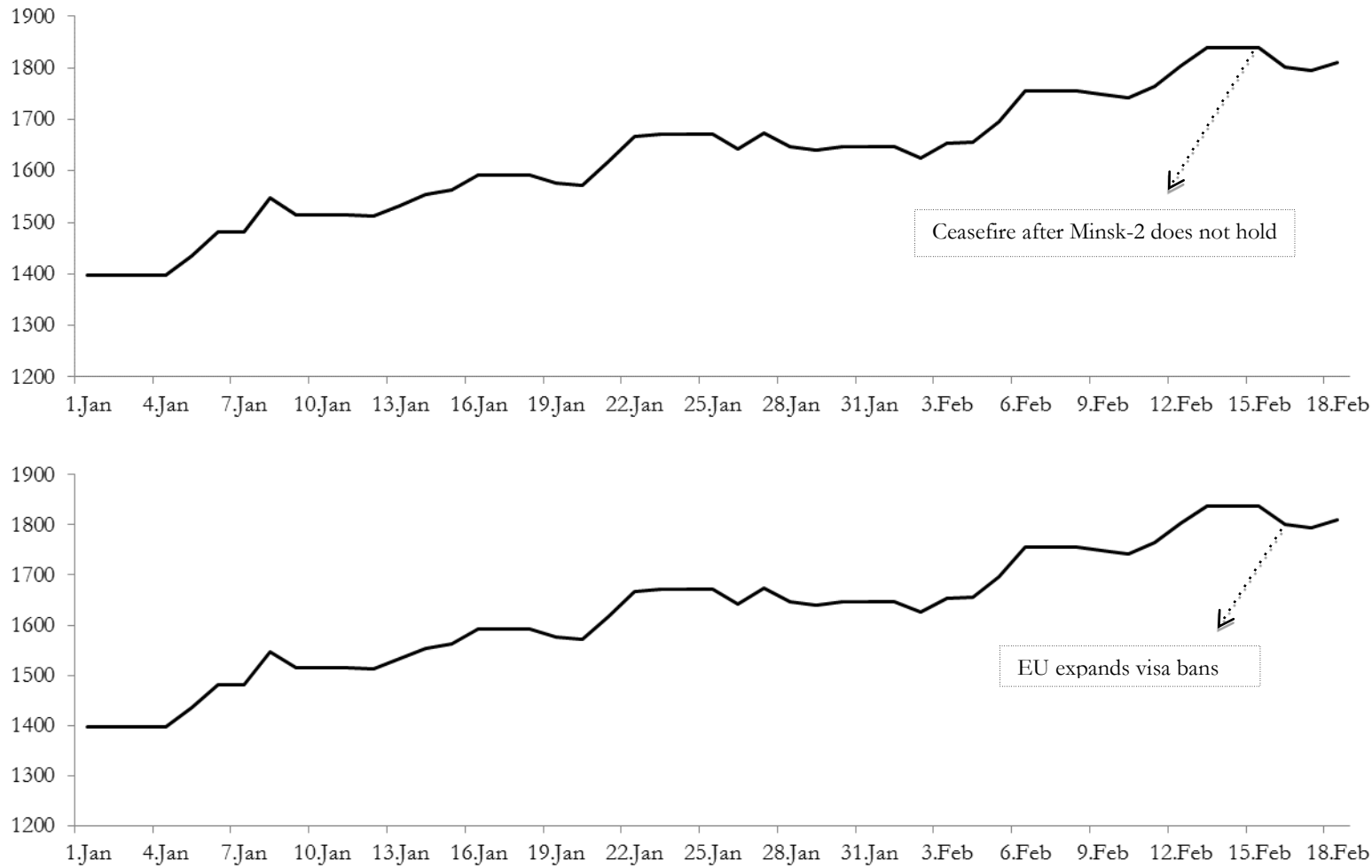


Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The graph depicts the development of the Russian stock market index MICEX in RUB during the period

⁶No significant triggering events or sanctions that occurred during October – December 2014 were identified

Figure 7 Russian stock market performance in RUB; key triggering events and sanctions over the period (Jan-Feb 2015)



Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The top graph depicts the development of the Russian stock market index MICEX in RUB and the crisis triggering events that happened during the period, and the bottom graph depicts the same index and the sanctions imposed by the US and the EU during the period

5.5. Results for Identifying Connections between the Sanctions and the Exchange Rate

H3: The Western sanctions on Russia have no explanatory power over the movements in the RUB/USD exchange rate.

The coefficients estimated for sanctions' variables reported in Table 8 indicate that there is no link between Western sanctions as well as Russian food embargo and RUB/USD exchange rate, which is in line with H3.

5.6. Interpretation of the Identified Connections between the Sanctions and the Exchange Rate

The most important result that we discuss in our interpretation is the missing link between the sanctions and the exchange rate movements:

- Neither the US nor the EU sanctions have any explanatory power for the exchange rate.

As mentioned previously to our knowledge there is no research that could establish a link between sanctions and currency performance of a sanctioned state. The results of our work proves that it is difficult to shift target country's currency with sanctions given that other factors have substantially more significant impact on it. This does not prove that there can be no link under other circumstances or with other types of sanctions, but indicates that the public perception of the sanctions being an explanation for the ruble depreciation might be wrong (Arutunyan, 2014), (Rankin, 2014). Instead it might be the case that the ruble rate is experiencing a "perfect storm" (Cable, 2014) – a combination of different factors that influence and enhance each other, leading to the drastic devaluation of the ruble compared to major currencies, especially the USD. This is an idea that we investigate further in H4. Another reason for the missing connection could be the limitations of the sanctions' index. Market reaction time and market noise makes it difficult to pinpoint cause and effect in high frequency financial data. For example credible rumors can move the market, and then the actual confirmation of that rumor (for example the actual announcement of sanctions) has little impact on the market (Oberlechner & Hocking, 2004), (Cutler & Poterba, 1989). The limitations of our approach and possible further investigations are explained in more detail in Section 5.9.

5.7. Results for Identifying Connections between the Other Factors and the Exchange Rate

H4: Other factors, in particular oil price, hold explanatory power over the movements in the RUB/USD exchange rate.

Coefficients estimated for other market factors variables reported in Table 8 prove that oil price has the majority of explanatory power over the exchange rate. Changes in oil price explain RUB/USD exchange rate movements on the same as well as on the next day and average weekly returns on the next week do the same. Specifically, 1% increase in oil price causes c. 0.3% ruble appreciation on the same day and c. 0.17% on the next day. This is in line with c. 0.45-0.46% appreciation in average weekly returns in the next week.

Moreover, the MSCI World Index performance seems to impact RUB/USD daily returns on the same day. A 1% increase in the index causes the ruble to appreciate by c. 0.4%. The MSCI Emerging Markets Index has similar but stronger impact of c. 0.7%.

Furthermore, fixed income securities yields have an impact on RUB/USD daily returns. In particular, 1% increase in the US treasury yield causes c. 1.7-1.8% ruble appreciation on the next day and 1% increase in Russian yield leads ruble to appreciate by c. 0.2% on the next day.

5.8. Interpretation of the Identified Connections between the Other Factors and the Exchange Rate

Similarly to previous cases, we would like to provide economic interpretation for the identified connection between various economic factors and RUB/USD exchange rate.

Oil had no significant explanatory power over the stock returns, but it has significant influence on the exchange rate (measured in RUB/USD). The strong devaluation of the ruble indicates that investors sold ruble assets and bought foreign assets, possibly anticipating the Russian economy to suffer significantly from the dropping oil prices (Kuznetsov, et al., 2014), (Forbes.com, 2015). This result is also a strong indication that the plunge in the ruble might be more influenced by other factors and not the sanctions. The heavy bear market in oil during the period is confirmed to have a significant influence on the exchange rate, while, as seen in H3 testing results, the sanctions have none.

Additionally, there is a strong connection between the world indices performance and the state of Russian economy, a typical sign of the growing globalization and the increased correlation between economies around the globe (Heathcote & Perri, 2004). This link is translated into the identified influence of MSCI World Index and MSCI Emerging Markets Index on the RUB/USD exchange rate. This is probably explained by the calmer than expected period of observations, during which the general market movements influence the exchange rate more than single country related events.

Finally, there is direct connection between interest rates and the exchange rate. Interest rates serve as one of the main instruments for central banks around the world to control money aggregates and as pointed out earlier the Russian Central Bank used this and other tools heavily during the period. Interest rates and also direct interventions have been used as a tool to stabilize the ruble. In total the Central Bank spent more than USD 80 billion to support the ruble (Central Bank of Russia, 2015) during the observed period. The active usage of those tools had a strong influence on Russian interest rates, albeit only partially successful (Aleksashenko, 2014) in its original purpose of defending the ruble, and thus it is not surprising to see these connections mirrored in our results. Higher yields meant it was more attractive for investors to buy Russian, which generated increased demand resulting in strengthening of the ruble. It is noteworthy that the link exists only on a one-day lag, which seems to indicate that there is a delay from the interest rate market to the forex market.

The link between the US yields and the exchange rate is also significant. We expected this to be indicative of two interesting and yet opposing factors. On one hand, an increase in the US yields should make the currency more attractive, thus leading to a higher value of the USD, resulting in a depreciation of the ruble. On the other hand, the US yields are an important gauge for the price of money for global investors. In recent years the term “risk on risk off”⁷ has been used to describe in- and outflows from risky assets, such as emerging markets assets (Regan, 2014). This usually means safe haven assets like the US treasuries or German bunds would move in the opposite direction of risky assets, depending on the investors’ sentiment. Based on this a drop in the price of the US treasuries (which would result in increasing yields, as yields move inverted to the prices of fixed income securities) could be connected to a “risk on” move. This “risk on” move would cause foreign investors buying Russian securities and increasing demand for ruble assets. Thus an increase in the US yields would lead to an increase in the ruble value. Our results support the theory that the second effect is the stronger one, since rising US yields result in a rising ruble. The lagged effect in this

⁷ The term was first used by Nicholas Colas of ConvergEx Group (Regan, 2014)

connection could be due to the different trading hours in both markets, resulting in an overnight spill over. Nevertheless, we note that the R squared in the respective model is relative low of only 7%, which leads us again to remain cautious since large portions of the movements are not explained with our factors. We also acknowledge that the relationships between the interest rates and the forex market are very complex and not the focus of this thesis. Other researches also point out, that the relations between interest rates and the exchange rate can change over time, and are difficult to pinpoint. This is based on the fact that both can react to the same factors (for example money inflow) in a different way, depending on the circumstances and the market situation (Sanchez, 2005), (Hnatkovska & Lahiri, 2008).

Table 7 Regression analysis results for MICEX returns

[illegible]

Table 8 Regression analysis results for RUB/USD exchange rate changes

[illegible]

Source: Own analysis

Notes: Events columns represent regressions where triggering events were separated into unique sanctions' variables as opposite to the No events columns where triggering events were integrated with the sanctions' variables as explained in Section 4.1; * represents significance at 1%, ** - at 5% and *** - at 10%; Lag 1 columns represent regressions run with one day lag for Daily returns and one week lag for Weekly returns average as explained in Section 4.1.

Description: The table presents the RUB/USD regression results

5.9. Limitations and Further Research

This paper has shown that our hypotheses of insignificant impact of the sanctions on the exchange rate (H3 & H4) is supported, while the results of the impact on the stock market are more ambiguous (H1 & H2). Before concluding our findings it is important to speak about the limitations of our methods and acknowledge this thesis objective contribution. There are several points we would like to address to clarify the limitations of this paper: Data period and return frequency leading to noise, the problems of rumors, the timing of the sanctions' index and the focus point of this paper.

The data period spanning over roughly one year forced us to use daily and weekly returns instead of monthly or even quarterly. Especially daily returns tend to be very noisy and regressions usually show relative low R squared values because of that. This has been confirmed by other research, using weekly data for the Russian stock market and finding comparable R squared values (Goriaev & Zabotkin, 2006). Thus, a lot of the movement is unexplained by our common factors, which limits the explanatory power of our analysis. This is an inherent problem of the sanctions topic, since the period in which sanctions occur is usually limited and thus if the reactions in the stock market are to be judged, researchers are forced to use daily data. Thus, it cannot be ruled out that the results of our analysis are affected by other factors, which influence the equity index or the exchange rate and coincide with the sanctions.

The above limitation is linked to the issues of the sanctions' index construction as well as the reaction of the stock market to news. As already pointed out in Section 4.1 the sanctions' index is constructed using different sources such as news sites, official documents and officials' speeches. The decision about which event is deemed important is always based on subjective judgment and thus the results are to be used carefully since other measures might possibly yield different results. Nevertheless, we believe we used events that received the greatest attention by the media, and thus most likely had the biggest influence on market participants. Market participants and their reactions have been a field of intensive research since a long time ago, and the explanation of the always rational agent has been challenged seriously by fields such as behavioral finance (Thaler, 2005). When dealing with uncertain events and difficult to estimate follow ups from those events, as it is the case with the sanctions, market participants struggle to anticipate the best way to invest. This can lead to counterintuitive market reactions. We find some evidence that sanctions sometimes have a positive market effect. This is most likely based on worse expectations from market participants (Baker,

2014), which get corrected once the actual facts get released (Fama, 1990), (Oberlechner & Hocking, 2004). Combined with the fact that sanctions could yield building up pressure effect, which is not priced in the market, due to the hard to estimate nature of the effect, it could create market movements that are resulting from sanctions but are out of sync with our sanctions' index.

The last important limitation we like to point out is the focus point of this paper. The central question is if the sanctions can be used to explain the stock market reactions in the observed period. The exchange rate inspection is just to prove whether there are differences for foreign and domestic shareholders, but the topic is of second order in our analysis. It is also out of scope of this paper to explain deeper the driving forces of the Russian stock market or the exchange rate, and we point towards other researches for a more detailed look of these issues (Goriaev & Zabotkin, 2006), (Koppl & Yeager, 1996), (Ono, 2012).

We believe this is an interesting field for future research. In the world of politics, that sees war more and more as an action of last resort and less as an appropriate tool to solve issues (Gilpin, 1983), (Parton, 2014), it is vital to understand the effects of other tools such as sanctions. Sanctions are hard to quantify and the Russian example offers a unique perspective on their functionality. Future research could for example look at the sanctions' influence on the Russian macro-variables as well as other financial markets, such as the debt market.

6. Summary and Conclusions

We finalize the study with concluding remarks and implications of our findings.

This paper examines the impact of Western sanctions on the Russian economy during the Russia/Ukraine crisis. The study focused mainly on the Russian stock market performance during the crisis as the main proxy for the Russian economy. The impact on RUB/USD exchange rate has also been examined.

The study has confirmed that there is little persistent significant impact from the sanctions on the stock market of a sanctioned state. The movements in the stock market are mainly driven by the other external market factors, such as the performance of the major world indices and the US treasury yields but, interestingly enough, in this case not by the oil price volatility over the observed period. Moreover, the little impact that sanctions have might be positive as well as negative and depends on the market efficiency and prior expectation of the market towards the potential sanctions. We can also conclude that it is technically challenging to examine the impact on a financial market, because of the complexity of the sanctions, issues of accessing reactions' timing and expectations of market participants. As for the exchange rate we find even less interrelations between the sanctions and the RUB/USD exchange rate over the period. The defining factor for the exchange rate remains the oil price, as oil is Russia's main export item, which can at least partially explain the missing oil link for the ruble denominated stock index. This further supports our doubt about the influence of the sanctions, since the stock market has not been performing particularly poorly during the observed period excluding the forex effect.

Our findings by no means aim at defying economic and other types of sanctions as an ineffective measure of international politics or advising its abolishment. As has been stated multiple times in the paper, the measurements for successful sanctions are broad and thus a missing impact on the stock market and exchange rate does not necessarily mean that the sanctions have been unsuccessful. The main focus of the study was to measure what impact different sanctions and other market factors have on the sanctioned state, measured by the reaction of two of its key financial markets. Our study does indicate that market participants react to sanctions and look out for the potential impact that sanctions have on the economy although sometimes in an unexpected way.

We believe our findings have important implications for policy makers around the world and will help them to be more effective in matching a type of restrictive measure on a sanctioned state with the desirable impact on its economic, political or social processes.

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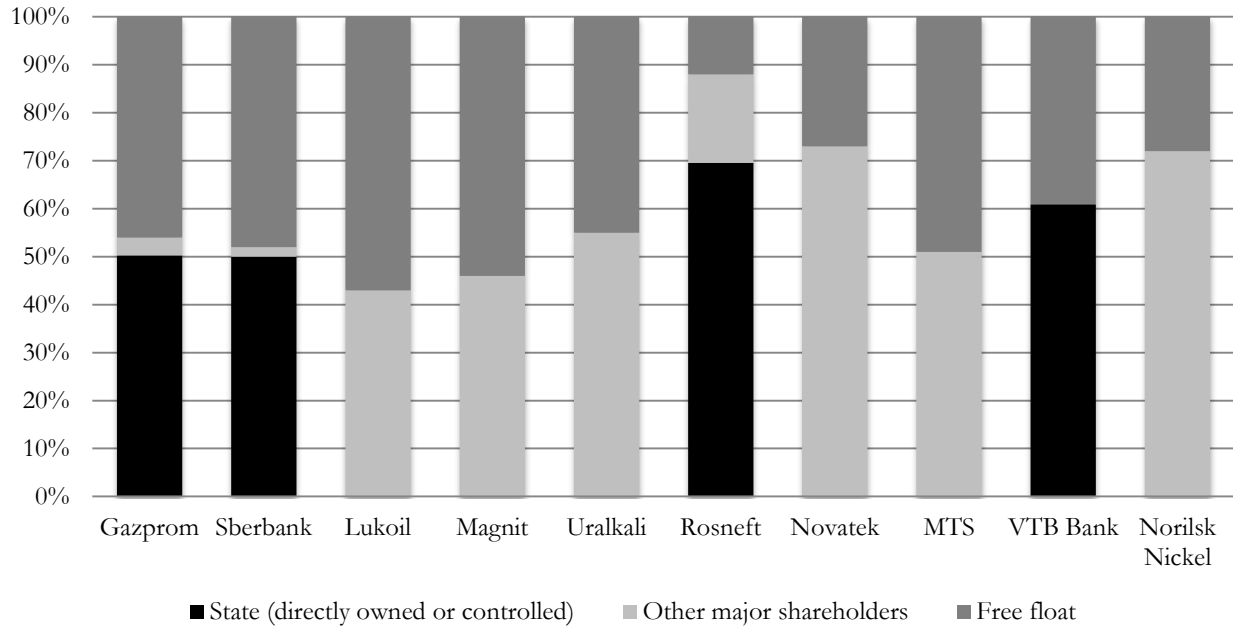
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Appendixes

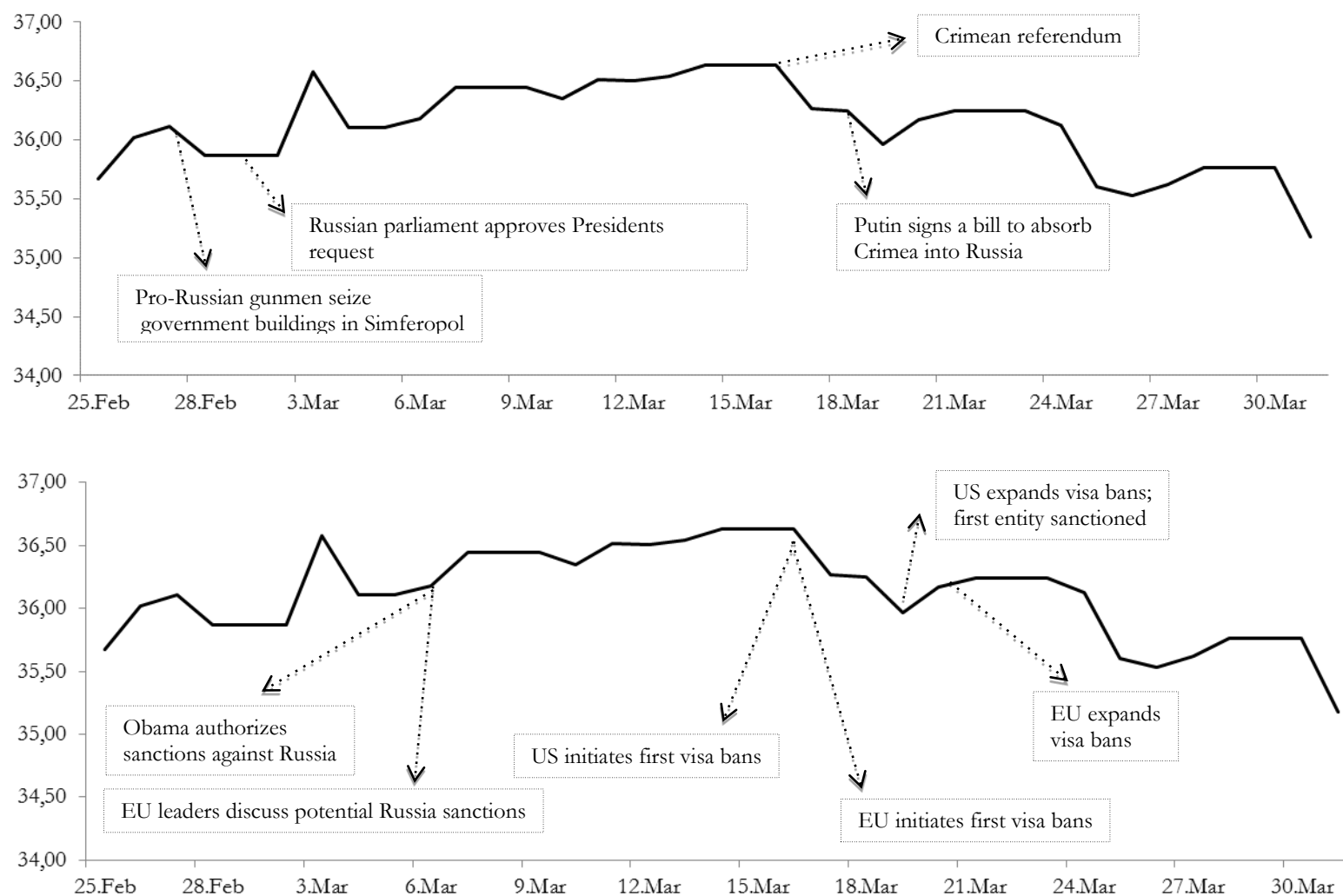
Figure 8 Ownership structure of top 10 Russian companies by market capitalization included in the MICEX index



Source: Company Websites, Bloomberg

Description: The above chart presents the structure of top 10 Russian companies in the MICEX index

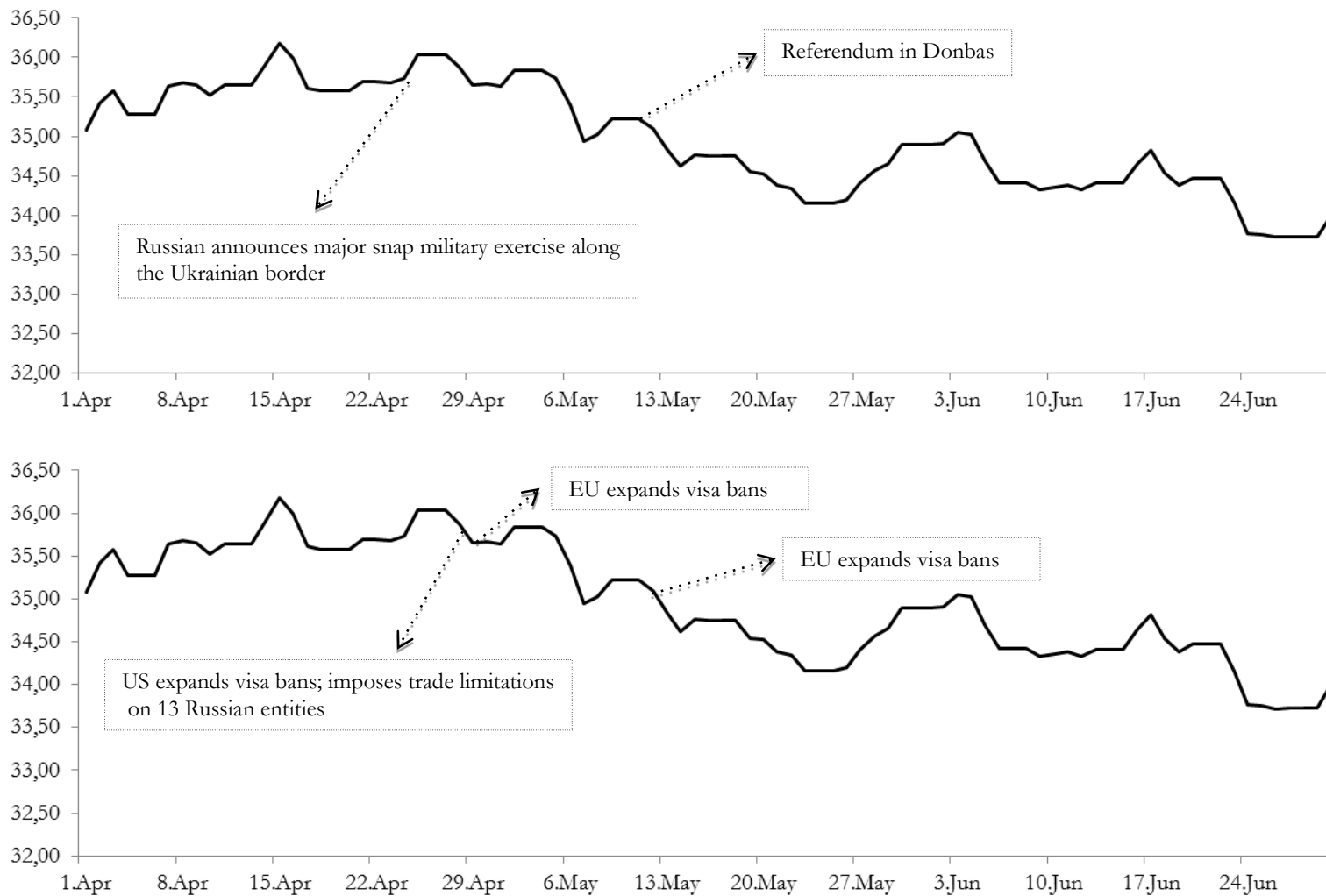
Figure 9 RUB/USD exchange rate; key triggering events and sanctions over the period (Feb-Mar 2014)



Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The top graph depicts the development of the RUB/USD exchange rate and the crisis triggering events that happened during the period, and the bottom graph depicts the same exchange rate and the sanctions imposed by the US and the EU during the period

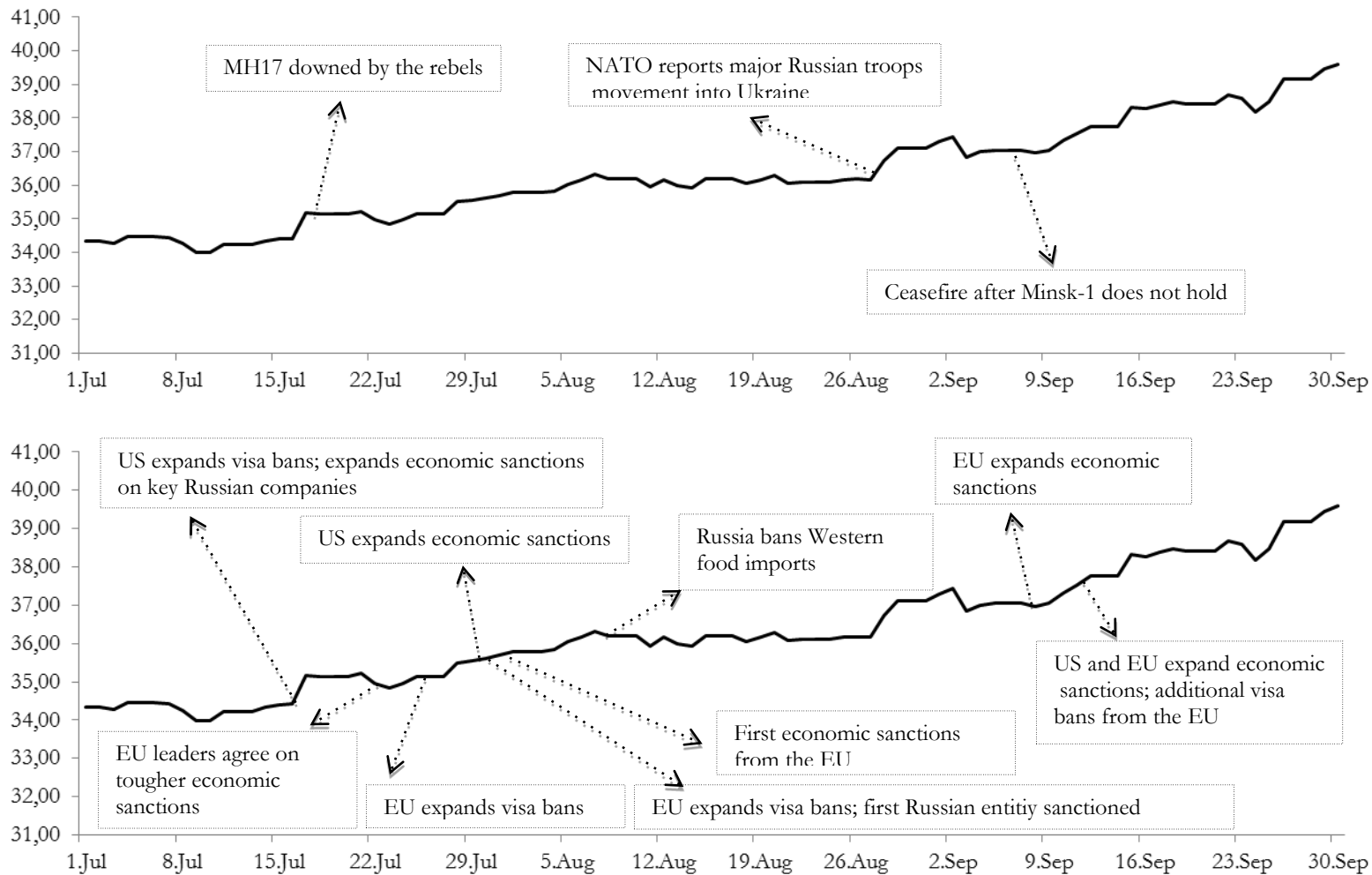
Figure 10 RUB/USD exchange rate; key triggering events and sanctions over the period (Apr-Jun 2014)



Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The top graph depicts the development of the RUB/USD exchange rate and the crisis triggering events that happened during the period, and the bottom graph depicts the same exchange rate and the sanctions imposed by the US and the EU during the period

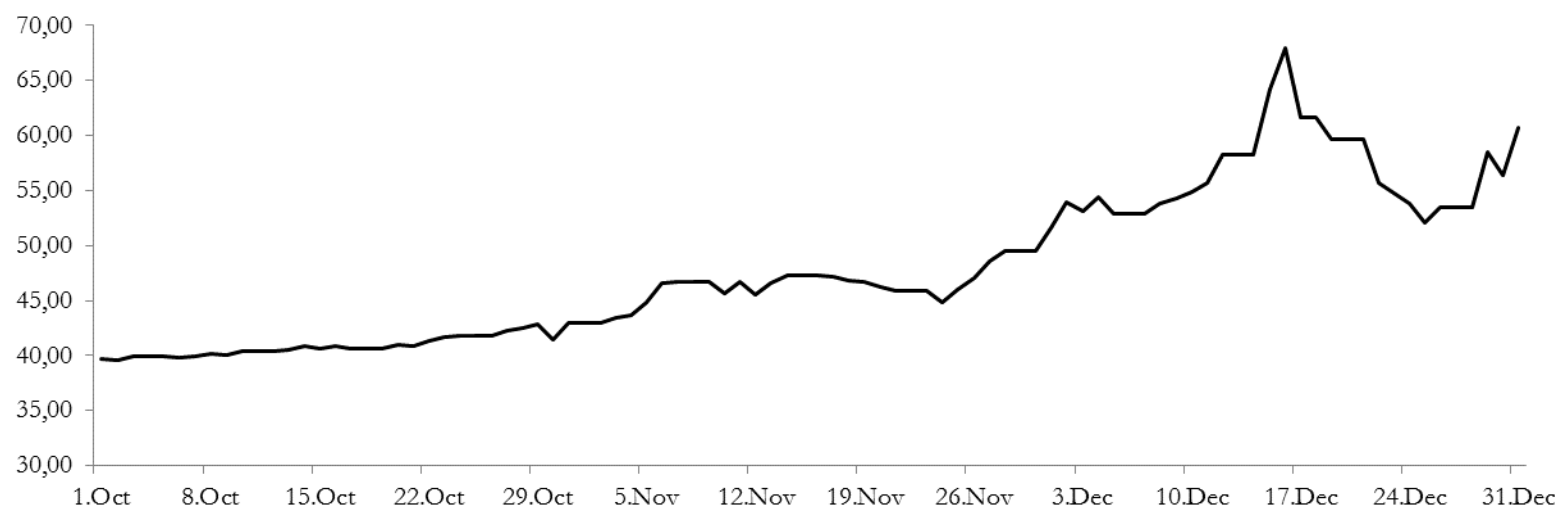
Figure 11 RUB/USD exchange rate; key triggering events and sanctions over the period (Jul-Sep 2014)



Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The top graph depicts the development of the RUB/USD exchange rate and the crisis triggering events that happened during the period, and the bottom graph depicts the same exchange rate and the sanctions imposed by the US and the EU during the period

Figure 12 RUB/USD exchange rate(Oct-Dec 2014)⁸

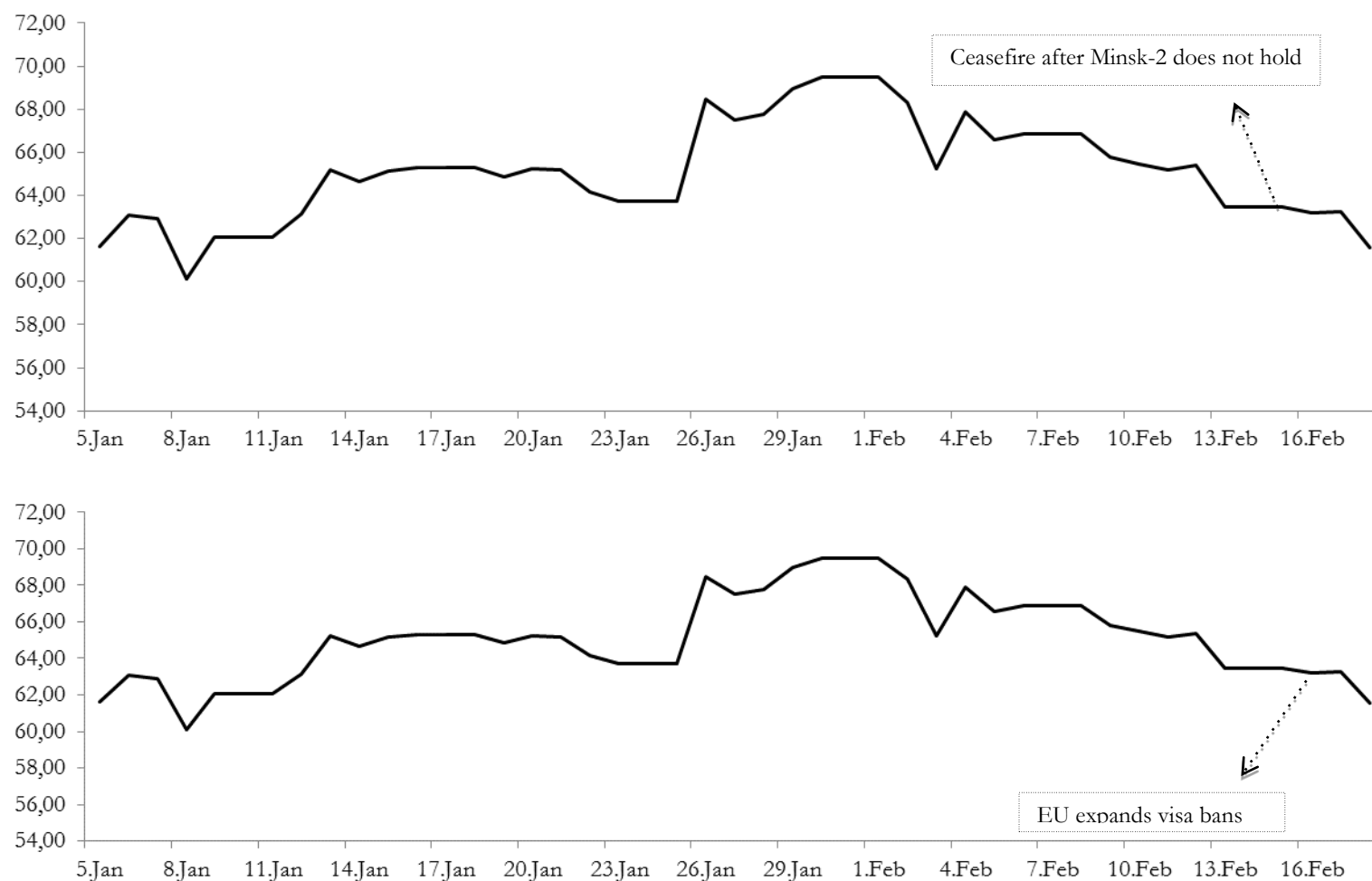


Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The graph depicts the development of the RUB/USD exchange rate during the period

⁸No significant triggering events or sanctions that occurred during October – December 2014 were identified

Figure 13 RUB/USD exchange rate; key triggering events and sanctions over the period (Jan-Feb 2015)



Source: Bloomberg, news reports, US Department of State, European Union Newsroom

Description: The top graph depicts the development of the RUB/USD exchange rate and the crisis triggering events that happened during the period, and the bottom graph depicts the same exchange rate and the sanctions imposed by the US and the EU during the period