Political Risk & Capital Flight

Case Study of the Ukrainian Crisis

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Abstract

This paper examines the economic impact that several political risk events have on the capital flight of Ukraine, and also the components of capital flight. The events of political risk are the Euromaidan revolution, the Russian annexation of Crimea and the war in the region of Donbass. By utilizing OLS regression techniques this paper estimates capital flight of Ukraine in relation to four economic components that constitute the World Bank capital flight residual method (1985): changes to external debt, net foreign inflow, current account deficit and changes to reserve assets. The results show that the effect of the Euromaidan revolution, the annexation of the Crimean peninsula and the war in the region of Donbass all lead to a significant reversal of capital flight.

Key words

Capital flight, political risk, Ukrainian crisis, balance-of-payments, Crimea, Donbass war, revolution

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1. Introduction

In this section the concepts and economic importance of capital and capital flight will be introduced. In addition, the relationship between capital flight and political risk will be explained. Then the hypotheses and key achievements are stated. Lastly, contributions of this paper's authors to the field of research will be presented.

1.1 Importance of Capital Flight

In order to understand the importance of capital flight, an understanding of the definition of "capital" and "capital flight" is needed, that will be used throughout this empirical paper. Capital will be expressed in terms of financial capital, representing an economic resource that can be used by country economies and businesses in order to purchase equipment for production of new goods/services, raising equity and other types of investments (Amadeo 2018). There is no universal definition of capital flight, rather the definition used in this paper is dictated by the choice of measurement for capital flight. The World Bank residual model (1985) is used which measures a nation's illicit financial flows, calculated by subtracting the official recorded uses of funds from the recorded sources of funds.[1] These illicit financial flows represent undocumented illegal capital escaping or entering the country of origin in response to political or economic instability. Capital flight is associated with abnormal capital outflows and it is important to distinguish them from normal capital outflows which occur based on consideration of portfolio diversification by domestic residents. Abnormal capital outflows occur in response to high levels of uncertainty and risk surrounding domestically held assets, capital flight ensues due to the domestic residents' immediate fear of their domestic assets losing value (Lensink, Hermes & Murinde 2000).

The importance of capital flight is related to the economic impact—whether it is positive capital flight or a reversal of capital flight (negative capital flight)—it can cause to an economy. Capital flight and reversal of capital flight are linked with a variety of consequences, explained in detail in this paper. One of the central consequences is when the occurrence of capital flight causes productive investment capital to escape from the domestic country, implying lost opportunities for the domestic economy. Capital flight is popularly associated with developing countries where the scale of capital flight is the most extreme, in the case of a panel study of sub-Saharan African countries it was found that for every dollar of external borrowing 80 cents left the region as capital flight in the same year. It was also found that capital flight is negatively correlated with GDP growth, implying that capital flight is one of the reasons suppressing the economic advancement of developing countries (Ndikumana & Boyce 2003).

Lastly, the topic of capital flight has been covered extensively in the vast amount of academic literature within this field of research. The amount of papers related to capital flight is countless, this is due to

[1] Sources of funds are external debt and net foreign inflow. Uses of funds are current account deficit and reserve assets. These are the components of the capital flight residual model. This is detailed in section 4.

the variety of: research objectives, econometric approaches, variables of interest.[2] This research field is further expanded when taking the uniqueness of the broad range of countries studied into account. This is because a model or a list of explanatory variables for one country may not be applicable to another. The high volume of literature covering capital flight is motivated by the desire to expose the roots of capital flight, and minimize the opportunities lost for countries that experience difficulties with economic growth.

1.2 Relationship Between Political Risk and Capital Flight

Political risk is the risk an investment's returns could suffer as a result of political changes or instability in a country (Chen 2018). This risk can lead to instability of the economic climate which in the case of capital flight creates uncertainty amongst domestic residents who in response to the increased risk seek greater risk-adjusted returns internationally. In the case of reversal of capital flight, political risk can indicate a transition towards an eventually stronger economic climate that gives domestic residents the perception of increased stability and reduced risk (Le & Zak 2006).

Political risk can be decomposed into many sub factors that affect capital flight independently. This paper studies the impact of three events collectively known as the “the Ukrainian Crisis”. The three events that represent political risk are the Euromaidan revolution, the annexation of the Crimean peninsula and the war in the region of Donbass. These events are associated with disturbances in traditional economic indicators, at the height of the Ukrainian crisis in 2015 GDP growth became negative at -9.77% and inflation had a value of 48.7% (World Bank Database 2018). Therefore, disturbances in capital flight data can be anticipated.

1.3 Hypothesis

Le & Zak (2006) would describe the Euromaidan revolution as *anti-government demonstrations such as strikes or riots* which is expected to provide a capital flight reversal. This is because the revolution inspired hope for the economy and a potential brighter economic future, due to aspirations of the Ukrainian people to achieve closer ties with the European Union. The annexation would be described by Le & Zak as *irregular government change* which is expected to accelerate capital flight since Vladimir Putin took over the Crimean peninsula with force, and also that there was an unconstitutional government change where a new Russian parliament was implemented with support from pro-Russian gunmen. Lensink, Hermes & Murinde (2000) suggest the effect of the war in the region of Donbass would behave like their *war* variable did, providing an acceleration of capital flight because of the consequences of political and economic instability the war would cause.[3]

1.4 Key Achievements

In this empirical paper the relationship between political risk and capital flight will be examined by applying a case study on the country of Ukraine. In order to examine this relationship, an investigation

[2] During the research period over forty academic papers related to capital flight were considered. The literature review section will present the most relevant papers.
[3] All three events will be described in more detail in section 3.

of the response of capital flight to Ukraine's few events that make up the Ukrainian crisis is being made. By using OLS regression technique with a control for seasonality and trends in the data, in accordance with a capital flight estimation model called the World Bank residual model from 1985, a method of measuring the effects of capital flight directly will be applied. In addition, this paper also successfully applies a unique method of measuring the effects of the components of capital flight.

Results obtained from this methodological application leads to statistical and economic interpretation of both the response of the components of capital flight and capital flight itself to the events of the Ukrainian crisis. In addition, a comparison is made between implications of the results and stated hypotheses about the effects of the Ukrainian crisis events on capital flight. The results allow a variety of policy recommendations that provide an insight on how the Ukrainian economy can be enhanced. Shortcomings of this research are evaluated. Lastly, suggestions for further research based on obtained results are given.

1.5 Contributions to the Field of Research

Yalta (2009) investigates directly the gaps in capital flight literature and this paper adopts two of her solutions. The two gaps identified are that most studies are conducted using a panel of countries and falsely treat capital flight as an exclusive Latin American or African problem. This paper fills these gaps by applying a single country case study of capital flight outside of these regions. By doing so, part of this paper's results challenge previous findings from existing research. Ukraine has no capital flight data available in response to the Ukrainian crisis, which this paper addresses. An advancement presented by this paper is a unique adjustment to the procedure of calculating and measuring capital flight; by applying OLS regression on the *components* of capital flight rather than on to capital flight directly.

1.6 Roadmap

This paper continues as follows: section 2 constitutes the literature review where a discussion on the importance of capital flows, the relationship between political risk and capital flight, and gaps in the literature will be addressed. Section 3 gives a description of the crisis events and their impact on the Ukrainian economy. Section 4 includes statistical descriptions of utilized data, a description of calculation method of capital flight and definitions of its components will be presented, the hypotheses will also be rationalized here. Section 5 examines the econometric approach of analyzing the relationships between the events of the Ukrainian crisis, components of capital flight and capital flight of Ukraine itself. Section 6 contains a presentation of empirical results and statistical interpretation for capital flight and its components. Section 7 presents an economic interpretation and discussion of the empirical results, together with shortcomings of the study and suggestions for further research. Section 8 presents conclusions on the research question and main results.

2. Literature Review

The literature review constitutes a part of the thesis where a discussion on important sources of information will take place. The upcoming three subsections of this literature review will discuss the following topics: importance of capital flows, the relationship between political risk and capital flight and lastly gaps in the literature will be addressed.

2.1 The Importance of Capital Flows

2.1.1 Determinants of capital flight

There is a substantial amount of literature examining determinants of capital flight. All papers examine a panel of countries or a case of an individual country, trying to capture analytical discoveries of possible statistically significant relationships between different economic variables (economic determinants) and the outcome variable capital flight. By comparing academic papers, there is a diverse range of results and conclusions on which economic determinants have a significant influence on a country's capital flight. This diversity implies that the scope of determinants of capital flight can be wide-ranging.

Alam & Quazi (2003) conclude several determinants as statistically significant for the acceleration of capital flight for Bangladesh. The primary one is *political instability*, followed by *increases in corporate taxes, higher real interest rate differentials between capital-haven countries and Bangladesh* and *lower GDP growth rates.* The main conclusion from Al-Fayoumi, AlZoubi & Abuzayed (2012) is that capital flight is affected by the significant determinants of *lag capital flight, external debt, foreign direct investment, real GDP growth rate* and *uncertainty*. *Lag capital flight, external debt, foreign direct investment* and *uncertainty* are positively correlated with capital flight whilst *real GDP growth* is negatively correlated with capital flight. *Uncertainty* implies an unstable macroeconomic environment in the sense that residents can be sure that returns on their capital will be sufficiently attractive and high in order to not move their capital abroad.

In addition to the vast amount of literature on this topic, Ndiaye (2011) comes to different conclusions for various determinants of capital flight. Significant increase in capital flight can be explained in the *absence of macroeconomic stability* in the sense that events such as *increases in inflation*, *exchange rate overvaluation*, *increases in real interest rates* and *budget deficits* positively affect capital flight. In addition, *past capital flight* and *financially developed systems* were shown to have a significant positive effect on capital flight whilst *remittances* and *foreign direct investment* exhibit a significant negative correlation with capital flight.

Alam & Quazi (2003) examine an econometric case of Bangladesh, attempting to understand in depth the causes of the country's substantial capital flight. They attempt to confirm a potential existence of a long-term relationship between capital flight and its determinants during the time period 1973-1999. Al-Fayoumi, AlZoubi & Abuzayed (2012) examines the case of the so-called MENA countries' (seven

countries located in the regions of the Middle East and North Africa) determinants of capital flight during the period of 1981-2008. Countries include Turkey, Jordan, Syria, Algeria, Morocco, Egypt and Tunisia. Ndiaye (2011) examines the case of all countries that share the Franc currency, known as the Franc Zone, a region in Africa. Ndiaye (2011) analyses the determinants of capital flight for the Franc Zone countries during the time period 1970-2005.

2.1.2 Revolving door

In addition to the wide-ranging scope of economic determinants in the research field of capital flight, a certain research field focuses narrowly on only one single determinant and how it affects capital flight. The single determinant is a country's *external debt*, recurring in a certain research category of capital flight papers called 'Revolving door' papers. These papers examine the relationship between capital flight and the *external debt* variable more closely than regular determinants of capital flight literature. The revolving door papers investigate developing countries that are subject to high levels of external debt. This model tries to capture a *bidirectional* causal relationship between a country's external debt and capital flight, hence the name "the *revolving door* model".

Beja (2006) investigates the case of whether there are direct linkages between external debt and capital flight for four Southeast Asian countries (the Philippines, Thailand, Indonesia and Malaysia) during the time period 1970-2002. Beja categorizes linkages between external debt and capital flight into two sub-groups: indirect linkages and direct linkages. Indirect linkages imply that there are sets of exogenous variables that cause both capital flight and external debt while direct linkages capture occurrences of capital flight and external debt in a revolving-door mechanism. The occurrence of capital flight is not a consequence of external debt per se. Instead, it arises because of macroeconomic mismanagement. The same relationship is valid for the case of how external debt arises. Macroeconomic mismanagement incorporates exogenous macroeconomic variables such as *corruption, weak economic institutions* and *policy mistakes*, constituting this overlapping set of factors and consequently leading to significant positive capital flight and external debt as consequences of undesirable conditions for the country's economy.

2.1.3 Capital flight measures

Capital flight can be measured with a variety of methods. There is no single method, due to the lack of consensus surrounding a universally accepted definition of capital flight. The papers included in this literature review section share a common factor which is the utilization of a repeating method of measurement for capital flight. This method is the World Bank residual measure (1985).[4] Yalta's (2009) sole focus is the conceptual and methodological issues of measuring capital flight. She states that even though some papers have adopted multiple approaches, the World bank residual measure is the most common used by the academic community.

[4] More details of the World Bank Residual measure will be provided in section 4.3

Alternative measures of capital flight are the Dooley method, the hot money method, the asset method and the Morgan Guaranty method (Ndiaye 2011). Briefly, these alternative measures can be minor adjustments to the commonly used residual measure or based on entirely different datasets.

2.2 Relationship Between Political Risk and Capital Flight

Before the year 2000, attempts had been made to represent political risk in overreaching capital flight models. Lensink, Hermes & Murinde (2000), however, claim to be the first serious attempt to exclusively examine the relationship between political risk and capital flight for a large set of developing countries. They note that to their knowledge only Pastor (1990) previously had touched the topic by including political instability variables in his empirical investigation on the determinants of capital flight. A closer look reveals it was not the sole focus of his study and relevant content was not developed on (as is the case with other similar papers published before year 2000). Lensink, Hermes & Murinde (2000) support a hypothesis that political risk leads to increased capital flight, showing that in the majority of cases a statistically robust relationship exists (exception for an alternative measurement of capital flight called “hot money”).

Le & Zak (2006) estimated the impact of three types of risk; economic risk, political instability and policy uncertainty on capital flight. Whilst these types of risk were found statistically significant in their model, political instability was found to be the strongest determinant causing positive capital flight. Their model controlled for the effects of *return differentials, per capita GDP* and *economic risk.* These three types of risk are represented by six significant variables. Acceleration of capital flight was caused by risks such as *unconstitutional government change*, *internal uprising*s and the *variance of policy implementation.* Reversal of capital flight was caused by *collective protests* and *major or minor constitutional government change.*

Including the variable *political instability* in an econometric model has been done in several ways. The simplest method is used by Alam & Quazi (2003) and involves inclusion of only one dummy variable called *political instability*. This single variable will then incorporate various undesired events such as riots, strikes and political turmoil for specific years. For their study of determinants of capital flight of Bangladesh, *political instability* was the primary statistically significant variable. However, since the definition of the variable was so broad it limits subsequent economic interpretation. The solution to this is to divide the variable political stability further into sub-categories.

For Le & Zak (2006) political risk required deeper definition. In the process of creating variables for the model they claim political risk has three major components: (i) Socio-political instability, (ii) Regime change instability and (iii) Policy uncertainty. (i) Socio-political instability is then split into two variables: (ia) *anti-government demonstrations such as strikes or riots* and (ib) *actions to suppress governmental uprisings such as purges, guerilla warfare or assassinations.* (ii) Regime change instability is split into three variables: (iia) *major regular government change*, (iib) *irregular government change* and (iic) *minor regular government change*. The regularity/irregularity distinction here refers to if the change

happens constitutionally or unconstitutionally. (iii) *Policy uncertainty* is one variable measured by variance of a government's ability to implement policies. In total, these six variables all represent political risk, but there is none that explicitly represents a war variable. Lensink, Hermes & Murinde (2000) also used a similar method of using six subcategories of political risk. Their paper examines the impact of six political variables chosen to represent political risk: *[instability (*assassinations plus revolutions*), political rights, civil liberties, a war dummy variable, democracy,* and *institutional structure]*.

Lensink, Hermes & Murinde (2000) use a large cross-sectional data set of at least seventy-nine countries over a time period stretching from 1971 to 1991. The data is based on sources such as the World Bank and other academic papers, both of them provide data on an annual basis. The scope of the study by Le & Zak (2006) include forty-seven developing countries over a time period stretching from 1976 to 1991. They have obtained the data in a similar method as the case of Lensink, Hermes & Murinde (2000).

2.3 Gap in the Literature

In this subsection of the literature review, a presentation will be given of noteworthy gaps in the literature that this paper has identified and intends to fill.

2.3.1 Current and quarterly data

An important aspect that distinguishes this study compared to other academic papers within the research field of capital flight is that this study fills a specific gap related to data. The only academic capital flight data available for Ukraine is from a study by Brada, Kutan & Vukšić (2011) covering the period 1995-2005. In contrast to their study, this paper takes data from 2005 and onwards (including a coverage of the effects of the Ukrainian crisis) into account, having the characteristic of utilizing current data. This paper will produce unique capital flight data for Ukraine before, during and after the Ukrainian crisis (a time period that previous academic papers do not cover).

Another noteworthy aspect to mention is the data frequency of observations in previous studies. Many previous studies specified annual data inclusion and no indications of quarterly data being used were found. Evidently, previous papers possess the disadvantage of not utilizing quarterly data (it is assumed that this is not a matter of choice for them, but rather a problem of insufficient or incompatible data) which means four times less observations than using annual data, leading to a relatively weaker ground for conduction of econometric analysis. The papers cover time periods within a range between eight and forty-two years, making the amount of data observations to a maximum of forty-two. By using data on quarterly basis instead, one obtains a four times larger sample of data observations and thereby enabling a larger sample size which would provide a smaller margin of error, help identify outliers and improve accuracy of mean values (Zamboni 2018).

Another disadvantage with annual data is the fact that you do not obtain a pinpoint view of economic shocks and the following effects in the case of quarterly data. Looking at an entire year filled with various shocks gives a less descriptive picture of the shocks' effects on economic variables. This means that annual data will include the effects of an entire year worth of shocks whilst quarterly data will include the effects of only three months' worth of shocks. Dividing into smaller time periods leads to an increased probability of isolating the effects of certain shocks, thereby alleviating potential bias in the results.

2.3.2 Country specific focus

Le & Zak (2006) claim that, because the countries in their sample have diverse political landscapes and face economic volatility, a fixed-effects model is used so that country-specific characteristics do not drive the results. Yalta (2009) mentions that one important gap in capital flight literature is the lack of country-specific empirical analyses and that most studies have been conducted for a panel of countries. It is argued by the author that the problem with using a panel of countries is the assumption that the countries from the sample are homogenous, would a fixed-effects model be sufficient to wash away the country-specific characteristics from the results? Yalta states that country-specific characteristics can change the analysis and the results significantly and that new studies in this area should be conducted in a case-study, single-country format rather than a panel analysis for a large set of countries.

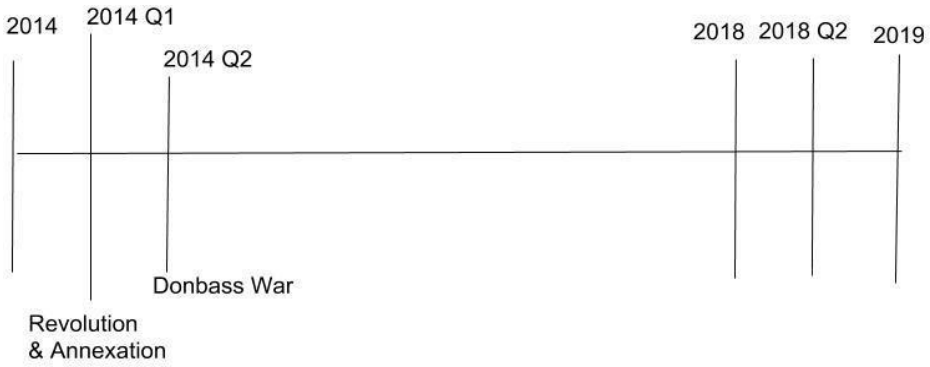
Taking Yalta's (2009) findings into account, one could conclude that using a panel of countries might lead to misguided economic interpretations from the results; what is true for a collection of many countries with a homogenous assumption might not be true or applicable for a single heterogeneous country with its own unique characteristics. A case study would take heterogeneity into account leading to increased accuracy of economic interpretations. To our knowledge, there are currently no papers using a single country case study of any country at all to exclusively study the relationship of capital flight and political risk. This could be due to few papers studying political risk and capital flight exclusively (all using panel data) and also due to these papers being published before Yalta's findings.

According to Yalta (2009) most studies treat capital flight as a Latin American or African problem. But she claims capital flight is prevalent in many developing countries and therefore, new studies should focus on capital flight outside of these regions. To our knowledge, there are currently no papers on capital flight in general using the developing country of Ukraine as a case study. Using Ukraine as a case study means that there will be a unique set of political risk variables for this study, even though the individual variables themselves comprising this unique set have been used before.

3. Political Risks

In section 3.1 there will be a description of the events that contributed to the Ukrainian crisis. In section 3.2 there will be an overview of the economic situation of Ukraine around the time of the crisis and explanation of its economic impact. The three main events (the revolution, the annexation and the war in the region of Donbass) are known as the Ukrainian crisis.

Figure 1: Timeline of Ukraine 2014-2019.[5]



3.1 Description of Ukrainian Crisis Events

The Euromaidan revolution (also known as the Ukrainian revolution 2014) spanned for only five days in February 2014. The revolution which was fiercely violent, was a result from relatively mild demonstrations that appeared on the Maidan square in the capital of Ukraine a couple of months before the occurrence of the revolution. The large demonstrations sparked as a consequence of decades of feud and desire for Ukraine to have closer ties with the European Union (EU) with the hope that the country would economically benefit from a closer relationship with the EU. The potential economic benefits from a closer relationship with the EU played an important role since the country endeavored an economic uprising (Coy, Matlack & Meyer 2014). An agreement on making ties with the EU closer to Ukraine was being planned to be signed by the, at that time, President Viktor Yanukovych (Thompson 2014).

Yanukovych's decision of not signing the "Ukraine-European Union Association Agreement" in late November 2013 opened the possibility for Russia to strengthen ties with Ukraine and away from the EU. Yanukovych chose to take Ukraine closer to Russia in their relations, resulting in the signing of the Ukrainian-Russian action plan on the 17 December of 2013 where Russia agreed on purchasing Ukrainian Eurobonds for a value of USD 15 billion—which were going to be issued by the other party, Ukraine—and at the same time the cost of natural gas exported from Russia to Ukraine would be lowered (Stern 2013). The decision of strengthening ties with Russia caused a large discontent among the protesters of the demonstrations. Since the discontent persisted and the Ukrainian people's hope

[5] 2018 Q2 is when our data range stops.

of getting closer to the EU started to fade over time, the enormous demonstrations in Kiev became fiercely violent with the result of the Euromaidan revolution, which spanned for five days (between the 18th to the 23rd of February in 2014) due to the demand of closer European integration from the people of Ukraine (Smith-Spark, Gumuchian & Magnay 2014). This violence resulted in a death toll of one hundred people and above five-hundred injured individuals (Black, Walsh & Pearson 2014).

The violence of the revolution came to an end on the final day when the pro-European opposition in Kiev and Yanukovych participated in a meeting over if any peaceful solution could be settled, resulting in an agreement to end the Kiev standoff (Malik, Gani & McCarthy 2014). The outcome of this agreement was Yanukovych's decision of leaving Kiev, travelling to Crimea and ultimately exiling in southern Russia. The downfall of Yanukovych's political power was made official when the Ukrainian parliament voted to remove him from his post, declaring Yanukovych's actions as an inability to fulfil his duties (Kendall 2014).

3.1.2 Annexation of Crimea

Situated close to the Black Sea, the Crimean peninsula became intervened by the Russian Federation on the 1 March of 2014 (BBC 2014a). People in different geographical regions had different interests and perceptions of Yanukovych and the position Ukraine should establish in its relationship between the EU and the Russian Federation. People living in the west of Ukraine had a pro-European attitude in the sense that Ukraine should have closer European integration while many Ukrainians and a large part of Russian residents in the eastern and southern parts of Ukraine felt a stronger bond to Russia. Crimea plays an important part here since there is a large majority of ethnic Russians living in Crimea (BBC 2014b).

Due to the fact that many residents in Crimea saw themselves as Russians and avid supporters of Yanukovych, fear rose among Ukrainian and Russian politicians that a potential unstable situation similar to the one in Kiev would appear on the Crimean peninsula. Together with the fact that the Crimean population had a positive attitude towards the Russian Federation, the Russian president Vladimir Putin decided to initiate a military intervention in Crimean territory together with the Russian marines (BBC 2014a).

In the city of Sevastopol and other adjacent cities in the region, demonstrations were held for declaring a strong support to the Russian Federation and an attempt for Russian allegiance (Amos 2014). Pro-Russian signals the protesters were making in the region of Sevastopol spread stronger over time, with the result of pro-Russian gunmen seizing the Crimean parliament building and the Council of Ministers building. A new regime of pro-Russian supporters gained political power, deciding to implement important pro-Russian leaders into the new parliament of Crimea on the 27th of February (Gumuchian, Smith-Spark & Formanek 2014). As days passed by, the new council endeavored a stronger autonomous position for Crimea, making the decision of commencing a referendum on whether the Crimean peninsula should belong to the state of Ukraine. In March 2014, the current

Crimean parliament declared independence from the state of Ukraine and has since then been fully integrated into the Russian Federation (Morris 2014). Ukraine has retaliated passively; no direct military efforts have been imposed in order to reclaim Crimea. Russian president Vladimir Putin boasted that he gained control over Crimea without a single shot being fired (Bershidsky 2016).

3.1.3 Donbass war

The Donbass war is an armed conflict between Ukraine and pro-Russian separatists contained within the Donbass region of eastern Ukraine, located at the border with Russia. The war emerged as a retaliation of the Ukrainian revolution outcome. According to the United Nations (2018) hostilities started on the 6th of April and have been active since then, twenty ceasefires have been instituted yet consistently ignored. The war has currently claimed over ten thousand lives—three thousand of those being civilians—including those deaths from Malaysia Airlines Flight 17.

As Doyle (2010) explains, the people of the Donbass region had been trying to gain economic autonomy and rights for the Russian language ever since the dissolution of the Soviet Union in 1991 when Ukraine was formed. However, discussion of separatism had been weak—with the exception of the Orange revolution in 2004—until the Euromaidan revolution in 2014. This suggests that pro-Russian separatist desires are reactions to pro-western revolutions in Kiev, rather than the desires spawning from internal aspiration. The separatist desires are strong considering that the Donbass residents are minority Russian ethic, only 38.2% according to an All-Ukrainian census of the population (2001). Rather these desires stem from the majority claiming Russian as their native language and that President Yanukovych gets plenty of support for his regime from this region since he himself is from Donbass (Doyle 2010).

The level of Russian involvement in the war is heavily debated between Western countries and Russia. In April 2014 from the very beginning of the war, Higgins, Gordon & Kramer (2014) report that the international community showed broad unity by raising the red flag that Russian nationals were found actively fighting for the pro-Russian separatists on Ukrainian territory. Russian president Vladimir Putin responded at the time by saying it is nonsense, but has since then changed his stance admitting that Russian troops are active on Ukrainian territory (Oliphant 2015). In a report by Gordon (2014) a spokeswoman for NATO claims that since mid-August 2014, NATO had received multiple reports of the direct involvement of Russian airborne, air defense and special operations forces in eastern Ukraine. She also mentions that Russian artillery support is firing against Ukrainian military from both within Ukraine and cross-border from Russia. Between 22nd and 25th August 2014, there were unusually many reports from western media claiming that Russian military vehicles are active within Ukraine. Russia has consistently denied these allegations; however Marcus (2014) reports from the BBC that based on satellite imagery there is little doubt. The increase in reports of Russian military vehicles coincides with Russia sending a convoy of more than one hundred aid trucks to Ukraine. Russia openly admits sending the convoy and the convoy was not authorized by the Ukrainian

government. This led to the Ukrainian government responding with: “we consider this a direct invasion by Russia of Ukraine” (Zinets & Madorsky 2014).

Generally, if you ask the Russian Federation they will claim that the war is purely a Ukrainian internal civil war and will distance itself from any involvement. Whilst if you ask Ukraine, any European country or the USA they will claim the war is being fueled by direct Russian interference. Both sides have very clear opposing agendas and there is a lack of consensus in the international community. This becomes problematic when one is deciding how to define political risk variables since one side would prefer the Donbass war to be described as “civil unrest” whilst another would prefer the term “external war” to be used.

3.2 The Ukrainian Crisis Impact on the Economic Situation

The Ukrainian crisis had grave impacts on the economy. Taking basic macroeconomic measures in relation to the events into account gives a picture that is very difficult to ignore. In this subsection descriptive pictures of Ukraine’s economic situation with regards to various macroeconomic variables with anecdotal evidence of the economic consequences of the events will be given.

3.2.1 Before 2014-2015 “pre crisis”

The period prior to the Ukrainian crisis was characterized by a strong economic boom for Ukraine’s economy with the exception of adverse influences on the Ukrainian economy from a global financial crisis and subsequent years of economic recovery.

Generally, early 2000s showed signs of stability when a stronger trust among foreign investors for the Ukrainian economy arose. This can be partly explained by relatively high Ukrainian interest rates when American interest rates were lowered due to the Federal Reserve’s decision to push its main interest rate down to 1%. Foreign financial capital was flooding in to Ukraine and money supply grew at an annual rate of 35% (C.W 2014). During 2000-2008, a conducted expansionary fiscal policy resulted in higher domestic demand in constant prices and financial development (Sutela 2012). GDP growth (annual in percent) had an average of approximately 7.5%, reaching its peak of 12.1% in 2004 (World Bank Database 2018).

The global financial crisis severely hurt the country’s economy during 2008-2010, ending the economic boom the country was experiencing before the global financial crisis. Ukraine’s economy suffered from a GDP decline (Kholod 2012) where GDP growth went from 2.3% in 2008 to minus 14.8% in 2009 (World Bank Database 2018). Ukraine’s economy started to recover in the last quarter of 2010 due to influences from a recovering world economy and rising prices in metals, of which Ukraine is a large exporter of (Kholod 2012). GDP growth increased to positive 4.2% in 2010. In 2011, the GDP growth was 5.43%, the highest level since its peak shortly before the global financial crisis. In 2012, it lay on 0.2% and became negative at -0.027% in 2013 (World Bank Database 2018). Inflation (consumer prices on annual basis in percent) lay on 0.569% in 2012 and became negative at -0.239% in 2013,

from striking 25.23% and 15.88% in 2008 and 2009, respectively (World Bank Database 2018). From the global financial crisis until 2013 the exchange rate was fixed at approximately eight hryvnia for one USD (National Bank of Ukraine 2018).

3.2.2 During 2014-2015 "height of the crisis"

2014: The revolution protests itself spurred turbulence and incurred costs for the state, however the greater impact was its clear indication of Ukraine securing ties with the EU and cutting ties to Russia. This effect is emancipated by the diversion of trade exports from Russia to the EU, pre-Ukrainian crisis exports to Russia amounted to USD 15 billion which then shrivelled to only USD 3.6 billion a few years later. Exports to the EU replaced this gap (Stratfor 2017). The economic effect of Ukraine losing the Crimean peninsula to Russia was relatively manageable since it provided only 3.6% of Ukrainian GDP (Olszański, Sarna & Wierzbowska-Miazga 2014). On the other hand, the escalation of the armed conflict in the Donbass region would prove to be devastating for the Ukrainian economy. Donbass is a heavy industry region, contributing to 16% of Ukrainian GDP, a quarter of industrial output and 27% of exports (Reuters 2014). The war brought economic activity in Donbass to a standstill (Stratfor 2017). In May, the International Monetary Fund (IMF) decided to instantly disburse a loan to Ukraine for USD 3.2 billion and scheduled a delivery of USD 1.4 billion for September. This was in part to provide stability to the Ukrainian economy from the shocks of the Donbass and Crimea regions, but also to strengthen ties towards the EU by financing the fulfillment of certain demands the EU and the IMF had set out (National Bank of Ukraine 2014).

Due to pressure from its creditors, the central bank of Ukraine increasingly allowed its currency to float over the span of 2014 leading to a depreciating value from the fixed rate of eight hryvnias for one USD at the start of the year to 15.8 hryvnias for one USD by the end of 2014 (National Bank of Ukraine 2018). This year also marked a very steep decline in GDP growth which became negative at 6.55% (World Bank Database 2018). In 2014, inflation rose from -0.239% to positive 12.07%. By observing this change, Ukraine was in a situation of inflationary pressure (World Bank Database 2018).

2015: In February 2015, the foreign exchange reserves for the Ukrainian national bank had reached emergency levels. What once was a strong safety net of USD 20 billion before the Ukrainian crisis had sunk to a tiny USD 5.6 billion (Ukraine National Bank 2015a). The Economist (2015) comments on the situation: *"It is nearly six months since the IMF actually disbursed any cash to Ukraine. That leaves the central bank fighting a lonely battle…. foreign exchange reserves are being depleted and investors getting scared. The main problem, of course, is the war in the east of the country".* Apart from the war draining government funds and creating an economic climate of deterrence for international investors, it is important to factor in the coal shortage in Ukraine during the freezing cold winter. Ukraine had rolling blackouts across the country and the wartorn Donbass region used to supply 70% of Ukraine's coal used for power, which it now did not have access to. Therefore, Ukraine became reliant on importing coal and natural gas from abroad which had an extortionate price tag due to the ever weakening Ukrainian hryvnia (Raczkiewycz & Verbyany 2014). The central bank was left alone paying

for the bill of importing gas and the cost of stabilizing its currency. In desperation they imposed capital controls and stopped banks from lending to clients to buy foreign currencies and banned banks from buying foreign currencies for its customers (The Economist 2015). This desperation showed in the value of the Ukrainian currency falling by 40% from January to February (National Bank of Ukraine 2018). Due to the hostilities in the Donbass war, Russia was no longer comfortable with 40% of its natural gas exports flowing through Ukraine and had announced it would now build an economically inefficient pipeline in order to completely bypass Ukrainian territory (Mazneva 2015).

Ukraine already had stacked up IMF loans from 2014, and a three billion USD loan from Russia from December 2013. The IMF remained hesitant to disperse Ukraine more funds, unless Ukraine accepted economically crippling austerity measures. In March, an agreement was met and the IMF bailed out Ukraine with a heroic USD 4.8 billion, followed by USD 1.7 billion later in the year which both were instantly used by Ukraine to bolster its international reserves (National Bank of Ukraine 2015b). This remedy proved to be too little too late and the damage had been done, by the end of the year GDP growth had decreased further to a gloomy negative -9.77% (World Bank Database 2018). The value of the Ukrainian currency had been unwillingly allowed to free fall down to approximately 24 hryvnias for one USD in December 2015 (National Bank of Ukraine 2018). In 2015, the inflation had a value of 48.7% (World Bank Database 2018).

3.2.3 After 2014-2015 "weakening crisis"

Despite the ongoing Donbass war, the Ukrainian economy starts to show indications of recovery for the years of 2016, 2017 and 2018. The annual GDP growth started to reverse from negative to positive. In 2016, the Ukrainian economy experienced a GDP growth at 2.3% and in 2017, it experienced 2.5% (World Bank Database 2018). The inflation of Ukraine declined sharply, from 48.7% (in 2015) to 13.9% in 2016 and ending at 14.4% in 2017 (World Bank Database 2018).

The IMF (2016) report provides additional indicators that the Ukrainian economy is recovering, with regards to the unemployment rate and other indicators related to the labor conditions of Ukraine. Real wages started to rise from low levels together with the consumer confidence index starting to rise as well, indicating that there is optimism for the economy (IMF 2016). Even though the currency value showed no signs of recovering, Iwanski (2017) claims that the central bank was successful in halting the devaluation trend whilst at the same time increasing the stock of foreign reserves close to pre-crisis levels of USD 15.5 billion by the end of 2016 and maintaining the inflation target.

Lastly, one important economic aspect the IMF (2016) takes into consideration in its report is the development of the IMF loans. Much of the explanation for the increasing amount of IMF loans Ukraine has been receiving lies in the fact that the foreign exchanges reserves were massively depleting during the years of 2014 and 2015 (National Bank of Ukraine 2015). This led to the IMF loans being used as replenishment for the depleting foreign exchanges reserves. The consequences of the IMF loans have been a larger external debt. In 2016 the disbursements had a value of USD 716

million and USD 734 million in 2017, both values are modest in comparison to the disbursements under the height of the Ukrainian crisis during 2014 and 2015. In addition, during 2018 (so far), the value of the disbursements has been zero. The repayments have been going through an increase, from zero repayments in 2016 to USD 628 million in 2017 and finally to USD 1.37 billion in 2018 (IMF 2016). These two changes indicate that disbursements are decreasing whereas repayments are increasing. Therefore, the economy of Ukraine is becoming less reliant on the financial loans from the IMF.

4. Data

In this section descriptions of utilized datasets will be given in terms of frequency of observations, time period and other aspects regarding the data. This section will also focus on an explanation of the calculation method of capital flight and terminological explanations of the variables used as components in the method. Lastly, hypotheses of this paper will be presented.

4.1 Dataset

All data which will be part of the methodological approach of the paper are taken from the central bank of Ukraine, known as the National Bank of Ukraine (NBU). This data, which is on a quarterly basis, contains detailed information about Ukraine's *gross external debt, net foreign inflows, current account balance and reserve assets.* All data except for the gross external debt was taken from Ukraine's Balance-of-Payments (BOP), which is a document covering all trade and financial transactions of a country (IMF 2013).

The amount of data observations depends on the variable in question. Data on *net foreign inflows, current account balance* and *reserve assets* spans from 1998 to 2018. All data is denominated in USD. Since the data is on a quarterly basis, there are eighty-two observations for each of the three aforementioned variables. However, since there are less observations for the variable *gross external debt*, this means that the dataset is limited to fifty-nine observations. This limitation is because data on *external debt* reaches back to 2003 whilst the rest of the variables reach back to 1998. In order to obtain the change in *gross external deb*t, a mathematical approach is used of calculating the difference between a new value (a later quarter in time) and an old value (from the previous quarter in time) in order to get the numerical change in the variable. Even if there is current data on gross *external debt, net foreign inflows, current account balance* and *reserve assets*, there is no current data on capital flight of Ukraine and this gap is filled by this paper due to unavailability.

Because the data comes from the NBU**,** there is a sense of reliability for the data to reflect the reality as precisely as possible. The data from the NBU is being gathered, analyzed and eventually publicly published by professionals for use of a wide range of domestic and international interessants. Therefore, the data from the NBU possesses the motivation of accuracy. The same reasoning can also be applied for the case of the IMF who reproduces identical data on behalf of the NBU. Data from the NBU adheres to the BPM6[6] framework which is refereed by an external organisation, the IMF. Once the IMF acknowledges that the data meets certain criteria, it will then publish the NBU data on its own international database.

Lastly, with regards to the BOP data, an important aspect that needs to be taken into consideration is the values in the data. Because the sums are substantial, any organisation collecting statistical

[6] BPM6 refers to the IMF Balance-of-Payments Manual sixth edition, which outlines standard practise for accounting Balance-of-Payments data (IMF 2013).

information must be cost effective. The consequence of this can be the possibility of overlooking the smaller details, leading to error. This is especially true for BOP data that includes a “Net errors and Omissions” section.

4.2 Capital Flight Measure

Existing capital flight data for Ukraine reaches from 1995 to 2005 (Brada, Kutan & Vukšić 2011), there is no data from 2005 onwards and no data covering the effects of the Ukrainian crisis. One task of this paper is to construct data to fill this gap. To construct capital flight data an application of the World Bank residual model (1985) will be made. The World Bank residual model is attempting to capture an indirect measurement of capital flight by comparing the *sources* of capital inflows (net increases in external debt and net inflow of foreign investment) with the *uses* of these capital inflows (current account deficit and change in reserve assets).

If the sources of capital inflows exceed the uses of the capital inflows, positive capital flight exists. Positive capital flight implies a scenario where capital is escaping the country. Imagining that the uses of capital inflows exceed the sources of capital inflows, a new scenario would occur where negative capital flight exists. Negative capital flight implies a scenario where capital is arriving into the country.

The residual measure is by far the most occurring method in existing capital flight literature. Due to its reliance on commonly available and easy to implement data, it is quite routinely adopted in empirical studies. Other measures include the trade misinvoicing method, hot money method and the Dooley method. However, these involve added layers of complexion and increased interpretation risk. According to Claessens, Naude & Mundial (1993), results from the Dooley method would be very similar to the residual method whilst using the hot money or the trade misinvoicing method would lead to somewhat different results. The World Bank residual model is presented as following:

$$\textit{Capital flight} = \Delta ED + NFI - CAD - \Delta RA$$

Observing the equation, it consists of four different components with each own separate economic meaning. ΔED is the change in external debt, NFI is net foreign inflows, CAD is the current account deficit and ΔRA is the change to reserve assets. By using the residual model more insight is obtained into the issue of capital flight in terms of its importance and effects for Ukraine. Since the residual model consists of four different economic variables, more information can be obtained by observing and analyzing the four components’ influences on capital flight rather than by solely observing capital flight.

4.3 Components

In order to understand implications of upcoming analysis and research of this paper, a detailed explanation needs to be given of the four variables which will be used as components in the World Bank residual measure.

External Debt (ED)

Gross external debt, according to the definition established by the IMF, is the “amount, at any given time, of disbursed and outstanding contractual liabilities of residents of a country to nonresidents to repay principal, with or without interest, or to pay interest, with or without principal” (IMF 2014). In other words, gross external debt is the total debt a country owes to its foreign creditors (European Central Bank n.d.-a).

Net Foreign Inflow (NFI)

The NFI is the sum of net direct investment, net portfolio investment, and net other investments. Net direct investment, also commonly referred to as foreign direct investment (FDI), are investments placed internationally to gain controlling ownership of businesses aboard. This type of investment is usual for building new facilities, mergers and acquisitions. It is the element of control that distinguishes FDI from foreign portfolio investment (Financial Times Lexicon n.d.). In accordance with a manual issued by the IMF (2013) about BOP, net portfolio investment can be defined as all cross-border transactions and positions involving equity or debt securities. In other words, net portfolio investment is the difference between the asset side of portfolio investments and the liabilities side of portfolio investments. Other investments in a country’s BOP incorporate other equity instruments and debt instruments that do not fall under the category of FDI or foreign portfolio investment.

Current Account Deficit (CAD)

The current account deficit is identical to a negative current balance. A current account deficit represents a country’s foreign transactions where imports of goods and services exceed exports of goods and services for a country. The current account also includes entries representing net income and transfers from abroad, however these are usually a small fraction of the total current account (Ghosh & Ramakrishnan 2018).

*Reserve Assets (*RA)

Reserve assets are an asset class denominated in foreign currency, with the function of being used and controlled by monetary authorities of a country. The purpose of using the reserve assets can be interventions in exchange markets to affect the currency exchange rate, thereby reducing currency volatilities in the market, and other related issues (European Central Bank n.d.-b).

4.4 Hypotheses

In this subsection our theoretical hypotheses will be stated and explained. The theoretical hypotheses will incorporate, in the first case, an examination of the effects from the Ukrainian crisis events on capital flight. The second main case will be an examination of the effects from the Ukrainian crisis events on the four aforementioned variables.

4.4.1 Capital flight

In accordance with the main conclusions of Le & Zak (2006), collective protests and major constitutional government change lead to negative capital flight. Identical causal relationship will also be hypothesized in the case of Ukraine because of the Euromaidan revolution that took place in the first quarter of 2014. The revolution indicated reduced dependence on Russia with the aspiration of strengthening ties with the EU instead. Consequently, this inspired hope for the economy. In other words, our theoretical hypothesis will be in line with a causal relationship between the revolution and Ukraine's capital flight where the revolution causes negative capital flight.

In accordance with the main conclusions of Lensink, Hermes & Murinde (2000), the occurrence of war leads to increased capital flight. Due to the fact that the violent chain of events in the region of Donbass is being regarded as an event of war, an assumption of increased capital flight for the case of Ukraine can be made. This would be due to the consequences of instability the Donbass war is causing. In other words, our theoretical hypothesis will be in line with a causal relationship between the war and Ukraine's capital flight where the war causes positive capital flight.

The case of the annexation is not as straightforward as for the cases of the revolution and war since it is not such a common event. In accordance with the study of Le & Zak (2006), unconstitutional government change leads to increase of capital flight. With this reasoning, it is hypothesized that the case could also be true for Ukraine since Vladimir Putin's armed forces took control over the Crimean government with force. The effect of war could be interpreted here because there was an armed conflict with an external nation. In other words, our theoretical hypothesis will be in line with a causal relationship between the annexation and Ukraine's capital flight where the annexation causes positive capital flight.

4.4.2 Components of capital flight

There are less established theories on the link between political risk and components of capital flight since this method is unique to this study. This makes it difficult to base a hypothesis on previous findings, rather a hypothesis will be based on the interplay of the components in relation with the final capital flight effect. If the final effect of the events on capital flight directly is hypothesized as in the section above, by using the residual model possible effects on the components can be estimated:

$$Capital\ flight = \Delta ED + NFI - CAD - \Delta RA$$

If there is positive capital flight it is possible that ED and NFI have positive values, and CAD and RA would have negative values. If there is negative capital flight it is possible that ED and NFI have negative values, and CAD and RA would have positive values. Since there are four variables at play, there is an unlimited amount of outcomes one could hypothesize. The simplistic extreme cases are presented to facilitate the understanding of the interplay of the terms in the formula:

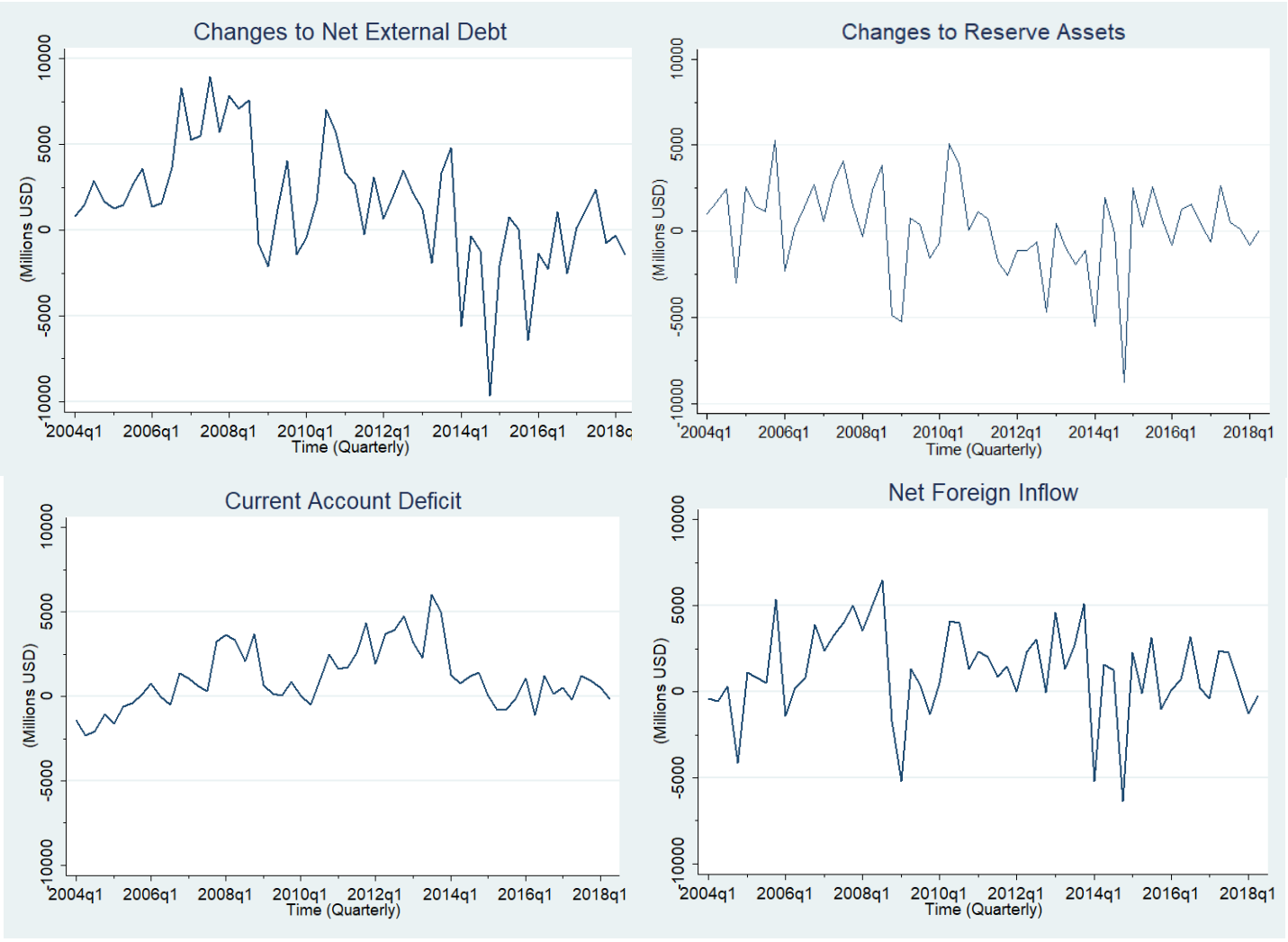
Revolution/Negative capital flight would mean a reduction of ED, reduction of NFI, a positive CAD and an increase in RA (the income is smaller than the expenses).
War & Annexation/Positive capital flight would mean an increase in ED, increase in NFI, a negative CAD, reduction in RA (the income is bigger than the expenses).

Still the hypothesized true outcome will not be as simple as the above extreme cases. For example, it is expected that RA will reduce in reaction to the revolution whilst simultaneously assuming negative capital flight. The above extreme cases are over-simplistic and do not offer much insight. However, from research it became apparent that the functioning of the BOP can be similar to the functioning of the residual model. Since the BOP must balance, it has a tendency for the assets and liabilities to cancel each other out (IMF 2013). This tendency is also true for the sources and uses of funds in the residual model. This tendency is not consistently apparent since shocks can create or correct an imbalance. However, shocks can also reveal the balancing mechanism in action.

From looking at the data it is noticeable that RA has an influential role over the value of ED. This role suggests that increases of RA indicates an increase of ED. It is known from section 3.2.2 that in the case of Ukraine during its crisis period, this was occurring due to Ukraine's actions of taking loans from the IMF to instantly buy foreign exchange reserves. A decrease in RA is often undesirable and a loan, if possible, would be taken to offset this decrease. If a loan was taken, then the decrease in RA would not happen, rather the RA would increase. Therefore, a decrease in RA suggests a decrease in ED (assuming a country has a long-term trend of debt repayment each quarter, as in the case of Ukraine). From figure 2 below it is seen that even if this relationship is not perfectly correlated, it is clear that when Ukraine does not have access to external loans during the global financial crisis or the Ukrainian crisis, its reserve assets sink as a result. When Ukraine's reserve assets increase after a crisis it is clear that they are funded by external debt from loans Ukraine has been granted. Information of Ukraine's access to debt disbursements and their amounts are detailed in section 3.2.2.

It is noticeable that CAD has an influential role over the value of NFI. This role suggests that a positive CAD indicates a positive NFI. This is because Ukraine's excess imports from the trade deficit will need to be financed by indebting itself via the NFI channel (Heakal 2018). A negative CAD indicates a negative NFI because Ukraine's excess exports from the trade surplus will need to be financed via the NFI channel by foreign consumers. Figure 2 below adds weight to the abovementioned theory. Whenever Ukraine is running a positive CAD it is accepting foreign inflows to pay for its deficit. Whenever Ukraine is not running a positive CAD or running a relatively small positive CAD it is less likely to accept foreign inflows. This relationship is strongest in the response to the global financial crisis and the Ukrainian crisis where a sudden cut down of Ukraine's CAD leads to an instant negative spike of NFI.

Figure 2: Changes to net external debt, changes to reserves assets, current account deficit and net foreign inflow during Q1 2004 - Q2 2018 (millions of USD)



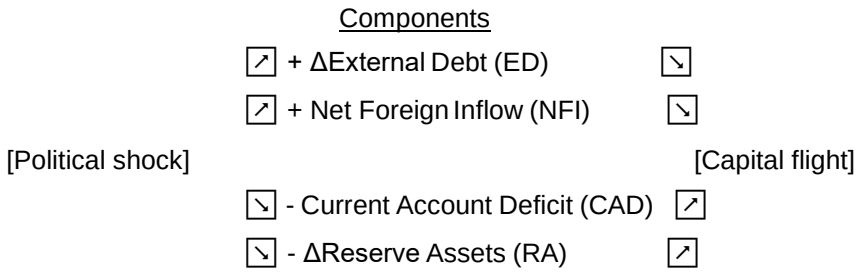
5. Identification Strategy

In this section a three-sided model will be presented portraying the relationship of the Ukrainian crisis affecting capital flight and its components from the residual model. Then, an econometric application of the three-sided model will be presented.

5.1 Three-sided Theoretical Model

The model that will be widely used throughout this paper will comprehend an examination of the relationship between Ukraine's capital flight, the four components and the Ukrainian crisis in a *unidirectional* causal relationship. The model will incorporate two parts where the first part sees linkages between the Ukrainian crisis and the components whereas the second part presents linkages between the four components and Ukraine's capital flight.

The expansion enables interesting discoveries of causal effects on Ukraine's capital flight. The model is as follows:



The above-standing model has three sides. To the left of the model is the political shock (the Ukrainian crisis). In the middle are the components which are used as mediators to explain capital flight, which is on the right. The first part consists of the policy change in Ukraine and the components. The components are the change in gross ED, NFI, CAD and change in RA. Here, the model is trying to capture a causal relationship between the political shock and the components in the sense that a discovery of how the causal effect from the political shock will look like for each separate component. The separate components will then equate to the final total capital flight effect, in accordance with the residual model.

5.2 Econometric Approach

Here, the practicality of the econometric interpretation of the three-sided model will be outlined. This is primarily performed using multiple Ordinary Least Squares (OLS) regressions. The empirical results from these regression outputs will enable identification and analysis of causal relationships which conclusions will later be based on. Regressions numbered from (0.1) to (0.4) are provided to facilitate gradual understanding, whilst the complete regressions numbered (1) to (5) at the end of section 5.2 are the models used for the empirical results.

5.2.1 Components

The amount of regression models representing the components will be four due to the investigation of the case of causality between the political shock and the four components in the model. Basic setup of the applicable regression equation for the econometric model will be as follows:

$$Y = \beta_0 + revann_i + war_i + e_i \qquad (0.1)$$

Y_i is the dependent variable for observation *i*, where *i* represents a quarterly time period observation. β_0 is the intercept, $revann$ and war_i are dummy variables for observation *i*, each with their own econometric meaning and e_i represents the joint effect of factors that are not being observed for observation *i*. The dependent variable is one of the four components: ED, NFI, CAD or RA. The dummy variable *revann* represents the Euromaidan revolution and the annexation of the Crimean peninsula. Since these events commence and finish within a week of each other, their effects are recorded in the data for the same quarter. This makes it difficult to isolate the impact of the events individually. Therefore, they both are included under the same dummy variable. The dummy variable *war* represents the war in the region of Donbass. With respect to time, the variable *revann* is trying to capture the impact of the two events that both commence and finish during the first quarter of 2014. Therefore, the time period of the first quarter of 2014 (Q1 2014) is selected. In the case of the variable war_i, its effect from the start of the war until present day needs to be captured since the war is still active. Thus, the time period starting from the second quarter of 2014 (Q2 2014) to the second quarter of 2018 (Q2 2018) is selected. In terms of the relationship between the dummy variable and each component, the dummy variables are trying to capture the effect (positive or negative) they have when they are “active”. In an econometrically terminological sense, an “active” dummy variable takes the value of 1. This means that the representation of the dummy variable’s effect on the outcome variable is being taken into consideration. When the dummy variable takes the value of 0, there is no effect taken into account (Wooldridge 2013).

5.2.2 Regression using capital flight directly

An additional fifth OLS regression is a case where the dependent variable is capital flight:

$$Capital\ flight = \beta_0 + revann_i + war_i + e_i \qquad (0.2)$$

where $Capital\ flight_i$ is capital flight for observation *i*, $\beta_0$is the intercept, $revann_i$ and war_i are dummy variables for observation *i*, each with their own econometric meaning and e_i represents the joint effect of factors that are not being observed for observation *i*. The rationale of running an OLS regression on capital flight as the dependent variable is to enable comparison of its coefficients to the case of performing OLS regression on the components. Furthermore, this facilitates the comparison of the significance between capital flight coefficient values and the components’ coefficients. The drawback of regressing with capital flight directly is that it provides less information than by regressing via the components since the components constitute capital flight according to the residual model.

5.2.3 Controlling for seasonality

Seasonality is a periodic pattern in which data experiences regular changes that occur during specific periods within a year. These variations become predictable since they are recurring during specific seasonal periods in time (Wooldridge 2013). Controlling for potentially existent seasonality lies in the rationale that seasonality causes variables in the data to be higher in value during some seasons within a year and lower in value during other seasons within the same year. The aim with running the regressions is to capture an understanding of only the relationship between the dependent variable and the independent variables and nothing else (of seasonal nature) that may affect the the two types of variables and true underlying movements in the data. By removing seasonality from the data, the data is being deseasonalized/seasonally adjusted (Australian Bureau of Statistics 2017).

In order to see if seasonality exists in the data, quarterly seasonal dummies are included with the purpose of discovering whether the dependent and independent variables are being affected by seasonality. To test for seasonality, the null hypothesis will state absent seasonality, that all the seasonal dummies are equal to zero. The alternative hypothesis states that at least one of the seasonal dummies are not equal to zero. This is achieved by performing an F-test on the seasonal dummies. The output of the F-test is an F-value which will be compared against the critical F-value. If the given F-value is larger than the critical F-value, the alternative hypothesis is true. If the given F-value is lower than the critical F-value, the alternative hypothesis is not true (null hypothesis remains). The critical F-value is obtained from a table where the user inputs a chosen alpha value, along with numerator and denominator degrees of freedom which are designated by the dataset (Wooldridge 2013). In practice, the model is modified in the following way:

$$Y = \beta_0 + revann_i + war_i + Q1_i + Q2_i + Q3_i + e_i \qquad (0.3)$$

where *Y* represents ED, NFI, CAD, RA or capital flight. *Q1, Q2* and *Q3* represent seasonal dummies for quarters one, two and three, respectively. β_0 represents a seasonal dummy for quarter four. The F-test is then performed on *Q1, Q2* and *Q3* after this regression (including the time trend) is executed.

5.2.4 Controlling for linear trends

In the case of trends in the data, a trend can be a general increase or general decrease throughout the time series over time. Detrending is an approach of removing trend from the data sample in order to have cleaner data, the purpose is to remove aspects that have the ability of distorting the data. This means that if there is for instance a general increase in the data, care needs to be taken into consideration because there may be spurious relationships among trending variables that have nothing to do with each other. In other words, there may be other variables that can affect the relationship between the independent variables and dependent variable in the regression when they are neither taken into account in the regression, nor have any correlation to the variables in question. This is what is trying to be removed through the process of detrending the data (Wooldridge 2013).

Detrending of the data in the aforementioned regressions is achieved by adding a time variable as an additional independent variable. In this case, the time variable is the quarterly time periods. Detection of a time trend is done by regressing a suspected variable on the time variable. If the returned coefficient for the time variable is significant, a trend is apparent with the coefficient measuring its magnitude (Wooldridge 2013). In practice, the model is modified from the example given in subsection 5.2.3 in the following way:

$$Y = \beta_0 + revann_i + war_i + Q1_i + Q2_i + Q3_i + qdate_i + e_i \qquad (0.4)$$

where *qdate* represents a time variable.

5.2.5 Final regressions

In summary, taking the previous subsections into account the final regressions that will be used for empirical analysis are as shown:

$$External\ Debt = \beta_0 + revann_i + war_i + Q1_i + Q2_i + Q3_i + qdate_i + e_i \qquad (1)$$

$$Net\ Foreign\ Inflow = \beta_0 + revann_i + war_i + Q1_i + Q2_i + Q3_i + qdate_i + e_i \qquad (2)$$

$$Current\ Account\ Deficit = \beta_0 + revann_i + war_i + Q1_i + Q2_i + Q3_i + qdate_i + e_i \qquad (3)$$

$$Reserve\ Assets = \beta_0 + revann_i + war_i + Q1_i + Q2_i + Q3_i + qdate_i + e_i \qquad (4)$$

$$Capital\ flight = \beta_0 + revann_i + war_i + Q1_i + Q2_i + Q3_i + qdate_i + e_i \qquad (5)$$

where *Q1, Q2* and *Q3* represent seasonal dummies for quarters one, two and three, respectively. β_0 represents a seasonal dummy for quarter four. *qdate* represents a time variable. $revann_i$ and war_i are dummy variables for observation *i*, and e represents the joint effect of factors that are not being observed for observation *i*.

6. Empirical Results

6.1 Table of Results

Table 1: OLS regression results (coefficients denominated in USD million)

	External Debt (1)	Net Foreign Inflow (2)	Current Account Deficit (3)	Reserve Assets (4)	Capital Flight (5)
Independent variables					
Revolution/Annexation	-7757*** [1037]	-7227*** [1003]	-2540*** [457]	-3879*** [872]	-8565*** [1061]
Donbass War	-4041*** [1339]	-2699** [1095]	-4706*** [566]	1753 [1208]	-3788*** [1377]
Controls					
Seasonality F-value (C=2.786)	2.24<C	1.99<C	2.74<C	C<3.35**	2.27<C
Trend detection	-101.2***	-11.7	22.2	-31.9	-103.2***
Miscellaneous					
adj.R^2	0.378	0.185	0.577	0.219	0.381
No. of obs	58	58	58	58	58

Notes: C=2.786, is the critical F-value * = significant at 90% confidence level

** = significant at 95% confidence level *** = significant at 99% confidence level

Robust standard errors are shown in square brackets.

The column titles show the regression identification number in parentheses, given in section 5.2.5.

6.2 Interpretation

In this subsection statistical interpretation of all the parameters from the above table will be presented. Since there are four dependent variables (components) there will be four sets of interpretation, one for each component (regressions 1 to 4). In addition, a set of interpretation aspects for a fifth regression where capital flight is the dependent variable will be made (regression 5). In order to get a sense of scale for the results, the coefficient values will be compared to nominal GDP.[7]

Significance of these interpreted parameters from the table will be based on a 5% alpha value, implying a confidence level of 95% (indicated with a double asterisk in table 1). Variables such as R-squared and adjusted R-squared are usually reported in statistical results. However, only the adjusted

[7] The 2014 quarterly average of Ukrainian GDP is USD 33.375 billion during the *revann* quarter. The quarterly average of Ukrainian GDP is USD 26.872 billion during the quarters covering the Donbass war. GDP Data is obtained from the World Bank Database (2018).

R-squared will be relevant for this study since a multivariate regression is ran. In line with statistical theory a positive coefficient sign indicates positive correlation between two variables. A negative coefficient sign indicates negative correlation between two variables (Wooldridge 2013). Lastly, robust standard errors will be given in square brackets after the related coefficient values.

6.2.1 External Debt (ED) (Regression 1)

Holding other things constant, the significant coefficient value of -7757 [1037] for the dummy variable *revann* implies a reduction of USD 7 757 million in the ED of Ukraine. In other words, when the dummy variable *revann* is active (taking the value of 1, *revann* = 1), the Euromaidan revolution and the annexation of the Crimean peninsula reduces Ukraine's ED by an amount of USD 7 757 million. If the significant coefficient value of -4041 [1339] is taken into consideration when the dummy variable *war* is active (*war* = 1), the war in the region of Donbass causes a decrease of Ukraine's ED by an amount of USD 4 041 million. The scale of reduction of ED due to *revann* is the size of 23.2% of Ukrainian GDP and the scale of reduction of ED due to *war* is the size of 15% of Ukrainian GDP.

By using an F-test on the seasonal dummies to check for seasonality, the F-value of 2.24 is insignificant at a critical F-value of 2.786. This means it cannot be stated that the variable ED exhibits seasonality variation. Detection of a trend was accomplished by regressing ED on a time variable where the result shows that there is a significant negative trend and that ED decreases on average by USD 101.2 million per quarterly period. Adjusted R-squared is 0.378, meaning that 37.8% of the variance in the dependent variable ED is explained by the independent variables revann and war.

6.2.2 Net Foreign Inflow (NFI) (Regression 2)

Implication of the significant coefficient value of -7227 [1003] for the dummy variable revann is a reduction of USD 7 227 million in the NFI of Ukraine when other things are held constant. The revolution and the annexation of the Crimea leads to a USD 7 227 million decrease of Ukraine's NFI. When you take the dummy variable war in its active form and its significant coefficient value of -2699 [1095] into consideration, this implies that the war in the region of Donbass reduces Ukraine's NFI by an amount of USD 2 699 million. The scale of reduction of NFI due to *revann* is the size of 21.7% of Ukrainian GDP and the scale of reduction of NFI due to *war* is the size of 10% of Ukrainian GDP.

The result from the F-test showed an insignificant F-value of 1.99, below the critical F-value of 2.786. Due to insignificance, it cannot be stated that the variable NFI exhibits seasonality variation. Detection of a trend gave a result showing that there is an insignificant negative trend of USD 11.7 million per quarterly period. Adjusted R-squared is 0.185, meaning that 18.5% of the variance in NFI is explained by the variables *revann* and *war*.

6.2.3 Current Account Deficit (CAD) (Regression 3)

Holding other things constant, the significant coefficient value of -2540 [457] for the dummy variable *revann* implies a negative effect of that size on the CAD. There is enough evidence to suggest a

reduction of the CAD by USD 2 540 million due to the Euromaidan revolution and the annexation of the Crimean peninsula. When the significant coefficient value of -4706 [566] is taken into consideration in the case of an active *war* dummy variable, the Donbass war is related to a reduction of Ukraine's CAD by an amount of USD 4 706 million. The scale of reduction of CAD due to *revann* is the size of 7.6% of Ukrainian GDP and the scale of reduction of CAD due to *war* is the size of 17.5% of Ukrainian GDP.

Running an F-test gave an F-value of 2.74 that is insignificant at the critical F-value of 2.786. A rejection of the null hypothesis cannot be made, implying a lack of evidence to suggest that the variable current account deficit exhibits seasonality variation. Detection of a trend gave a result showing that there is an insignificant negative trend of USD 22.2 million per quarterly period. Adjusted R-squared is 0.577, meaning that 57.7% of the variance in CAD is explained by the variables *revann* and *war*.

6.2.4 Reserve Assets (RA) (Regression 4)

Since the coefficient value of -3879 [872] for *revann* is significant, the implication is a negative effect on Ukraine's RA when other things are held constant. The Euromaidan revolution and the annexation of the Crimean peninsula leads to a reduction of RA by an amount of USD 3 879 million. However, compared to earlier observed negative coefficient values of the dummy variable *war* in the empirical analysis, the insignificant coefficient value of *war* in the case of Ukraine's RA is positive: 1753 [1208]. Since there is insignificance in this coefficient, there is no evidence to suggest that the war in the region of Donbass leads to a USD 1 753 million increase of Ukraine's RA when this dummy variable is active. The scale of reduction of RA due to *revann* is the size of 11.6% of Ukrainian GDP and the scale of increase of RA due to *war* is the size of 6.5% of Ukrainian GDP.

Running an F-test on the seasonal dummies gives an F-value of 3.35 that is significant at a critical F-value of 2.786. Due to significance, a rejection of the null hypothesis can be made and therefore, the variable RA exhibits seasonality variation. Detection of a trend gave a result showing that there is an insignificant negative trend of USD 31.9 million per quarterly period. Adjusted R-squared is 0.219, meaning that 21.9% of variance in RA is explained by the variables *revann* and *war.*

6.2.5 Capital flight (Regression 5)

The significant coefficient value of -8565 [1061] for the dummy variable *revann* implies that, holding other things constant. the Euromaidan revolution and the annexation of the Crimean peninsula reduces Ukraine's capital flight by USD 8 565 million. In the case of the variable *war,* the significant coefficient value of -3788 [1377] implies that the war in the region of Donbass leads to a decrease of Ukraine's capital flight by an amount of USD 3 788 million. The values of the coefficients *revann* and *war* for capital flight are the sums of the components regression coefficients calculated via the residual method. The scale of reduction of capital flight due to *revann* is the size of 25.7% of Ukrainian GDP and the scale of reduction of capital flight due to *war* is the size of 14.1% of Ukrainian GDP.

In comparison to the components where seven variables were significant and one variable was insignificant, new information provided is that these total capital flight value coefficients are both significant. This means that there is evidence to explain the effects of *revann* and *war* on total capital flight, but not for all the components since the Donbass war had an insignificant effect on reserve assets.

Running an F-test on seasonal dummies gives an F-value of 2.27 that is insignificant at a critical F-value of 2.786. Due to insignificance, it cannot be stated that the variable capital flight exhibits seasonality variation. Detection of a trend gave a result showing that there is a significant negative trend and that capital flight decreases on average by USD 103.2 million per quarterly period. Adjusted R-squared is 0.381, meaning that 38.1% of variance in capital flight is explained by the variables *revann* and *war.*

7. Discussion

In this section two types of discussions will be given. The first discussion is based on the obtained results from table 1 in section 6, and also in correspondence with figure 2 from subsection 4.4.2. The second type of discussion will touch upon aspects of research that are related to the execution of this study.

7.1 Results Discussion

In this subsection economic interpretation of the statistical results from section 6 will be made. The interpretations will comprise the economic meaning of the influence the events of the Ukrainian crisis has had on each component. In addition, comparisons in terms of hypotheses between implications of obtained results for hypotheses that were established earlier in this study will be made. Lastly, policy recommendations will be offered.

7.1.1 Economic interpretation

External Debt (ED) (Regression 1): An increase or decrease of external debt is intrinsically neither positive nor negative since it depends on many surrounding factors. At the same time, it is not unusual for a country to aspire to smoothly reduce its ED over time. The significant results from the trend detection reflect this.

In the case of Ukraine and other developing countries, an increase of ED can be considered a vital source of funding since the opportunity is large for productive investment and thereby increasing GDP. From figure 2 it is seen that outside of crisis periods ED increases with the intent for productive purposes. An increase of ED becomes a problem for Ukraine if the sources of funding are not used for productive purposes or that those productive opportunities are unavailable such as during crises or war. A lack of productive opportunities in a country implies an aversion of investment interest from normal channels[8], therefore a loss of access to externally sourced loans follows. The results show a sudden sharp decrease of ED in the first quarter of 2014 when the revolution and the annexation happened. This suggests a loss of access to external loans from normal channels because at this moment in time, the Ukrainian economy was not particularly healthy enough to attract investment. This theory is strengthened when taking into account the IMF emergency bail out loans in the quarter that followed the revolution and the annexation, with the purpose of replacing normal channels of externally sourced funding. During the Ukrainian crisis period disbursement of IMF emergency loans explains the majority of changes to ED, indicating Ukraine's reliance on emergency loans.[9]

The Donbass war period is associated with a decline of ED, although not as steep decline as in response to the revolution and the annexation. The effect could not be as strong for many factors: the war spans a much longer time period, Ukrainian GDP growth started to recover in the later years of the war or Ukraine secured ties to pro-EU sources of ED.

[8] Normal channels are private commercial banks, other governments, or international financial institutions.
[9] The influence of IMF loans on external debt is described in detail in section 3.2

Net Foreign Inflow (NFI) (Regression 2): As figure 2 shows, outside of crisis periods NFI experiences a positive trend due to Ukraine's growing economy. NFI is positive during these time periods because high risk-adjusted rates of return on investment attract foreign investors to enter a growing economy such as Ukraine. A positive level of NFI indicates investments flowing into the country, therefore productive opportunities are being matched with external financing that benefits the Ukrainian economy.

Negative shocks such as the global financial crisis in 2008 and the revolution together with the annexation in the first quarter of 2014 shows negative NFI values, implying that foreign investments are flowing out of the country. Negative NFI can be a problematic issue because investments that are flowing out of the country indicate lost opportunities in terms of utilizing the investments for productive purposes that can enhance the domestic economy. The results show a strong significant negative effect on NFI in the first quarter of 2014 when the revolution and the annexation happened. This can be explained by uncertainties and fears among investors that occur during this time period since the revolution and the annexation are creating instability to the economic climate of Ukraine.

Changes of NFI during the period of the Donbass war has not been as straightforward as in the occurrence of the sudden negative spike in NFI during the revolution and annexation. The difference is that during the Donbass war period the NFI of Ukraine is generally hovering slightly above zero. From the results, this leads to a weaker negative coefficient compared to the revolution and annexation. Explanation to this is the economic recovery Ukraine experiences during the later years of the Donbass war. When the economy commences to recover, the economy is restructuring itself to the uncertainty surrounding the shock of the war. Even if economic restructuring has taken place, the war still provides at least some degree of uncertainty, which explains why NFI hovers around zero and never fully recovers to pre-crisis levels.

Current Account Deficit (CAD) (Regression 3): In a similar fashion to external debt, a CAD is inherently neither good nor bad, but it depends on many surrounding factors. As figure 2 shows, when Ukraine does not experience the effects of a crisis there is a preference to run a CAD. This means that Ukraine is importing more than it exports during periods of economic growth. Since Ukraine is a developing country it might choose to run a CAD in periods of growth due to increased claims on domestic assets by foreign investors, whose investment capital is used to increase productivity and stimulate the Ukrainian economy. Alternatively, a CAD may be due to importing excess materials (goods) with the ultimate goal of exporting finished products in the future where Ukraine benefits from the added value in a production chain. A CAD could also be the result of poor government planning (Heakal 2018).

The significantly negative coefficients for both annexation/revolution and the Donbass war from table 1 show that due to the Ukrainian crisis, Ukraine experiences a decline of the size its CAD (this decline is

similar to the one Ukraine experiences in response to the global financial crisis). Figure 2 shows that due to the ongoing Donbass war the CAD remains close to zero and has since then not recovered. This reduction of the CAD could possibly be due to the Ukrainian crisis deterring foreign investors, or due to lack of funding for importing materials for use in production chains. Poor government planning could also play a role here (Heakal 2018).

Reserve Assets (RA) (Regression 4): Ukraine was reliant on using its RA to pay for state subsidized imported natural gas, significant levels of seasonality was detected in RA data since natural gas was bought in large quantities during the winter quarter.

It is known from figure 2 and from Ukrainian central bank reports that RA fell to dangerous levels by the end of 2014. The negative significant coefficient result from the revolution/annexation dummy variable reflects this RA depletion trend for 2014, even if the dummy variable is active only for the first quarter. When the RA get dangerously closer to zero towards the end of 2014 it cannot go any lower. This leads to an possible explanation to why the *war* dummy variable shows an insignificant positive coefficient; the dummy is active from the bottoming out of the RA during 2014 to the replenishment over the years 2015 onwards. Ukraine suffered an increased reliance on external sources of energy since it lost control of the Donbass region which was an important source of energy. This can help explain the increased uses of RA funds for energy during 2014.[10]

7.1.2 Components of capital flight

By cross referencing the economic interpretation of the components of capital flight (Regressions 1 to 4) with the total capital flight coefficient values (Regression 5), we can analyze the sources of capital flight coefficients. Analysis of the capital flight components for the revolution and annexation shows that the sources of the reversal came from a significant reduction in ED and NFI. Both these components have very strong effects due to values of an average at approximately minus USD 7 450 million. Negative coefficients for CAD and RA were found significant. They both are negative values and therefore according to the residual model contribute positively towards capital flight, partially countering the aforementioned effects from ED and NFI. For clarity, the calculation of capital flight for the *revann* variable in the residual format is as follows:

$$\Delta ED + NFI - CAD - \Delta RA = Capital\ flight$$

$$(-7757) + (-7227) - (-2540) - (-3879) = -8565.$$

Analysis of the capital flight components show that the sources of the reversal during war period came from a significant reduction in ED and NFI, followed by an insignificant increase of RA. The insignificant increase of RA is included in the components analysis because four of the five variables of the residual model equation are significant, and when solving for the insignificant variable as an unknown variable, the same value as the insignificant coefficient regression result is obtained. The

[10] The influence of state energy bills on reserve assets in detailed in section 3.2

only factor that contributes to an increase of capital flight is the significant decrease of CAD while all other factors decrease capital flight. Calculation of capital flight for the *war* variable is as follows:

$$(-4041) + (-2699) - (-4706) - (1753) = -3788.$$

By comparing the negative coefficient values for *revann* and *war* during the transition of going from the period of the revolution and annexation to the Donbass war, the *war* coefficient is weaker than the coefficient of *revann* because of changes to ED, NFI and CAD that increase capital flight. Analysis of the capital flight components show that the negative effect of ED is not as strong in the period of war as in the period of the revolution and annexation, indicating that in comparing the two time periods, a weaker negative ED effect explains an increase of capital flight. The same case can be applied for the NFI. Since the negative effect of the CAD becomes stronger, capital flight is increasing from this change. From the change, RA is the only component providing the effect of decreasing Ukraine's capital flight. This is because the component is going from a negative value to a positive value. Comparison of *war* and *revann* shows that if RA would have stayed constant from the *revann* period, there would have been positive capital flight as shown:

$$(-4041) + (-2699) - (-4706) - (-3879) = 1845$$

This shows how sensitive capital flight can be to a single component.

7.1.3 Hypothesis comparison

By comparing implications of the results and hypothesized effects of the Ukrainian crisis events would have on capital flight of Ukraine, interesting findings are being discovered. It was hypothesized that a revolution would indicate a reversal of capital flight and the results showed this to be true. This makes sense because it indicated a move towards the EU which was seen by the majority as hope for the future economic climate.

It was hypothesized that both annexation and war would lead to acceleration of capital flight. The results from this paper contradict this hypothesis as both the annexation and war lead to reversal of capital flight instead of acceleration. This highlights the importance of performing research on a country case study format rather than a panel of countries because previous findings on the effects of annexation and war have been based on panel of countries rather than individual countries. One can wonder how the results would be updated for those panel-of-countries papers from Lensink, Hermes & Murinde (2000) and Le & Zak (2006) if they had performed research on each country individually, since this paper contradicts their findings.

Mechanisms of the residual model were hypothesized in the following way: When ED decreases, so will RA; when NFI decreases, so will CAD. This is found to be completely true for the *revann* variable and partly true for the *war* variable. For the *war* variable, NFI and CAD both decrease. However, when

ED decreases RA increase. RA increases because the reserves could not be depleted any further, as outlined in section 7.1.1.

7.1.4 Policy recommendation

Whilst there is a consensus in academics based on the literature review that acceleration of capital flight is a problem, it is difficult to suggest an equally urgent remedy for the case of Ukraine since it experiences reversal of capital flight during the Ukrainian crisis. Reversal of capital flight is undocumented capital entering the country, which is not as negative for the economy as acceleration of capital flight.[11] The negative aspect of reversal of capital flight is that it provides missed taxation opportunity for the Ukrainian government. The reverse capital enters the informal part of the economy where it remains under the radar to Ukrainian tax authorities (Mahmood 2013). Based on this, it is clear that Ukraine would benefit from increased surveillance by the tax authority on its population in order to deter this process of reversed capital flight.

An additional policy aspect needed to be taken into consideration is a stronger need for democratic institutions that allow opinions of the people to become reality. This is achieved by improving the value of democracy and through the reduction of corruption. Improved values of democracy and reduction of corruption play an important role for the link between the people and the government (at that time, the government of Yanukovych) in times of the Euromaidan revolution because the link between the people and the government was so weak to enable the revolution to emerge. This is relevant for the case of the pro-EU move the demonstrations were attempting to achieve in Kiev. If the politicians of the Yanukovych government (including Yanukovych himself) would have taken Ukraine a step closer to the EU by fulfilling the will of the people, the Euromaidan revolution might never have happened.[12] This implies a higher degree of political stability by enabling the possibility of avoiding the revolution and also the revolution effect of reversing Ukraine's capital flight.

Annexation and war are complex to remedy since they are executed by an external aggressor. Policy recommendations here would be derived from the field of international relations rather than through economic deliberation. Geographically and ideologically sandwiched between the EU and Russia—using the argument of economic stability as priority—the optimal scenario for Ukraine would be to show solidarity towards one side only.

7.2 Research Discussion

In this subsection, aspects of research will be discussed. There are two aspects that will be taken into consideration. One is shortcomings of the study the reader needs to be aware of. The second aspect is suggestions for further research within this field of economics.

[11] Theoretically, the most desirable would be zero capital flight and zero reversal of capital flight.

[12] Because the annexation and the Donbass war were retaliation for the revolution, they would have also never have happened.

7.2.1. Shortcomings

One shortcoming of this study is not being able to differentiate between the effects of the revolution and the annexation. If data on a weekly basis could have been used instead of data on a quarterly basis, the results would have increased accuracy in terms of isolating the effects of the events. Furthermore if weekly data existed, because the revolution and annexation occurred within a fortnight of each other, the data would still exhibit spillover effects between the events.

Not having the time and resources to be able to add additional variables that would increase the strength of the model is another shortcoming. Determinants of capital flight papers mentioned in the literature review could have over ten explanatory variables that were included in empirical analyses. By controlling for additional variables the dummy variables and the model in this paper would exhibit increased accuracy and more explanatory power.

In terms of data used to obtain statistical results, the relationship between the amount of observations and standard errors in a regression is another example of a shortcoming of the study. In accordance with statistical theory, the sample of observations and the standard error are negatively correlated. A smaller amount of standard errors contributes to less spread/variation and more accuracy in the data (Cortinhas & Black 2012). Results of this paper could have provided a smaller margin of error, helped identify outliers and improved accuracy of mean values if the model would have been based on a larger sample of observations (Zamboni 2018).

Attention should be brought to potential omitted variable bias in the results from the positive correlation between the shock of the global financial crisis and the coefficients of capital flight (along with its four components) that is noticeable from figure 2. This bias is upward (positive), therefore underestimating the coefficients. Successful isolation and inclusion of the effect from the global financial crisis as an independent variable in the regression model would have strengthened the empirical results from this study, by outputting coefficients with even larger absolute values indicating a stronger effect of political risk on capital flight.

There is also potential omitted variable bias in the results from the negative correlation between the economic recovery (from 2016 onwards) and the coefficients of capital flight (along with its four components), that is noticeable from figure 2. The bias is downward (negative), therefore overestimating the coefficients. If an isolation of the effect from the economic recovery were to be successfully achieved and included as an independent variable in the regression model, empirical results of this study would show smaller coefficient values in absolute terms, meaning a weaker effect of political risk on capital flight.

7.2.2 Suggestions for further research

If the main interest would be estimation of capital flight of Ukraine only, identical coefficient results would have been obtained regardless if regressions using the mediators as the dependent variable or

capital flight as the dependent variable were to be conducted. Since the four components provide more information than an analysis of capital flight directly, a suggestion is that future studies within this field of research also apply this method.

Another point to take into consideration for further research is the format of country analysis. The difference (as previously mentioned in subsection 7.1.3) between this paper and previous papers on the relationship between political risk and capital flight is that this paper applies the sole case of Ukraine as country of research while previous papers observe a large set of countries. Performing research on each country individually (whether it is from previous set of countries or countries not analyzed in this field of research at all) can provide interesting findings since this paper contradicts findings of the panel-of-countries papers. Therefore, it highlights the importance of performing research in this field of research on a country-case format rather than a panel of countries.

8. Conclusions

This empirical paper using OLS regression technique, examines the economic impact several events of political risk have had on capital flight of Ukraine. Collectively labelled the Ukrainian crisis starting from 2014, the Euromaidan revolution, the annexation of the Crimean peninsula and the war in the region of Donbass are the events the paper have taken into consideration. A successful application of a unique method of not only measuring the effects on capital flight directly, but also measuring the effects on the components of capital flight in accordance with the World Bank residual model.

The effect of the Euromaidan revolution and the annexation of the Crimean peninsula had a significant reversal of capital flight. The effect of the revolution is as hypothesized. However, the results for the annexation contradict findings from previous political risk and capital flight literature. Analysis of the capital flight components show that the sources of the reversal came from a significant reduction in external debt and net foreign inflow. Significant reduction in current account deficit and reserve assets contributed to acceleration of capital flight, however these were overpowered by the sources of reversal.

Based on previous political risk research, a hypothesized effect of acceleration of capital flight due to war proves to be challenged from the results of this paper. Results of this paper show that the war in the region of Donbass leads to a statistically significant reversal of capital flight. Analysis of the capital flight components shows that the sources of the reversal during war period came from a significant reduction in external debt and net foreign inflow, followed by an insignificant increase of reserve assets. Significant reduction in current account deficit contributed to acceleration of capital flight, however this effect was overpowered by the sources of reversal.

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