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Economic Sanctions: An Effective EU Foreign Policy Tool?

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Contents

List of Tables

List of Figures

Abbreviations

CFSP	—	Common Foreign and Security Policy
EEAS	—	European External Action Service
EU	—	European Union
GDP	—	Gross Domestic Product
GDP PC PPP	—	Gross Domestic Product Per Capita Purchasing Power Parity
LN	—	Natural Logarithm
SQRT	—	Square Root
TIES	—	Threat and Imposition of Economic Sanctions
VIF	—	Variance Inflation Factor

Abstract

This study aims to examine if economic sanctions threatened or imposed by the European Union (EU) were successful in bringing about policy change in a targeted state. A logistic regression analysis is used to test for the influence of five independent variables on the likelihood of a successful outcome. The results of the statistical analysis prove that high scores on population size of the target state, and the duration of the sanction have a negative effect on the likelihood of a successful outcome. Furthermore it proves that sanctions are more likely to be successful in the threat stage in comparison to when they are imposed. The regime type, or the relative economic power of the targeted state does not influence the likelihood of a successful outcome. Overall it is found that economic sanctions imposed by the EU are successful in half of the cases.

1 Introduction

In April 2014 the EU imposed economic sanctions against the Russian Federation, which will be held in place until at least the 31st of June, 2016. These sanctions have been imposed on Russia due to the Russian involvement in the destabilization of Ukraine, and the annexation of Crimea. The sanctions will be lifted if Russia fully implements the Minsk agreement (European Parliament, 2016). Russia responded with counter sanction towards the EU, implementing an embargo on EU agriculture products. The effect of the sanctions in terms of the EU's Gross Domestic Product (GDP) is a decline of 0,3% in 2014 en 0,4% in 2015 (Szczepanski, 2015, p.4). The Austrian Institute of Economic Research (WIFO) concluded that the long-term result of the sanction would mean a trade loss of €92 billion and up to 2.2 million jobs could be lost (Szczepanski, 2015, p.4-5). Economic sanctions will thus not only impact the targeted state, but also the sending actor (Kaempfer & Lowenberg, 1988, p.786).

The EU states that the usage of economic sanctions – or restrictive measures as it is defined by the EU – are "an essential foreign policy tool", and are used to "bring about a change in policy or activity by the target country, part of a country, government, entities or individuals" (EEAS, n.d.). Sanction are used to promote peace, democracy and the respect for the rule of law, human rights and international law (EU factsheet, 2014). Morgan, Bapat, and Krustev (2009, p.98) argue that from the 1970s onward a significant increase in the usage of economic sanctions can be observed, doubling every decade in the total amount of imposed sanctions. At the moment the EU has imposed sanctions on 34 different actors (European

Commission, 2015), and has imposed or threatened to impose economic sanction 110 times before the currently imposed sanctions (Morgan, Bapat, & Kobayashi, 2014).

Over the past decades extensive research has been conducted on the effectiveness of economic sanction in bringing about policy change in targeted states. A significant amount of the research concludes that economic sanctions are not an effective tool for achieving policy change in a targeted country (Wallensteen, 1983; Pape 1997; Pape 1998; and Peksen, 2009). Additionally a few authors argue for a limited effect of economic sanction (Morgan & Schwebach, 1997; Hufbauer, Schott, Elliot, & Oegg, 2007). Combining this with the knowledge of the cost of economic sanctions for the sending actor, it is questionable whether economic sanctions should be "an essential foreign policy tool" for the EU.

This research set out to determine if economic sanctions imposed by the EU are successful in bringing about policy change in the targeted state, and furthermore to explain the success and failure of the sanction policy of the EU using five explanatory variables. In order to test for the influence of the five variables on the outcome of the sanction a logistic regression model will be constructed. The model will use economic capabilities, regime type, and population size of the targeted state, the duration of the sanction, and the sanction status - imposed or threatened, as the explanatory variables.

The structure of the rest of this thesis can be divided into four main parts. In the first section an overview will be given of the existing literature on economic sanctions, furthermore the explanatory variables will be substantiated, and for each variable one hypothesis will be constructed. The second section discusses the data collection for both the dependent and independent variables, and the recoding of the variables will be discussed. In third section univariate, bivariate, and multivariate analyses will be conducted to test for the relation between the dependent and independent variables. In the last section the results of the statistical analysis are interpreted and compared to the existing literature. Furthermore alternative explanations are sought for effects that were not in accordance with the hypotheses. Finally, conclusions are drawn upon the results of the study.

2   Theoretical Framework

Restrictive measures, or economic sanctions, are thus imposed to alter the behaviour of a third country. The EU has distinguishes between three sorts of restrictive measures. First, an arms embargo; an arms embargo consists of a ban of all supplies to the targeted state for the use for military combat. If the EU believes it to be appropriate, the arms embargo can be extended to also include police materials. An arms embargo is implemented to prevent escalation of violence. Secondly, a travel ban can be imposed on a certain list of people

affiliated with the targeted state. This sanction prevents the targeted persons from entry into the EU. Lastly the EU makes use of the freezing of funds, financial assets, and the suspension of trade. This makes it impossible for the targeted entity to use or move their financial and economical resources (EU Factsheet, 2014). The focus of this study will be on the freezing of funds, financial assets, and the suspension of trade.

As was argued in the introduction, a significant amount of the literature concluded that economic sanctions are not an effective tool to bring about policy change. Kaempfer and Lowenberg (1988, p.786) presented three points why imposed economic sanction are inclined not to work. Almost thirty years later Hovi, Huseby, and Sprinz (2005, p.480-1) concluded on the basis of existing literature roughly the same three reasons for the ineffectiveness of imposed economic sanctions. These three factors have thus proved to be decent explanatory variables over time. The first factor that impedes the success of economic sanctions is the predicament to impose economic sanctions in such a manner that it hurts a specific area of the targeted state. Target state are able to reduce the effect of the sanction by turning towards substitute suppliers, create sufficient stockpiles, or rationing. Secondly, sanction will not only have a negative impact on the targeted state, but it will also negatively influence the economy in the sender state. Especially if the sender and the targeted state have high economic interdependence. Finally, economic sanction can cause a rise of nationalism and patriotism in the targeted state. This can for example be observed in the case of the imposed sanction against Russia due to their involvement in the Ukraine crisis. In the eyes of the Russian population the economic recession taking place in Russia is the fault of the West. Instead of demanding policy change, the population supported the leader, and his anti-Western policy (Sakwa, 2014, p202).

Most of the quantitative research conducted on the effectiveness of economic sanctions uses the data set provided by Hufbauer, Schott, and Elliott (1990). The pitfall of this data set is that it ignores the effect of the mere threat of economic sanctions (Morgan, Bapat, & Krustev, 2009, p.93). Morgan, Bapat, and Krustev (2009) continue that the threat of economic sanction will cause targeted state to concede even before the implementation of the sanction. This assumes that states are rational actors, and have access to full information (Drezner, 2003, p645-6). States will do what is needed to avoid the highest political cost in the case of economic sanctions (Morgan, Bapat, & Krustev, 2009, p.93). The highest political cost can either be the cost of non-compliance to the demands of the sender state, and cost associated with the imposition of the sanction, or it can be the political cost of conceding to the demands of the sender state, and the political cost that caused by this (Blanchard & Ripsman, 1999, p.224). Drezner (2003, p.646) approaches the research on economic sanctions from a game theoretic perspective and states that economic sanctions

will never pass the threat stage. Either the targeted state concedes to the demands of the sender state because of the threatened sanctions and the accompanied costs with the possible imposition (2), or the sender state will not make a threat because it knows that the targeted state will not concede, bringing cost on both the parties involved (1). However, this approach assumes the availability of full information on both sides, which will hardly ever be the case in international relations. If a threat is posed and the target decides to stand firm, thus not to concede to the threat, the sender state will have two options. Either to back down from its threat, resulting in a status quo situation and a credibility loss for the sender state (3), or to impose the sanction. If the sanction is imposed on the targeted state, the targeted state can either cope with costs caused by the sanction and decline to change its policy (5), or the targeted state can decide to change its policy after all and see the sanctions lifted (4). Figure 1 is a schematic representation of this process.
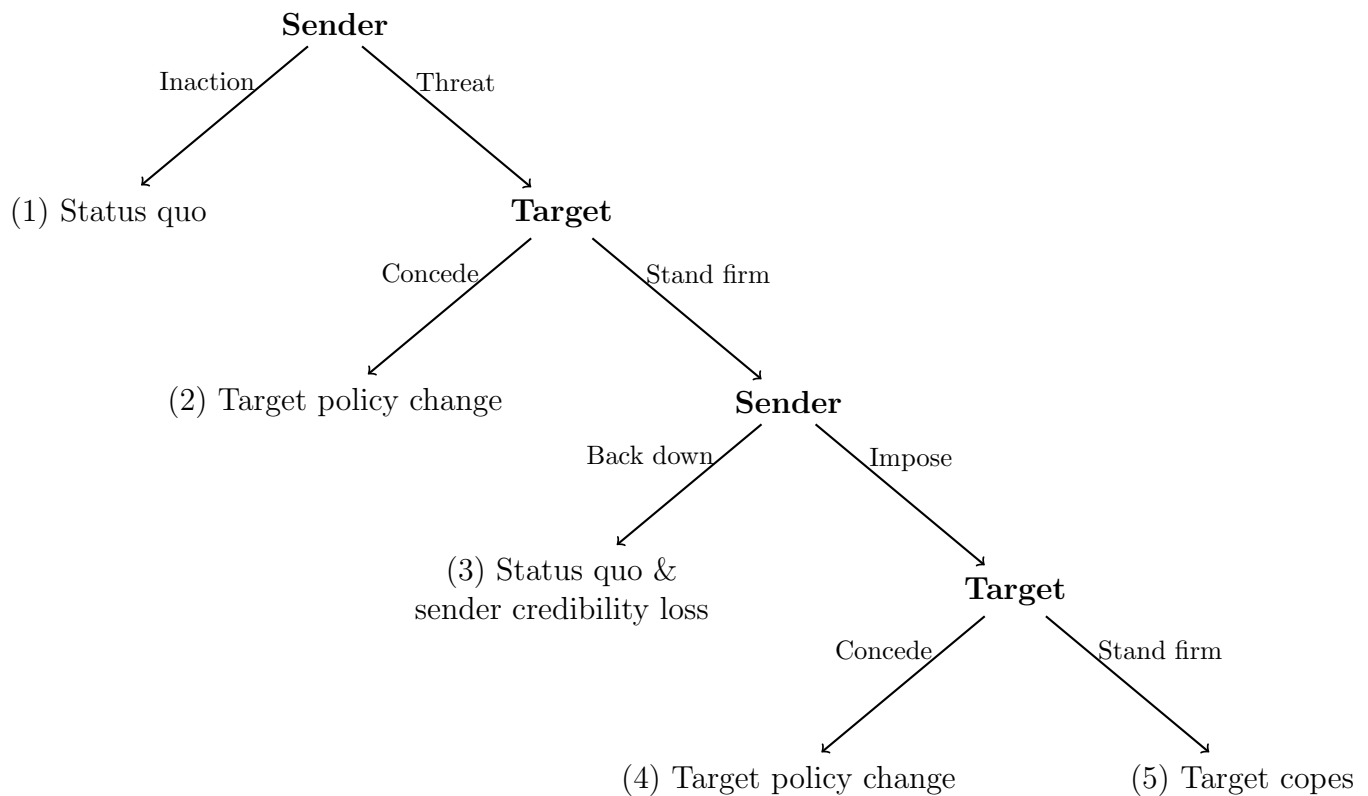
Figure 1: Model of sanction process

As can be observed, the threat of an economic sanction does not always bring about desired policy change. Three reasons are put forward by Hovi, Huseby, and Sprinz (2005, p.484-5) to explain the decisions of targeted states not to comply to the demands of the sender state. First, the targeted states do not consider the threat made by the sender state credible. The targeted state thus deems the probability that the sender state will actually impose the

economic sanction to be low. Second, the targeted state estimates that the consequences of the imposed sanctions are the lesser evil in comparison with conceding to the demands of the sender state. The targeted state does not concede to the threats made by the sender state, but the targeted state prefers the negative effect of the sanction over the imposition of the demands made by the sender state. And lastly, the decision to stand firm may arise from the believe that sanction will be imposed regardless of the actions undertaken by the targeted state. In other words, the targeted states believes sanctions will be imposed, whether or not they concede to the demands of the sender state.

A sanction is considered to be successful when the demands of the sender state are met by the targeted state, in order to see the (threat of) economic sanctions lifted. As stated before, the sanctions will aim to promote peace, democracy, human rights and the rule of law, and human rights and international law. The outcome of a sanction is considered negative when the targeted state does not alter its behaviour after a sanction is threatened or imposed.

2.1   Sanction status

In the previous discussion a distinction was made between economic sanctions that are imposed, and economic sanctions that are not imposed but are merely in the threat stage - this is defined as the sanction status. Lacy and Niou (2004, p.39) argue that if an economic sanction is imposed, it is less likely to succeed in its goal of bringing about policy change in the targeted state. In the bulk of the cases target states are able to anticipate whether or not they can cope with the costs of the sanction (Morgan, Bapat, & Krustev, 2009, p.93). After the imposition of a threat the targeted state will calculate what will cause the lowest political cost for the government. In other words, it is assessed what will damage the government more, either the economic sanction, or the cost of conceding to the demands of the sender state (Drezner, 2003; Blanchard & Ripsman, 1999). As stated before, this assumes that states are rational actors that strive for minimization of costs and have access to full information. That is, states have perfect knowledge of what effect the sanction will have, and furthermore the targeted states know what will be the political cost of either conceding or standing firm. According to Blanchard and Ripsman (1999, p.224-5) states calculate the costs and pick the policy that will bring the least cost. This results in a policy in which states either concede at the moment the threat of a sanction is made, or decide to cope with the cost of the imposed sanction. The decision whether or not to cope with the cost of the sanction is thus made in the threat stage. Therefore it is unlikely that states will concede after the imposition of the sanction. There are however cases in which states concede after the implementation of the sanction. This can be caused by a miscalculations of the effect of the sanctions, in which the sanction has a stronger effect

than was anticipated, or caused by a misinterpretation of the willingness of sender states to implement the sanction (Hovi, Huseby, & Sprinz, 2005, p.499). However, it is assumed that these cases will be an exception to the rule. States will calculate the political cost of either standing firm or conceding in the threat stage, therefore the decision to concede or stand firm will be made before the actual imposition of the sanction. This leads to following hypothesis:

H_1: *Economic sanctions will be less successful when they passed the threat stage*

2.2 Duration of the sanction

According to Hufbauer, Schott, and Elliot (1990, p.101) the possibility of a successful outcome after the imposition of a sanction declines as time passes. Thus the longer a sanction is in place, the less likely it is that the targeted state will concede to the demands of the sender state. This is caused by various reasons. First, sender states might be willing to lift their sanction as they realize it does not bring about the desired effect (Dashti-Gibson, Davis & Radcliff, 1997, p.609). Second, the possibility of the target state to adjust to the sanction, and the likelihood of the targeted states to acquire new economic partners will lessen the dependence on the sender state (Hufbauer, Schott, & Elliot, 1990, p.101; Bonetti, 1998, p.808). Third, the population gets used to the effect of the economic sanctions. Fourth, states, or actors in the state, might develop illegal manners to avoid the sanctions, and decrease the influence of the sanction (Burlone, 2002, p.31). And lastly, if the severity of the economic sanctions are miscalculated, and cause a heavier burden than expected, states will concede short after the imposition rather than after a long period to avoid the highest cost (Drezner, 2003; Lacy & Niou, 2004).

Although, the contrary could also be argued. The duration of the sanction could cause the resources of the targeted state to be exhausted. This effect is cumulative, thus the longer the sanction is in place, the higher chances of exhausting the resources of the targeted state (Bonetti, 1998, p.808). Dashti-Gibson, Davis and Radcliff (1997, p.609) also argue for the possible increased effectiveness due to the ever increasing costs experienced by the targeted state. In the long-term this will lead to concessions made by the targeted state. However, keeping in mind that states will be able to estimate the effect of the sanction, it can be expected that states will not let the sanction economically exhaust them, and afterwards concede to the demands of the sender state. Coming back to the point of cost calculation of Drezner (2003), if sanctions cause a heavy burden, states will concede after a short period of time rather than after a long period.

Regarding the threat stage, economic sanctions are more likely to fail when the threat

is perceived as empty by the targeted state (Hovi, Huseby, & Sprinz, 2005, p.485). Thus the longer the target state is merely subject to a threat of an economic sanction, but in the meantime is still able to carry out its condemned policy, the less likely the targeted state will perceive the threat as credible. Peterson (2013, p.679) argues that if the sender backs down from the imposition of the sanction, this has a negative effect on the credibility of the (following) sanction. Therefore it can be expected that, due to the calculation made by a state on the costs of conceding, the possibility of alternative economic resources, and the way in which a threat is perceived, an increase in the duration of a sanction will have a negative effect on the likelihood of a positive outcome for the sanction. This argumentation leads to the following hypothesis:

> H_2: *The longer the duration of the (threat of an) economic sanction, the lower the probability of a successful outcome*

2.3   Economic capabilities of the target state

The economic capabilities of the target state are expected to influence the probability that an economic sanction will be successful. An economically strong state is more likely to have sufficient economic abilities to be able to cope with the economic losses caused by the imposed sanction (Marinov, 2005, p.572). Huffbauer, Scott, and Elliott (1990, p.97-8) argue that economic sanctions that are imposed upon an economically weak state will be more effective than sanctions imposed upon a economically strong state. The imposed economic sanctions will put stress upon an already unstable state, and enhances the hardship of the economic situation. Sakwa (2015, p.202) argues that economically weak states are more prone to sanctions. This is because economically weak states do not have to capabilities to retaliate against the sender state, and are thus not able to put pressure on the imposed sanction.

Bolks and Al-Sowayel (2000, p.247) state that the economic situation is intertwined with the political structure of the state. In other words, states that are economically weak tend to also have weak political structures. This makes economically weak states more prone to the (the threat of) economic sanctions. The economical, and thus also the political, strength of a state influences the ability of a state to deflect the impact of economic sanctions. A strong political structure gives the government the competences to introduce certain policies to counter the effect of the imposed sanctions (Bolks & Al-Sowayel, 2000, p.247).

Economically strong states are therefore expected to be better able to deflect the effects of the economic sanction because these states are better equipped to cope with the economic losses, and are able to retaliate. Furthermore, their political structure makes it able to

introduce policies to counter the effect of the sanctions. For economically weak states, the contrary could be argued. This leads to the following hypothesis:

> H_3: *Economically weak states will be more prone to (the threat of) economic sanctions*

2.4   Regime type of the target state

Brooks (2002, p.49) argues that economic sanctions will impact democratic and non-democratic regimes differently. Economic sanction will be more successful against democratic states than if non-democratic states are targeted. The population of a democratic state can demand policy change from their leaders which in turn will lead to lessening of the economic harm caused by the imposed sanctions. For non-democratic regimes on the other hand economic sanctions tend to weaken the middle class position, but strengthen the regime and its allies. Nooruddin (2002, p.69) found that democracies are more receptive for the effect of economic sanction because they are motivated by the prospect of re-election. This means that democratic governments will implement policies that will satisfy their electorate. As has been stated by Brooks (2002), the population will demand policy change from the government, and in order to keep their electorate satisfied, bearing in mind the re-elections, democratic governments will try to lift the burden of the imposed economic sanctions by conceding to the sender states demands. Considering that non-democratic regimes do not have to answer to the demands of their population, they will be less receptive for economic sanctions.

Lektzian and Souva (2007, p.849) give two reasons why economic sanctions are less likely to have a favourable outcome in non-democratic states in comparison with democratic states. First non-democratic regimes have greater possibilities for rent-seeking, due to their significant influence in the domestic economy. Non-democratic regimes are able to gain political loyalty by granting social contracts and allow smuggling. Import and export restrictions are at the basis of rent-seeking. The former causes rising prices of the products on the domestic market caused by a shortage, making domestic production and smuggling more rewarding. The latter on the other hand, will cause prices to drop below the world market prices and gives smugglers the ability to buy these products domestically and sell them abroad with profit. The regime acts as a facilitator in this situation in return for political loyalty. Secondly, Lektzian and Souva (2007, p.849) argue that in non-democratic states the core leaders of the state are not affected by broad economic sanction, but only the lower class will be hit. This enhances the political power of the non-democratic regime.

Thus because democratic regimes are held accountable for their policy by their electorate,

and are driven by the prospect of re-election, democratic regimes are more likely to concede to economic sanction than non-democratic regimes. Furthermore the ability of non-democratic regimes to extract rent from a sanction situation, and the difficulty to target the core leaders, non-democratic regimes are expected to be better able to cope with economic sanctions. This leads to the following hypothesis:

> H_4: *Economic sanctions are less likely to be successful if they are threatened or imposed upon non-democratic states*

2.5   Population size of the target state

In the academic literature on the effectiveness (of the threat) of economic sanctions the impact of population size has yet to be discussed. However, population size is a frequently used explanatory variable in political research. With regard to economic sanctions it is expected that the larger the population size of the state, the better states are able to cope with the effect of economic sanctions. Burlone (2002, p.30) argues that the economic self-sufficiency of the targeted state plays an important role in the ability of states to cope with sanctions. Economic self-sufficiency is the ability of a state to have economic prosperity without the dependence on other states or international trade. The aim of economic sanctions is to disrupt the international trade of the targeted state (Burlone, 2002, p.30). Thus if a state is not involved in international trade, it is increasingly difficult to target, which will limit the effect of the economic sanction. Krasner (2003, p.21) argues that states with a small population are more involved in the international trade in comparison to large states. From this reasoning it could be argued that large states are more self-sufficient than small states, and thus more difficult to target with economic sanctions. Resulting in the following hypothesis:

> H_5: *The larger the population of the targeted state, the lower the probability of a successful outcome*

3   Data Collection

The data required to test the above mentioned hypotheses is collected from different sources. For distinguishing different cases of EU economic sanctions the 'Threat and Imposition of Economic Sanctions' dataset (TIES) of Morgan, Bapat, and Kobayashi (2014) is used. TIES provides 110 cases of threatened and/or imposed economic sanction by the EU or its

predecessor, the European Economic Community (EEC), and is updated until 2005. 110 was the total amount of cases after all the cases in which the 'final outcome' was missing were removed from the dataset. The TIES dataset (2014) is complemented by including imposed economic sanction by the EU from 2005 - 2016. This is done so by conducting specific search queries in EUR-Lex. EUR-Lex is the database of the EU where the official journals and documents of the EU are published. This also includes the common positions, and the European Council decisions. Effectively this means that when economic sanctions are imposed this is published on EUR-Lex, taking into account these decisions are made by the European Council under the Common Foreign and Security Policy (CFSP).

3.1   Data collection cases 2005-2016

Documents related to a council decision that concerns the imposition of an economic sanction include 'restrictive measures' and the name of the targeted state in the document title. A search has been conducted for every state recognized by the United Nations (United Nations, 2016) AND 'restrictive measures'. The search query was limited to a time range from 2005 to 2016. Assuming that sanction cases before 2005 are to be found in the TIES dataset. Whenever the query had a positive result, the documents were analysed on two points.

First, it was established whether or not the document indeed concerned economic sanctions imposed by the EU on a third country. Restrictive measures imposed by the EU can, among others, consist of an arms embargo, imposition of a travel ban to a specific list of people, freezing of funds, freezing of financial assets, and the suspension of trade (EU Factsheet, 2014). Considering the fact the research is focussed on the effect of economic sanctions, a targeted state must be sanctioned economically, and will thus only be included into the analysis if the restrictive measures included either one or more of the latter three points. Cases in which, for example, an arms embargo and a freezing of funds took place are also included in the study. Cases in which merely a prevention of entry or an arms embargo was imposed are not included in the dataset.

Secondly, it is possible that a certain document is not the document that initially imposed the economic sanction, but extended, amended, or repealed the original sanction. If this was the case, the document would state what document it extends, amends, or repeals. The referred to document would then be consulted and if necessary the process was repeated. Resulting in being able to determine what was the original document that imposed the economic sanction. This process is important for determining the start date of the economic sanction. In this process the distinction was made between an arms embargo and prevention from entry, and economically focussed sanctions as well, because economically focussed sanction can be added to the overall sanction at a later stage.

Besides the search query on EUR-Lex the EU document 'Restrictive measures (sanctions) in force' (European Commission, 2016) was consulted. It provides information on the currently imposed, and recently annulled economic sanctions by the EU. This was used in order to determine if sanction cases had been missed in the search query. It confirmed the effectiveness of the search query, as no new cases emerged consulting the document. Finally 34 sanction cases were added to the dataset, bringing the total of imposed/threatened economic sanctions by the EU to 144. Due to the lack of time, and the absence of a solid methodological framework in the literature for finding economic sanction threat cases, no threat cases were added for 2005 - 2016.

The date of the document that initially imposed the economic sanction on a third country was used as the starting date of the sanction. To determine a possible end date, thus whether or not a sanction had been annulled, and if so, on what date, another search query was conducted on EUR-Lex. The search query that was used is the following: 'EU document code' that initially imposed the sanction (e.g. 2011/172/CFSP for the case of Egypt) AND (annul* OR repeal* OR terminat* OR Lift* OR amend*). In which the asterisk (*) is replaced by 0 to N letters. If a document was repealed in order to be replaced by another - keeping the initial sanction in place, the same search query was conducted for the replacing document. If the search query did not give any results for the last replacing document, the sanction was coded as ongoing. For the cases that are added using the EUR-Lex dataset the starting- and the possible annulling documents can be found in table 7 in Appendix A: EUR-Lex search results.

3.2 Dichotomization of the dependent variable

The dependent variable for all the hypotheses is the outcome of the sanction. In the TIES dataset (2014) Morgan, Bapat, and Kobayashi distinguish between ten different sorts of outcome. Because of the relatively small sample size the outcome variable is dichotomized into positive and negative outcomes. This is done so to overcome the problem of under representation of certain categories in the dataset. For example only five observations are made for the outcome 'partial acquiescence by target to threat', of which only one state was non-democratic. The low amount of observations for this specific category will lead to a distortion of the test results. However, also the downside of dichotomizing the outcome variable has to be taken into account. Recoding the outcome into two categories results in the loss of information. For example in the analysis no distinction can be made between 'capitulation by the sender after imposition', or 'stalemate after sanction imposition', due to the fact that they are coded as the same negative outcome. Nonetheless, the benefits of a more robust results outweigh the loss of information.

The following are considered to be positive outcomes for the EU: complete acquiescence by target to threat; partial acquiescence by target to threat; total acquiescence by target following sanction imposition; partial acquiescence by target following sanction imposition. On the contrary, the following are regarded as negative outcomes for the EU: capitulation by the sender in threat stage; stalemate in threat stage; capitulation by the sender after imposition; stalemate after sanction imposition. Two other categories were present in the dataset: negotiated settlement after threat; and negotiated settlement following sanction imposition. The dataset indicated the nature of the settlement for the sender state on a scale from 0 - 10, whereas 10 was the best possible outcome for the sender state, and 0 the worst (Morgan, Bapat, Kobayashi, 2013). A score from 0 - 5 on the nature of the settlement was coded as a negative outcome, if a settlement scored 6 - 10 it was coded as a positive outcome.

In order to determine the nature of the outcome for the cases added using the EUR-Lex database, it was first established whether or not the sanction had ended. If the sanction was still in place this was considered as a negative outcome. For the sanction that had been annulled, newspapers, United Nations Security Council resolutions, or information from the annulling EU document itself were consulted to establish whether or not the outcome was positive or negative. The corresponding outcome and references can be found in table 7 in Appendix A: EUR-Lex search results.

3.3   Independent variables

The first hypothesis will test whether or not economic sanctions are more likely to have a positive outcome for the sender state before they pass the threat stage. This requires data of cases in which the EU has imposed threats on a third country, whether or not these sanction were imposed, and the outcome of the threatened and the imposed sanctions. The TIES dataset (2014) provides 108 cases in which the EU threatened with the imposition of economic sanctions, in the remaining cases no threat was made prior to the imposition of the sanction.

The second hypothesis tests for the influence of the duration of the economic sanctions. In the case in which a threat was made, but no sanction was imposed, the number of days between the date the threat was made and the end date of threat is measured. If a threat was made and afterwards the sanction was imposed, the number of days between the start of the threat and the end of the economic sanction was measured. In the case in which no threat was made, the date the sanction was imposed is used as the start date. If the sanction did not end, March 1, 2016 was used as the end date and the outcome was automatically coded as negative. March 1, 2016 was taken as end date because at this date the data on annulling documents was collected from EUR-Lex. If sanctions were annulled after this date,

these were not taken into account in the analysis. By putting an 'end date' on the ongoing sanctions it was possible to calculate a minimal duration of the sanction. The alternative was coding the ongoing sanctions as missing for the duration variable. This may have however overemphasized the positive outcomes, as cases in which sanctions are already in place for years are not taken into account. The ongoing sanction was coded negatively considering that if the outcome would have been positive, thus a policy change had been achieved, the sanction would have been lifted.

The third hypothesis explores the effect of economic capabilities on the outcome of economic sanctions. Comparing the economic capabilities between countries over different years requires more than merely measuring their Gross Domestic Product (GDP). To control for the differences in size between countries GDP has to be measured per capita (PC). In other words, the total GDP of a state will be divided by its population. This makes it possible to compare small and big states in terms of their economic power. To control for inflation over time GDP PC is measured in purchasing power parity (PPP). PPP expresses the value of money within state. GDP PC PPP is expressed in US Dollars. GDP PC PPP will thus measure the relative economic power of the targeted states. GDP PC PPP is measured in the year of the imposed threat. If no threat was made the year of the sanction imposition was used. The majority of the data was retrieved from the World Bank (2016a). However for some states no data was available, and was therefore retrieved from other sources. An overview of the consulted datasets can be found in table 9 in Appendix B: Target state data.

The fourth hypothesis will test for the influence of the regime type of the targeted state on the outcome of threatened or imposed economic sanctions. The 'Polity IV' dataset of Marshall, Gurr, and Jaggers (2014) was used to distinguish between democratic and non-democratic regimes. Missing data was complemented using the Democracy and Dictatorship Revisited dataset (DD) by Cheibub, Ghandi and Vreeland (2010). Polity IV dataset provides scores on a 21-point scale, from -10 to 10, for each country per year. Whereas -10 to -6 are considered autocracies, -5 to 5 anocracies, and 6 to 10 democracies. Because of the relatively small sample size, also regime type is dichotomized. Following the coding scheme of Polity IV, states with a score below 6 will be considered as non-democratic states, consequently the rest will be considered as democratic states. The Polity IV dataset classified three exception: occupation by foreign power during war; complete collapse of central political authority; and a period of regime transition (Marshall, Gurr, and Jaggers, 2014). Each of these categories will be considered as non-democratic. In the DD dataset six classification of regime type are made: 0. Parliamentary democracy; 1. mixed (semi-presidential) democracy; 2. presidential democracy; 3. civilian dictatorship 4. military dictatorship; 5. royal dictatorship. Taking into account this classification, 0 - 2 were considered as democratic

regimes, 3 - 5 were considered classified as non-democratic regimes. The score of the states correspond with the score in the year the threat was posed. If no threat was made, the year of the imposition is taken as the reference point. See table 9 in Appendix B: Target state data, for details on each separate case.

The fifth and last hypothesis will test for the effect of the population size of the targeted state on the outcome of the economic sanction. This requires data of the population of each state. The data on population was largely retrieved from the World Bank (2016b). For three cases no data was available, for these cases the data was retrieved from different sources, as indicated in table 9 in Appendix B: Target state data. The population size corresponds with the year when the threat was posed. If no threat was posed, the imposition year of the economic sanction was used.

4 Statistical Analysis

4.1 Univariate analysis

In order to establish whether or not the data was normally distributed, large outliers were present, and to determine if transformations had to be made to the data to make it more suitable for further analysis, univariate analysis is conducted on the data. In this section a distinction will be made between binary and interval variables.

4.1.1 Binary variables

As mentioned above the data set consists of 144 cases of threatened or imposed economic sanction by the EU on third countries. In order to determine what factors caused these economic sanctions to be successful or, on the other hand, to be a failure, five explanatory variables were tested. The dependent variable is the outcome of the sanctions. This variable is binary and is thus coded as either 1 or 0. 0 being a negative outcome for the EU, and 1 being a positive outcome from the EU. In 54.86% of the cases the outcome of the sanction was positive for the EU. For the remaining 45.14% the outcome was negative. As can be observed, the distribution of positive and negative outcome cases are distributed relative evenly among the dataset. The distribution of the final outcome is also presented in figure 2.
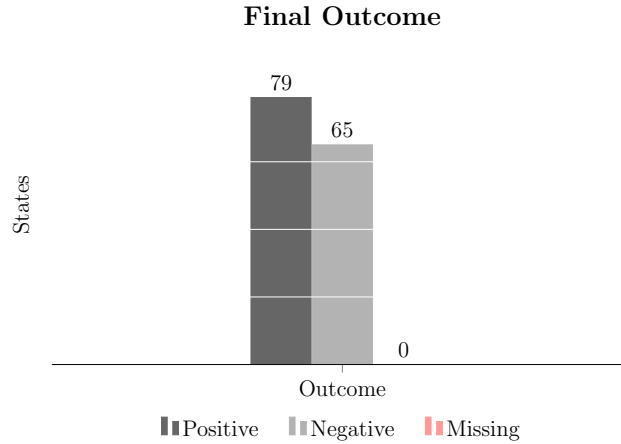
Final Outcome

Figure 2: Final outcome

Two out of the five independent variables are binary, being the regime type of the targeted state, and sanction status. Regime type distinguished between democratic and non-democratic regimes in the targeted states. From the targeted states a slight majority was a non-democratic state (52.78%). 46.53% of the targeted states were considered democratic states. The data was missing for one case (0.69%). It can be concluded that approximately the same amount of democratic as non-democratic states are targeted with economic sanctions by the EU (see figure 3). The sanction status indicated if the sanction either ended in the threat stage, or if the sanction was actually imposed. In 61.81% of the cases an economic sanction was actually imposed. In the remaining 38.19% the sanction did not pass the threat stage. A little over 1/3 of the analysed economic sanctions were thus never imposed (see figure 4).

Target State Regime Type

Figure 3: Regime type

Sanction Status

Figure 4: Sanction status

4.1.2 Interval variables

The other three independent variables, GDP PC PPP, population, and duration are interval variables, and are measured in different units. GDP PC PPP is measured in $1000, population in millions, and duration is measured in years. Before condu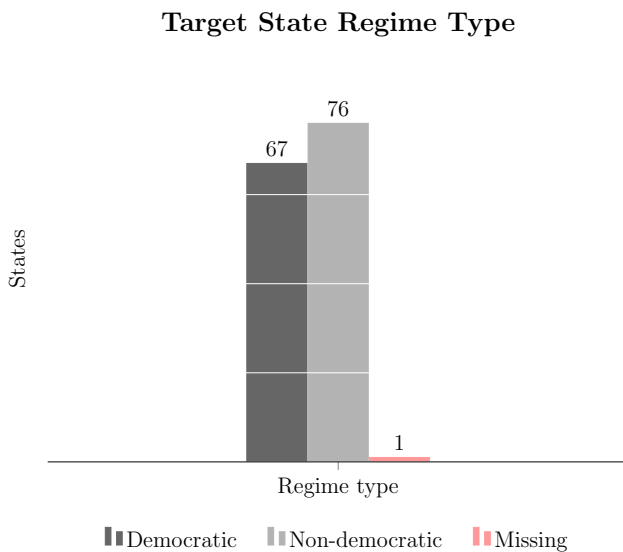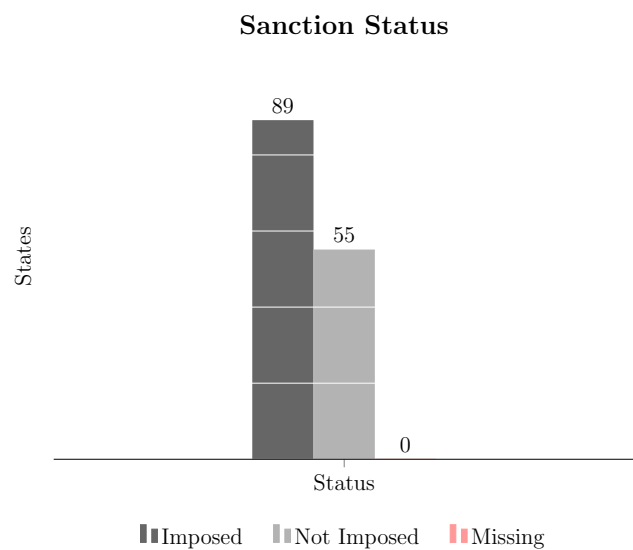cting bivariate and multivariate analyses the interval variables were analysed in order to identify possible outliers, and to explore the distribution of the data. As can be observed in table 1 the median score for all three variables is significantly smaller than the mean score ($\tilde{x} < \mu$). It can therefore be expected that the data is either skewed or a wide spread of values exists in the data. The constructed histograms confirm the first expectation, the data for all three variables is positively skewed (see figure 5, 7, 9 in Appendix C: Histogram). The scores on skewness (y_1) - indicating the asymmetry in the data, and kurtosis (y_2) - indicating its 'peakedness' (Hopkins & Weeks, 1990, p.721-4), confirm moreover the assumption that the data of all three variables are positively skewed (see table 1 for the results).

The distance from μ to the maximum score for GDP PC PPP is 3.42 σ, for population this is 4.96 σ, and for duration the distance between the maximum score and μ is 4.65 σ. On the other hand, the distance from the minimum score of each variable is less than 1 σ from μ. This indicates that fairly large outliers can be found within the dataset. This is also confirmed by the constructed box plots of the three variables (see figures 11, 13, and 15 in Appendix D: Boxplot). In order to establish if errors were made with the data entry, the data was reassessed on its correctness. However no faulty data could be identified.

Statistics	GDPPCPPP ($1000)	Population (m)	Duration (year)
Frequencies (n)	140	144	144
Missing	4	0	0
Mean (μ)	9.99	98.82	4.71
Median ($\tilde{x}$)	6.37	22.52	2.16
Standard deviation (σ)	9.31	228.30	5.65
Minimum	0.45	0.01	0.01
Maximum	41.80	1230.08	31.01
Skewness (y_1)	1.328 ($\sigma = 0.205$)	3.905 ($\sigma = 0.202$)	2.128 ($\sigma = 0.202$)
Kurtosis (y_2)	1.423 ($\sigma = 0.407$)	15.440 ($\sigma = 0.401$)	5.842 ($\sigma = 0.401$)

Table 1: Statistics of interval variables

To overcome the effect of the non-normal distributed data, and the influence of the relatively high amount of outliers on the multivariate analyses, the data of GDP PC PPP, population, and duration was transformed. A natural logarithm (ln) was applied

to the population variable, and the square root (sqrt) was calculated for GDP PC PPP and duration. This proved to be a significant improvement to the data. The normality curve in the histograms (see figure 6, 8, and 10 in Appendix C: Histogram) indicated that the data is more normally distributed in comparison to the non-transformed data (see figure 5, 7, and 9 in Appendix C: Histogram). A decline of large outliers can also be observed in the box plots. Whereas in the non-transformed data outliers were found relatively far away from the whiskers of the box plot (see figures 11, 13, and 15 in Appendix D: Boxplot), in the transformed data the outliers tend to be much closer to the whiskers. For GDP PC PPP the outliers have disappeared entirely (see figures 12, 14, and 16 in Appendix D: Boxplot). Lastly, the improvement can also be observed when the scores on skewness and kurtosis are taken into account. It is therefore that the rest of the statistical analysis will be conducted using the transformed data. The statistics of the transformed data, and the results of the skewness and kurtosis can be observed in table 2.

Statistics	GDPPCPPP (sqrt)	Population (ln)	Duration (sqrt)
Frequencies (n)	140	144	144
Missing	4	0	0
Mean (μ)	89.42	16.44	34.74
Median ($\tilde{x}$)	79.84	16.93	28.06
Standard deviation (σ)	44.85	2.52	22.75
Minimum	21.29	9.38	1.73
Maximum	204.46	20.93	106.39
Skewness (y_1)	0.520 ($\sigma = 0.205$)	-0.719 ($\sigma = 0.202$)	0.747 ($\sigma = 0.202$)
Kurtosis (y_2)	-0.533 ($\sigma = 0.407$)	0.199 ($\sigma = 0.401$)	0.148 ($\sigma = 0.401$)

Table 2: Statistics of transformed interval variables

4.2   Bivariate analysis

Bivariate analyses are conducted to test for the relation between each independent variable and the outcome variable. For the binary variables the relation is tested with a chi-square test. The relation for the interval variables is tested by the means of an independent samples t-test. Furthermore the data is analysed on the presence of multicollinearity.

Because of the fairly small sample size and the presence of binary variables it is important to check if all the categories are fully represented in the dataset. A two way cross-table for the relation between sanction status and the outcome variable was constructed to confirm that cases are represented in which, for example, a sanction was imposed and the outcome was negative, or merely a sanction threat was made and the outcome of the sanction was positive.

Table 3 confirms that for all cells enough cases were present. The same test was conducted for the relation between regime type and the outcome variable. Table 4 also confirmed that enough cases were present for this relationship.

<table>
<tr><td colspan="3" align="center">**Sanction Status**</td></tr>
<tr><td></td><td>*Threat*</td><td>*Imposed*</td></tr>
<tr><td rowspan="2">**Outcome**</td><td>*Positive*</td><td>41 (28.5%)</td><td>38 (26.4%)</td></tr>
</table>

		Threat	Imposed
Sanction Status			
Outcome	*Positive*	41 (28.5%)	38 (26.4%)
	Negative	14 (9.7%)	51 (35.4%)

		Democratic	Non-Democratic
Regime Type			
Outcome	*Positive*	42 (29.4%)	36 (25.2%)
	Negative	25 (17.5%)	40 (28.0%)

Table 3: Cross-table sanction status & outcome   **Table 4:** Cross-table regime type & outcome

A chi-square test was conducted to test for the relation between regime type and the outcome variable, and sanction status and outcome. A significant relation was found between sanction status and outcome ($\chi^2(1, N = 144) = 13.924$, $p = 0.000$). By interpreting phi (Φ) it can be concluded that there is a negative relation between the two variables ($\Phi = $ -0,311, $p = 0.000$). In other words, if a sanction is imposed, it is more likely that the outcome of the sanction is negative. From the imposed economic sanctions, 42,70% proved to be successful, from the threatened cases 74,55% was successful. No significant relation was found between the dependent variables and the other binary variable - regime type ($\chi^2(1, N = 143) = 3.370$, $p = 0.092$). Whether a state is democratic or non-democratic does not seem related to the outcome of the sanction policy.

An independent samples t-test was conducted to test for the influence of population size on the outcome of economic sanctions. The average population size (ln) of the target state is smaller when the outcome of the sanction is positive ($\mu = 15.52, \sigma = 2.73$), in comparison to a negative outcome ($\mu = 17.56, \sigma = 1.66$). The difference proved to be significant ($t(131)$ = 5.517, $p = 0.000$). In other words, economic sanctions tend to be more successful against smaller states. Two more independent samples T-tests were conducted, the first to test for the relation between duration of the sanction (sqrt) and the outcome variable, the second to test for the relation between the GDP PC PPP (sqrt) of the targeted state on the outcome of the sanction. A significant relation was observed for duration and the outcome of the sanctions ($t(118) = 3.302$, $p = 0.003$). Successful sanction were on average shorter ($\mu = 29.55, \sigma = 19.30$) than sanctions with a negative outcome ($\mu = 41.05, \sigma = 25.08$). No significant relation was found between GDP PC PPP and the outcome variable ($t(138)$=-0.167, $p = 0.868$). Thus the relative economic power of a state did not influence the likelihood of a positive sanction outcome.

No significant relation was found between regime type, and the outcome variable, neither was there a significant relation between GDP PC PPP and the outcome variable. However,

due to their theoretical importance these variables will still be included in the multivariate analysis.

Before conducting the multivariate analysis it is important to check for multicollinearity. Thus establishing whether or not the independent variables interact with each other, making the explanatory power of the model less precise. Multicollinearity is tested by using 'collinearity diagnostics' in SPSS. It performs two different tests, the 'tolerance' and the 'variance inflation factor' (VIF). Both of the test indicate there is no presence of multicollinearity between the independent variables (Tolerance > 0.1, VIF < 10). The results are presented in table 5.

Predictors	Tolerance	VIF
Sanction Status	0.758	1.319
Regime Type	0.782	1.279
GDP (sqrt)	0.800	1.250
Population (ln)	0.920	1.087
Duration (sqrt)	0.814	1.229

Table 5: Multicollinearity diagnostics

4.3   Multivariate analysis

To test for the relation between of the above mentioned independent variables and the outcome of sanction a logistic regression model is fitted. Making it able to predict the probability that the outcome of an economic sanction is positive, using sanction status, regime type, GDP PC PPP, population, and duration.

Because the dependent variable, the outcome of the sanction, is a dichotomous variable a multilinear regression model will not provide a decent explanatory model for the success or failure of economic sanctions. If a linear regression model would be applied, the possible outcome would range from $-\infty$ to ∞, however the outcome of the dependent variable is either 1 or 0. This problem is overcome using logistic regression. Solving the problem by applying a logit transformation to the dependent variable. The logistic regression model predicts the logit of Y from a linear function of the independent variables. The logit of Y is the natural logarithm (ln) of the odds of Y. The odds are the ratio of the probabilities (π) of Y taking place (Peng, Lee, & Ingersoll, 2002, p.4). When put into an equation the following in derived:

$$Logit(Y) = ln(odds) = ln\left(\frac{\pi}{1-\pi}\right) = \alpha + \beta_1 x_{1i} + \beta_2 x_{2i} + \beta_3 x_{3i} + \beta_4 x_{4i} + \beta_5 x_{5i} \quad (1)$$

The log (*ln*) odds that an economic sanction will have a positive outcome versus a negative outcome (Y=1) will thus be predicted with the function of sanction status (x_1), regime type (x_2), GDP PC PPP (x_3), population (x_4), and duration (x_5). The logit function can be expressed as the probability that Y=1, by taking an antilog of equation 1 (Peng, Lee, & Ingersoll, 2002, p.4), resulting in the following equation:

$$\pi = \frac{e^{(\alpha+\beta_1 x_{1i}+\beta_2 x_{2i}+\beta_3 x_{3i}+\beta_4 x_{4i}+\beta_5 x_{5i})}}{1 + e^{(\alpha+\beta_1 x_{1i}+\beta_2 x_{2i}+\beta_3 x_{3i}+\beta_4 x_{4i}+\beta_5 x_{5i})}} \tag{2}$$

The results of the logistic regression (see table 6) show that the log odds of an outcome to be positive versus negative was negatively related to sanction status ($p = 0.047$), population ($p = 0.000$), and duration ($p = 0.041$). Taking into account the fact that sanction status is a binary variable, one unit increase means that the sanction passed the threat stage and was imposed. The logistic regression shows that if a sanction was actually imposed that the odds of a positive versus a negative outcome were 2.76 times smaller (=1/0.362). Thus sanctions are more likely to be successful before they are imposed. For every unit increase in population (ln) the odds of a positive versus a negative outcome were 1.66 times smaller (=1/0.603). In other words, the larger the population, the less likely the sanction is to be successful. A similar effect occurs with the duration of the sanction, for every unit increase in the duration (sqrt) the odds of a positive versus a negative outcome were 1.02 times smaller (=1/0.979). Whereas it can be concluded that the longer the duration of the sanction, the less likely the sanction is to be successful.

No significant relation exists between regime type ($p = 0.417$) and GDP PC PPP ($p = 0.550$), and the log odds of outcome of the sanction being positive versus negative. Whether a regime was democratic or non-democratic, or whether a state has a high or low GDP PC PPP does not influence the likelihood of the sanction being either successful or a failure. See table 6 for an overview of the results.

The goodness of fit was assessed by the Hosmer and Lemeshow test. The null-hypothesis of this test assumes that the model is a good fit, which is accepted on the basis of $\chi^2(8) = 6.595$, $p = 0.581$. The omnibus test also confirms the assumption that the model is a good fit. The null hypothesis for the omnibus test is that adding independent variables to the model does not improve its explanatory power. This hypothesis can be rejected on the basis of $\chi^2(3) = 44.903$, $p = 0.000$. It can therefore be concluded that adding the independent variables to the model improves its explanatory power. Regarding the performance of the model it can be concluded that the model was performing better than the null-model (Nagelkerke $R^2 = 0.369$). Furthermore the percentage of correct predictions was 70.5% (cut-off point of the probability was 0.5).

Predictor	β	σ	df	p	$\exp(\beta)$
Constant [a]	0.833	0.479	1	0.082	2.301
Sanction Status	-1.017	0.511	1	0.047[*]	0.362
Regime Type	0.371	0.457	1	0.417	1.449
GDP PC PPP (sqrt)	-0.003	0.005	1	0.550	0.997
Population (ln)	-0.505	0.124	1	0.000[**]	0.603
Duration (sqrt)	-0.021	0.010	1	0.041[*]	0.979

Test		χ^2	df	p	
Omnibus		44.903	5	0.000**	
Hosmer and Lemeshow		6.595	8	0.581	
Nagelkerke R^2	0.369				

[*] Significant at $p < 0.05$; [**] Significant at $p < 0.01$

[a] The variables GDP PC PPP (sqrt), population (ln), and duration (sqrt) are centralized in order to create a more meaningful constant. The constant indicates score of the function when all the variables are 0. For the three interval variables it is theoretical impossible to score 0, as no state has a population of zero, or a GDP PC PPP of zero. Neither is it possible that an economic sanctions lasts zero days. By subtracting the mean score from each individual case, the variables can have a value of 0 (the new mean score for each interval variable) and therefore the constant becomes meaningful. The value of the constant with the non-centralized variables was $\beta = 10.062$, $\sigma = 2.206$, df $= 1$, $p = 0.000$, $\exp(\beta) = 23429.626$.

Table 6: Logistic regression analysis

By removing the two insignificant variables it was attempted to produce a more economical model. However the model did not improve. A slight decrease in the Nagelkerke R^2 (0.356), and the amount of correct predictions (69,4%) was observed. Also no improvements in the goodness of fit can be observed (Hosmer and Lemeshow, $\chi^2(8) = 11.175$, $p = 0.192$; Omnibus test, $\chi^2(3) = 44.581$, $p = 0.000$). Therefore the first model, including all variables was kept as the predicting model. By inserting the constant (α) and the β's of each variable into the equation, the following was equation derived:

$$ln\left(\frac{\pi}{1-\pi}\right) = 0.833 + -1.017x_{1i} + 0.371x_{2i} + -0.003x_{3i} + -0.505x_{4i} + -0.021x_{5i} \quad (3)$$

This is expressed in the probability of Y=1 as:

$$\pi = \frac{e^{(0.833+-1.017x_{1i}+0.371x_{2i}+-0.003x_{3i}+-0.505x_{4i}+-0.021x_{5i})}}{1 + e^{(0.833+-1.017x_{1i}+0.371x_{2i}+-0.003x_{3i}+-0.505x_{4i}+-0.021x_{5i})}} \quad (4)$$

By inserting the values of two sanction cases, the predictive power of the model can be displayed. For example if the values (sqrt/ln, and centered) of the sanction case against St.

Lucia in 2000 are put into the equation, the predicted value of the probability of (Y=1) = 0.973. Confirming the positive observed outcome of the sanction. Another example is the sanction that was imposed against Iran in 2011, whereas the predicted value of the probability of (Y=1) = 0.209. The sanctions against Iran are ongoing, and are therefore considered a negative outcome. The model was able to correctly predict 70.5% of the cases. Whereas a predicted value under 0.5 predicted a negative outcome, and a predicted value over 0.5 predicted a positive outcome.

5   Discussion

From the 144 analysed cases in which the EU imposed or threatened economic sanctions on a third country, 1 out of 2 had a positive outcome. The findings of the logistic regression suggest that economic sanctions are less likely to bring about the desired policy change after they are imposed. Furthermore it was found that the longer (the threat of) an economic sanction is in place, the lower are the probabilities of a successful outcome. Lastly the results suggest that the larger the population of the targeted state, the less likely the sanction outcome is to be successful. These findings confirm hypotheses 1, 2, and 5.

The economic strength of a state did not have the expected effect on the outcome of the economic sanctions. It was expected that economically strong states would be better equipped to cope with the negative effect of the imposed sanctions. However no significant difference was observed between states with a high or a low GDP PC PPP, and the outcome of the sanction. Moreover there was no significant difference in the outcome if sanctions were threatened or imposed against democratic or non-democratic states. On the basis of these findings hypotheses 3, and 4 were rejected.

The results of the influence of sanction status on the outcome of the sanction were similar to the conclusions reached by Blanchard and Ripsman (1999), Lacy and Niou (2004), and Morgan, Bapat, and Krustev (2009): after imposition of the sanction, the chances of a successful outcome drop significantly. Following the argumentation of Drezner (2003) and Blanchard and Ripsman (1999), this is caused by the calculations made by the government of the targeted state. States calculate the cost of sanction imposition, and compare it to the political cost of chancing their condemned behaviour. When the cost of the sanction is higher than the cost of changing the behaviour, states will decide to alter their behaviour before the imposition of the sanction. If it is the other way around, thus the cost of the sanction is lower than the cost of changing the behaviour, states will undergo the imposition of the sanction because it is less costly. Considering that the states have already anticipated the cost caused by the sanction, it is less likely that the targeted state will concede after the

imposition of the sanction.

The longer (the threat of an) economic sanction is in place, the less likely it is that the sanction brings about the desired policy change in the third country. The ability of states to adapt to the effects of the economic sanction, and the effect of the declining credibility of the threat are expected to be able to explain the influence of duration. Regarding the threat stage, both Hovi, Huseby, & Sprinz (2005) and Peterson (2013) argue that targeted states are less likely to concede to the demands of the sender state, if the threat of sanction is perceived as empty. When the sender state appears to be hesitant to impose the sanction, thus increasing the threat period, this lessens the credibility of the sanction. Resulting in a decrease of the probability of a successful outcome. Regarding the duration of the imposed sanction, the conclusion of Hufbauer, Schott, and Elliott (1990) that the greatest impact of an economic sanction takes place in the first year is confirmed by this finding. It is expected that the decline of success is caused by the possibility of the targeted state to find alternative economic resources and develop illegal manners to avoid the effect of the sanction. The decline of success could furthermore be explained by the ability of the state and its population to adjust to the new economic situation over time (Hufbauer, Schott, & Elliot, 1990; Bonetti, 1998; Burlone, 2002). A last explanation is put forward by Drezner (2003), being that if states underestimated the cost of the economic sanction, states are more likely to abandon their condemned policy short after the imposition, rather than after a long period of time. The method that was used for the calculation of the duration did not allow for the assessment of the duration of the threat or the imposed sanction individually. Therefore it cannot be clarified if either the credibility loss, or the ability of states to adapt to the sanctions influenced the outcome of the sanction the most. This has to be assessed in future research.

The results show that economic sanctions are less likely to be successful when they are imposed against states with large populations. This means that larger states are better able to cope with the effects of economic sanctions. Thus, for example, if large states as China or the USA are targeted, the sanctions are less likely to be successful in comparison to when states as Vanuatu or Antigua and Barbuda are targeted. Although the influence of population size of the targeted state on the outcome of an economic sanction is yet to be discussed in the academic literature, a possible explanation for the influence of population size was pointed out in the theoretical framework: states with large populations are more likely to be economically self-sufficient, which in turn has a positive effect on the ability to cope with imposed sanctions. However, due to the absence of academic literature it is difficult to conclude what is the underlying theory behind the influence of population size on the outcome of sanctions. It could also be possible that population size acted as a proxy for,

for example, absolute economic power - as large states tend to have more economic resources. Population size is factor that has to be addressed in the academic literature.

By measuring the GDP of a state in per capita purchasing power parity it was able to compare the targeted states on their relative economic power, instead of their absolute economic power. The logistic regression analysis did not find any influence of GDP PC PPP on the outcome of the sanction. Thus the relative economic power of the targeted state did not matter for the effectiveness of an economic sanction. However the conclusions of Huffbauer, Scott, and Elliott (1990) and Marinov (2005) on the negative relation between economic power and sanction outcome should not be disregarded. Economic power can also be interpreted as the absolute economic power of a state. As mentioned in the discussion on the influence of population size, it is plausible that absolute economic power has more influence on the outcome of the sanction. The difference between relative and absolute economic power becomes clear when two sanction cases are compared. For example, Liechtenstein conceded to the demands of the EU in the threat stage. Whereas the USA did not react to the threats made by the EU, and in the end the EU abandoned their threats against the USA and did not impose the sanction. The GDP PC PPP was similar for Liechtenstein and the USA when the sanctions were threatened against these states in 2000 and 1992 respectively. However, if the two are compared in terms of GDP, or absolute economic power, the difference is significant (Liechtenstein $2.5 billion, in comparison to $6500 billion of the USA). Thus the relative economic power of a state did not increase or decrease the likelihood of a positive sanction outcome. It is however plausible that the absolute economic power of the targeted state influences the outcome of the sanction, but this has to be tested in future research on EU sanctions.

Whether economic sanctions were targeted against democratic or non-democratic states did not influence the likelihood of a successful sanction outcome. It was argued that in democratic states the negative effects of the economic sanctions forces the government to change their harming policy because the government is held accountable by the electorate, and acts with the prospect of re-election (Brooks, 2002; Noorrudin, 2002). However no effect of regime type on the outcome of the sanction was observed in the logistic regression analysis. A possible explanation can be found in the arguments of Burlone (2002, p.31). Burlone argues that free market states have the ability to swiftly adapt their economic policies, and re-allocate their resources more rapidly than state-controlled economies. Whereas free market economies are often found in democratic states, and state-controlled economies in non-democratic states. Swift adaptation and re-allocation make it possible to circumvent the effect of the economic sanction more easily. Preventing accusations made by the electorate and possible loss of office. In terms of methodology, recoding the variable of regime type

into a binary variable - democratic or non-democratic - made it possible to conduct a logistic regression analysis with a relatively small sample size. It can however be expected that the model would gain in explanatory power if the original 21-point scale from Polity IV is used.

Overall it was found that 54,86% of all sanction cases, threatened and imposed, by the EU had a successful outcome. Drezner (2003, p.653-5) tested for threats and impositions of economic sanctions made by the USA, and found an overall effectiveness of sanction of 56,72%. The research of Hufbauer et al. (2007, p.158) focussed on the effectiveness of imposed sanctions, imposed predominantly by the USA, and found that 34% had a successful outcome. The imposed sanction by the EU tested in this study, had an effectiveness of 42,70%. Thus in comparison with the results of Hufbauer et al. (2007) the EU has a slightly higher success rate. The overall effectiveness was comparable to the results found by Drezner (2003). An increase in overall effectiveness can however be assumed if threat cases for 2005-2016 are added to the analysis. As was discussed above, economic sanction tend to be more successful before the actual imposition of the sanction. Sanction that ended in the threat stage, and thus did not get imposed, had a success rate of 74.55%. On the contrary, if sanctions do get imposed, but are not effective in the first period after imposition, sanctions are likely to end in a stale mate. This situation is harmful for the targeted state, but also for the sender state, as the imposition of an economic sanction is also a burden for the sender state (Kaempfer & Lowenberg, 1988). The stalemate is caused by the unwillingness of the targeted state to comply to the demands of the sender state. On the other hand, Peterson (2013, p.679) argues that if the sender state backs down from either imposing the sanction, or from keeping the sanction imposed for a long period of time, this has a negative effect on the perceived credibility of the next threat. Therefore the sender state will be hesitant to back down in a stalemate.

Thus the threat of an economic sanction must generate a high enough expected cost for the target state to make it concede before the imposition of the sanctions (Blanchard & Ripsman, 1999, p.224). Although economic sanctions tend to be less successful after imposition, it is important that sanctions are imposed after non-compliance to the threat, even in the prospect of failure. Lacy and Niou (2004, p.39) conclude that if sanctions are never imposed, sanction threats are not perceived as credible. As a result the threat of a sanction does not have the desired effect.

6   Conclusion

This study set out to determine if economic sanctions imposed by the EU are an effective foreign policy tool, and used five independent variables to explain the variance in the outcome

of the sanction. It aimed to find a relation between sanction status, regime type, GDP PC PPP, population size, and duration; and the outcome of the sanction - being either positive or negative. The results of the conducted logistic regression analysis show that economic sanctions are more successful before they get imposed. Furthermore it proved that the larger the population of the targeted state, or the longer the duration of the (threatened) sanction, the less likely the result of the sanction was to be positive. Whether an economic sanction is imposed upon a state with high or low relative economic power did not matter for the outcome of the sanction. Lastly, no difference in outcome was observed between democratic and non-democratic targeted states.

EU sanctions proved to be the most effective in the threat stage, whereas 3 out of 4 cases in which no sanction was imposed had a successful outcome. The effectiveness of the economic sanctions starts to decline when the initial threat of a sanction does not have the desired effect. As was confirmed by hypothesis 1, the imposition of a sanction significantly lowers the probability of a positive outcome. Threats are expected to have the most effect if they are credible and potent. Regarding the credibility of the threat, it is expected that the longer a threat is in place, the lower the credibility is. In terms of the potency of the threat, a threat is expected to be successful if the possible cost of the sanction exceeds the political cost of compliance for the targeted state. It can be assumed that generating high cost for the target state is increasingly difficult when larger states are targeted. This is because large states are more economically self-sufficient. Considering that they are less dependent on trade relations with the EU, less influence on the targeted economic system can be achieved. If sanctions do get imposed due to the non-compliance of the targeted state in threat stage, the sanction is most effective right after imposition. If the sanction is longer in place, this will give the targeted state and its population the ability to adapt to the consequences of the sanction. If the targeted state does not comply when the sanction is imposed the possibility of a stalemate arises, which has a negative effect on both the sender and the targeted state.

Three conclusion can be drawn from this study in respect of the usage of economic sanctions as an "essential foreign policy tool" by the EU. First, as was also confirmed in the literature, the threat stage plays an important role in the effectiveness of the economic sanctions. In which the credibility of the threat is an essential aspect of its success. The credibility of threats decreases when the threat is in place for a longer period of time. Furthermore threats are regarded as credible when imposition takes place after non-compliance. Thus sanctions have to be imposed on states that do not concede to threats made, even if it can be expected that the sanction is going to fail and a possible stalemate is reached. Secondly, the threat of the sanction must be potent enough to convince the target state that it is less costly to change their policy, than to cope with the sanction. Thirdly, to

adhere to the second point, it is crucial for the EU to increase their ability to target states with large populations, as was found that states with large population were less prone to the effect of economic sanction. By making credible and potent threats, it can be expected that the EU will force targeted states to concede in the threat stage. As a result no economic losses are suffered by the EU, but policy change in the targeted state is achieved, making economic sanctions an effective foreign policy tool.

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Appendices

Appendix A: EUR-Lex search results

Target State	Document Start	Document End	Reference	Outcome
Afghanistan	2011/486/CFSP			
Belarus	2006/362/CFSP	2016/280/CFSP	Oliver, 2016; Verbergt, 2016	Positive
Bosnia and Herzegovina	2011/173/CFSP			
Burundi	2015/1763/CFSP			
Central African Republic	2013/798/CFSP			
Comoros	2008/187/CFSP	2008/611/CFSP	European Council, 2008	Positive
Cote D'Ivoire	2004/852/CFSP			
Democratic Republic of Congo	2005/440/CFSP			
Egypt	2011/172/CFSP			
Eritrea	2010/127/CFSP			
Federal Republic of Yugoslavia	2000/696/CFSP	2014/742/CFSP	European Council, 2014	Negative*
Federal Republic of Yugoslavia	98/240/CFSP	2000/599/CFSP	European Council, 2000	Positive
Guinea-Bissau	2012/237/CFSP			
Haiti	94/315/CFSP	94/681/CFSP	UN Security Council, 1994a; UN Security Council, 1994b	Positive
Iran	2007/140/CFSP	2015/1863/CFSP	Dyer, 2016; Wroughton and Torbati, 2016	Positive
Iran	2011/235/CFSP			
Iraq	2003/495/CFSP			
Lebanon	2005/888/CFSP			
Liberia	2004/487/CFSP	2015/1782/CFSP	UN Security Council, 2015	Positive
Libya	2011/137/CFSP			
Libya	93/614/CFSP	2004/698/CFSP	UN Security Council, 2003	Positive
Myanmar (Burma)	96/635/CFSP	2013/184/CFSP	Mahtani, 2013; Robinson, 2013	Positive
North Korea	2006/795/CFSP			
Russian Federation	2014/145/CFSP			
Somalia	2009/138/CFSP			
South Sudan	2011/423/CFSP			
Sudan	2005/411/CFSP			
Syria	2011/273/CFSP			
Tunisia	2011/72/CFSP			
Ukraine	2014/119/CFSP			
USA	CR 2271/96			
Yemen	2014/932/CFSP			
Zimbabwe	2002/145/CFSP			

* Sanction was lifted because "Mr. Milosevic and persons associated with him no longer represent a threat to the consolidation of democracy and, consequently, there are no grounds to continue applying those restrictive measures" (European Council, 2014). No settlement or acquiescence has been reached following the economic sanctions. The sanctions are lifted due to the fact that Mr. Milosevic died in 2006, and the sanction seemed no longer necessary (Sekularac, 2014). Therefore the outcome is coded negative

Table 7: EUR-Lex search results

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Appendix B: Target state data

Target State	Year	GDP	Regime Type	Population	Duration	Ongoing	Outcome
AAB	2000	16.393,02	Democratic*	77.648	604		Positive TS
Afghanistan	2011	1.655,36	Non-democratic**	28.809.167	1674	Yes	Negative
Algeria	1988	6.259,88	Non-democratic	24.591.493	3		Negative TS
Andorra	2000	19000 a	Democratic*	65.399	3028		Positive TS
Argentina	1982	6.433,77	Non-democratic	28.993.989	2679		Positive
Austria	1992	22.240,08	Democratic	7.840.709	31		Positive
Bahamas	2000	20.495,90	Democratic*	297.891	657		Positive TS
Bahrain	2000	37.435,34	Non-democratic	666.855	452		Positive TS
Bangladesh	1992	935,08	Democratic	110.987.459	723		Positive TS
Barbados	2000	11.474,91	Democratic*	269.838	584		Positive TS
Belarus	2002	6.678,54	Non-democratic	9.865.000	60		Positive
Belarus	2004	8.460,57	Non-democratic	9.730.000	4239	Yes	Negative
Belarus	2004	8.460,57	Non-democratic	9.730.000	4325	Yes	Negative
Belarus	2006	10.980,51	Non-democratic	9.604.000	3570		Positive
Belize	2000	5.469,28	Democratic*	247.312	632		Positive TS
BOS	2011	9.147,41	Non-democratic**	3.832.310	1807	Yes	Negative
Brazil	1982	5.157,40	Non-democratic	128.054.757	87		Positive TSS
Burundi	2015	836,59	Democratic	10816860 +	152	Yes	Negative
Canada	1982	13.280,62	Democratic	25.202.000	729		Positive
Canada	1985	16.248,26	Democratic	25.942.000	11319	Yes	Negative
Canada	1986	16.774,97	Democratic	26.204.000	40		Positive TS
Canada	1991	20.184,29	Democratic	28.171.682	2178		Positive TS
Canada	1995	23.426,67	Democratic	29.354.000	287		Negative TSS
Canada	1995	23.426,67	Democratic	29.354.000	18		Negative
CEN	2013	605,19	Non-democratic***	4.710.678	799	Yes	Negative
China	1989	918,99	Non-democratic	1.118.650.000	219		Negative
China	1989	918,99	Non-democratic	1.118.650.000	566		Negative
China	1991	1.086,29	Non-democratic	1.150.780.000	839		Negative TS
China	1994	1.652,76	Non-democratic	1.191.835.000	529		Negative TS
China	1997	2.256,69	Non-democratic	1.230.075.000	9745	Yes	Negative
Colombia	1992	5.287,41	Democratic	35.558.683	708		Positive S
Comoros	2008	1.448,14	Democratic*	665.414	143		Positive
Costa Rica	1992	5.409,61	Democratic	3.257.463	708		Positive S
Cote D'Ivoire	2004	2.333,10	Non-democratic***	17.802.516	4096	Yes	Negative
Dominica	2000	6.372,61	Democratic*	69.679	461		Positive TS
Dominican Republic	1992	3.954,58	Democratic	7.468.551	3278		Negative S
DRC	2005	453,23	Non-democratic****	56.089.536	3914	Yes	Negative
Ecuador	1992	5.088,28	Democratic	10.705.670	3278		Negative S
Egypt	1997	5.418,93	Non-democratic	64.754.566	1839		Negative
Egypt	2011	10.495,55	Non-democratic	83.787.634	1807	Yes	Negative
Eritrea	2010	1.061,37	Non-democratic	4.689.664	2192	Yes	Negative
Fiji	2000	5.014,83	Non-democratic****	811.223	504		Positive
FRY	1998	5843 a	Non-democratic	7.567.745	5100		Positive
FRY	2000	5778 a	Democratic	7.516.346	935		Positive
Greece	2004	25.837,11	Democratic	11.055.729	866		Positive TS
Grenada	2000	7.649,96	Democratic*	101.620	611		Positive TS
Guatemala	1992	3.891,04	Non-democratic	9.619.113	3278		Negative S
Guatemala	1993	4.024,20	Non-democratic	9.860.063	14		Positive TS
Guinea	2002	988,13	Non-democratic	9.114.287	1848		Positive
Guinea-Bissau	2012	1.426,95	Non-democratic	1.714.620	1398	Yes	Negative
Haiti	1994	1.109,76	Democratic	7.674.911	1507		Positive
Haiti	2000	1.374,02	Non-democratic	8.549.202	137		Positive
Honduras	1992	2.227,38	Democratic	5.179.557	3278		Negative S
India	1992	1.274,57	Democratic	906.461.358	364		Positive TS
Indonesia	1997	4.984,91	Non-democratic	202.853.850	529		Negative TS
Indonesia	1999	4.377,99	Democratic	208.644.079	122		Positive
Iran	1979	4511,36 b	Non-democratic****	37.256.771	437		Negative S
Iran	1989	5.598,37	Non-democratic	75.184.322	3521		Positive
Iran	1997	8.815,36	Non-democratic	62.426.086	95		Positive
Iran	2007	15.623,01	Non-democratic	71.720.859	3245		Positive
Iran	2011	17.957,44	Non-democratic	75.184.322	1785	Yes	Negative
Iraq	2003	9711,57 b	Non-democratic	25.630.426	4802	Yes	Negative

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Target State	Year	GDP	Regime Type	Population	Duration	Ongoing	Outcome
Israel	1982	8.409,54	Democratic	14.437.661	376		Positive S
Israel	2001	20.754,07	Democratic	24.943.793	5215	Yes	Negative
Japan	1989	17.517,33	Democratic	123.116.000	249		Negative S
Lebanon	2005	11.033,31	Democratic	3.986.865	3732	Yes	Negative
Liberia	2000	588	Non-democratic	2.891.968	2584		Positive TS
Liberia	2004	484,54	Democratic	3.184.643	4176		Positive
Libya	1977	25548,62 b	Non-democratic	2.840.378	10645		Negative S
Libya	1993	19.048,51	Non-democratic	4.691.934	1828	Yes	Negative
Libya	2011	11.703,51	Non-democratic***	6.288.652	3979		Positive
Liechtenstein	2000	25000 a	Democratic*	33.282	3398		Positive TS
Macedonia	2001	6.152,60	Democratic	2.021.585	48		Positive
Malaysia	1982	4.131,59	Non-democratic	14.543.585	87		Positive TSS
Maldives	2004	8.139,37	Non-democratic*	312.000	108		Positive
Marshall Islands	2000	2.053,40	Democratic*	52.161	1503		Positive TS
Mexico	1992	8.947,70	Non-democratic	89.110.043	3278		Negative S
Monaco	2000	27000 a	Missing	32.081	3398		Positive TS
Morocco	2002	4.081,63	Non-democratic	29.535.591	9		Positive TS
Myanmar (Burma)	1996	874,41 b	Non-democratic	45.290.888	6020		Positive
Nauru	2000	5000 a	Democratic*	11845 ++	1265		Positive TS
Nicaragua	1992	1.972,68	Democratic	8.442.330	708		Positive S
North Korea	2006	1800 a	Non-democratic	23.969.897	3389	Yes	Negative
Norway	1997	41.803,26	Democratic	4.405.157	105		Positive TSS
Pakistan	1997	2.430,98	Democratic	128.845.692	1839		Negative
Panama	1992	5.118,55	Democratic	2.575.330	3278		Negative S
Panama	2000	7.288,37	Democratic	3.028.751	321		Positive TS
Peru	2000	5.301,75	Non-democratic****	25.914.875	13		Negative TS
Philippines	1982	2.232,87	Non-democratic	50.068.493	87		Positive TSS
Poland	1980	4.724,01	Non-democratic	35.574.150	1449		Positive
Russia	1980	Missing	Non-democratic	139.010.000	521		Positive
Russia	1980	Missing	Non-democratic	139.010.000	567		Negative
Russia	1991	7.844,10	Non-democratic	148.624.000	2178		Positive TS
Russia	1999	9.257,67	Non-democratic	147.214.392	797		Negative S
Russia	2004	14.654,43	Democratic	144.067.054	67		Negative TSS
Russia	2014	24.448,67	Non-democratic	143.819.569	715	Yes	Negative
Samoa	2000	3.120,76	Non-democratic*	174.614	321		Positive TS
Seychelles	2000	14.626,50	Non-democratic*	81.131	630		Positive TS
Singapore	1982	11.113,64	Non-democratic	2.646.500	87		Positive TSS
Somalia	2009	535,96 c	Non-democratic***	9.356.827	2570	Yes	Negative
South Africa	1977	4636,08 b	Non-democratic	25.805.575	4951		Positive
South Korea	1982	2.852,81	Non-democratic	39.326.352	130		Positive TSS
South Korea	1994	10.907,56	Democratic	44.641.540	1004		Negative S
South Korea	2003	19.784,52	Democratic	47.859.311	2205		Negative
South Sudan	2011	3.563,94	Non-democratic	10.510.122	1688	Yes	Negative
Spain	1982	9.164,91	Democratic	37.942.805	861		Positive
St. Kitts and Nevis	2000	16.474,50	Democratic*	45.544	383		Positive TS
St. Lucia	2000	8.025,16	Democratic*	156.949	617		Positive TS
Sudan	2005	2.849,42	Non-democratic	31.990.003	3955	Yes	Negative
SVG	2000	6.185,18	Democratic*	107.897	637		Positive TS
Switzerland	2002	40.415,17	Democratic	8.924.958	219		Positive TS
Syria	1986	2.411,31	Non-democratic	11.020.718	3245		Positive
Syria	2011	6374,90 b	Non-democratic	21.070.917	1758	Yes	Negative
Taiwan	1988	8.300,22	Non-democratic	19950000 +++	72		Positive TS
Togo	1992	1.003,13	Non-democratic****	3.984.356	5789		Positive
Togo	2005	1.106,83	Non-democratic	5.578.219	18		Positive
Tonga	2000	3.296,43	Non-democratic*	97.898	449		Positive TS
Tunisia	2011	10.235,04	Non-democratic****	10.673.800	1856	Yes	Negative
Turkey	1981	3.956,43	Non-democratic	44.936.836	1611		Negative S
Turkey	1997	9.846,55	Democratic	60.394.104	460		Negative TS
Uganda	1972	Missing	Non-democratic	9.988.321	2450		Positive
Ukraine	2014	8.680,83	Non-democratic	45.362.900	727	Yes	Negative
USA	1970	Missing	Democratic	205.052.000	224		Positive TSS
USA	1982	14.410,16	Democratic	231.664.000	11		Negative TS
USA	1983	15.531,18	Democratic	233.792.000	95		Negative S
USA	1985	18.231,83	Democratic	237.924.000	123		Positive TS
USA	1985	18.231,83	Democratic	237.924.000	135		Negative TS
USA	1985	18.231,83	Democratic	237.924.000	776		Negative S

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Target State	Year	GDP	Regime Type	Population	Duration	Ongoing	Outcome
USA	1985	18.231,83	Democratic	237.924.000	184		Negative S
USA	1986	19.078,41	Democratic	240.133.000	301		Negative TS
USA	1989	22.879,18	Democratic	246.819.000	46		Positive TSS
USA	1991	24.365,62	Democratic	252.981.000	2362		Positive TSS
USA	1992	25.466,83	Democratic	256.514.000	114		Negative TS
USA	1994	27.755,76	Democratic	263.126.000	1360		Negative
USA	1996	30.047,31	Democratic	269.394.000	778		Negative TSS
USA	1996	30.047,31	Democratic	269.394.000	7397	Yes	Negative
USA	2003	39.591,87	Democratic	290.107.933	1101		Positive
Uzbekistan	2004	2.464,71	Non-democratic	25.864.350	2016		Positive
Vanuatu	2000	1.881,82	Democratic*	185.058	1084		Positive TS
Venezuela	1992	11.213,77	Democratic	20.799.471	708		Positive S
Yemen	2014	3.787,65	Non-democratic***	26.183.676	439	Yes	Negative
Yugoslavia	1991	4925 a	Non-democratic	24117000 ++++	1611		Positive
Zimbabwe	2000	2.138,38	Non-democratic	12.499.981	5808	Yes	Negative
Zimbabwe	2002	2.046,36	Non-democratic	12.691.431	5125	Yes	Negative

Country name abbreviation from Correlates of War were used: AAB, Antigua and Barbuda; BOS, Bosnia and Herzegovina; CEN, Central African Republic; DRC, Democratic Republic of the Congo; FRY, Federal Republic of Yugoslavia; SVG, St. Vincent and the Grenadines; USA, United States of America.

'Year' refers to start year of the sanction threat. If no threat was made, the data of the sanction imposition was used.

GDP PC PPP (GDP) retrieved from the World Bank (2016a), unless indicated otherwise using notes a, b, or c in the table.
Regime type retrieved from Polity IV (Marshall, Gurr, and Jaggers, 2014), unless indicated otherwise using note *. The three 'other' regime types are indicated by **, ***, or **** in the table.
Population was retrieved from the World Bank (2016b), unless indicated otherwise using notes +, ++, +++ or ++++ in the table.

a. Data retrieved from Index Mundi (2016)
b. Different year used from World Bank dataset: Iran 1980 used; Iraq 2004 used; Libya 1980 used; Myanmar 1998 used; South Africa 1980 used; Syria 2010 used
c. Data retrieved from Trading Economics (2016)
* Democracy and Dictatorship Revisited dataset (Cheibub, Ghandi and Vreeland, 2010)
** Occupation by foreign power during war
*** Complete collapse of central political authority
**** Period of regime transition
+ Different year used from World Bank dataset: Burundi 2014 used
++ Data from CIA World Factbook (2000) used
+++ Data retrieved from Trading Economics (2016b)
++++ Data retrieved from Szayna and Zanini (2000)
Positive/Negative S concerns a settlement following sanction imposition
Positive/Negative TS concerns an outcome during the threat stage
Positive/Negative TSS concerns a settlement during the threat stage

Table 9: Target state data

References appendix B

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Appendix C: Histogram
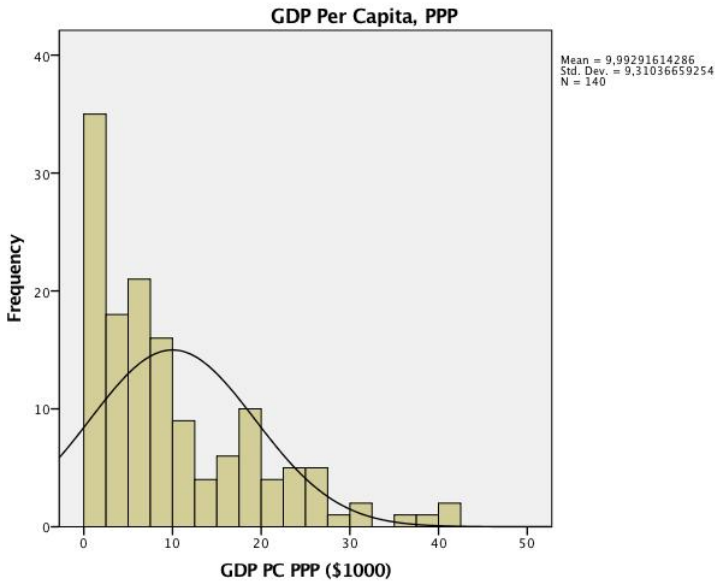
Figure 5: Histogram GDPPC PPP
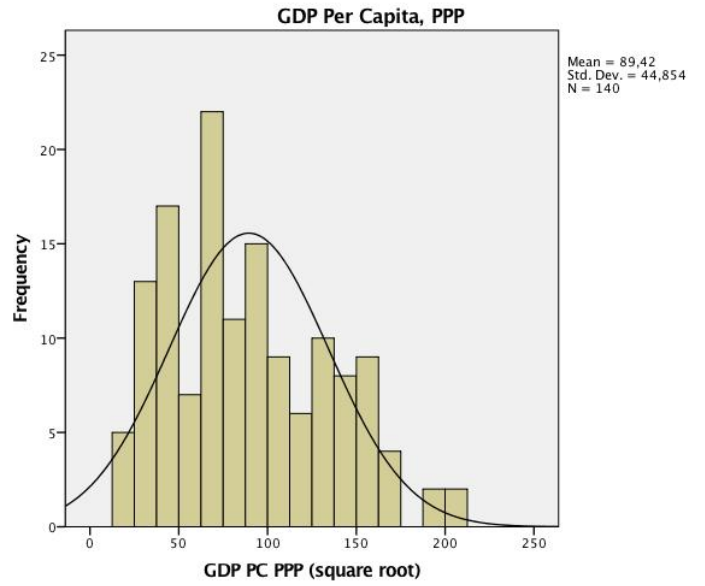
Figure 6: Histogram GDPPC PPP (sqrt)
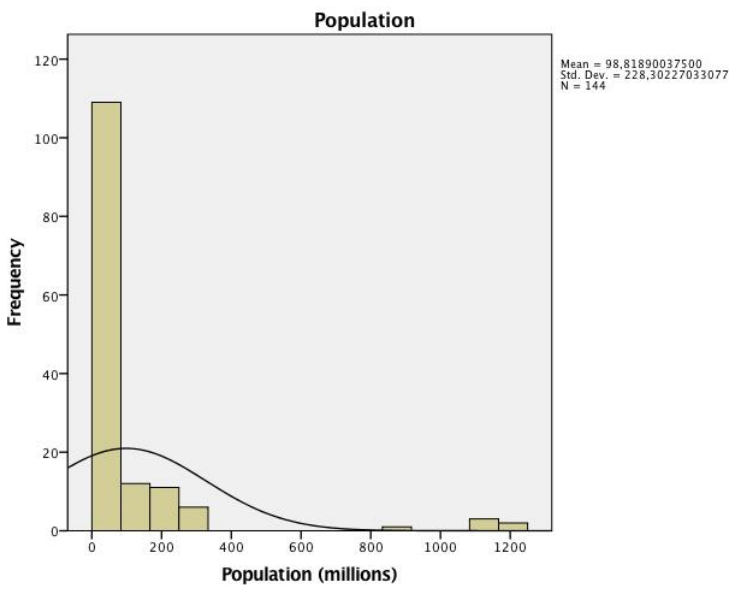
Figure 7: Histogram population
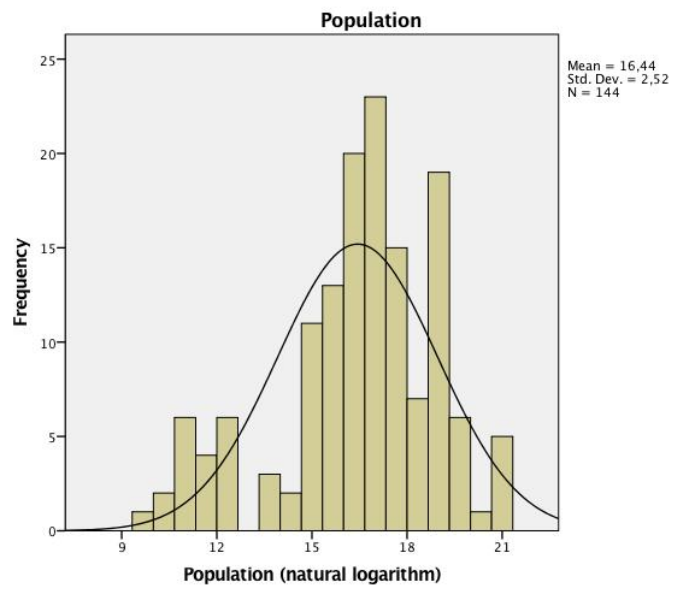
Figure 8: Histogram population (ln)
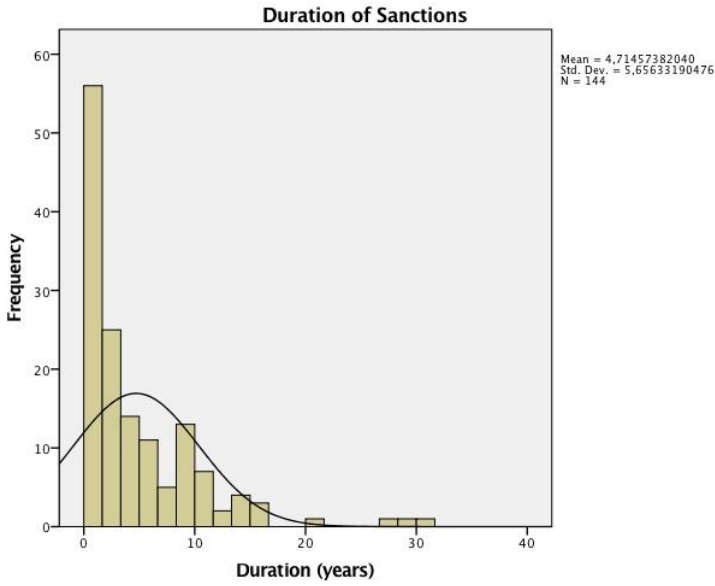
Figure 9: Histogram duration
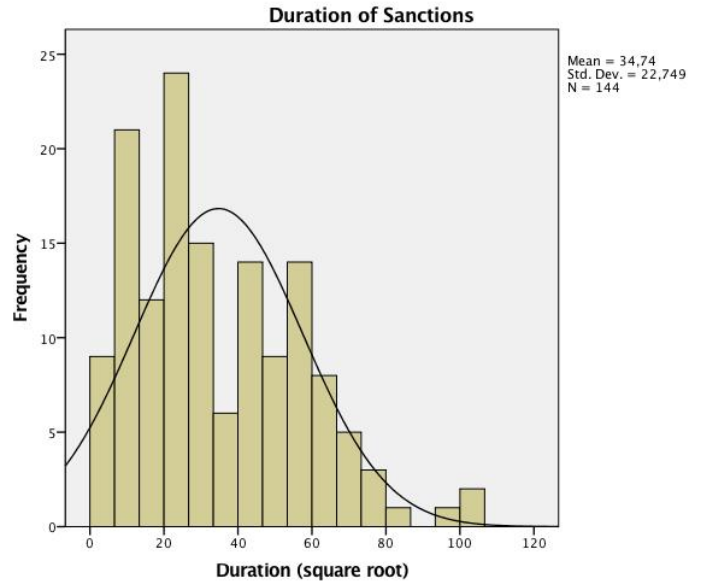
Figure 10: Histogram duration (sqrt)

Appendix D: Boxplot
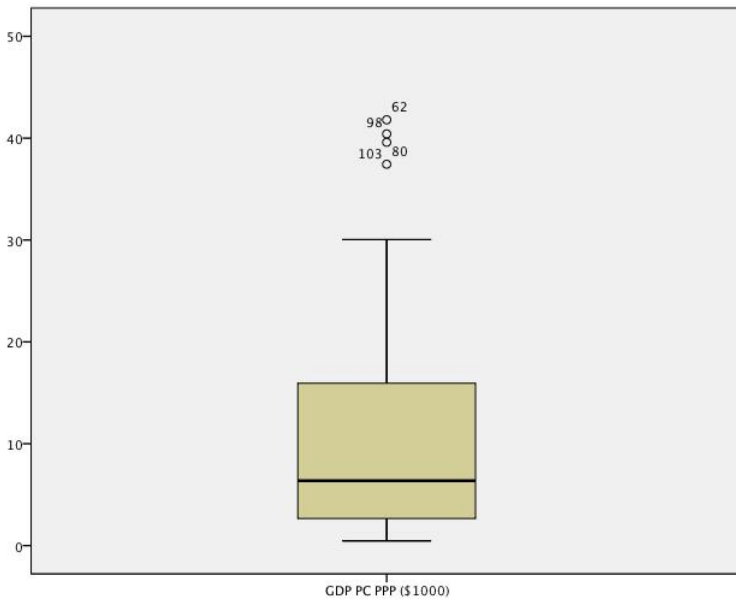
Figure 11: Boxplot GDPPC PPP
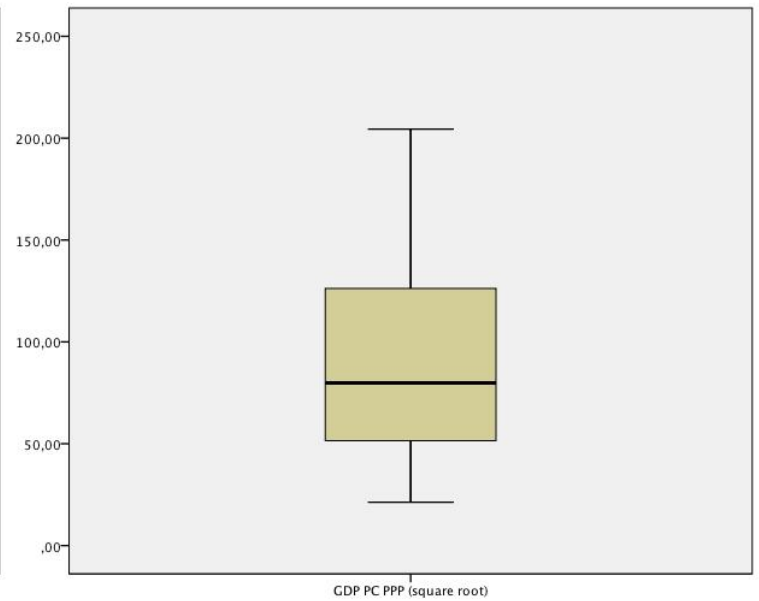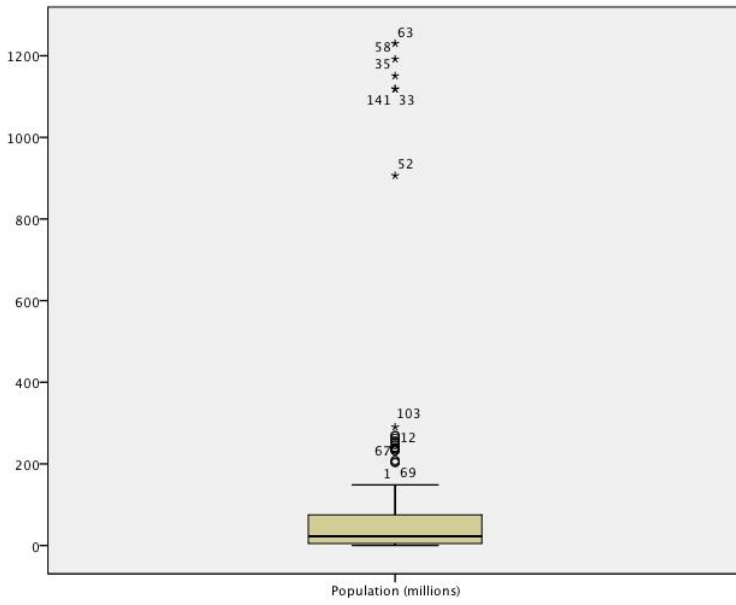

Figure 12: Boxplot GDPPC PPP (sqrt)

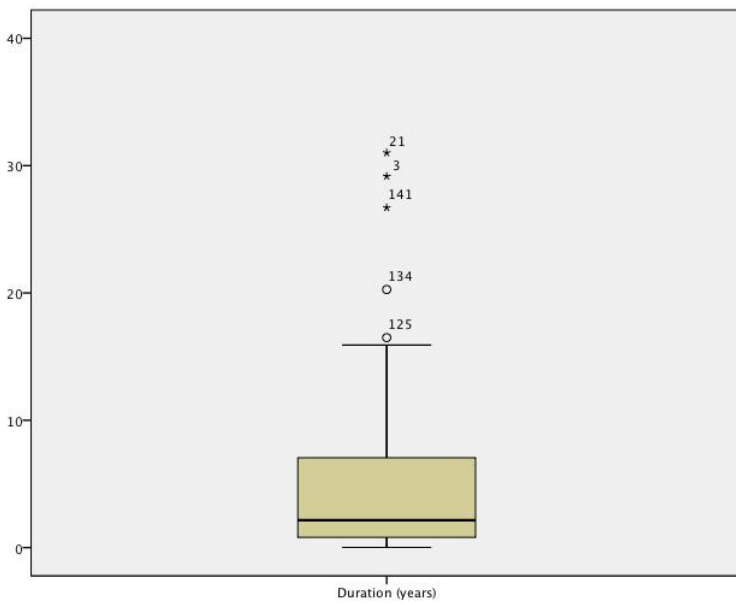**Figure 13:** Boxplot population
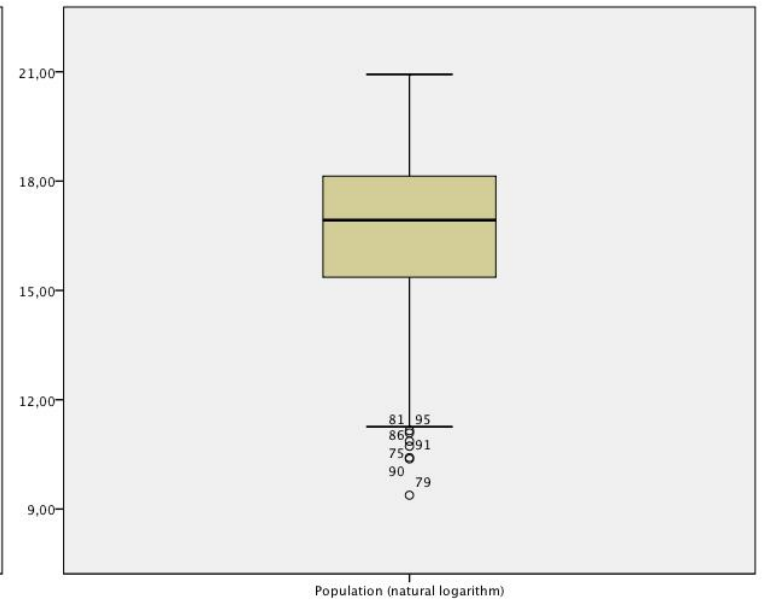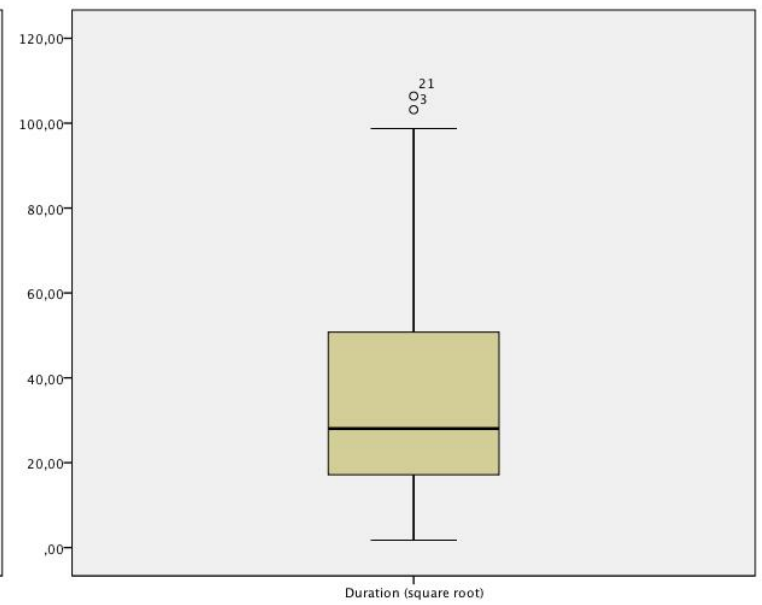

Figure 14: Boxplot population (ln)

Figure 15: Boxplot duration

Figure 16: Boxplot duration (sqrt)