Do Threats or Impositions of Sanctions Destabilize Leaders?

A Panel Data Study

Author:

Thomas Reinholdsson

Master Thesis, April 2011

Supervisor: Klas Fregert

Department of Economics
Abstract

This paper examines whether economic sanctions, or threats of sanctions, destabilize regime leaders. As a measure for the events of sanctions the study uses a dataset known as the Threat or Imposition of Sanctions (TIES) including 888 individual cases. The applied econometric method is the conditional logistic regression with panel data on the period between 1971 and 2000. The findings suggest that neither sanctions nor threats of sanctions have any significant effect on the destabilization of leaders.

Keywords: conditional logistic regression, economic sanctions, panel data, regime leaders, threat of sanctions.
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## Abbreviations

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<tr>
<td>CLR</td>
<td>Conditional Logistic Regression</td>
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<tr>
<td>COW</td>
<td>Correlates of War</td>
</tr>
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<td>CPI</td>
<td>Consumer Price Index</td>
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<td>EU</td>
<td>European Union</td>
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<td>FE</td>
<td>Fixed Effects</td>
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<td>GDP</td>
<td>Gross Domestic Product</td>
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<td>HSE</td>
<td>Hufbauer, Schott and Elliot</td>
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<td>MID</td>
<td>Militarized Interstate Disputes</td>
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<td>MLE</td>
<td>Maximum Likelihood Estimation</td>
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<td>RE</td>
<td>Random Effects</td>
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<td>TIES</td>
<td>Threat and Imposition of Sanctions</td>
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<td>UN</td>
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Section 1

Introduction

Do threats or impositions of sanctions destabilize leaders? That is the title, as well as the research question, of this paper. The objective is to evaluate on whether sanctions, or threats of sanctions, affect the probability that a leader is removed or resigns from office. In the past, economic sanctions have been the subject of much discussion, and they have been criticized as an inefficient tool for achieving political changes in foreign regimes. The recent imposition of sanctions on the Islamic Republic of Iran, by the European Union and United States, where the result of Iran’s nuclear program, and the following controversy made the top news several times in 2010. In October, the same year, the Iranian sanctions were strengthened even further by the European Council (2010). Dashti-Gibson et al. (1997) point out that the imposition of sanctions usually has the intention to either bring about political changes of the target, or destabilize the target regime and its leaders. Although the situation of the Iranian sanctions could be a combination of both - this paper focuses primarily on the latter. Contrary to previous research, we use a relatively new set of data on threat and imposition of sanctions by Morgan et al. (2006). Hence, the purpose of this study is mainly to: (i) replicate an estimation done by Marinov (2005) using new data on sanctions, and (ii) investigate on whether threat of sanctions is of any importance, when it comes to the destabilization of leaders. In addition to the dependent variable representing change of leaders, we also control for whether the imposition of sanctions have any impact on regime changes. As we are using the conditional logistic regression method, the estimated models show no signs of significant correlation between sanctions, or threat of sanctions, and destabilization of leaders.

The structure of the paper is as follows. Following section presents a brief background on sanctions and some information about previous research. Section 3 explains the applied econometrics, with subsections about the CLR method and temporal dependence. Section 4 overviews the data sources and the model variables, and Section 5 shows the estimated results. It is followed by some further discussion in relation to economic sanctions. Section 7 comprises the concluding remarks of the paper.
Section 2

Background

2.1 Imposition of Sanctions

The case of the Iranian sanctions is not the first time economic sanctions have been advocated as a more humane alternative to military force for the means of achieving foreign policy goals. Looking at its role in the political arena of the 20th century, Wallensteen (2000) argues that the discussion as well as the use of sanctions follows a thirty year cycle. In the thirties there was a widely concern about sanctions against territorial aggression, primarily on what the international community should do to countries that had the intention to attack and occupy their neighbors. The League of Nations agreed on a legal framework on when to impose sanctions against this type of aggression, but in some cases, such as Japan’s attack on China in 1931, sanctions were not used, while as in the second Italo-Abyssinian War\(^1\) four years later sanctions were imposed, but less than a year later they were proved to be inefficient and the imposition was declared as a failure. Not only did the following disappointment result in the disbelief of sanctions as a successful alternative to military intervention, but also to the demise of the League of Nations.

In the 1960’s the view on the “economic weapon” preserved quite pessimistic, especially within the United Nations, but sanctions were initiated by some major powers. For example, the United States initiated sanctions on Cuba and the Dominican Republic, as well as that their Cold War-counterpart the Soviet Union imposed restrictions on Albania and China. The previous concern about territorial aggression decreased, instead it was replaced by the worry of regimes treatment of their own populations, foreign policies, or threats towards neighboring nations. In Southern Rhodesia (later known as Zimbabwe), on the 11th November 1965, the administration of Ian Smith signed the unilateral declaration of independence from the United Kingdom. The United Nations responded by imposing mandatory sanctions in 1966 that remained until the end of 1979. By now sanctions were widely used, and later South Africa was also to become

\(^1\)A war between Italy and Ethiopia that started in October 1935 and ended in May 1936.
a target. Hence, the debate on sanctions was at this time mainly about decolonization issues (Wallensteen, 2000).

Pape (1997) clarifies that the first major wave of research on sanctions starting in the 1960’s and 1970’s showed that sanctions were comparably not as efficient as military interventions. Although they were considered more humane, sanctions were still regarded as an inefficient policy instrument. However, this conventional wisdom was to be challenged in the mid-1980’s by a new wave of researchers arguing that sanctions had been underrated due to the references of a few famous and unsuccessful cases, such as the ones in Cuba, Italy and Southern Rhodesia. It was claimed that the general view of sanctions was biased because there were not enough individuals representing the interest of imposing sanctions, compared to those that had an interest in avoiding them; and thus the failures were exaggerated. In 1985, an article by Hufbauer, Schott & Elliott was to challenge this view.² Their study - to some extent representing a newly founded optimism - reported a success rate of 34 percent. Although this reported value has been seen as low in more recent articles, at the time of the publication it clearly contrasted with the earlier debate, and this time sanctions were to be considered as a plausible alternative to military interventions (Pape, 1997). This, in combination with the belief that sanctions could be even more efficient with the increase of international cooperation after the Cold War, may explain the increased record of sanctions used by the United Nations in the following decade. Which according to Wallensteen (2000) could be seen as a new cycle; followed by the ones in the 1930’s and 1960’s. In some sense the sanctions debate was once again about territorial aggression. For example, the UN Security Council imposed restrictions on Iraq because of their invasion of Kuwait in August 1990, and it was followed by several other cases of sanctions initiated by the United Nations, which led to further empirical data for the area of research to evaluate on the success and failure of economic sanctions. In order to answer whether a sanction should be regarded as successful, it is important to look at the purpose that the sender had when the sanction was initially introduced. In several cases the purpose is to destabilize another country’s leadership. Even when it is not - leader changes might be positively correlated with good results in the sender’s point of view. At least if the newly appointed leaders are more willing to implement the desired policy changes.

2.2 Previous Research

Marinov (2005) finds evidence for a significant positive correlation with regards to his research question: "do economic sanctions destabilize country leaders?", using a conditional logistic regression on panel data for the time period between 1947 and 1999. The paper uses an updated dataset on sanctions by Hufbauer et al. (1990) including 169 individual cases, and hence, its findings show that sanctions cause an average increase of 28 percent in the probability of a leader

²The article was later followed by a well-cited update, see Hufbauer et al. (1990).
losing his or her position in office. Further, Escribà-Folch & Wright (2010) examine whether sanctions destabilize authoritarian leaders. In addition, a study by Kaempfer et al. (2004) investigates on about the same relation, hence, instead applying Wintrobe’s dictatorship model. While as these papers focus more on dictators, than regime leaders in general, they are still within the same area of research like as our study. As Escribà-Folch & Wright (2010) use about the same method as Marinov (2005), their estimated results show that the likelihood of losing power increases in personalist regimes with the imposition of sanctions. However, the effect seems to be either ineffective or counterproductive in single-party and military regimes. We will not focus that much on different types of leaders, other than controlling for the regime types in the estimation process. The data of sanctions used in these articles consists of only sanctions that were merely imposed, and not those only threatened. In accordance to what Marinov (2005) discusses, threats could at times be among the most successful cases. Further, Eaton & Engers (1992) argue that "the threat of sanctions probably plays a much greater role in international relations than their actual use would suggest". Hence, it is not only of interest to investigate on the effect from imposed sanctions, but also on how the threat of sanctions possibly correlates with the destabilization of leaders.
Section 3

Method

The applied econometric method in this study is the conditional (fixed effects) logistic regression (CLR) using maximum likelihood estimation (MLE).\(^1\)

3.1 Conditional Logistic Regression

In linear regressions the dependent variable usually consists of numerical values; and when it is structured differently, other methods than the linear regression has to be used. As is the case for this study, the outcome variable is categorical and it characterizes whether a leader during a given year has lost his or her position. It has only two possible outcomes on answering the question of whether a leader has left office, simply "yes" or "no". Hence, it may be coded as a binary variable - also known as a dichotomous variable - where 1 stands for "yes" and 0 for "no". Instead of making estimations on how the independent variables tend to affect the dependent variable in terms of numerical values, this study evaluates the probability that a leader will lose office given the characteristics of the independent variables. The main focus is therefore on how imposed or threatened sanctions affect the probability of losing office - or if they even have any effect on the probability at all. The CLR method differs from the regular logistic regression to the extent that the likelihood is estimated for each cross-sectional unit - which is actually also one of the disadvantageous aspects with the CLR model - that it ignores the variation between the units.\(^2\) However, we rest upon the assumption that states are quite unique in the comparision with each other, and therefore the fixed effects are assumably more appropriate than the random effects.\(^3\) If there are variables that do not vary within the cross-sectional units, the effect cannot be captured by the fixed effects (Allison, 2009; Hilbe, 2009). For example, when it comes to individual characteristics such as

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\(^1\)The same method is used by Marinov (2005).

\(^2\)Katz (2001) shows by using Monte Carlo experiments that both conditional and unconditional estimators show a negligible bias when \(T \geq 16\), however, when there are many observations within each group, the conditional estimator is preferred.

\(^3\)It is also possible to perform a Hausman test to see if one should preferably choose fixed or random effects.
sex or religious belief, they are usually constant over time; but, for our variables there are substantially more variation within the units. Also, for the study to be comparable to the article written by Marinov (2005) it is appropriate to use an equivalent model. The same author emphasizes that the CLR method is a "simple and powerful way to deal with country-specific omitted variables".

3.1.1 Logistic Model

The CLR model builds upon the cumulative logistic distribution, and its function can be written as

\[ F(z) = \frac{e^z}{e^z + 1} = \frac{1}{1 + e^{-z}} \] (3.1)

and then we substitute \( z \) with the specification of the coefficients and our independent variables. First, let

\[ z = \beta' x_{it} \] (3.2)

where \( \beta \) is a vector with coefficients, \( x_{it} \) is a vector including the independent variables, and \( i = 1, 2, ..., I \) identifies the cross-sectional units (e.g. states), while \( t = 1, 2, ..., T_i \) denote the time-dimensional observations for the \( i \)th unit; in our case it represents the year of the observed state. Then, the CLR model can simply be denoted as

\[ P(y_{it} = 1 \mid x_{it}) = F(\beta' x_{it}) \] (3.3)

where \( P(y_{it} = 1 \mid x_{it}) \) denotes the conditional probability that the dependent variable equals to 1, given the values of the independent variables, here represented by \( x_{it} \). Also, note that we have not included an intercept since the cross-sectional differences cannot be captured by the CLR model.

3.1.2 Matching

Then, before continuing with the construction of the conditional likelihood, it is necessary to discuss something that is called "matching". In the dependent variable and for each cross-sectional unit there has to be some variation between the 1:s and 0:s; otherwise the observed unit - or state (as it is in our case) - will not contribute anything to the MLE, and if so, it is dropped from the estimation process. When controlling for if there are both 1:s and 0:s represented in the data one usually refers to the term matching, which can be denoted as

\[ k_{1i} : k_{0i} \] (3.4)

where \( k_{1i} \) shows the amount of times the variable is equal to 1, and \( k_{0i} \) how many times it is 0. For example, 12:18 matching means that there are totally 30 observations with twelve 1:s and eighteen 0:s represented; and as for the dependent variable in our case it means that a given state has changed
its leader twelve times between 1971 and 2000. The sum of observations is $T_i = k_{1i} + k_{0i}$ for each $i$:th cross-sectional unit. Since 0:s do not add up anything in a summation, it means that $k_{1i}$ could also be written as

$$k_{1i} = \sum_{t=1}^{T_i} y_{it}$$  \hspace{1cm} (3.5)

where $y_{it}$ are the observations of the dependent variable for the $i$:th unit. We may then proceed with the construction of the conditional likelihood.

### 3.1.3 Conditional Likelihood

The full conditional likelihood is the product of all the cross-sectional likelihood functions. Thus we will begin by looking at the individual likelihoods. First, let us consider the probability of $y_{i}'s$ values conditional on $\sum_{t=1}^{T_i} y_{it} = k_{1i}$, like as

$$l_i(\beta) = P(y_{i} \mid \sum_{t=1}^{T_i} y_{it} = k_{1i})$$  \hspace{1cm} (3.6)

which is a simple notation of the conditional likelihood, for each $i$. Then, let 1 to $k_{1i}$ correspond to the cases of when there is a leader change, and $k_{1i} + 1$ to $T_i$ when there is not a change. Also, denote the total number of possible assignments of $k_{1i}$ to $T_i$ as

$$c_i = \binom{T_i}{k_{1i}} = \frac{T_i!}{k_{1i}!(T_i - k_{1i})!}$$  \hspace{1cm} (3.7)

and hence, the conditional likelihood can be written as

$$l_i(\beta) = \frac{\prod_{t=1}^{k_{1i}} P(x_{it} \mid y_{it} = 1) \prod_{t=k_{1i}+1}^{T_i} P(x_{it} \mid y_{it} = 0)}{\sum_{j=1}^{c_i} \left( \prod_{t_j=1}^{k_{1j}} P(x_{jt_j} \mid y_{jt_j} = 1) \prod_{t_j=k_{1j}+1}^{T_j} P(x_{jt_j} \mid y_{jt_j} = 0) \right)}$$  \hspace{1cm} (3.8)

which can be further simplified, with the application of Bayes’ theorem to each $P(x \mid y)$ term, and then one can get

$$l_i(\beta) = \frac{\prod_{t=1}^{k_{1i}} e^{\beta' x_{it}}}{\sum_{j=1}^{c_i} \prod_{t_j=1}^{k_{1j}} e^{\beta' x_{jt_j}}}.$$  \hspace{1cm} (3.9)

While as this is the conditional likelihood for each cross-sectional unit, the full conditional likelihood is then the product of all $l_i(\beta)$:s,

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4The Bayes’ theorem is algebraically defined as $P(A \mid B) = \frac{P(B \mid A)P(A)}{P(B)}$. 

10
The next step in order to solve for the MLE is to maximize the equation with respect to \( \beta \); which is simplest done by using the natural logarithm,

\[
\ln(l(\beta)) = \sum_{i=1}^{I} \ln(l_i(\beta)).
\]  

Thus, the solution that maximizes the function will lead to a log-likelihood value that represents the sum of the terms on the right-hand side of the equation. Since the individual likelihood terms are probabilities between 0 and 1, and that their logarithms are negative, the sum will be a negative number between \( -\infty \) and 0.\(^5\) For more details on the algebraic steps and simplifications that has been used in this section, see Hosmer & Lemeshow (2000) and Menard (2010).

### 3.2 Temporal Dependence

This study uses a duration variable - measuring the number of years that a leader has stayed in office - constructed out of the dependent variable. Thus, it means that when there is a change of the leader - the binary dependent variable equals 1 - the duration variable starts counting from 0, and hence, for each year there is no leader change, the duration variable increases by 1. This is a simple way of modeling temporal dependence. However, this simple method implies a constant hazard, or probability, between the duration variable and the dependent variable. As for the \textit{YEARS IN OFFICE} variable it is not unreasonable to think that the effect on \textit{LEADER CHANGE} is marginally decreasing or increasing, or that the functional form of the relationship is changing over time. It is possible to adjust the form of the dependence by using time dummies or splines.

In this paper we are using natural cubic splines; but, to get a good intuition of what splines are, it is not a bad idea to first discuss a simpler method; and hence, an introduction of the time dummies now follows.

#### 3.2.1 Time dummies

Beck et al. (1998) propose a simple solution to the problem of the hazard form by adding a series of dummy variables to the specification of \( z \), in equation 3.2, like as

\[
z_i = x_{it} \beta + \kappa_{ti} \alpha
\]

where \( \kappa_i \) is a vector including the time dummies. Simply, one dummy for each unique value in the duration variable; and if we denote the number of

\(^5\)However, if all the individual terms are equal to 1, then all the logarithm values will be 0, and then the sum equals 0 as well.
unique values as $M$, then the vector simply consists of $M$ dummies, such as $\kappa_{1i}, \kappa_{2i}, \ldots, \kappa_{Mi}$. Carter & Signorino (2010) call these dummies "duration-specific fixed effects". If one wants to add time dummies to the model, it is possible to either drop the duration variable and use all the dummies, or keep the variable and drop one of the dummies. This solution does, however, come with at least two potential problems; inefficiency and separation. Inefficiency is related to the value of $M$, and thus if it is substantially large, then there are many coefficients that need to be estimated. The coefficients could therefore be relatively many in comparison with natural cubic splines that only require the estimation of three additional parameters. Also, splines usually create a much smoother hazard.\(^6\)

The issue of separation occurs when the time dummies perfectly determine the dependent variable - an issue that tends to be more common when $M$ is large. If the variables in question are perfectly determined then the observations cannot be used in the regression, and hence they are dropped before the process of estimation.\(^7\) The problem of separation is more common when one uses binary data, as it is for our situation. Carter & Signorino (2010) emphasize that the dataset is likely to suffer from separation if it consists of less than 10 000 observations and when the maximum duration is greater than 15 periods. This is obviously the case for our data, and therefore splines seem to be better to use than time dummies. However, this is not the only reason of why we are using splines. Since this paper - at least partially - serves as a replication study of the article written by Marinov (2005), it is as well appropriate to use the same method as he does.

### 3.2.2 Splines

Carter & Signorino (2010) explain how one can think of splines like as "a procedure that allows us to smooth the relationship between two variables" and that they "allow one to specify points in $t$ where the relationship with $y$ changes substantially", where those points are referred to as knots. The greater the number of knots, the less smooth is the variables relationship. In this study, three knots have been used when constructing the natural cubic splines; and the knots have the same placement as suggested by Beck et al. (1998) - at years 1, 4 and 7 - for our variables YEARS IN OFFICE and REGIME DURABILITY. These default parameter settings could be inappropriate in many cases, but in our case it is not unlikely that the hazard dependence form approximately changes at these positions. For example, a leader could be exposed to a much higher probability of losing his or her position the first year, than the second or the third; also, the hazard form changes as where the knots are placed - more specifically at the end of the first, as well as the second, presidential term. In addition, since Marinov (2005) does not discuss his placement, it could perhaps be that he follows the same procedure as Beck et al. (1998); and hence uses the default parameter settings.

\(^6\)Which could be considered as an advantages as long as the hazard dependence is assumed to be relatively smooth (Carter & Signorino, 2010).

\(^7\)Stata automatically controls for separation in the data, and the program drops the observations that show any sign of perfect determination (Stata, 2009).
parameter values. Thus, that are the main reasons of why 1, 4 and 7 are the chosen points in our study. We will not go into the details on how the spline interpolation is processed, or on how the natural cubic splines are constructed; but, the process could simply be summarized in four steps; (i) choose knot locations, (ii) generate spline basis vectors from the duration variable, (iii) use the generated vectors as regressors in addition to the other variables of the model specification, and finally, (iv) continue with the estimation procedure.\(^8\) For more explanations on splines and temporal dependence, see Eubank (1988), Beck et al. (1998) and Carter & Signorino (2010).

\(^8\)In Stata, the splines can be generated with the \textit{snp7} module (Sasieni, 1995).
Section 4

Data

The data section is structured in subsections; where the first describes the data sources, while as the second is an overview of the variables and their summary statistics.

4.1 Data Sources

This paper uses several different data sources, and thus each of them will be briefly presented in this section.\(^1\) There will also be some information on the variables included in the logistic regressions. The dependent variables used are LEADER CHANGE and REGIME CHANGE, and in total there are fifteen different control variables, among them SANCTIONS and THREAT OF SANCTIONS.

4.1.1 Archigos: A Data Base on Leaders

The Archigos database as published by Goemans et al. (2009) identifies the political leader of up to 186 independent states covering the time period from 1875 to 2004. It is important to note that it is not necessarily the official leader of the state, but rather the person that de facto exercises the power. This decision, to determine which person that has the most power, is mainly normative and based on primary and secondary sources, as well as the authors’ own knowledge about the states and their power structures. Usually, Goemans et al. (2009) code the leader depending on the form of the state governance, for example:

<table>
<thead>
<tr>
<th>Parliamentary regime</th>
<th>→ Prime minister</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presidential regime</td>
<td>→ President</td>
</tr>
<tr>
<td>Parliamentary and presidential regime</td>
<td>→ President</td>
</tr>
<tr>
<td>Communist state</td>
<td>→ Chairman of the party</td>
</tr>
</tbody>
</table>

As for regimes with a parliament as well as a presidency position; the latter

\(^1\)In the study we have also used the Correlates of War Project (2008) dataset as for the country classifications; however, the data has not specifically been used for the dependent or independent variables, and therefore an overview of it is not necessary.
is chosen as the leader because it is usually the president that deals with foreign policy. Since this study investigates on how economic sanctions affect the probability that a leader will leave office, it is also of importance to acknowledge that a leader may leave office for other reasons than by election; for example, because of force from other states or due to natural death. Goemans et al. (2009) categorize four different ways that a leader can lose office: (i) "regular", (ii) "irregular", (iii) "foreign imposition", and (iv) "natural death" (including illness and suicide). When the leader leave his office in a regular manner it means that the reason usually is retirement, term limits, or defeat in elections. Foreign imposition implies that another state removes the leader; while as the irregular alternative includes events such as coups, revolts and assassinations (Goemans et al., 2009). The Archigos dataset covers a lot of detailed information on entry and exit of leaders around the world, as well as other variables. Since much of the information is not used in the regressions of this study it is not necessary to present all of it; but, some additional description will now follow when we introduce the variables that are later included in the regressions:

**LEADER CHANGE:** The dependent variable consists of 0:s and 1:s depending on if there is a leader change, or not, a given year. Following Marinov (2005) and Escribà-Folch & Wright (2010), in cases of when leaders exit office due to natural death, illness or suicide, the leader change observations are censored and therefore coded as 0 instead of 1. When an observed state and year involves a leader change - there will be information on multiple leaders, and since the regression process only allows for one observation for each unique combination (between the states and years) some information has to be removed. Therefore, we will only keep the observations on the leader that was in office during the beginning of the year.

**AGE:** The variable has information about a leader’s age, and is constructed by taking the current year minus the year when leader is born. It is not inconceivable that the older a leader becomes, the higher the risk that he is replaced or resigns.

**YEARS IN OFFICE:** A duration variable that counts the number of years since the last leader change. Following Marinov (2005), natural cubic splines are used in addition to the YEARS IN OFFICE variable.
4.1.2 Threat and Imposition of Sanctions

Collected by Morgan et al. (2006, 2009), the dataset features data on economic sanctions, as well as threats of sanctions, for totally 888 individual cases covering the time period between 1971 and 2000. Economic sanctions can take various forms; familiar examples are tariffs, embargoes, import restrictions, travel bans and blockades. In comparison to the well-known HSE dataset, the TIES data consists of more cases of imposed sanctions, as well as threat of sanctions. There is a risk that results derived from the HSE data suffer from selection bias, since there are cases when threat of sanctions might be well enough and even the most effective example of achieving a desired policy change. If threats are not included there are good reasons to believe that the results could be biased. Thus, Marinov (2005) acknowledges this problem by saying that:

"[...] it is important to note that the data records instances in which sanctions were actually imposed, not merely threatened. By the argument made, the destabilizing influence of sanctions will be weaker in such cases. For this reason, a number of the (most successful) cases [...] will not show up in the data."

The TIES data is originally collected and organized from various primary and secondary sources; such as Lexis-Nexis, Facts on File, Keesing’s Record of Contemporary Events, New York Times and London Times. Morgan et al. (2006) have themselves made the judgement of whether an episode is to be seen as a sanction, threat of sanction, or neither. To be considered as a sanction the case must involve at least one sender state and a target state. Also, the reason for the sanction must be related to an aim of the sender to change the behavior of the target state; therefore restrictions based on consumer safety or enviromental standards are not included in the data. For cases where there are multiple target states, the authors have divided the same sanction into several sanction cases; each having only one target state. The start date of a sanction begins with a threat, or when the sanction is actually imposed in cases without any previous threats. Threat of sanctions, on the other hand, are described in the data manual as that the sender “must only declare that sanctions are a possibility against a target state” and “threats may be initiated in several ways, such as verbal statements by government officials, drafting of legislation against a target state, or the passage of a conditional law stipulating that sanctions will be imposed if certain target behaviors are not changed” (Morgan et al., 2006).

In comparision with the HSE dataset, the TIES data accounts for more sanction cases. The HSE dataset has 204 cases in total, whereas 139 are between 1971 and 2000. In the same time period, the TIES dataset has totally 888 cases, where 361 of them are considered as threat-only, and thus 527 sanctions were actually imposed. There are three main reasons of why the TIES dataset consists of such a larger amount of cases, and these are the inclusion of: (i) threat of sanctions, (ii) trade disputes, and (iii) less well-known and usually shorter cases. The average duration of sanctions is 6.6 years for HSE, and 2.7 years for TIES.

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5In contrast to the HSE dataset, the TIES data also includes trade sanctions. Morgan et al. (2009) argue that there are no theoretical reasons of why trade sanctions should not be included.
Morgan et al. (2009) argue that effective sanctions are more likely be shorter in duration and without much publicity, while the less efficient ones last longer; and thus the HSE dataset could be biased in favor of non-successful sanctions. The variables that are constructed from the TIES dataset, and hence applied in the regression models of this study, are the following ones:

**SANCTIONS:** The dummy variable identifies whether there are any imposed sanctions on a target state. It is simply coded 1 if there are any imposed sanctions; otherwise the variable equals to 0. It is important to mention that there are no available data on when sanctions or threat of sanctions have not been used; therefore, the data may include more 0:s than the reality suggests. It would of course have been better if there during the data collection process would be someone looking through all states and consequently code 0 or 1 whether there was an event of an economic sanction. The variable used in this study is only constructed out of the 1:s.\(^6\)

**THREAT OF SANCTIONS:** Same as **SANCTIONS** with the exception that it also includes threat of sanctions. Sometimes a threat may be enough, or even more effective than an actual imposition.\(^7\)

### 4.1.3 Polity IV

The Polity project is among the most used datasets in research related to regime change and for studying the effects of regime authority. The Polity I data was originally formulated and collected by Eckstein & Gurr (1975) in their published book "Patterns of Authority: A Structural Basis for Political Inquiry". The more recent and updated version - known as Polity IV - is currently under the direction of Monty G. Marshall. When it comes to the data coverage, some observations start their time period as early as 1800, while as the last observed year of the dataset is 2007. Polity IV covers up to 162 different states around the world (Marshall & Jaggers, 2009). Including a variety of variables one has to keep in mind that many of them are based on subjective interpretations; for example, when a state is to be classified as a democracy or not. Anyway, Hadenius & Teorell (2005) recommend the use of the Polity or the Freedom House data, at least regarding democracy indices, because of their clear procedures in the coding and collecting of the data. The authors prefer a combined index of them both, since there are some differences between the indices in the grading of the states. This study follows the recommendation of Hadenius & Teorell (2005) in the sense that we are using the Polity IV data; but, as for this moment, we will not include the Freedom House data. It is, however, a good suggestion to make

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\(^6\)This is also why the number of observations is relatively large for the variables that originate from the TIES dataset, see Table 4.1. The same problem is also relevant for the MID dataset.

\(^7\)An interesting remark on the threat of sanctions, which is also emphasized by Eaton & Engers (1992), is that it does not consider "promises" as an alternative to threats; which could, at least to some degree, work in the same manner.
use of several different data sources because of the subjective interpretations; either by simply changing the data source of the variables (in the sensitivity analysis) or by constructing a weighted average. In this study, the Polity IV data will be used for the following control variables:

**DEMOCRACY:** Following Chiozza & Goemans (2004) and Marinov (2005), we use a dummy indicator on whether a state is considered as a democracy or not. The regime type variable from the Polity IV dataset consists of a 21-point scale. Regimes scoring more than or equal to 7 points are coded as 1 in the **DEMOCRACY** variable.

**MIXED REGIME:** A mixed regime is defined as between or a combination of autocracy and democracy. The polity score is calculated by subtracting an autocracy score from a democracy score; and thus, if a regime has about the same score for both, it would be considered to be a mixed regime. If the polity score is less than or equal to -7 points in the 21-point scale, a regime is identified as an autocracy. It is not necessary to use more than two dummies, since the third would not contribute with any additional information in the regression process. Therefore, there is no dummy variable for autocracy; meaning that if both **DEMOCRACY** and **MIXED REGIME** equals to zero the observed state is defined as an autocracy.

In addition, there are a couple of variables denoted **DEMOCRACY** * ln(t+1) and **MIXED REGIME** * ln(t+1).** Following Marinov (2005), they are the same as **DEMOCRACY** and **MIXED REGIME,** but that they are also multiplied with the logarithm of the leader’s years in office (see **YEARS IN OFFICE**).

**REGIME CHANGE:** The next two variables are used in the sensitivity analysis, as substitutes for **LEADER CHANGE** and **YEARS IN OFFICE.** The **REGIME CHANGE** variable is a dummy of whether the regime is in a transition process. More specifically, the original variable includes a value (between -20 and 20) of the polity score change, and in the event of a multi-year transition it is coded 0. In the newly constructed variable, any value between -20 and 20 (including 0) is simply converted to the value of 1, which denotes whether a state is currently undergoing a regime change. In all other cases the **REGIME CHANGE** variable is coded as 0.

**REGIME DURABILITY:** The variable measures the duration in years since the previous change of regime type. Thus, a change between autocracy, democracy

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8The regime type variable used is the revised combined polity score variable - named **polity2** - in the Polity IV dataset, see Marshall & Jaggers (2009).

9We use t+1 instead of t, since this makes it possible to use the logarithm even when t equals to 0.
or mixed regime. Like as for YEARS IN OFFICE, splines are calculated and used in addition to the duration variable.\textsuperscript{10}

4.1.4 Militarized Interstate Disputes

The Militarized Interstate Disputes (MID) dataset, as compiled by the Correlates of War (COW) project, has information about conflicts and disputes with data on threats, display or use of military force between states.\textsuperscript{11} The dataset consists of cases of military disputes and spans over the time period between 1816 and 2001 (Ghosn et al., 2004). This study uses three variables from the MID dataset.

\textbf{FORCE:} The original data is structured by cases of militarized interstate disputes; including information on the start and end date for each dispute. To be able to use the data in the analysis it has been transformed into a panel data structure, organized with the identification variables state and year. In cases of when a state is the target of several different militarized disputes in the same year, only the dispute with the highest level of hostility is considered.\textsuperscript{12} The hostility level is divided into five different stages: (i) no militarized action, (ii) threat to use force, (iii) display of force, (iv) use of force, and (v) war. Following almost the same procedure as Marinov (2005), the variable FORCE is coded 1 if it has actually been applied; or more precisely, if either (iv) use of force or (v) war is true.\textsuperscript{13} In other cases the variable is coded 0.

\textbf{THREAT OF FORCE:} Same as FORCE, besides that it also includes (ii) threat to use force, and (iii) display of force.

\textbf{MILITARY DISPUTE:} The variable has information of whether a state is part of any military dispute, regardless of the hostility level or if they are the revisionist state or not. Simply, the variable represents 1 if a state during a given year is observed in the MID dataset; if not, it is coded as 0.

\textsuperscript{10}The regime change and durability variables are created from change and durable in the Polity IV dataset.

\textsuperscript{11}While as Marinov (2005) uses the previous version 3.0, this study uses the most recent and updated MID dataset - version 3.10 - released on September 26, 2007. In the latest version several corrections have been made where errors or discrepancies have been reported since the previous data release.

\textsuperscript{12}Actually, there is no clear definition of a target in the MID dataset. However, there are available information on whether a state is in a dispute (between two or more states). Besides there are data on if a state in a specific case was seen as the revisionist state who wanted to change the status quo, or the opposite - prefering to preserve the current situation. For example, when the United States entered Iraq in 2003 - the former state was considered as the revisionist state, while as the latter was not. In this study, the definition of a target is therefore a state that is involuntarily involved in a militarized dispute.

\textsuperscript{13}Marinov (2005) has not taken into account of whether a state is revisionist or not, and for that reason there could be some differences in the estimation results, in comparision with this study.
4.1.5 World Development Indicators

The often used and well-known World Development Indicators (WDI) dataset covers a broad range of variables with the main focus on economic development issues. In 2010, the database contained more than 900 indicators, over 209 countries, with the time period from 1965 to present. Some of the indicators may be more limited in the time span, as well as for the number of countries included. The WDI dataset is regularly updated each year (World Bank, 2010; NSD, 2011).

**ECONOMIC GROWTH**: The variable **ECONOMIC GROWTH** measures the annual GDP per capita growth. The economic growth is assumed to be negatively correlated with the probability of a leadership change.

**WEALTH**: The logarithm of GDP per capita (constant 2000 US dollar).

**INFLATION**: Measures inflation as the annual percentage change in the consumer price index (CPI). It is also divided by 100, in order to have the same format as the **ECONOMIC GROWTH** variable.

### 4.2 Overview of the Variables

The previously presented variables are shown with their summary statistics in Table 4.1. **LEADER CHANGE** has a higher mean value than **REGIME CHANGE**, 0.145 and 0.147 respectively, indicating that it is slightly more common that a leader leaves office than the change of a regime’s polity score. We can also see that on average a state is the target of **SANCTIONS** 17.5 percent of the time; increasing to 24.2 percent when including threats. **FORCE**, as well as **THREAT OF FORCE**, seems to be less commonly used. **MILITARY DISPUTE** shows an average value of 0.259; but, as for all the variables that originate from the MID or the TIES dataset, the true value is most likely to be higher since the 0:s represent all states and years where a specific event has not been recorded. It could very likely be that an observation for a specific state and year included in the restructured dataset, has not been reviewed in the MID or the TIES dataset.

It seems like states are almost equally distributed when it comes to whether they are classified as autocracies, democracies or mixed regimes; but, if one also observes the difference between **DEMOCRACY * ln(t+1)** and **MIXED REGIME * ln(t+1)**, it is possible to see that **YEARS IN OFFICE** is on average higher for mixed regimes. Hence, it could be that there are more democracies than mixed regimes, but that the leaders tends to stay in office for a longer period of time for the latter regime type. The mean value of the **ECONOMIC GROWTH** variable is calculated from the gross domestic product per capita, in constant 2000 US dollar, according to the following formula: 

\[(gdppc_t - gdppc_{t-1}) / gdppc_{t-1}\].

Since \(t\) in these variables represents the number of years in office.
variable is 1.6 percent, and for \textit{INFLATION} it is even more than 46 percent. The age of leaders spans between 18 and 93 years. The longest period a leader has stayed in office is 46 years, while at least one regime has lasted for 191 years.
Table 4.1: Summary Statistics of the Variables, 1971-2000

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Std. Dev.</th>
<th>Min.</th>
<th>Max.</th>
<th>N</th>
<th>Spec.</th>
<th>Type</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEADER CHANGE</td>
<td>0.145</td>
<td>0.352</td>
<td>0</td>
<td>1</td>
<td>4684</td>
<td>Dependent</td>
<td>Dichotomous</td>
<td>Archigos</td>
</tr>
<tr>
<td>REGIME CHANGE</td>
<td>0.147</td>
<td>0.354</td>
<td>0</td>
<td>1</td>
<td>4338</td>
<td>Dependent</td>
<td>Dichotomous</td>
<td>Polity IV</td>
</tr>
<tr>
<td>SANCTIONS</td>
<td>0.175</td>
<td>0.38</td>
<td>0</td>
<td>1</td>
<td>6480</td>
<td>Independent</td>
<td>Dichotomous</td>
<td>TIES</td>
</tr>
<tr>
<td>THREAT OF SANCTIONS</td>
<td>0.242</td>
<td>0.428</td>
<td>0</td>
<td>1</td>
<td>6480</td>
<td>Independent</td>
<td>Dichotomous</td>
<td>TIES</td>
</tr>
<tr>
<td>FORCE</td>
<td>0.089</td>
<td>0.285</td>
<td>0</td>
<td>1</td>
<td>6480</td>
<td>Independent</td>
<td>Dichotomous</td>
<td>MID</td>
</tr>
<tr>
<td>DEMOCRACY</td>
<td>0.326</td>
<td>0.469</td>
<td>0</td>
<td>1</td>
<td>4338</td>
<td>Independent</td>
<td>Dichotomous</td>
<td>Polity IV</td>
</tr>
<tr>
<td>DEMOCRACY * ln(t+1)</td>
<td>0.347</td>
<td>0.688</td>
<td>0</td>
<td>3.367</td>
<td>4297</td>
<td>Independent</td>
<td>Continous</td>
<td>Polity IV</td>
</tr>
<tr>
<td>MIXED REGIME</td>
<td>0.299</td>
<td>0.458</td>
<td>0</td>
<td>1</td>
<td>4338</td>
<td>Independent</td>
<td>Dichotomous</td>
<td>Polity IV</td>
</tr>
<tr>
<td>MIXED REGIME * ln(t+1)</td>
<td>0.451</td>
<td>0.885</td>
<td>0</td>
<td>3.85</td>
<td>4297</td>
<td>Independent</td>
<td>Continous</td>
<td>Polity IV</td>
</tr>
<tr>
<td>WEALTH</td>
<td>7.504</td>
<td>1.557</td>
<td>4.131</td>
<td>11.233</td>
<td>4367</td>
<td>Independent</td>
<td>Continous</td>
<td>WDI</td>
</tr>
<tr>
<td>ECONOMIC GROWTH</td>
<td>0.014</td>
<td>0.065</td>
<td>-0.5</td>
<td>0.905</td>
<td>4189</td>
<td>Independent</td>
<td>Continous</td>
<td>WDI</td>
</tr>
<tr>
<td>AGE</td>
<td>56.898</td>
<td>11.515</td>
<td>18</td>
<td>93</td>
<td>4684</td>
<td>Independent</td>
<td>Continous</td>
<td>Archigos</td>
</tr>
<tr>
<td>YEARS IN OFFICE, t</td>
<td>7.096</td>
<td>8.115</td>
<td>0</td>
<td>46</td>
<td>4684</td>
<td>Independent</td>
<td>Continous</td>
<td>Archigos</td>
</tr>
<tr>
<td>INFLATION</td>
<td>0.462</td>
<td>4.948</td>
<td>-0.217</td>
<td>237.731</td>
<td>3782</td>
<td>Independent</td>
<td>Continous</td>
<td>WDI</td>
</tr>
<tr>
<td>THREAT OF FORCE</td>
<td>0.127</td>
<td>0.334</td>
<td>0</td>
<td>1</td>
<td>6480</td>
<td>Independent</td>
<td>Dichotomous</td>
<td>MID</td>
</tr>
<tr>
<td>MILITARY DISPUTE</td>
<td>0.259</td>
<td>0.438</td>
<td>0</td>
<td>1</td>
<td>6480</td>
<td>Independent</td>
<td>Dichotomous</td>
<td>MID</td>
</tr>
<tr>
<td>REGIME DURABILITY</td>
<td>21.874</td>
<td>27.664</td>
<td>0</td>
<td>191</td>
<td>4338</td>
<td>Independent</td>
<td>Continous</td>
<td>Polity IV</td>
</tr>
</tbody>
</table>

* Although they are notated as independent, they are actually generated out of the dependent variables.

* The Archigos dataset is also used as a source, since t represents a leader’s number of years in office.
Section 5

Analysis

The first part of the analysis focuses mainly on the differences with the results by Marinov (2005), and also on whether THREAT OF SANCTIONS will do anything to the estimation results. While as the second part will count more as a sensitivity analysis; if different type of control variables possibly have any impact on the significance of the SANCTIONS variable. Besides, the dependent variable LEADER CHANGE is eventually substituted with a variable that represents regime instability.

5.1 Estimation Results

Table 5.1 shows the first part of the estimation results. Model 1 is the same model as used by Marinov (2005). Model 2 is the same as Model 1, with the exception that random effects has been used instead of fixed effects. Both methods are included to see if the choice between them actually has any significant impact on the estimated coefficients. Model 3, on the other hand, is estimated with data material provided by Marinov (2005); and thus there are most likely some minor differences in both the dependent as well as the independent variables. Mainly because of different methods in creating the variables, but also due to various versions of the original data sources. As for SANCTIONS its data instead originates from the HSE dataset. Hence, the estimation results of Model 3 is to be compared with the regression output of Model 1. In the last model of Table 5.1 the variable SANCTIONS is substituted with THREAT OF SANCTIONS.

Furthermore, a one-year lag has been used for some of the independent variables. The main reason for that is to control for the possibility of an opposite causality; e.g. that the change of leader affects the SANCTIONS variable. However, a disadvantage by using lags is that when a leader is new on his or her
<table>
<thead>
<tr>
<th></th>
<th>(1), FE</th>
<th>(2), RE</th>
<th>(3), FE</th>
<th>(4), FE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LEADER</td>
<td>LEADER</td>
<td>LEADER</td>
<td>LEADER</td>
</tr>
<tr>
<td><strong>SANCTIONS</strong>a</td>
<td>0.054</td>
<td>0.088</td>
<td>0.224</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.156)</td>
<td>(0.139)</td>
<td>(0.171)</td>
<td></td>
</tr>
<tr>
<td><strong>THREAT OF SANCTIONS</strong>a</td>
<td></td>
<td></td>
<td></td>
<td>-0.019</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(0.156)</td>
</tr>
<tr>
<td><strong>FORCE</strong>a</td>
<td>-0.124</td>
<td>-0.137</td>
<td>-0.389</td>
<td>-0.125</td>
</tr>
<tr>
<td></td>
<td>(0.200)</td>
<td>(0.187)</td>
<td>(0.190)</td>
<td>(0.200)</td>
</tr>
<tr>
<td><strong>ECONOMIC GROWTH</strong>a</td>
<td>-3.112</td>
<td>-2.310</td>
<td>-2.096</td>
<td>-3.142</td>
</tr>
<tr>
<td></td>
<td>(0.971)</td>
<td>(0.892)</td>
<td>(0.806)</td>
<td>(0.973)</td>
</tr>
<tr>
<td><strong>WEALTH</strong>a</td>
<td>0.201</td>
<td>0.053</td>
<td>-0.235</td>
<td>0.232</td>
</tr>
<tr>
<td></td>
<td>(0.269)</td>
<td>(0.071)</td>
<td>(0.218)</td>
<td>(0.270)</td>
</tr>
<tr>
<td><strong>DEMOCRACY</strong>a</td>
<td>-0.601</td>
<td>-0.327</td>
<td>-0.374</td>
<td>-0.595</td>
</tr>
<tr>
<td></td>
<td>(0.276)</td>
<td>(0.266)</td>
<td>(0.269)</td>
<td>(0.276)</td>
</tr>
<tr>
<td><strong>DEMOCRACY * ln(t+1)</strong></td>
<td>1.261**</td>
<td>1.109**</td>
<td>1.024**</td>
<td>1.262**</td>
</tr>
<tr>
<td></td>
<td>(0.158)</td>
<td>(0.153)</td>
<td>(0.151)</td>
<td>(0.158)</td>
</tr>
<tr>
<td><strong>MIXED REGIME</strong>a</td>
<td>-0.076</td>
<td>-0.079</td>
<td>0.058</td>
<td>-0.075</td>
</tr>
<tr>
<td></td>
<td>(0.229)</td>
<td>(0.227)</td>
<td>(0.232)</td>
<td>(0.229)</td>
</tr>
<tr>
<td><strong>MIXED REGIME * ln(t+1)</strong></td>
<td>0.687**</td>
<td>0.549**</td>
<td>0.367**</td>
<td>0.685**</td>
</tr>
<tr>
<td></td>
<td>(0.125)</td>
<td>(0.124)</td>
<td>(0.134)</td>
<td>(0.125)</td>
</tr>
<tr>
<td><strong>AGE</strong></td>
<td>0.022**</td>
<td>0.019**</td>
<td>0.030**</td>
<td>0.022**</td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.006)</td>
<td>(0.007)</td>
<td>(0.007)</td>
</tr>
<tr>
<td><strong>YEARS IN OFFICE, t</strong></td>
<td>-0.888***</td>
<td>-0.863***</td>
<td>-0.970***</td>
<td>-0.890***</td>
</tr>
<tr>
<td></td>
<td>(0.162)</td>
<td>(0.158)</td>
<td>(0.151)</td>
<td>(0.162)</td>
</tr>
<tr>
<td><strong>SPLINE 1</strong></td>
<td>-0.157***</td>
<td>-0.144***</td>
<td>-0.177***</td>
<td>-0.157***</td>
</tr>
<tr>
<td></td>
<td>(0.032)</td>
<td>(0.031)</td>
<td>(0.030)</td>
<td>(0.032)</td>
</tr>
<tr>
<td><strong>SPLINE 2</strong></td>
<td>0.059***</td>
<td>0.053***</td>
<td>0.066***</td>
<td>0.059***</td>
</tr>
<tr>
<td></td>
<td>(0.013)</td>
<td>(0.012)</td>
<td>(0.012)</td>
<td>(0.013)</td>
</tr>
<tr>
<td><strong>SPLINE 3</strong></td>
<td>-0.012***</td>
<td>-0.010***</td>
<td>-0.013***</td>
<td>-0.012***</td>
</tr>
<tr>
<td></td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.003)</td>
<td>(0.003)</td>
</tr>
</tbody>
</table>

|                  |        |        |        |        |
| # of obs.        | 2892   | 3339   | 3458   | 2892   |
| # of states      | 124    | 148    | 132    | 124    |
| Log-likelihood   | -974.021 | -1316.495 | -1119.580 | -974.074 |

Standard errors are presented in the parantheses.

- a A one-year lag has been used.
- b Random effects model. Estimated constant is not shown in the table.
- c Model has been estimated with the data used by Marinov (2005).
- * p < 0.05, ** p < 0.01, *** p < 0.001
position, the person is compared to the situation of the previous leader. An example; sanctions are imposed on a specific regime, and later on they turn out to be successful and the regime with its leader is replaced and hence the sanctions are removed. So far so good, but during the first observed year of the new leader, the sanctions will still be counted, because of the one-year lag of the SANCTIONS variable.

In Model 1, as well as for Model 2, we can see that SANCTIONS is not significant with the TIES dataset. The same variable was significant in the article written by Marinov (2005); however, when running a regression with his data over the time period between 1971 and 2000 (see Model 3), it also turns out to be insignificant. Could this possibly mean that sanctions have become less efficient over time? As previously discussed, it could perhaps, in recent years be more difficult to exclude countries from the international market, because of the increased globalization. Today there are more alternative trade partners; for example, if the United Nations impose sanctions on the Islamic Republic of Iran, the target state could instead increase their foreign trade with China. Which means that in the more recent decades economic sanctions are likely to be less costly for the target state, compared with the period before the Cold War. Neither of the variables FORCE or WEALTH are showing any significance. ECONOMIC GROWTH is significant at 1 percent with a negative coefficient. Perhaps unsurprisingly, the estimated coefficient indicates that high economic performance the previous year lowers the risk of the leader to lose office the observed year. DEMOCRACY and its negative coefficient imply that the risk that a leader will lose office is initially low for democracies; but when also taking DEMOCRACY * ln(t+1) into account, we can see that for each additional year a leader stays in office - the risk of losing his or her position increases. However, one has to remember that for a president or prime minister the length of one term is usually four years, and for some regimes (e.g. the United States) the leader is not eligible to serve for more than two terms. Therefore it makes sense to use DEMOCRACY * ln(t+1) in addition to the DEMOCRACY variable. Both of the variables are significant at less than 0.1 and 5 percent respectively. We have earlier discussed that a weakness with fixed effects is that it does not capture the between states variation, and if we assume that the regime type of the states does not change very often - that there are lack of within-units variation - one should perhaps be cautious to draw undue conclusions. However, Model 2 - the random effects model - does not severely changes the estimation results; other than that DEMOCRACY becomes insignificant. Model 1 and Model 4 differs in the only way that SANCTIONS has been substituted with THREAT

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2 As for notice, Stata has not omitted any independent variables due to perfect multicollinearity. As suggested by Menard (2001), we have also performed a variance inflation factor (VIF) test. Hence, with the exception of the variables that measure age and wealth, the test results show no possible multicollinearity between the independent variables. Thus, the variables in focus - those on sanctions - show no signs of a high degree of multicollinearity.

3 However, if we add a dummy to Model 1 for the the Cold War years that takes a value of 1 for all the years until 1990, and 0 otherwise, then the newly added variable does not show any significance, and neither does it change the other estimates noticeably.

4 The force variable is, however, significant at 5 percent in Model 3.
OF SANCTIONS. Including threats does not change the estimated results that much. The coefficient on the sanctions turns slightly negative, but it remains insignificant.

It should also be noted, there are possibilities that the estimates of SANC-
TIONS and THREAT OF SANCTIONS are affected by selection bias. An effect that could arise due to: (i) senders selection of specific targets; for example, that some target regimes are more vulnerable to foreign pressure, or (ii) that the targets select themselves into sanctions. While as the former effect is quite well controlled for with the fixed effects and some of the dependent variables, the latter effect is more of a problem. It is much more difficult to measure and control for information that may only be available to the target regime, and hence, not available to the researchers or the sender states. For example, a leader may have private information on the probability of his survival in office, and if we assume that the imposition of sanctions tends to increase the popularity of the leader among the domestic citizens, hence in such case, it would also be possible to assume the event of self-selection. If the selection effect is apparent, then the estimated coefficients of sanctions will be biased downward.\(^5\) However, the study should still be comparable with the estimations in the article written by Marinov (2005). Although, one should be aware of the possible occurrence of the selection effects.

5.1.1 Sensitivity Analysis

In the second part of the estimation process, as presented in Table 5.2, we are going to change some of the variables to see if it will have any impact on the estimated results. First, as shown in Model 5, the INFLATION variable is added to Model 1. The variable is not significant, but it has some minor effects on the other estimated coefficients. The coefficient of ECONOMIC GROWTH decreases, and WEALTH turns significant at 5 percent, but still, SANCTIONS is not significant.

For the next model is the INFLATION variable removed, but instead the model allows for threats of both force and sanctions. In Model 6, neither THREAT OF SANCTIONS or THREAT OF FORCE show any signs of significance. However, when using MILITARY DISPUTE instead of FORCE and THREAT OF FORCE, as is done in Model 7, it shows that military force probably has an impact on the dependent variable. More specifically, it implies that military disputes actually lower the risk that a leader will leave office. Marinov (2005) explains that it could be because of the ”rally around the flag” effect - which means that a leader may actually gain increased popularity during military disputes. To some extent the disputes could very well strengthen the effect of ”we” and ”them” between the citizens and the foreigners. So far, we have not discussed anything on how to interpret the estimated values of the coefficients. This is mainly because we have not yet found any significance of the variables concerning economic sanctions. If one, however, wants to interpret the coeffi-

\(^5\)For more information on the selection effects, see Nooruddin (2002).
<table>
<thead>
<tr>
<th></th>
<th>(5), FE</th>
<th>(6), FE</th>
<th>(7), FE</th>
<th>(8), FE</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SANCTIONS</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>0.035</td>
<td>0.098</td>
<td>0.243</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.165)</td>
<td>(0.157)</td>
<td>(0.301)</td>
<td></td>
</tr>
<tr>
<td><strong>THREAT OF SANCTIONS</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.016</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.156)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>FORCE</strong></td>
<td>-0.156</td>
<td>-0.268</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.216)</td>
<td>(0.354)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>ECONOMIC GROWTH</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-4.211**</td>
<td>-3.140**</td>
<td>-3.136**</td>
<td>-3.142*</td>
</tr>
<tr>
<td></td>
<td>(1.375)</td>
<td>(0.973)</td>
<td>(0.983)</td>
<td>(1.566)</td>
</tr>
<tr>
<td><strong>WEALTH</strong></td>
<td>0.715*</td>
<td>0.234</td>
<td>0.206</td>
<td>-0.104</td>
</tr>
<tr>
<td></td>
<td>(0.354)</td>
<td>(0.271)</td>
<td>(0.268)</td>
<td>(0.488)</td>
</tr>
<tr>
<td><strong>DEMOCRACY</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.650*</td>
<td>-0.596*</td>
<td>-0.639*</td>
<td>-2.083**</td>
</tr>
<tr>
<td></td>
<td>(0.311)</td>
<td>(0.277)</td>
<td>(0.276)</td>
<td>(0.642)</td>
</tr>
<tr>
<td><strong>DEMOCRACY * ln(t+1)</strong></td>
<td>1.298***</td>
<td>1.263***</td>
<td>1.274***</td>
<td>1.032***</td>
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<tr>
<td></td>
<td>(0.177)</td>
<td>(0.158)</td>
<td>(0.158)</td>
<td></td>
</tr>
<tr>
<td><strong>MIXED REGIME</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.019</td>
<td>-0.075</td>
<td>-0.086</td>
<td>-1.078**</td>
</tr>
<tr>
<td></td>
<td>(0.275)</td>
<td>(0.229)</td>
<td>(0.230)</td>
<td>(0.406)</td>
</tr>
<tr>
<td><strong>MIXED REGIME * ln(t+1)</strong></td>
<td>0.696***</td>
<td>0.685***</td>
<td>0.704***</td>
<td>0.687***</td>
</tr>
<tr>
<td></td>
<td>(0.148)</td>
<td>(0.125)</td>
<td>(0.125)</td>
<td></td>
</tr>
<tr>
<td><strong>AGE</strong></td>
<td>0.024**</td>
<td>0.022**</td>
<td>0.021**</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.007)</td>
<td>(0.007)</td>
<td>(0.007)</td>
<td></td>
</tr>
<tr>
<td><strong>YEARS IN OFFICE, t</strong></td>
<td>-0.902***</td>
<td>-0.891***</td>
<td>-0.890***</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.179)</td>
<td>(0.162)</td>
<td>(0.163)</td>
<td></td>
</tr>
<tr>
<td><strong>INFLATION</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.004</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.012)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>THREAT OF FORCE</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.152</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.170)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>MILITARY DISPUTE</strong>&lt;sup&gt;a&lt;/sup&gt;</td>
<td>-0.404**</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>(0.139)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>REGIME DURABILITY, t</strong></td>
<td></td>
<td>-6.847***</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>(0.509)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

# of obs. 2456 2892 2892 2601
# of states 113 124 124 111
Log-likelihood -834.467 -973.867 -969.885 -383.186

Standard errors are presented in the parantheses. Splines are still included, and they are all highly significant at 0.1 percent, but not shown in the table.

<sup>a</sup> A one-year lag has been used.

<sup>*</sup> p < 0.05, ** p < 0.01, *** p < 0.001
cients we can use MILITARY DISPUTE as an example. The value of its estimated
coefficient is -0.404, and then if exponentiating the value one gets an odds ratio
of 0.668. This simply says that if a state changes from not being involved in
a military dispute to be involved in one, its probability of a leader change is
multiplied with the odds ratio. In this case, the probability decreases with 33.2
percent, if all other variables remain the same. For some of the variables we have
the presence of interaction; for example, DEMOCRACY * ln\((t+1)\) is constructed
out of the interaction between DEMOCRACY and YEARS IN OFFICE, \(t\). There-
fore, it is difficult to say anything about their specific effect on the dependent
variable. Both FORCE and MILITARY DISPUTE are significant with negative
coefficients in the published article by Marinov (2005).

In the last model, the dependent variable - LEADER CHANGE - has been
replaced with the REGIME CHANGE variable. Also, REGIME DURABILITY is
added while as AGE and YEARS IN OFFICE are removed from the estimation
process. The variables DEMOCRACY * ln\((t+1)\) and MIXED REGIME * ln\((t+1)\) are
now calculated with the REGIME DURABILITY variable as \(t\), instead of using
YEARS IN OFFICE. All regime type variables are now significant at 1 percent
or lower. The coefficient of DEMOCRACY implies that once a state becomes a
democracy it is less likely to change to another regime type. One can also see
that the coefficients of the democracy variables are relatively lower than for the
previous models, and thus, once a state becomes a democracy it is more likely
to remain of its type than for its leader to stay in office. REGIME DURABILITY
is negatively correlated with the dependent variable; implying that the older
the regime is, the less likely it is to be changed. Finally, the variable in focus -
SANCTIONS - once again turns out to be insignificant. Hence, the variable does
not show any signs of significance using the CLR method, at least not for the
time period between 1971 and 2000.
Section 6

Discussion

In this section there will be some more discussion on sanctions and its related areas, and hence it could perhaps serve as suggestions for further research. We have used a dichotomous variable representing whether a state during a given year is the target of an economic sanction, or not. There are, however, many determinants causing the different outcomes, and thus if an imposition is to be seen as a success or a failure. For example, we have not discussed on how the extent and type of sanctions may affect the target state and its leaders.

As Dashti-Gibson et al. (1997) explain, it is the resulting cost, or the fear of such costs, that motivates a policy change of the target regime. However, those costs are somewhat difficult to measure, especially when it is not only the actual costs that matters; but also, the target state’s expectation of them. To complicate it even further, how does one measure the potential costs of a threat that does not even turn into an imposed sanction? Not only size matters, but also what type of sanctions that are imposed. Import and export restrictions are among the most common type of sanctions. They can have a major impact on the target’s economy, but the accompanying costs are usually much worse for the ordinary citizens than for the leaders. There is even a possibility that such sanctions creates a discontent among the population which instead strengthens the position of the leaders. Therefore are perhaps financial sanctions the better choice - at least when it comes to the purpose of destabilizing leaders. Dashti-Gibson et al. (1997) believe that such sanctions have a more direct impact on the target state’s leaders; for example, since it is possible to limit the leaders’ access to foreign currency, or freezing their assets. Morgan & Schwebach (1995, 1997) consider sanctions to be “a rather blunt instrument”; but, the same authors also show that if sanctions are better directed at specific segments of a population, it is possible to achieve fairly large policy changes. Whether the effect is substantially large enough to have a leader to leave his or her office remains to investigate and could perhaps be the subject for further research.

Another variable that could possibly determine the outcome of sanctions is the duration - the length of sanctions. One hypothesis is that sanctions are thought to be more effective over time; hence, the probability of success
marginally increases with time. It may take some time until sanctions have any effect. Hufbauer et al. (1990) discuss that it could also be the opposite, meaning that sanctions’ efficiency marginally decreases over time. Usually, sanctions are ended when their stated purpose turns out successfully - since there is then no need for them anymore. It can also be that the sender state cancels the imposition if it realizes that the prospect of success is very unlikely. It may, however, be the case that senders are reluctant to remove sanctions after recognizing their failure. In such cases, the length of sanctions would arguably have a negative effect. (Dashti-Gibson et al., 1997). On the other hand, when it comes to sanctions that originate from multilateral arrangements it could be that it is difficult to maintain the necessary international solidarity.

There are further interesting remarks on multilateral sanctions. The states who are the target of sanctions are usually simply identified, but when it comes to the sender it is sometimes more complicated. Especially if it is not only one individual sender state per sanction, but many in the form of a multilateral arrangement or in the context of an international organization, such as the European Union or the United Nations. It is not that obvious which form of arrangements - multilateral or unilateral - that are the most successful ones. Some previous research, such as Hufbauer et al. (1990) and Drezner (2000), show that unilateral sanctions are more efficient in achieving the purpose stated by the sender. Drezner (2000) even conclude that "no statistical test has shown a significant positive correlation between policy success and international cooperation among the sanctioning states" when referring to the multilateral alternative. Multilateral sanctions are costly to arrange for the primary sender, as it requires a lot of economic and diplomatic expenditures, and hence, it is somewhat puzzling to understand why so much has been spent the recent decades on such cooperative sanctions? The theoretical arguments of multilateral sanctions’ efficiency could be summarized as: (i) that they are often imposed when there are more at stakes, and hence, the target is less open for changes, (ii) the sanctions create public goods which produce incentives for each sender to free ride by ignoring the imposed restrictions, and (iii) the coalitions suffer from the inability to maintain consistent demands on the target, due to difficulties of agreeing on a common goal. Meaning that the demands could end up weaker, or even, in favor of the target (Bapat & Morgan, 2009). Does it mean that cooperation and thus multilateral sanctions should be avoided? Not necessarily. If they are used with the support of an international organization, that more or less monitors the sender states to follow the agreements, then they may even prove to be more efficient than unilateral sanctions (Drezner, 2000). Hence, multilateral arrangements without the support of an international organization, such as the United Nations, do not work very well, or to cite Drezner (2000): "a small and sturdy stick is better than a large and brittle one". However, Bapat & Morgan (2009) come up with the opposite conclusion; that multilateral sanctions work more frequently than unilateral ones. As is also the case of our paper, they use the TIES dataset, instead of the set of data by Hufbauer, Schott & Elliott most often used in empirical studies within the area of economic sanc-
tions. Hence, the findings by Bapat & Morgan (2009) are perhaps more in line with the intuition of policymakers. For example, when the UN Security Council, in 2006, threatened to impose sanctions on North Korea, because of their plan to develop nuclear technology, Condoleezza Rice advocated that a coalition of states would lead to much greater costs for the target, unless they fulfill the sanctioners’ demands. Also, multilateral sanctions are perhaps more severely to the target, since it is more difficult - in comparison with the unilateral sanctions - to circumvent sanction restrictions by trading with other economic partners. Those costs, however, could have declined in the recent decades, since today’s international market is much more integrated. There are more trading opportunities for the target states (Davis & Engerman, 2003). Hence, we have now discussed some topics of the sanctions debate that are perhaps of interest for further research. Although there are many possible determinants, at least some of those - not comprised in the regression models of this study - have been presented within this section.
Section 7

Conclusion

The purpose of this study is to investigate on whether threat or imposition of sanctions destabilize leaders, using the conditional logistic regression method with panel data. In contrast with most of the empirical work on sanctions, a dataset known as Threat and Imposition of Sanction (TIES) has been used instead of the well-known Hufbauer, Schott, and Elliot dataset. The TIES dataset contains information on 888 cases in which sanctions were threatened or implemented in the time period between 1971 and 2000. The estimated coefficient for sanctions indicates no significance, and neither does it if one also allows for threat of sanctions. Besides, we have also used various control variables, as well as two different measures for the dependent variable. Hence, the coefficients regarding sanctions remain insignificant. Marinov (2005) did find economic sanctions to be significant; however, with the same period applied to his data, the effect of the sanctions turns out to be approximately the same as for this paper. It could be that the prerequisites in terms of sanctions efficiency have changed with the increased globalization, and perhaps that is what the next wave of research on sanctions will be about.
References


Stata (2009), ‘Stata 11 Documentation’.
