
# Prior Political Relations Works:
## A Meta-Analysis of its effect on the Success of Economic Sanctions

A Research Paper presented by:

***Gabriela Fernanda Benalcazar Jativa***
Ecuador

in partial fulfilment of the requirements for obtaining the degree of
MASTER OF ARTS IN DEVELOPMENT STUDIES

Major:

**Economics of Development**
ECD

Members of the Examining Committee:

Prof. Dr. Peter van Bergeijk
Dr. Binyam Demena

The Hague, The Netherlands
December 2018

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***Inquiries:***

International Institute of Social Studies
P.O. Box 29776
2502 LT The Hague
The Netherlands

t: +31 70 426 0460
e: info@iss.nl
w: www.iss.nl
fb: http://www.facebook.com/iss.nl
twitter: @issnl

***Location:***

Kortenaerkade 12
2518 AX The Hague
The Netherlands

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# List of Acronyms

| | |
|---|---|
| IO | International Organization |
| ISI | Institute for Scientific Information |
| ISS | Institute of Social Studies |
| CDA | Clustered data analysis |
| FDA | Funnel asymmetry test |
| GNP | Gross National Products |
| HSE | Hufbauer, Scott and Elliot |
| HSEO | Hufbauer, Scott, Elliot and Oegg |
| JCR | Journal Citation Reports |
| PEESE | Precision-effect estimate with standard error |
| PET | Precision-effect test |
| PPR | Prior Political Relations |
| PPRE | Prior Political Relations Estimates |
| MAER-Net | Meta-Analysis of Economics Research Network |
| MID | Militarized Interstate Dispute |
| MRA | Meta-Regression Analysis |
| MRM | Meta-Regression Model |
| OLS | Ordinary least squares |
| TIES | Threat and Imposition of Economic Sanctions |
| US | United States |
| UK | United Kingdom |
| SES | Success of Economic Sanctions |
| VIF | Variance Inflation Factor |

## Acknowledgment

First of all, I want to thank God for giving me life and the opportunity to be alive, and to be able to fulfil my dreams. On this occasion, I would also like to thank my supervisor, Prof. Dr. Peter van Bergeijk, for having pushed me to investigate further than expected, for having suggested the research topic and for having decided that I would be part of his team. I am also grateful to my second reader, Dr. Binyam Demena, for his infinite patience, for all the time that he dedicated to help me answer all the doubts that I had and for teaching me how to apply the meta-analysis approach.

In second place but not with less importance, I would like to thank my family. Especially my father Carlos who always try to give me the best and always push me to fight for more with his example of perseverance. To my mother Monica who showed me that adverse situations are not an impediment to success, I admire you a lot. To my brother Andres who always shows me how to fly, and to my brother Carlitos who shows me how it feels to be sure of loving someone or something.

I also want to thank all those people who always supported me from Ecuador since the first moment I got accepted to ISS. To my unconditional friends Cris, Adry and Belen, who always believed in me and in my abilities to get where I am. Also, I want to thank to the group of Ecuadorians that I met at ISS, I hope that we continue to see each other when we return the country or in any part of the world. But especially to Gaby G., Julito and Carlita, thanks for always checking on me and for the important contributions that you made to develop this research work.

Besides, special thanks to my friends of eternal RP writing nights. To you, Anam, Logna and Jana, without your unconditional support, I would have lost my mind a long ago. And to my other ISS friends: Faraz, Santi and Jenna. Having come to this place not only made me understand new concepts, but also made me meet a number of cultures and wonderful people who were always there for me, thanks for being one of them.

Finally, I hope this research paper provides good policy implications for policymakers. Beyond presenting conclusions that could seem obvious, that this research awakens their interest to study this topic in a deeper way.

## Abstract

In this work a meta-analysis regression was performed to review 18 primary studies which were carried out between 1985 and 2017. These studies included a total of 60 empirical estimates of the impact of prior political relations between sender and target countries on the success of economic sanctions. The aim of this research is to find if there is no bias in the empirical studies. If a bias exists, then we intend to look for the 'true effect' of the prior political relations and which ones are the heterogeneity factors these publications count for. Our results showed that these primary studies have indeed a publication bias. In addition, prior political relations impact positively with a 'true' effect of 0.139 in the success of economic sanctions. The heterogeneity factors of the empirical studies include the following: if prior political relations variable was calculated as a dummy, control variables (duration, US, distress, no institutions, military alliance, GNP ratio, the interaction between international institution and cooperation, and knights) and the number of study citations in every publication.


## Relevance to Development Studies

In the world economy where the 'mainstream' theories continue to rule the world, states and supranational organizations are considered significant actors in foreign policy or economic statecraft. This concept is related to the establishment of a worldwide hierarchy, and this also relates with the concept of power as a synonym of 'influence' and 'control' (Baldwin 1979: 162). In this conceptual framework, economic sanctions, our topic of interest, are highly being recognised as a world politics' instrument that can be used to support international public goods such as: peace and security or human rights. A clear example of its usage are the several sanctions implemented in Africa aiming to resolve conflicts or civil wars, to interstate war, or to stop human rights violations. Following this line of thought, it is important to understand how these power relations work and if economic sanctions truly work to influence and/or control other countries' decisions. Given that the primary studies carried out on the subject contain contradictory results for foreign policy, it is important for us to understand this phenomenon with certainty. This will allow us to contribute to the clarification of economic and political theory and help policy makers take future decisions of a global nature.


## Keywords

Economic sanctions, prior political relations, meta-analysis, international economics, international politics, power, power relations

# Chapter 1
# Introduction

## 1.1 Background Information

Political science has made valuable contributions on the concept of power, including the definition of positive and negative sanctions. To define them, we need to consider a world where we have two actors: the sender which is the country making the sanctions, and the target which is the country targeted by them (Smeets 1990: 105). According to Baldwin (1971: 23), the actual or promised rewards to the target are defined as positive sanctions, while negative sanctions are defined as actual or threatened punishments. More specifically, sanctions are associated with the establishment of the target country's baseline of expectations. These target country's expectations are in terms of its future value position at the moment the sender country's influence attempt begins. In words of Baldwin (1971: 23, 24):

> Positive sanctions, then are actual or promised improvements in the target country's value position relative to his baseline of expectations. Negative sanctions are actual or threatened deprivations relative to the same baseline.

This research focuses on the impact of negative sanctions, not because positive sanctions are not important in the fields of economics or politics. Furthermore, not that many academics have studied positive sanctions. While this research was conducted, we could not find any empirical study regarding the impact of positive sanctions. Alternatively, we found mostly theoretical concepts of positive sanctions (e.g. Baldwin 1971). According to Baldwin (1971: 20-22), there are some reasons to top up this issue aside. First, some political scientists reject the concept of positive sanctions in defining power (e.g. Easton 1953; Talcott Parsons 1963; McFarland 1969; Garvey 1970; Blau 1964; Dahl 1991), while Weber et al. (1964) exalts more the threat or actual use of force as 'political' power. Second, there is a conceptual conversion of positive sanctions into negative ones. Third, some academics consider that if proper assumptions are made, there is no need for a distinction between the two types of sanctions (e.g. Boulding 1963). And finally, there is a tendency to discuss about the negative sanctions rather than the positive (e.g. Dahl 1957 as cited in Baldwin 1971: 22).

The assumption behind negative sanctions as a more popular tool of foreign policy is that countries will change their behaviour after the sanctions are implemented (Bergeijk 2009: 115). This is an important assumption because its usage is related to demand action against a foreign transgressor and to signal resolve to the international community (Kaempfer et al. 2004: 29). The first documented case of economic sanctions occurred in 1914: United Kingdom vs. Germany (Hufbauer et al. 2007: 20; 1990: 16; 1985: 13) and since then its use has been constantly increasing. As Eriksson (2016: 1) states "there are currently nearly 30 EU and UN targeted sanctions regimes ongoing around the world". Just to mention, some "notorious examples of sanctions include those imposed against Iraq to interrupt the invasion of Kuwait, against Haiti to topple the military government, and against South Africa to abolish apartheid" (Vidal 2010).

Despite the popularity of the sanctions, their success rate has not been optimal. According to Hufbauer et al. (2007: 3; 1990:2; 1985: 2), a 'successful' sanction is the one which changes the target state's political behavior. Following a research performed by Hufbauer et al. in (1990: 93), the success rate of sanctions was one out of three in the period from 1946-1989. A more recent

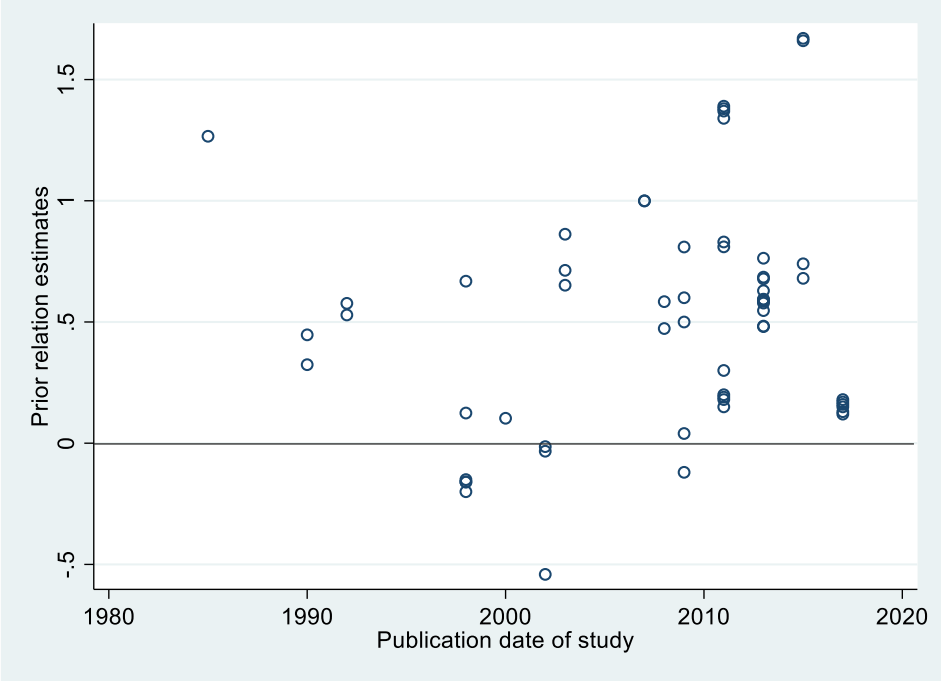
investigation from the same authors -Hufbauer et al (2007: 158)- showed that this partial success rate did not change (34 percent).

At the same time, Hufbauer et al. (1997) stated that success is tempered by the high costs on the well-being of the targeted populations. This led to the following question "What is success and how is it measured?" This because "economic pressure typically takes place along-side other important events and developments, such as a weak economy or a foreign military intervention" (Marinov 2005: 565). To take into consideration these factors, researchers placed economic sanctions as a dependent or independent variable, which helped in the clarification of this question.

The approach in which economic sanctions act as an independent variable helps researchers to analyse the connection between *the implementation* of economic sanctions and economic deprivation, government instability, sanctions duration, and/or democracy (for example Marinov (2005); Vidal (2010); Bolks and Al-Sowayel (2000)). On the contrary, when economic sanctions act as a dependent variable, *the success* of economic sanctions can be analyzed, and which different variables can improve the rate of success or not. The understanding of how these two approaches work is important for this research because we want to capture the 'true effect' of the prior relations variable *on the success rate* of economic sanctions. Therefore, it is not feasible to consider a different approach since both results cannot be combined.

The empirical literature on the topic (if sanctions truly 'worked') started in 1985 of Hufbauer, Scott and Elliot[1]. Regarding the impact of prior political relations on economic sanctions success, which is the political variable of interest in this study, the theory and findings are contradictory. Some theories such as the ones developed by Wallesteen (1968) and Drezner (1999) assure that economic sanctions will be more fruitful when imposed to allies in order to avoid the higher costs in the long and short term of the imposition of economic sanctions.

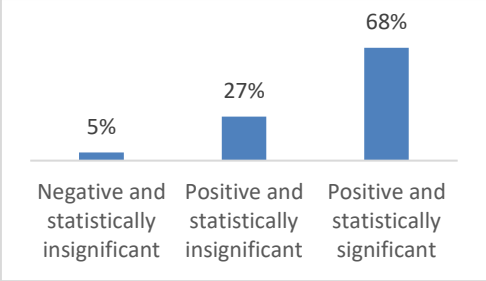
**Figure 1:** Prior Relations Estimates by Year of Publication (N=60)




*Source:* Author's elaboration

Figure 1 shows, with data of 18 primary studies of 25 valid studies[2] -published between 1985-2017- collected using Stanley et al. (2013) recommendations. However, there is a contradiction between the obtained findings. Figure 2 contains the distribution of these estimates. On the one hand, 68% of the estimates validate a significantly positive effect, while the rest of them (35%) are insignificant (both positive and negative). Therefore, this sample of studies is not necessarily representative to define if prior political relations impact positively or negatively on the success of economic sanctions. In addition, considering the number of publications that have considered prior political relations as an important variable to explain the success of economic sanctions, we can say that this topic has not been studied among a large group of academics.

**Figure 2:** Incidence of Prior Relations on the Success of Economic Sanctions Reported in 18 Studies Published in 1985-2015 (N=60)




*Source:* Author's elaboration

Furthermore, the empirical papers differ on methodological points, for example the way they measure economic sanctions success, the estimation procedure they used, different (sub) populations samples, and the specification of the prior political relation before the economic sanction is imposed. Based on this, there is a need for empirical testing to get an overall conclusion and some of the methods that could be used to obtain results are the traditional review of literature and meta-analysis.

The difference between the literature review and meta-analysis is simple. The first one is used for qualitative and mixed data literature -with a different study design-. While the second one is a statistical technique that combine quantitative results obtained from independent studies (Jesson et al. 2011: 10, 12, 130). Between the reasons why we do not choose to perform a traditional (narrative) review, there is the uncertain conclusions that we can get "because of the lack of systematic search for all material" (Jesson et al. 2011: 131). On the other hand, despite the fact that systematic review deals with this problem (because it contemplates a protocol to obtain results), this technique is still more prone to be biased. Therefore, we choose to perform a meta-analysis because is more transparent, covers all the available literature, and relies in rigorous robustness tests (Bergeijk and Lazzaroni 2013: 17).

The main objective of meta-regression analysis (MRA) is to accommodate and correct two main biases associated with applied econometrics. The first one is the sample selection[3] bias, while the second one is the publication selection[4] bias (Stanley and Doucouliagos 2012: 3, 4). This research tool has been applied firstly in medical studies and psychological enquiries (Sustiyo 2016: 2), and it has been used for over 30 years (Stanley and Doucouliagos 2012: 2). Regarding the field of economics, it has been used during the last two decades in empirical studies where results are contradictory (Sustiyo 2016: 2). In this field, MRA has a different focus than when it is applied in other fields (Stanley and Doucouliagos 2012:3). Because this topic overlaps between international relations and international economics few publications have been developed using a meta-analysis

approach (for example Moons and Bergeijk (2017)). Therefore, this research is one of the first that will provide such kind of evidences in this specific topic.

## 1.2 Justification of the Study

Power relations are an important structure through which 'influence' or 'control' are exerted in international politics, not only to obtain individual objectives as a state but also to support public goods such as health and security or human rights. Therefore, it is important to clarify the debate among the existing studies concerning the relationship between the success of economic sanctions and prior political relations between the sender and the target countries. As a result, future studies related to the topic may use this study to have a clear background to support their research on. Thus, this intends to help policymakers improve the implementation of further economic sanctions and to take worldwide decisions based on these results.

The contribution of this research will be as follows: first, provides general conclusions based on empirical data regarding the impact of prior relations on the success of economic sanctions, which means a representation of how the world works. Second, the results of this investigation can be used as the basis for other related studies in the future with new implications such as: a deeper investigation on the topic regarding the publication bias if present. Third, the conclusions obtained from this study are expected to provide advice for policy makers, especially those focused on economic sanctions. In this sense, it would help to reduce the cost of imposition of economic sanctions, for both parts involved, since it will allow us to know how these political relations work. Fourth, as stated before, no other meta-analysis study regarding this specific topic has been done, being this work the first one to provide this kind of evidences. And in general, this research paper is an important step understanding the impact of prior political relations between sender and target countries to obtain success in economic sanctions. This will contribute to the clarification of economic and political theory.

## 1.3 Research Questions

To achieve the established objectives, this research will try to answer the following research question: Using meta-analysis, is it true that friendly prior relations between sender and target countries have a positive impact on the success of economic sanctions?

The sub-questions are:

1. Is there a publication bias regarding this topic that can be evidenced? If yes, what kind of bias is it?
2. What is the average meta-effect between economic sanctions and prior relations?
3. Are there heterogeneity factors in the primary empirical studies? If yes, which are they?

## 1.4 Research Hypothesis

Following multiple theories described by various authors, the main hypotheses of this research are:

a. There is no publication bias regarding the relationship between friendly prior relations and the success of economic sanctions.
b. Friendly prior political relations provide a positive effect on the success rate of economic sanctions.

c. There are heterogeneity factors in the primary empirical studies.

## 1.5 Limitations of the Study

This study has the following limitations:

- Finding the number of empirical studies that examine the impact of prior relations on the success of economic sanctions, due to time constraints.
- Finding the necessary number of publications which possess a heterogeneity factor.
- Since meta-analysis is a quantitative method, studies without regression coefficients were excluded. This represents a loss of information regarding the topic compared to the hypothetical situation of using different approaches such as the traditional or systematic review of literature.
- There were some empirical studies that did not included standard errors or t-statistics in their charts, and they have to be excluded because the authors were unwilling or unable to support missing data. This represents, as the previous point states, a loss of information in the sense of statistical significance at the population level.
- The primary studies' authors maybe did not consider prior relations as such a relevant variable to influence the probability of success of economic sanctions. This translates into finding less estimates in primary studies which reduces the number of observations.

## 1.5 Structure of the Paper

This research paper is structured as follows. Chapter 2 discusses relevant literature regarding this topic and describes the coded primary studies. Chapter 3 provides the methodology of the research paper and the conceptual framework. Chapter 4 presents the detailed results of the study. Finally, Chapter 5 contains conclusions from this research and offers recommendations.

# Chapter 2
# Literature Review

## 2.1 Economic Sanctions

Although the first documented case of imposition of economic sanctions is from 1914, this coercion tool was also used long before in ancient Greece (Hufbauer et al. 1990: 4). The main objective of implementing sanctions is to deal with domestic and international crisis. Nevertheless, these measures can accomplish several different goals such as to encourage democracy, disrupt military expeditions, stop human rights violations and suppress internal opposition, promote the sender's reputation and maintain international norms and structures, just to mention some of them (Eriksson 2016: 2; Hufbauer et al. 1990: 5-7).

International trade theories formulated by Ohlin (1929) and Heckscher (1919) who explained the notion of trade and specialization, are the starting point for explaining how economic sanctions achieve their ultimate objectives. In their theories, assuming that global economic well-being is maximized under free trade conditions, they refer to the fact that diverse goods require different factor proportions, and every country possesses different relative factor endowments. Therefore, a comparative advantage will arise in those goods which the countries use their most abundant factors more intensively. Then, countries will export their abundant-factor goods as a trade-off for imported goods that use scarce factor intensively. The 'zero-sum game' will not exist because the whole world gains from trade (Smeets 2018: 5).

By taking the reverse of this international trade theories, if there is a limitation on trade or a protection of individual markets, this general welfare according to the assumptions will be reduced. Based in these theories, Kemp's (1964) developed his theory of economic welfare[5] states: a net welfare loss will result from the application of an embargo that will create a supply shock, or a boycott that will isolate the target country from the world market. The probability to comply will be based on the relative balance of powers between the involved countries and their economic interaction because for the target country its revenue and well-being will be depressed to an unacceptable level if the sender wishes (Smeets 2018: 5).

There are a lot of economic theories established to explain how economic sanctions works (e.g. Porter (1979); Frey (1984)) but moving beyond the neoclassical trade theories, Dizaji and Bergeijk (2013) developed a dynamic model of sanctions built on several studies[6]. Based on the case of a boycott of Iranian oil, they established that economic sanctions -in practice- will initially cause effective damage, possibly pushing for the achievement of the objectives. However, in the long run the sanctions are likely to have the opposite effect. Likewise, the social impact of sanctions could be extended beyond the sanction episode, and "the deterioration during the initial phase will exceed the improvement during the recovery that sets in either the second phase or when the sanction is terminated" (Dizaji and Bergeijk 2013: 134). Which means that the cost of imposing sanctions surpasses the benefits of lifting sanctions (Dizaji and Bergeijk 2013: 134).

Besides the conclusion of this dynamic model, Hufbauer et al. (2007: 7, 8; 1990: 12, 13) states that sanctions could fail because of four reasons: inequity to the task, resistance, the involvement of "black knights" (countries that support the targeted countries diminishing the expected results of sanctions) and the alienation of allies abroad and business interests at home as a product of economic sanctions. Despite this information, states keep using sanctions because not all the

sanctions end with a failure and the other alternatives (military action or diplomatic protest) are costlier compared to its use.

## 2.2 Prior Political Relations / International Relations

Since the beginning of the human race there have been communities of people and relations among them and this arouse an interest of knowing how they work until we reach the concept of international relations as we know it today. Prior the First World War, the various schools of thought were stable about international relations, but in the last two or three decades[7] these philosophical thoughts have been volatile. The predominant way of thinking follows the traditions of Realism and Idealism[8] which are two polarized categories (Boucher 1998: 13).

On the one hand, Realism shows that conflict is intrinsic in relations among individuals and societies meaning that we need to be prepared. That is why Realism worries about power and security, because without power there cannot be security. There will be no ideals of peace and a universal community, because in fact, each state will try to gain advantage over the other (Boucher 1998: 14). For them, states are the true influencers on world politics and "the international states system is anarchic, with no higher authority […] policing states' behaviour" (Dobson 2016: 878). This anarchism makes that states' objectives "predominantly conditioned by external rather than internal sources" (Ibid).

On the other hand, Idealism is related with human will and institutional progress. Therefore, is associated with the view that "disasters are due partly to failures of understanding, and party to the lack of suitable institutions to encourage cooperation" (Hollis and Smith 1991: 11). This way of thinking believes that human beings have goals like peace, prosperity, health and that institutions which are a human construct have their own influence on peoples' thoughts and actions (Ibid). Thus, "ethics and not interests should be the guide to international relations" (Boucher 1998: 14).

These two ways of thinking had their criticism. Behaviourism was developed to counter Realism in the sense that they wanted to rely theories in observable data. The most criticized terms were: power, the balance of power, and the national interest. Although these terms could not be defined through observation. That was one of the main reasons to not consider this theory as relevant in the study of International Relations. This is how Transnationalism and Interdependence emerged, stating that other actors apart from the state play a role in international events, and that the sensitiveness and vulnerability to world events are a consequence of the increasing linkages among national economies (Hollis and Smith 1991: 28, 29, 32, 34).

What followed that theory was Neo-Realism, and as its name suggests it has affinities to Realism theory. What this theory tried to explain was the international economic issues, introducing the terms of 'hegemony', 'regimes' and 'hegemonic stability' which means domination from the leader. This thought enabled other states to co-operate with the hegemony and with other countries as well to maintain the stability (Hollis and Smith 1991: 36, 37).

The previously mentioned theories will lead us to the current scene where Realism, Pluralism and Structuralism theories reside. Realism was previously mentioned. Pluralism includes other actors (subnational, supranational, and transnational), and it does not include hierarchy of dominance. Structuralism presents a perspective of the 'less-developed' nations where there are centre-periphery relations that explain the nature of international politics and economics in favour of economic interests from the dominant classes that lead to a continuing exploitation of the poor (Hollis and Smith 1991: 38, 39).

## 2.3 How do Prior Political Relations and Economic Sanctions works?

To describe the relationship between prior political relations and economic sanctions we first need to describe the 'conflict' situation which leads to invoking sanctions. Wallesteen (1968: 252, 253) states, that there are four main theories that explain the outcomes of economic sanctions. The first two theories are the sender-oriented and the target-oriented theories, related to the structural and behavioural aspects of the sender (rank and motive) and target (effects of the sanctions). The third one is associated to the relation between these two actors and their perception about each other. Finally, the fourth theory is environmental-oriented, and refers to the international system outside these two actors.

Based on an examination of ten cases of sanctions, Wallesteen (1968) draw general conclusions regarding these four theories. First, the reasons for main senders -mostly highly ranked senders- to impose a sanction are that the recipient break fundamental norms (e.g. security) (1968: 253, 254). Secondly, "receivers of sanctions tend to be low ranked nations with a high dependence on trade with the main sender" (1968: 254). This statement implies that there is a cordial relation -diplomatic relation- between both countries, which breaks down when economic relations are broken. Thus, the more interaction both countries have, the more powerful the sanctions will be and the less they will last with successful results for the sender -compliance of the recipient- (1968: 259, 260).

Drezner's model (1999) also captures some of these conclusions. His model basically explains the sender and target's behaviour considering "their opportunity costs of deadlock and the expectation of future conflict with each other" (Drezner 1999: 4). When the expectations of a future conflict are contemplated, the senders are more willing to make economic sanctions' threats and impositions. However, these expectations are contradictory because they reduce the sender's ability to obtain concessions. On the contrary, target countries are more worried about the long-run of making concessions because this will reduce its bargaining position in future interactions. Therefore, economic sanctions will be more fruitful when imposed to allies because they do not anticipate many future conflicts and they care less about the material and reputational implications of conceding. Thus, allied target countries will concede more to avoid the costs of deadlock (Drezner 1999: 4, 5).

When considering the aforementioned theories, we found elements of Sections 2.1 and 2.2 that connect the fundamentals of economic sanctions and international relations. On the one hand, Realism and Neo-Realism theories contribute to describe the power hierarchical relation that Wallesteen (1968) and Drezner (1999) mentioned between senders and targets countries. On the other hand, Idealism contributes to describe the reason why sanctions are used, which is ethical (e.g. solve conflicts) instead of self-interest.

Moreover, the economic theory of economic welfare and the dynamic model of sanctions are also connected with Walesteen (1986) and Drezner (1999) theories. First, because the target will behave according to its future expectations of threat or imposition of economic sanctions (conflicts). Second, because the imposition of this sanctions can lead into a supply shock (long and short-term) accompanied by social impact. Which in conclusion, will lead (with exceptions) the target to comply with the sender's demands, but being an ally of the sender country would increase the probability of compliance given the closer and higher relationship of trade that remains between allies.

## 2.3 Prior Relations and Economic Sanctions: Empirical Literature

As mentioned in Section 1.1, in 1985 Hufbauer, G.C., J.J. Scott and K.A. Elliot (hereafter HSE) wrote the first empirical approach of the study of the 'success' of economic sanctions. It is important to address that thanks to the publication of this work, many researchers have examined the empirical success of economic sanctions using the HSE[9] database. However, in the late 2006 Threat and Imposition of Economic Sanctions (hereafter TIES)[10] database was created. This database was the second one used to obtain empirical results. The main differences and similarities of the databases can be evidenced in Table 1.

**Table 1:**
Comparison of main characteristics between databases per year

| Characteristic / Database | HSE 1985 | HSE 1990 | HSEO 2007 | TIES 2006 | TIES 2014 |
|---|---|---|---|---|---|
| Coverage | 1914-1984 | 1914-1990 | 1914-2006 | 1971-2000 | 1945-2005 |
| No. Cases | 103 | 116 | 204 | 888 | 1412 |
| Definition of economic sanctions | Mean to deliberate government-inspired withdrawal, or threat or withdrawal, of "customary" trade or financial relations. | | | Actions that one or more countries take to limit/end their economic relations with a target country to persuade them to change its policies. | |
| Definition of prior political relations | Measurement of warmth of prior relations before the imposition of the sanction | | | Measurement of warmth of prior relations and alliance before the imposition of sanction | |
| Threaten economic sanctions | No | No | No | Yes | Yes |
| Only high-profile cases[a] | Yes | Yes | Yes | No | No |
| Mean duration of cases | 5.45[b] | 6.25[c] | 6.6[d] | 2.7 | 2.43 |

*Notes:* [a] Morgan et al. (2009: 99) states that HSE database excluded many cases that were not 'high profile' or less severe cases. [b] Author's mean calculation based on the information of every case founded in Hufbauer et al. (1985). [c] Data obtained from Kim (2009: 44). [d] Data obtained from Morgan et al. (2009: 99).

*Source:* Morgan et al. (2009); Morgan et al. (2014); Hufbauer et al. (1985); and Kim (2009)

In addition, Hufbauer et al. (1985: 28, 29; 1990: 36) described the type of sanctions that are commonly used to inflict costs on the target (see Table 2), and the major foreign policy objective requested by the sender country which are: modest[11], destabilize the target government, disrupt a minor military adventure, impair the military potential of the target country, and change target-country policies in a major way[12]. Although, Morgan et al. (2009; 2014) described different categories for the type of sanctions, they followed in a sense the same scheme that was proposed by Hufbauer et al. in 1985.

**Table 2:** Type of Economic Sanctions

| Type of Sanction | Description |
|---|---|
| Trade sanctions | Consist in the loss of export markets, lower prices received for confiscated exports, refusal of critical imports, and higher prices paid for substitute imports. |
| Financial sanctions | Consist in the interruption of commercial and official finance in which the target will have to pay a higher interest rate to alternative creditors. |
| Financial and Trade control | Consist in the freeze of the target country's foreign assets, such as bank accounts held in the sender country. |

*Source:* Hufbauer et al. (1985: 28, 29; 1990: 36)

Another important distinction that must be described is the Equation (1) used to estimate the models in the empirical publications on economic sanctions (see Equation 1).

$$Success\ of\ Economic\ Sanctions = \beta_0 + \beta_1 * Prior\ Relations + \beta_3 \mathrm{X} + \varepsilon \quad (1)$$

Where the success of sanctions represents the value of a successful economic sanction, prior relations represents the value of a 'good' prior political relation before the imposition of the sanction, X is a set of other control variables (trade, duration of sanctions, international cooperation, etc.), and $\varepsilon$ is the error term. As detailed in Section 1.1, every author calculates our variables of interest (success of economic sanctions and prior relations) in a different way (see Appendix I and 2). Some of them also mix two methodologies to calculate the success of economic sanctions and prior relations, and use a different estimation procedure (probit, logit, OLS) which makes a difference in the obtained results.

The 18 primary studies that we founded with a summary of their methods, control variables used, and results can be found in Appendix III[13] and the timeline in which they were written is shown Table 3. The oldest study was published in 1985, the most recent in 2017 and the median study appeared in 2011. Approximately less than a quarter of the research in question was published in the last 5 years showing that the discussion about this topic is decreasing.

**Table 3:**
Chronological publication of economic sanctions' studies (by decades and per publication year)

| Authors | Period | Publication Year |
|---|---|---|
| Hufbauer et al. | 1980 | 1985 |
| Lam | 1990 | 1990 |
| Dehejia and Wood | | 1992 |
| Bonetti | | 1998 |
| Drury | | 1998 |
| Hart Jr. | 2000 | 2000 |
| Nooruddin | | 2001 |
| Jing et al. | | 2003 |
| Lektzian | | 2003 |
| Ang and Peksen | | 2007 |
| Allen | | 2008 |
| Kim | | 2009 |
| Bapat and Morgan | | 2009 |
| Bergeijk van | | 2009 |
| Early | | 2011 |
| Kim | | 2013 |
| Lektzian and Patterson | | 2015 |
| Bergeijk van and Siddiquee | | 2017 |

*Source:* Author's elaboration

This quick review of the primary empirical literature gives us the firsts indications of the possible bias, evidenced partially by the tendency of some authors to choose one specific database or a preferred regression method. Also, this information shown the possible heterogeneity factors in the measurement of the impact of prior political relations over the success of economic sanctions. Now we must go deeper into discussing the nature of the primary data found and analyse them using the meta-analysis regression model previously discussed. This will help us to obtain an

empirical evidence to reject or accept the publication bias. In case of accepting the publication bias we could obtain the 'true' effect of prior relations. And finally, the performed regression could deliver us results for the heterogeneity of the sample (studies).

# Chapter 3
# Data and Empirical Approach

## 3.1 Introduction

In Section 1.1 and 1.2, we presented that the main objective of our investigation which is to clear the debate between the existing studies on the relationship among success of economic sanctions and prior relations between sender and target countries. To accomplish our objective, we choose to perform a meta-analysis regression because it will help us to accommodate and correct two main biases associated with applied econometrics. As stated in section 1.1 this tool was firstly used for non-economic publications, which led to the generation of guidelines for conducting and reporting meta-analyses (Stroup et al. 2000; Higgins and Green 2008).

However, none of these guidelines have explicitly considered the type of empirical evidence found in applied econometric research. According to Stanley et al. (2013: 392) most of the MRA guidelines in the economics literature emphasis on the methodological aspects of econometric estimation and its interpretation (e.g. Nelson and Kennedy 2009), rather than wider standards of its practice and reporting. This was the main reasons why members of Meta-Analysis of Economics Research Network (hereafter MAER-Net) created a guideline for reporting MRA. Therefore, in this research paper we follow MAER-Net prescriptions listed in section 2.2 of Stanley et al. (2013).

## 3.2 Methods, Protocols, Data Construction and Meta-Data Set

Section 3.1 specified how we are going to answer the objective of this research paper. In order to fulfil the MAER-Net guidelines, Appendix IV was developed by the group team[14]. We searched using the broad keywords: "Economic sanctions" OR "economic coercion" OR "sanction*" OR "episodes" AND "determin*" OR "success*" OR "fail*" OR "effect*" OR "work" OR "outcomes" OR "result*" OR "cost*" AND "sender state" OR "target state" AND "foreign" OR "*politic*" OR "democratic*" OR "autocrat*" OR "*leader*" OR "*stability" AND "empirical analysis" OR "sensitivity analysis" OR "approach" OR "econometric analysis" OR "modelling". This search yielded a gross list of 380 potentially relevant studies.

Studies were included if they satisfy the criteria as specified in Appendix IV. For a full report of excluded studies see Appendix V. The application of these criteria resulted in our data set of 18 empirical studies for coding. A template for extraction was designed in Excel format (see Appendix VI for details in the codified parameters). The second reviewer has independently checked the consistency of the data and coding with an initial data collection and coding disagreement[15] rate of less than 1%. Because in all the cases it was a disagreement, a consensus was reached.

To deal with the problem of the multiple estimates, usually done to ensure robustness, which is found in empirical studies, Stanley and Doucouliagos (2012: 32) mentioned four ways to define the meta-dataset that can help us to solve the issue within-study dependence. The first one is the *best-set* of estimates which is the preferred author's specification. Sometimes that is unclear in the empirical papers and that possibly reflects a larger publication selection than other reported estimates. The second one is the *average-set* constructed by calculating a weighted average using optimal weights, but with an important loss of within-study information. The third one is the *all-set* which consist in coding all relevant estimates in each of the studies that results in a larger number of observations without excluding the interdependence between data points. Finally, the *independent-*

*set* of estimates consistent with the concept of "independency" if the dataset involves different authors or different datasets for the same authors. We choose to code all-set estimates because in this way we avoid the loss of information. In addition, our sample is not sufficiently big enough (18 empirical studies) to construct an average-set.

The majority (98%) of the models are estimated using logit or probit estimations. The difference between them is that almost 86% express prior relations in cardinal numbers while the other 32% of them express prior political relations as a dummy variable for cordial relations before the imposition of economic sanctions (see Appendix II). Since we could not re-calculate those parameters[16], we controlled for these characteristics in the multinomial meta-regression model (see Section 3.4). We contacted authors when sample means, observations size, t-values, or standard errors were not reported in the primary studies and when we needed clarification of the models, methods or estimates. We also collected estimates for control variables. Two studies -Hufbauer et al. 1990; 2007- were excluded because the authors were unwilling or unable to support missing data (note that Figures 1 and 2 exclude those studies where information is incomplete).

Our dataset consists of 18 primary studies for which the 60 observations (regression coefficients) are available. These studies were realized with cross-sectional data of collected cases of economic sanctions impositions and were published between 1985 and 2017 as mentioned in Section 2.3. The median number of parameter estimates taken from a primary study is 2 estimates. The mean and maximum are 3 and 12 estimates, respectively. For each empirical study, we coded more than 40 potential research dimensions, and four categories of publication qualities. And the data set includes 3 book chapters and 15 peer-reviewed journal articles. Finally, of the 60 prior political relation estimates (hereafter PPRE), none of them are found to be larger than 10, in absolute value.

## 3.3 Weighted Average Effect, Publication Bias and Genuine Effect

Following Demena and Bergeijk (2017: 551, 552) we start with the computation of the weighted average PPRE effect:

$$\varepsilon_{\omega} = \frac{\sum \varepsilon_i N_i}{\sum N_i} \tag{2}$$

Where $\varepsilon_i$ is the reported PPRE effect in the *i*th study with $N_i$ its associated sample size as weights. We use the sample size to weight the effect size following Hunter and Schmidt (2009), Schulze (2009) and Demena and Bergeijk (2017). Accordingly, the weighted average prior relations effect is 0.675 (statistically significant at a 99% confidence interval: 0.353-0.677). Thus, prior relations would seem to have a significant positive effect on the success of economic sanctions.

The second step is to assess if the effect is genuine or influenced by publication bias. For this, we used a funnel plot to get a first indication of the extend of publication bias. Sutton states (as quoted in Stanley 2005: 314; Stanley 2012: 53) that funnel plots are an informal examination to detect publication bias. "A funnel graph is a scatter diagram of precision versus non-standardized effect" (Ibid). If there is no publication selection, "regardless of the magnitude of the true effect, the estimates will vary randomly and symmetrically around the graph" (Stanley 2005:314).

However, this method is only biased on visual inspection, therefore we need other means to assess publication selection bias more objectively. A powerful statistical method is the meta-regression model (MRM):

$$\varepsilon_{ji} = \beta_0 + \beta_1 Se_{ji} + u_{ji} \quad (3)$$

Where $\varepsilon_{ji}$ is an individual estimate, $Se_{ji}$ is its standard error and $u_{ji}$ the error term. "When publication selection is present, the reported effect is positively correlated with its standard error, ceteris paribus; otherwise, estimates and their standard errors will be independent" (Stanley and Doucouliagos 2012: 60). However, equation (3) possesses heteroskedasticity and should never be estimated by ordinary least squares (OLS). The heteroskedasticity problem occurs because the error term is not expected to be independently and identically distributed (Stanley and Doucouliagos 2012: 61). To solve this problem, weighted least squares (WLS) are routinely employed. Therefore, we divide equation (3) through by $Se_{ji}$ (Ibid):

$$t_{ji} \equiv \varepsilon_{ji}/Se_{ji} = \beta_1 + \beta_0(1/Se_{ji}) + e_{ji} \quad (4)$$

Where $t_{ji}$ represents the t-statistic of the *i*th PPRE from the *j*th study and $e_{ji}$ is $u_{ji}/Se_{ji}$. First, we employ MRA to test whether or not here is publication selection. We test $H_0: \beta_1 = 0$ which is considered as a test for the asymmetry of the funnel graph and that is why is called funnel-asymmetry test (FAT). Next, we test $H_0: \beta_0 = 0$ which serves to discover the 'genuine' underlying empirical effect which is covered by the potential distortion due to publication selection. This test is called the precision effect test (PET) because $\beta_0$ is the coefficient on precision (Stanley and Doucouliagos 2012: 61 – 63). Also, to account for within-study dependence, we prefer the mixed-effects multilevel (hereafter MEM) as in Doucouliagos and Laroche (2009), Havránek and Iršová (2011), and Demena and Bergeijk (2017). To do further check for robustness, we applied clustered data analysis (CDA). It is important to mentioned that ll WLS estimations use inverse variance.

## 3.4 Explaining Heterogeneity

We follow Demena and Bergeijk (2017) with minimal modifications required to explain heterogeneity factors. Table 4 lists potential sources of heterogeneity of the findings in the primary studies that include minimums, maximums, means, medians and standard deviations (for a complete description of coded control variables see Appendix II). As described in Section 3.2, since the mean and covariance of the effect coefficients and control terms were not always available to re-calculate those parameters, we controlled for these characteristics using Demena and Bergeijk (2017: 561) approach. This means that we added a binary variable in the meta-data set (1 for estimates coming from a different estimation method, control terms and 0 otherwise).

**Table 4:**
Definition and Descriptive Statistics of Explanatory Variables

| Variable | Definition | Min | Max | Mean | Median | Std. Dev. |
|---|---|---|---|---|---|---|
| 1/se | Precision of estimated spillover | 1.216 | 20.890 | 3.990 | 3.066 | 3.702 |
| | **Data Characteristics** | | | | | |
| SES Source HSE1990 | =1 if source of the success of economic sanctions variable is obtained from HSE1990 dataset | - | - | 0.483 | 1.000 | 0.504 |

*(Continued)*

**Table 4.** *Continued*

| Variable | Definition | Min | Max | Mean | Median | Std. Dev. |
|---|---|---|---|---|---|---|
| | **Estimation Characteristics** | | | | | |
| Logit | =1 if the estimation model was realized using logit estimators | - | - | 0.450 | 1.000 | 0.502 |
| SES Procedure HSE | =1 if the procedure to calculate the success of economic sanctions variable is the one used by HSE | | | 0.433 | 1.000 | 0.500 |
| PPR Procedure | =1 if the prior relation variable was coded as a dummy | - | - | 0.317 | 1.000 | 0.469 |
| | **Specification Characteristics** | | | | | |
| Trade | =1 if trade control variable was used | - | - | 0.650 | 1.000 | 0.481 |
| Duration | =1 if duration of economic sanctions control variable was used | - | - | 0.800 | 1.000 | 0.403 |
| War | =1 if war control variable was used | - | - | 0.250 | 1.000 | 0.437 |
| Perception sender | =1 if perception of the sender control variables was used | - | - | 0.050 | 1.000 | 0.220 |
| Cooperation | =1 if international cooperation variable was used | - | - | 0.767 | 1.000 | 0.427 |
| US | =1 if US (sender/hegemony) control variable was used | - | - | 0.450 | 1.000 | 0.502 |
| Distress | =1 if distress control variable was used | | | 0.633 | 1.000 | 0.486 |
| No institution | =1 if no institution control variable was used | - | - | 0.050 | 1.000 | 0.220 |
| Financial sanctions | =1 if financial sanctions control variable was used | - | - | 0.200 | 1.000 | 0.403 |
| Policy change | =1 if policy change variable was used | - | - | 0.767 | 1.000 | 0.427 |
| Military policy goal | =1 if military or security intervention control variable was used | - | - | 0.483 | 1.000 | 0.504 |
| Military alliance | =1 if military alliance control variable was used | - | - | 0.183 | 1.000 | 0.390 |
| GNP Ratio | =1 if GNP ratio control variable was used | - | - | 0.317 | 1.000 | 0.469 |
| Power | =1 if power control variable was used | - | - | 0.283 | 1.000 | 0.454 |
| Democracy | =1 if democracy control variable was used | - | - | 0.367 | 1.000 | 0.486 |
| Accompanying threat | =1 if companion policies control variable was used | - | - | 0.433 | 1.000 | 0.500 |
| Import sanctions | =1 if import sanctions control variable was used | - | - | 0.100 | 1.000 | 0.303 |
| Interaction institution and cooperation | =1 if the interaction between international institution and international cooperation control variable was used | - | - | 0.417 | 1.000 | 0.497 |
| International institutions | =1 if international institutions control variable was used | - | - | 0.550 | 1.000 | 0.502 |
| Knights | =1 if knights control variable was used | - | - | 0.300 | 1.000 | 0.462 |
| Perception target | =1 if perception of the target control variable was used | - | - | 0.050 | 1.000 | 0.220 |
| Cost target | =1 if cost to the target control variable was used | - | - | 0.517 | 1.000 | 0.504 |

*(Continued)*

**Table 4.** *Continued*

| Variable | Definition | Min | Max | Mean | Median | Std. Dev. |
|---|---|---|---|---|---|---|
| | **Publication Characteristics** | | | | | |
| Publication date | The publication year of study (base 1985) | 0.000 | 32.000 | 22.767 | 26.000 | 7.834 |
| Study citations | Study citations in Google scholar per age, as of August 2018 | 0.444 | 16.556 | 5.643 | 4.389 | 6.044 |

*Source:* Author's elaboration

We report four categories of potential sources of heterogeneity. Despite some variables, in the data and estimation characteristics, have two or more categories, we choose to consider one, in order to facilitate the interpretation of every individual results. The chosen category in every case is highlighted with orange. On the contrary, the omitted ones -due to high correlation between some other variables- are highlighted in red (note that the omitted variables are not included in Table 4).

a. Data Characteristics: Since all the results of primary studies were obtained with cross-sectional data it does not make sense to include this variable as a control. Table 5 lists the characteristics of every different source used in the primary studies and their percentage of usage in the sample. We did not include time span and number of observations because these variables suffer from collinearity problems.

**Table 5:**
Percentage of usage of the data source characteristics in the coded sample

| Variable | Characteristic | Percentage |
|---|---|---|
| SES Source | Mixed | 15.00% |
| | HSE1985 | 5.00% |
| | HSE1990 | 48.33% |
| | TIES | 10.00% |
| | HSEO2007 | 21.67% |
| PPR Source | Mixed | 0.00% |
| | HSE1985 | 5.00% |
| | HSE1990 | 46.67% |
| | HSEO2007 | 21.67% |
| | HSEmixed | 13.33% |
| | Sinorino and Ritter | 3.33% |
| | Correlates of War Alliance | 3.33% |
| | Alliance Treaty Obligations and Provisions | 6.67% |

*Source:* Author's elaboration

b. Estimation Characteristics: Table 6 lists the characteristics of every different method or procedure used in the primary studies and their percentage of usage in the sample.

**Table 6:**
Percentage of usage of the estimation characteristics in the coded sample

| Variable | Characteristic | Percentage |
|---|---|---|
| Estimation method | Logit | 45.00% |
| | Probit | 53.33% |
| | OLS | 1.67% |
| SES Procedure | Mixed | 11.67% |
| | Hufbauer et al. | 43.33% |
| | Lam, Dehejia-Wood | 10.00% |
| | Dashit-Gibson et al. | 25.00% |
| | Bapat and Morgan | 10.00% |
| PPR Procedure | Dummy | 31.67% |
| | Categorical | 68.33% |

*Source:* Author's elaboration

c. Specification Characteristics: Table 7 lists the characteristics of every different method or procedure used in the primary studies and their percentage of usage in the sample. We choose to include every coded variable, but ones in red were the ones with collinearity problems; and therefore, they had to be excluded.

**Table 7:**
Percentage of usage of the specification characteristics in the coded sample

| Characteristic | Percentage |
|---|---|
| Trade | 65.00% |
| Duration | 80.00% |
| War | 25.00% |
| Perception sender | 5.00% |
| Hindrance | 50.00% |
| International Cooperation | 76.67% |
| Cost sender | 55.00% |
| Asymmetry | 1.67% |
| US | 45.00% |
| Distress | 63.33% |
| No institution | 5.00% |
| Financial sanctions | 20.00% |
| Policy change | 76.67% |
| Military policy goal | 48.33% |
| Economy impact | 13.33% |
| Military alliance | 18.33% |
| Interaction assistance and trade | 20.00% |
| GNP Ratio | 31.67% |
| Power | 28.33% |
| Democracy | 36.67% |
| Multilateral sanctions | 6.67% |
| Accompanying threat | 43.33% |
| Import sanctions | 10.00% |

*(Continued)*

**Table 7.** *Continued*

| Characteristic | Percentage |
|---|---|
| Human right sanctions | 1.67% |
| UK | 1.67% |
| Interaction institution and cooperation | 41.67% |
| International institutions | 55.00% |
| Distance | 6.67% |
| Export sanctions | 10.00% |
| Knights | 30.00% |
| Interaction trade | 6.67% |
| Number senders | 6.67% |
| Invulnerable | 3.33% |
| GDP per capita | 6.67% |
| Perception target | 5.00% |
| Interaction US sender and hegemony | 16.70% |
| Cost target | 51.67% |

*Source:* Author's elaboration

d. Publication Characteristics: We also controlled for the publication year of the study. Besides, we use author citations in Google Scholar per year. And, we did not test for publishing in a high-rank journal because this variable has collinearity problems.

To investigate the heterogeneity in the reported PPRE, we expand equation (4) to include the moderator variables

$$t_{ji} \equiv \frac{\varepsilon_{ji}}{Se_{ji}} = \beta_1 + \beta_0 \left(\frac{1}{Se_{ji}}\right) + \frac{\alpha_k X_{kji}}{Se_{ji}} + e_{ji} \quad (5)$$

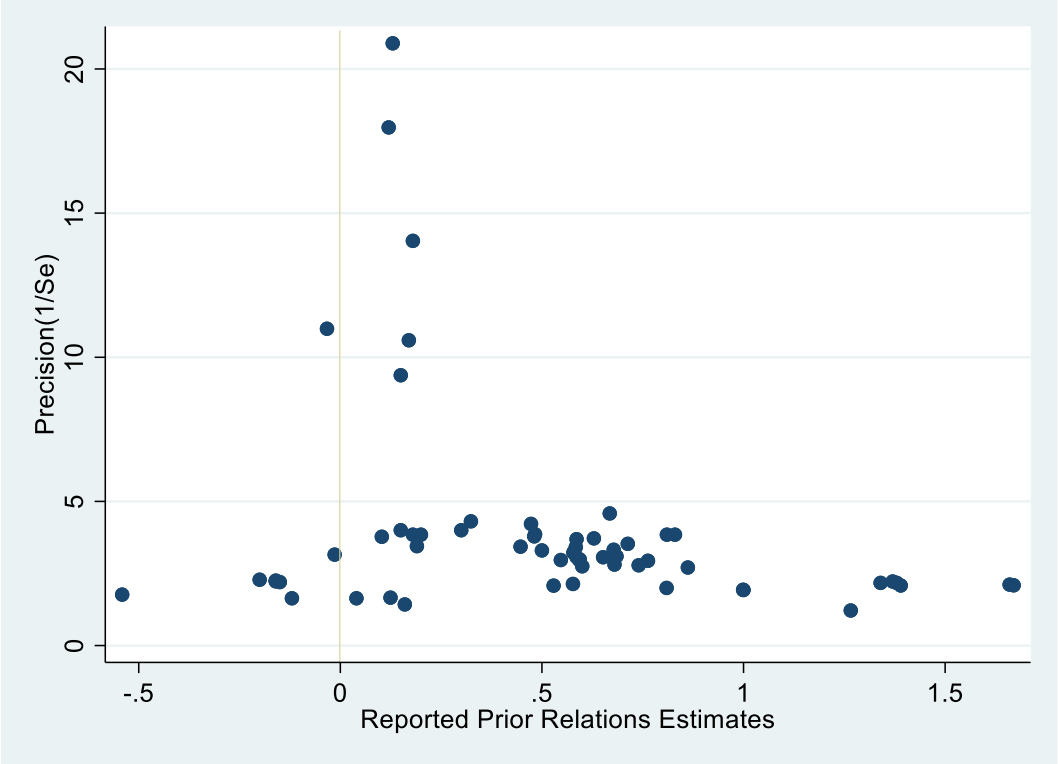
Where $t_{ji}$ is the t-statistic of each primary study estimates, $X_{kji}$ is any of the chosen moderator variables that describe different primary studies, while $\alpha_k$ is the coefficient of the independent variables estimated, and k represents the individual characteristics of every different reported moderating variables. To deal with the problem of multicollinearity, we use general-to-specific (hereafter GETS) modelling approach. According to Demena and Bergeijk (2017: 555) GETS modelling starts with a general specification (5) in which all potential moderator variables are included. Next, one at a time, the statistically most insignificant variables are removed, until we arrive at a reduced specification that contains significant variables only.

# Chapter 4
# Results and Findings

## 4.1 Funnel Plot

As visualized in Figure 3, we use the inverse of standard error (1/SE), which is the most common and precise way to measure precision (Stanley 2005: 314; Stanley 2012: 53). Figure 3 displays 60 prior political relation estimates (PPRE), where the values are skewed to the right, which indicates publication bias. The top of the funnel graph is less susceptible to selection bias because of its high precision (Stanley and Doucouliagos 2012: 56), and therefore, it is a better indicator of PPRE. The most precise coefficient has an effect of 0.13 points, while the average of the three most precise values is 0.14 points. Is worth mentioning that the top coefficient is much less than the mean of all 60 estimates, which is of 0.52 points. Next, we turn to objective statistical test that corresponds to these funnel graphs.

**Figure 3:**
Funnel plot, reported prior relations estimates




*Source:* Author's elaboration

## 4.2 FAT and PET

Table 8 presents the results of FAT and PET on estimates of prior relations. First, we found that in all the chosen specifications, the FAT indicates a substantial presence of bias. Conversely, columns (1) and (2) suggest that prior relations true effect ($\widehat{\beta_0}$) does not have statistically significance

(failing to reject the null hypothesis). However, column (3) hints that using our preferred method -mixed-effect multilevel method- there is, on average, a true effect in prior relations about 0.079 points, with a statistical significance level of 5%. Following Cohen (1988) guidelines (above 0.01) the effect is not weak, but generally speaking is not bigger either.

Next, we test for the heterogeneity across all the studies with the Q-test (as suggested by Stanley and Doucouliagos 2012: 49). The Q-test $\chi^2$ distribution with $n - 1$ degrees of freedom and 60 observations is 124.06 (p-value = 0.000). The $I^2$ test for heterogeneity reports that the variation in the reported PPRE due to sampling error is 45.8%. Thus, we need a multivariate MRA as our inferences may also depend on other potential sources of heterogeneity.

**Table 8:**
Bivariate MRA for FAT-PET

| Variables | CDA | Robust | MEM |
|---|---|---|---|
| | (1) | (2) | (3) |
| | t-value | t-value | t-value |
| Genuine effect/PET | 0.0458 | 0.0458 | 0.0791** |
| (Precision, B0) | (0.0324) | (0.0282) | (0.0381) |
| Bias/FAT | 1.394*** | 1.394*** | 1.142*** |
| (Intercept, B1) | (0.327) | (0.205) | (0.265) |
| Observations | 60 | 60 | 60 |
| Studies | 18 | 18 | 18 |

*Notes:* Standard errors are in parentheses. ***, **, * stands for 1%, 5%, and 10% level of significance. Test for between study heterogeneity (Q-test) is 124.06*** on 59 degrees of freedom with p-value less than 0.001 and $I^2$ statistics (variation in PPRE attributable to heterogeneity) is 52.4%.

*Source:* Author's elaboration

## 4.3 Sources of Heterogeneity

First, a general model was estimated using all the variables presented in Table 4 (see Appendix VII). When we checked for multicollinearity, using the correlation matrix (see Appendix VIII), we discovered that some of the variables may have a severe collinearity problem because several of these pair-wise correlations are quite high. Next, we calculated the Variance Inflation Factor (hereafter VIF) (see Appendix IX) where there where values were values greater than 10 showing a highly likely multicollinearity problem. Therefore, we develop the general-to-specific (GETS) modelling as mentioned in Section 3.3.

Table 9 presents the results of the reduced multivariate MRA using GETS modelling. Using this procedure, we observed that almost half of the moderator variables, included in the general MRA, are statistically not significant and that they are not equally important in describing the potential source of heterogeneity. We eliminated 16 moderator variables that did not appear to be important for the explanation of the heterogeneity[17]. If we consider the general model versus the specific multivariate model, "a trade-off exists between on the one hand, potential multicollinearity and loss of degrees of freedom and on the other hand, the inclusion of all moderator variables" (Demena and Bergeijk 2017: 558). Again testing for multicollinearity, we calculated the correlation matrix (appendix IX) and VIF (appendix X) showing a reduction on the obtained coefficients in comparison with the general model.

Turning to results, as specification (4) indicates, 13 remaining variables are statistically significant (at least at 10% significance). Thus, performing the joint test of these 11 variables rejects the null hypothesis of zero joint effect F (11, 47) = 8.49 (p-value=0.000) was rejected. To account for within-study correlation, this specific model is then re-estimated using the preferred MEM model and, for comparison and robustness check, with robust standard errors and CDA. The columns report:

**Table 9:**
Multivariate MRA for Source of Heterogeneity: Reduced Model

| Variables | Specific | CDA | Robust se | MEM |
|---|---|---|---|---|
| | (4) | (5) | (6) | (7) |
| | t-value | t-value | t-value | t-value |
| Genuine effect/PET | 0.139*** | 0.139** | 0.139*** | 0.139*** |
| (Precision, Bo) | (0.0516) | (0.0596) | (0.0505) | (0.0457) |
| Bias/FAT | 2.661*** | 2.661*** | 2.661*** | 2.661*** |
| (Intercept, B1) | (0.483) | (0.325) | (0.345) | (0.427) |
| PR Dummy | -2.291*** | -2.291*** | -2.291*** | -2.291*** |
| | (0.612) | (0.483) | (0.416) | (0.542) |
| Duration | 0.596* | 0.596** | 0.596*** | 0.596** |
| | (0.336) | (0.232) | (0.202) | (0.298) |
| US | 1.988*** | 1.988*** | 1.988*** | 1.988*** |
| | (0.527) | (0.540) | (0.474) | (0.466) |
| Distress | -1.118* | -1.118*** | -1.118*** | -1.118** |
| | (0.581) | (0.260) | (0.322) | (0.514) |
| No institution | -1.491** | -1.491** | -1.491** | -1.491*** |
| | (0.647) | (0.668) | (0.642) | (0.572) |
| Military alliance | 3.745*** | 3.745*** | 3.745*** | 3.745*** |
| | (1.005) | (0.524) | (0.818) | (0.889) |
| GNP Ratio | 0.984* | 0.984*** | 0.984*** | 0.984** |
| | (0.525) | (0.271) | (0.245) | (0.465) |
| Import sanctions | -1.914*** | -1.914*** | -1.914*** | -1.914*** |
| | (0.522) | (0.301) | (0.264) | (0.462) |
| Interaction institution and cooperation | -2.470*** | -2.470*** | -2.470*** | -2.470*** |
| | (0.734) | (0.369) | (0.463) | (0.649) |
| Knights | -2.102*** | -2.102*** | -2.102*** | -2.102*** |
| | (0.425) | (0.205) | (0.227) | (0.376) |
| Study citations | -0.115*** | -0.115*** | -0.115*** | -0.115*** |
| | (0.0408) | (0.0208) | (0.0170) | (0.0361) |
| Observations | 60 | 60 | 60 | 60 |
| Studies | 18 | 18 | 18 | 18 |

*Notes:* The dependent variable is the t-value of the prior political relations estimates. Standard errors are in parentheses. ***, **, * stands for 1%, 5%, and 10% level of significance.
*Source:* Author's elaboration

As Table 9 shows, in all the specifications there is a significative publication bias and the obtained 'genuine' effect value of prior political relations positively influences the success of economic sanctions. Focusing on our chosen model, this effect is 0.139, with a statistical significance level of

1% (column 7). These values have increased consistently in comparison to the ones obtained in the bivariate MRA, showing that indeed, the inferences obtained in Table 9 can be explained with other sources of heterogeneity.

Moving to the PPR estimates, they *ceteris paribus* will be larger when: the control variables of duration, US, military alliance, GNP ratio are included. In contrast, the use of prior political relations as a dummy, the inclusion of the control variables of distress, no institution, import sanctions, interaction between international institution and cooperation, and knights, and the number of citations in every study are associated with smaller reported effects. We compared and tested the robustness of the results using estimates with clustered standard errors (column 5) and robust standard errors (column 6) reported in Table 9. Without due allowance of data dependence, column 6 reports similar results as column 7 (but the statistical significance reduces for the control variable of no institution, and on the contrary, statistical significance is increased in the control variable duration). Controlling for data dependence, column 5 corroborates the findings of column 8 (but statistical significance is reduced in the PET value, and on the contrary, statistical significance is increased in the control variables distress and GNP ratio).

# Chapter 5
# Conclusions and Recommendations

This research aims to analyse the prior political relations effect using 60 reported estimates from 18 primary studies by 27 researchers covering cross-sectional databases of economic sanctions impositions published until 2017. We found a positive and significant uncorrected weighted average prior political relations effect of 0.675, which is larger (by almost 15 points) compared to the mean value of empirical studies which is 0.52. We investigated whether this effect is genuine or affected by publication (or other) bias using a funnel-plot, FAT-PET, and GETS meta-analysis approaches. Our study clearly uncovers that publication bias is a problem for this field and we establish the extent and source of the bias. Thus, rejecting the first hypothesis formulated in Section 1.4 of no publication bias.

Next, reported prior political relations overstated the true effect, and this does appear to have been caused by the two main biases described before: publication selection and sample selection. The first one, is associated with highly cited publications. Evidence shows that researchers tend to report lower estimates in most cited publications. While the second bias is associated with the inclusion or exclusion of the moderator variables, and with the methodological choices that the researcher made. We found that the underlying 'true' prior political relations effect is important to obtain a success in the imposed economic sanctions, with a magnitude of 0.139, notably after taking publication bias and misspecification of the primary studies into account. Thus, these results corroborated the second hypothesis regarding the friendly prior political relation. Therefore, the chosen political and economic theoretical framework is also corroborated by these results. Showing that in fact being an ally of the sender country contributes to the compliance of its demands.

Regarding the third formulated hypothesis, the multivariate approach showed that there is substantial heterogeneity in the reported prior political relation estimates. As stated before, the inclusion or exclusion of the moderator variables plays an important role in the size and sign of prior political relation estimates effect. Hence, we suggest that future research needs to carefully consider the selection of explanatory variables in order to avoid omitted variable bias. Indeed, understanding publication bias potentially calls for researchers to consider the sources of bias towards positive prior political relations estimates. Besides, it is worth to mention that the way in which researchers calculated the prior political relations also matters. This must be considered for future studies in order to avoid publication bias due to estimation choices.

With respect to the policy implications of the findings and with the perspective of what is more convenient for the sender and the target, suggestions are contradictory. On the one hand, if senders establish better international relations with a greater range of countries, they will achieve a higher success rate if they choose to impose economic sanctions. However, to establish a higher trade linkage with them will imply that the cost of imposing sanctions will be higher as well. And on the contrary, if target countries want to resist to comply the sender's demands, they should diversify their trade market to avoid the cost of the imposed sanctions.

This brings us to a broader discussion where we should debate whether economic sanctions are a good instrument for coercion. Taking into consideration the dynamic model of sanctions, we know that economic sanctions -in practice- will have a social impact (in the long and short run) beyond the sanction episode. This gives us a great indicative of the actual damage that this commonly used tool can achieve and leave us with some questions to answer: to what extent are policymakers willing to suffer or to make the population suffer with the imposition of economic

sanctions? Is this truly beneficial for the development of countries? But, if sender countries choose not to use economic sanctions, which other tools can be used to convince countries to change their policies/actions? In which cases is the imposition of economic sanctions necessary? And, who should be responsible for imposing these sanctions?

Moving to the discussion of the data found in the empirical studies, it is important to mention that researchers of this topic do not have access to many databases and that the available databases only include cases of high ranking countries. This leaves aside the cases of sanctions imposed from developing countries, so this particularity should be coded and analysed in future investigations. In addition, since the main topic (prior political relations) has not being investigated recently for a considerable number of academics, it could be possible that they considered this variable as not that important for the success rate of economic sanctions. However, this paper has denied this fact and for future research work it would be interesting to include this variable to have more robust results.

Finally, considering the chosen methodology (meta-analysis) to answer the research questions, we can conclude that it is not perfect. This statistic tool does not contemplate other external factors that are happening at the same time of the imposition of sanctions, which are not included in the database (e.g. oil international prices, global crisis, among others), that can 'help' to increase the success rate of economic sanctions. In addition, some of the researchers did not include standard errors or t-statistics in their regression estimates. Therefore, it is a work for the future researchers on the topic to include these variables and values in their future researches if this approach is intended to be conducted again.

# Appendices

**Appendix I:**
Main methodologies to calculate the Success of Economic Sanctions

| Author | Methodology | Policy Result | Sanctions Contribution | A sanction is successful if | Dummy |
|---|---|---|---|---|---|
| Hufbauer et al. | Success score = policy result * sanction contribution | 1 = failed outcome<br>2 = unclear but possibly positive outcome<br>3 = positive outcome (somew hat successful)<br>4 = successful outcome | 1 = zero or negative contribution<br>2 = minor contribution<br>3 = modest contribution<br>4 = significant contribution | Success score ≥ 9 (scale of 16 points) | No |
| Lam; Deheija-Wood | Success score = policy result | Same as Hufbauer et al. (1985) | N/A | Policy result ≥ 3 (scale of 4 points) | No |
| Dashit-Gibson et al. | Success score = dummy variable of policy result | Same as Hufbauer et al. (1985) | N/A | 1 = policy result ≥ 3<br>0 = policy result ≤ 2 | Yes |
| Bapat and Morgan | Success score TIES | Total capitulation, negotiated settlement, and partial concessions | 1 = Minor costs<br>2 = Major costs<br>3 = Severe costs | Target partially capitulates, fully capitulates, or reaches a negotiated settlement | Yes |

*Source:* Hufbauer et al. (1985:32, 33); Lam (1990: 240, 241); Deheija-Wood (1992: 75); Dashti-Gibson et al. (1997: 612); Bapat and Morgan (2009: 1082).

**Appendix II:**
Main methodologies to calculate Prior Relations variable

| Author | Definition | Methodology | Dummy |
|---|---|---|---|
| Hufbauer et al. | Measurement of warmth of prior relations before the imposition of the sanction | 1 = antagonistic: sender and target countries are in opposing campus<br>2 = neutral: sender country does not have strong ties to the target, but there are possibilities for a future relationship<br>3 = cordial: sender and target are close friends and allies | No |
| Allen | Measurement of the presence of an alliance | Using Correlates of War Alliance data (1991) | Yes |
| Lektzian and Patterson | Measurement of alliances ties between the sender and target | Using Alliance Treaty Obligations and Provisions (ATOP) data set (Leeds et al. 2002) | Yes |
| Bapat and Morgan | Measurement of warmth of prior relations and alliance before the imposition of sanction | Using Signorino and Ritter's (1999) weighted political affinity score | No |

*Source:* Hufbauer et al. (1985: 37, 38); Allen (2008: 264); Lektzian and Patterson (2015: 53); Bapat and Morgan (2009: 1084).

| ID | Authors | Study aim | Study Design | Control Variables | Main results |
|---|---|---|---|---|---|
| **1** | Bonetti (1998) | Examine correlates of classes of outcomes of economic sanctions. Key issue is to explain the motives underlying the imposition of economic sanctions. Null hypothesis: sanctions are coercive. | Cross-sectional data between 1944 and 1989, 104 sanction episodes with HSE data using logistic estimators. | Modest policy, assistance, export, import, cooperation, prior relations, cost to target, trade linkage, trade linkage squared, cost to sender. | Strong and significant effect of assistance on the probability of failure with a negative sign.<br>Trade linkage has a positive but diminishing marginal effect on the probability of avoiding total failure.<br>Positive but non-significant relationship between pre-sanctions sender-target and the probability of a favorable outcome.<br>Puzzling negative sign on the modest policy variable.<br>The presence of significant third-party assistance to the target is the most powerful way in which failure can be generated.<br>Low trade linkage tends to create conditions conductive to total rather than marginal failure, influence less powerful than the third-party influence.<br>Both the nature of the policy objective of the sender and the state of pre-sanction sender-target relations have an important influence on the probability of total success, given the sanctions are successful. |
| **2** | Ang and Peksen (2007) | Test the proposition that the level of perception of issues by the sender and target states will determine the sanctions outcome.<br>H1: The perception of high issue salience by the sender will result in the determination to see sanctions succeed and will likely result in a positive sanctions outcome.<br>H2: The perception of high issue salience by the target will result in the determination to resist sanctions and will likely result in a negative sanctions outcome.<br>H3: The greater the difference (sender perception - target perception) in asymmetric perception of issue salience between the sender and the target, the greater the likelihood of a positive sanctions outcome. | Cross-sectional data between 1914 and 1990, 99 sanction episodes with HSE data using logistic estimators. | Cost to sender, distress, GNP ratio, trade, prior relations, duration, international cooperation, Unite States (US) sender, relative power, sender perception, target perception, asymmetry. | Model 1 indicate that one of the independent variables (sender perception(+)) and three of the control variables (distress(-), prior relations(+), international cooperation(-)) affect the success of sanctions outcomes. Support for the first hypothesis and no support for the second hypothesis.<br><br>Model 2 indicate the same results for the three control variables, sender asymmetric perception of issue salience is statistically significant and has a dramatic effect on sanction outcomes. Support the third hypothesis. |

| ID | Authors | Study aim | Study Design | Control Variables | Main results |
|---|---|---|---|---|---|
| 3 | Hart Jr. (2000) | Probe that democracies are, on average, more successful when using economic sanctions than non-democracies. | Cross-sectional data between 1914 and 1989, 81 bilateral sanction episodes with HSE data using a heteroskedastic ordered probit model. | Sender a democracy, cost of sanctions to target, high costs to sender, serious issue, international assistance to target, level of trade, international cooperation with sender, relative capabilities (GNP), target economically distressed, cordial prior relations, use of military policies, target a democracy | Democracies are generally more successful when using economic sanctions even when controlling for expected covariates of sanction success (statistically significant).<br>With the control variables, the relationship between regime type and sanctions outcome is substantively larger.<br>Higher levels of international cooperation lead to poorer sanctions outcomes. This results do not comport with theoretical expectations (statistically significant).<br>Higher costs to the target have the greatest impact on unclear outcomes and clear successes.<br>Increasing levels of trade between sender and target have little substantive impact while increasing capabilities reduces the probability of outright success (statistically significant).<br>When the target is economically distressed it is more likely (than the baseline) that outcome will be a complete success. Same results for cordial prior relations and use of military companion policies. |
| 4 | Kim (2009) | H1: Sanctions against human rights violations in the target have a lower probability of success<br>H2: Sanctions by the US as a leading sender have a higher probability of success<br>H3: There is a download trend in the success of sanctions after the decline of the US hegemony<br>H4: Sanctions by the US as a leading sender after the decline of its hegemony have a lower probability of success<br>H5: Sanctions by the UK as a leading sender have a higher probability of success<br>H6: The more democratic the sender, the higher the probability of success<br>H7: The more democratic the target, the higher the probability of success<br>H8: Sanctions by democratic senders against democratic targets are more likely to succeed than otherwise | Cross-sectional data between 1914 and 1990, 116 cases with HSE data using logistic estimators. | Sanctions duration, sanction of financial type, sanction against human rights, US as a leading sender, US hegemony, US as a leading sender*US hegemony, UK as a leading sender, international institution leading sender, international cooperation for sender, international institution as a leading sender*international cooperation for sender, cost to sender, international assistance to target, target conditions, cost to target, presanction relations, economic difference, democracy level of sender, democracy level of target, democracy level of sender*dummy democracy level of target | Sanctions duration and sanction of financial type have a positive impact over economic sanctions without statistical significance.<br>Sanction against human rights have a negative impact over economic sanctions (statistically significant).<br>The data does not support the hegemonic decline theory (US), results are not statistical significant and the interaction term has a unexpected sign.<br>International cooperation has a negative effect over economic sanctions (statistically significant). Interaction term is slightly positive but falls the statistical significance.<br>Sanctions enacted by the UK are more likely to succeed than otherwise without statistical significance.<br>Cost to sender has a negative effect over economic sanctions.<br>International assistance unexpected (+) sign, prior relations (+) sign, target conditions expected (-) sign (without statistical significance). Cost on the target is slightly positive (statistically significant).<br>Presanctions relations has the expected positive sign but without statistical significance. Economic difference has a unexpected negative sign but without statistical significance.<br>Democracy level of sender and target have positive signs (statistically significant). The interaction term has an unexpected (-) sign, statistically insignificant. |

| ID | Authors | Study aim | Study Design | Control Variables | Main results |
|---|---|---|---|---|---|
| 5 | Bergeijk van and Siddiquee (2017) | Analyze the second and third editions of the database on international economic sanctions of the Peterson Institute for International Economics (HSE and HSEO) | Cross-sectional data between 1914 and 1990, 105 cases with HSE using a multivariate probit model. | Modest policy, destabilization, disruption of military interventions, military impairment, companion policies, international cooperation, international assistance, prior relation, duration, cost to target, GNP ratio sender / target, trade linkage, health and stability, cost to sender. | Disruption of military interventions is always insignificant in all specifications and editions and there is no evidence of bias.<br>Military impairment have statistically insignificant coefficients but it may be biased due to methodological change.<br>Companion policies are significantly positive for the second edition but insignificant for the third edition. There is a methodology bias.<br>Modest policy and destabilization have positive and significant marginal effects in both editions. There is a methodology bias.<br>No difference for international cooperation and assistance.<br>Size and significance are larger in the second edition for companion policy, duration and prior relations.<br>Ratio for sender GNP to target GNP, trade linkage and health and stability present a methodological change. Not corrupted by methodology change. |
| 6 | Kim (2013) | H1: The lower the difference in the levels of structural network power between the sender and the target, the higher the probability of success. | Cross-sectional data between 1950 and 1990, 116 cases with HSE data using a censored probit model. | Power balance, sender cooperation, institution sanction, sender cost, national security, additional policies, US sanction, target assistance, target stabilities, target cost, pre-sanction relationship, pre-sanction trade level, target assistance, year, target's power. | Coefficient for a high difference in structural-network power between sender and target (-) as expected and statistically significant in 5 models.<br>Coefficient for high structural-network power for the target (+) as expected and statistically significant in 5 models. |
| 7 | Dehejia and Wood (1992) | Contribute to the policy debate of the success of sanctions. | Cross-sectional data between 1914 and 1990, 115 cases with HSE data using a logistic specification. | Major foreign objective requested (5), companion policies (3), international cooperation, international assistance, duration (2), stability, prior relations, cost target, pre-sanctions trade linkage, GNP sender's ratio, imposition of controls (3), cost sender, invulnerable, secondary issue. | Imposition of financial an export control (-) and significant. Import control (+).<br>Five possible policy goals (+) all significant. And companion policies: covert action, regular military action (+), quasi-military action (-) Relative ordering in the success of companion policy-measures.<br>International assistance (-), cost target and prior relations (+) all significant.<br>Prior trade linkage, stability, cost sender (+), international cooperation, GNP target's ratio (-) but all insignificant.<br>Linear duration (+) and quadratic duration (-) but insignificant.<br>Invulnerable target governments and secondary issues (+) and highly significant. |

| ID | Authors | Study aim | Study Design | Control Variables | Main results |
|---|---|---|---|---|---|
| **8** | Lam (1990) | Test the robustness of Hufbauer and Schott's results and conclusions, while addressing methodological problems contained in their ordinary least squares regression. | Cross-sectional data between 1914 and 1984, 98 cases with HSE data using a probit estimation. | Policy result, year, international cooperation, prior relations, health, cost GNP target, trade linkage, cost send, log ratio GNP senders-target, destabilization, World War (I and II), covert action, quasi-military force, support, export control, import control, capital control. | Only import controls are positively significant. Export and import controls are positive but insignificant.<br>Cost GNP target is positive and significant.<br>Cost sender is negative and significant.<br>Year is negative and insignificant.<br>Health, support and log ratio sender's GNP (-), prior relations (+) and significant.<br>Change and trade linkage are positive but insignificant.<br>The author run another model more parsimonious which shows a better prediction in the success of policy goals. |
| **9** | Bapat and Morgan (2009) | Revisit the question of multilateral versus unilateral sanctions using a new data set on the Threat and Imposition of Economic Sanctions.<br>H1: Sanctions are more likely to be imposed multilaterally in response to high salience issues.<br>H2: Sanctions are les likely to succeed if the dispute involves a high salience issue.<br>H3: Multilateral sanctions are more likely to be successful than are unilateral sanctions if and only if they are conducted through an institutional institution.<br>H4: Multilateral sanctions are more likely to be successful than are unilateral sanctions if there is only one issue in dispute.<br>H5: If more than one issue is in dispute, multilateral sanctions are more likely to be successful than are unilateral sanctions if and only if they are conducted through an international institution. | Cross-sectional data between 1971 and 2000, 888 cases with TIES data using a probit estimation. | Multilateral, institution, interaction, security issue, target costs, sender costs, GDP per cap. Sender, GDP per cap. Target, target durability, joint democracy, affinity, sender RPC, distance, US, Cold War, duration. | Multilateral sanctions appear more effective than do unilateral sanctions, even if an institution is not involved (H1).<br>Sanctions appear far more successful in the cases which seemingly constitute the most difficult of disputes to resolve (H2).<br>In the 5 models they run the multilateral variable changes it sign and significance while they include variables. This lets them to conclude that the public good explanation is rejected (H3).<br>The likelihood of success is maximized if the sender are multilateral, have multi-issue oriented goals, and operate through an international institution (H4).<br>If sanctions are multilateral, involve more than one issue, and are conducted through an international institution, the predicted probability of sanctions success rises (H5).<br>With an examination of more cases, the authors contradict previous findings using the HSE data. |

| ID | Authors | Study aim | Study Design | Control Variables | Main results |
|---|---|---|---|---|---|
| **10** | Allen (2008) | Explore the potential for unequal variance in the context of response to economic sanctions. Democracies are more likely to concede to sanctions and have less variability in their behavior in response to sanctions. | Cross-sectional data between 1915 and 1990, 109 sanctions episodes with HSE data using a heteroskedastic probit estimation. | Regime score, alliance, accompanying threat, economic impact, financial sanctions, US sender, multilateral sender, major military demand.<br><br>Vector of covariates that define groups with different error variances. | Coefficients in heteroskedastic model tend to be larger and with smaller standard errors compared to traditional probit analysis.<br>Amount of economic impact that a sender can impose to the target state has a statistically significant positive impact on the success of the policy.<br>Previous economic relationships are potentially important.<br>Existence of a military alliance has a positive influence on sanctions success.<br>Type of sanctions (+) statistically significant, financial sanctions are more likely to succeed than trade sanctions.<br>Multilateral sanctions are more likely to lead to concessions compared to sanctions accompanied by additional coercive threats.<br>Regime variable (+) and significant. A more democratic state is more likely to concede to sanctions pressure.<br>There is a statistically significant difference in the variance across regime types that is substantively important. As a state's Polity score increases, the estimated variance decreases.<br>The model of variances identifies that common explanations of sanctions success predict the behavior of democratic targets more effectively than they predict the behavior of autocratic targets. |
| **11** | Drury (1998) | Use a multivariate ordered logit model to test how accurate and important or weighty the bivariate policy recommendations of Hufbauer and colleagues are within the context of multivariate analysis. | Cross-sectional data between 1914 and 1990, 108 sanctions episodes with HSE data using a multivariate ordered logit model. | Distress, GNP ratio, friend, cooperation, black night, trade controls, target GNP cost, sender cost, national security, institution, institutional cooperation, black night trade, policies, year, USA. | Hufbauer et al. (1990) overstated the importance of the variables they tested and this lows the accuracy of their policy recommendations. Only target GNP and year (+) have significance.<br>Using the complete model, the variables that are significant are: level of cooperation (-), target GNP cost (+) and institutionalized cooperation (+).<br>The presence of a black night is important only when it can replace the sanctioned imports.<br>Threats to the national security of the sender, the use of supplemental policies and the involvement of the USA as a sanctioning state do not enhance the chances of success.<br>Effect of a prior friendly relationship, trade controls are inconsequential.<br><br>Only two of Hufbauer et al. (1990) nine policy recommendations unconditionally hold up after multivariate analysis. |

| ID | Authors | Study aim | Study Design | Control Variables | Main results |
|---|---|---|---|---|---|
| **12** | Hufbauer et al. (1985) | Realize a comprehensive analysis of the use of economic sanctions for foreign policy purposes. | Cross-sectional data between 1914 and 1984, 108 sanction episodes with HSE data using an OLS model. | Time trend, modest policy change, World War (I and II), covert action, quasi-military force, international cooperation, support, prior relations, length, health and stability, cost target, pre-sanction trade linkage, 10 times greater relation sender and target's GNP, 10 to 100 times greater relation sender and target's GNP, export controls, import controls, financial controls, cost sender. | Sanctions have been successful in 36% of the cases overall. But the success rate depends on the type of goal sought. It is higher for destabilization and modest goal cases than for other categories.<br>Countries in distress or experiencing significant problems are far more likely to succumb to the policy objectives of the sender.<br>Results are more pronounced in destabilization cases.<br>Cases involving a low GNP ratio (10 and under) exhibit higher success scores compared to cases where GNP ratio is over 100.<br>Economic sanctions seem more effective when aimed against previous friends and close trading partners.<br>Length of economic sanctions has no significant bearing on the outcome. It is better to impose a shorter sanction.<br>Cases that inflict heavy costs on the target country are generally successful.<br>The more it costs a sender country to impose sanctions, the less likely it is that the sanctions will succeed.<br>There is little evidence that covert and military actions, when used in parallel with economic sanctions, will favor the success of sanctions.<br>If there is more international cooperation to implement the sanctions, the less likely they will be effective.<br>Sender countries should think through its means and objectives before resorting to use economic sanctions. |
| **13** | Early (2011) | Fill the gap in the literature related to the consequences of sanctions-busting.<br>H1: Test whether sanctions-busting conducted by politically motivated third parties, is sufficient to negatively impact sanctions' likelihood of success.<br>H2: Test whether the joint effects of both politically and commercially motivated sanctions busters make sanctions more likely to end in failure. | Cross-sectional data between 1950 and 2006, 96 episodes of US-imposed sanctions with HSEO data using multinomial logit and multinomial probit estimators. | All busters, black night allies, black night great powers, HSE black knight, US cooperation, International Organization (IO) Support, IO*Cooperation, US defensive alliance, target defense alliance, modest goal, prior relations, democracy, post-Cold War, time, time squared, time cube. | Combined effects of commercial sanctions busters and black nights undermine the effectiveness of economic sanctions, making them less likely to succeed.<br>The more third parties help the sender, the higher the probability of failure of economic sanctions.<br>Sanctions busters present a higher impact on the likelihood of senders abandoning their sanctions between the 3rd and 12th years sanctions have been in place.<br>Joint actions undertaken by both politically and commercially motivated sanctions busters have a profoundly negative impact on sanctions success.<br>The effects of the subset of sanctions busters (Black Night Allies, Black Night Great Powers) do not achieve any statistical significance in any of the models.<br>By using HSE Black Night variable, it is verified that HSEO intuition is correct (sanction-busting undermines sanctions regimes' effectiveness.<br>US Cooperation exerts a weak, negative significant effect.<br>IO Support denotes conditional significant effects (-) when US receives no direct cooperation.<br>Only modest goals and prior relations had significant (+) effects.<br>US defensive alliance and Post-Cold War have a (-) significant effect. |

| ID | Authors | Study aim | Study Design | Control Variables | Main results |
|---|---|---|---|---|---|
| 14 | Jing et al. (2003) | Focus on the success of sanctions in achieving a desired policy outcome, but also focus on the determinants of instrument choice. | Cross-sectional data between 1914 and 1990, 98 cases of economic sanction with HSE data using multivariate probit and multivariate logit estimators. | Modest policy change, military assistance, target's health, prior relations, cost sender, cost target, international cooperation, log ratio GNP sender-target, trade linkage. | There is no statistical significant relationship between the policy change sought by the sender and the use of any of the three policy instruments.<br>The probability of a sender using a covert or open military action is (+) and significantly related to the expected sender's costs.<br>The probability of a sender using military intervention is (+) and significantly related to third-country assistance to the sanctions target.<br>The probability of resorting to military force is negatively and significantly related to the economic health and political stability of the target prior to sanctions.<br>Prior relations do not have a statistically significant effect on the probabilities of choosing the policy instruments.<br>The probability of military action and pre-sanctions trade linkage is (+) and marginally significant.<br>There is no statistical significant relationship between the strength of trade linkage and the probability of choose trade or financial sanctions.<br>No statistical significant relation between multilateral cooperation, third-country assistance, cost target and the success of sanctions.<br>Negative and significant relationship between sanctions success and target's health, relative size.<br>Positive and significant relationship between sanctions success and prior relations, cost sender. |
| 15 | Lektzian (2003) | Debate whether sanctions are a just policy understanding the theoretical role that humanitarian suffering plays in the success, or lack of success, of sanctions in achieving intended policy goals. And also, examine how sanctions worked in practice. | Cross-sectional data between 1914 and 1990, 113 cases of economic sanction with HSE data using logit estimators. | International organization, prior relations, political/economical stability, target democracy, target autocrat, military action, GNP ratio, percent target imports from sender. | Model 1 shows that imposing economic costs on target is about asymmetries in economic strength and not about political factors.<br>Model 2 shows that imposing economic costs, in general, does not increase the probability of achieving success in a significant manner.<br>Prior cordial relations and international organization involvement have (+) and significant effects.<br>When the target is autocratic the probability of success decreases with statistical significance.<br>Economic sanctions are not about economics, are about politics. |

| ID | Authors | Study aim | Study Design | Control Variables | Main results |
|---|---|---|---|---|---|
| | | | | | The success of sanctions does not depend in whether the targeted country is open or close to trade. |
| **16** | Lektzian and Patterson (2015) | Test a theory based in Stolper-Samuelson Theorem. Economic sanctions restrict the ability of targeted countries to engage in international economic exchange. | Cross-sectional data between 1971 and 2000, 888 cases with TIES data using a logistic estimation. | Major / severe sanctions, total number senders, US sender, target-all senders, alliance, institution in sender coalition, target polity. | For a trade-open country, decreasing returns to the abundant factor is a powerful mechanism leading a successful coercion.<br>Increases in returns to the scarce factor of production relative to other factors affect the success of sanctions.<br>Sanctions that impose high economic costs on the targeted country are significantly more likely to be successful.<br>When an international institution is involved in the sender coalition, the probability of success increases dramatically.<br>Sanctions imposed against an ally are more likely to be successful. |
| **17** | Nooruddin (2001) | Present a unified model of sanctions imposition and success arguing that previous models have been incorrectly specified because they omit a key explanatory variable (target's regime type). | Cross-sectional data between 1945 and 1990 with HSE data using a probit and a censored probit estimation. | Model 1: target western hemisphere, % trade with US, target major power, dyadic militarized interstate dispute (MID) during year, target Soviet Bloc, target's regime type.<br><br>Model 2: target's regime type, log total cost as % GNP, relative power, % trade with US, target's domestic stability, target alliance with US, prior cordial relations, dyadic MIC during year, black knight, US cooperation, major goal. | Model 1:<br>Militarized dispute involvement have (-) and significant effects.<br>Polity of the target is not significant in the success of sanctions.<br>US is more likely to use sanctions on states located in the Western Hemisphere. But dyadic trade is negative related with sanction imposition.<br>Major powers are less likely to be sanctioned.<br>MID with the US and Soviet bloc members are more likely to be sanctioned.<br>Target's regime type is not statistically significant.<br>Model 2:<br>Regime type matters, sanctions against democracies are more likely to succeed and this result is statistically significant.<br>Cost of sanctions matters and is positively related to sanction success but the size of the coefficient is half of the one obtained in the censored probit model.<br>Targets that had an alliance with the US were less likely to concede to the sanction, statistically significant.<br>States embroiled in MID with US are far less likely to concede with the largest coefficient in the model.<br>Cooperation on sanctions can be counterproductive. |
| **18** | Bergeijk van (2009) | Analyze the effectiveness of economic sanctions | Cross-sectional data between 1946 and 2000 with HSE data using a logit estimation. | Absolute trade linkage, proportional trade linkage, sanction duration, autocracy score, democracy score, financial sanctions, aid to GDP, co-operation with sender, hindrance sender, area, prior relations, GDP sender-target ratio, reputation, moderate goal, target's instability, ex post costs to | The probability that an economic sanction succeeds is higher, the larger the presanction trade linkage, the more democratic and open and the shorter the sanction period.<br>The signs of the coefficients conform to a priori expectations, with the exception of the sender-target GDP which is not significant.<br>The only significant parameter relates to the pre-sanction relations but its significance is reduced.<br>Sanctions can be effective instruments in international politics. |

*Notes:* *H refers to the hypothesis formulated by the authors

**Appendix IV:** Report on the data collection

**Coders:** Patrick KIMARARUNGU (PK)
Gabriela BENALCAZAR (GB)
Alemayehu RETA (AS)
**Supervisors:** Prof. Dr. Peter van Bergeijk
Dr. Binyam Afewerk Demena

Data Collection Process:

We follow MAER-Net guidelines listed in section 2.2 of Stanley (2013) to search, collect, code and analyse empirical studies. Electronic databases such as Google Scholar and ISI web of knowledge were checked. However, only Google Scholar responded to our search queries. The search included all potentially relevant published and unpublished empirical studies without any specific beginning span, but with an ending span of 2017. We have different broad keywords with different terminology based on the individual interest of variables (duration, trade and prior relations) as specified in every individual research paper. The multiple search process took us 3 months (June-August 2018).

Studies were included if they satisfied the following selection criteria for detailed review: English language, empirical investigations that are conducted on the success of economic sanctions and that include individual variables of interest such as duration, trade or prior relation (for a full report of excluded studies see every coder's paper), and that report regression-based coefficients[18], sample size, t-statistics or standard errors.

Every individual coder searched, read and coded the research literatures independently. The final dataset was reviewed by at least one of the members of the team, as a second coder, to check the consistency of the data: wrong values, missing information, etc. (for a full report of the disagreements see every coder's paper). Benalcazar reviewed Kimararungu, Kimararungu reviewed Reta, and Reta reviewed Benalcazar. At minimum the information coded was the one specified by Stanley et al. (2013) (a complete list of the information coded for each study or estimate can be found in every coder's dataset).

**Appendix V:** Report on Excluded Studies

| Author | Year | Justification for exclusion |
|---|---|---|
| Bergeijk van | 1989 | This study did not include prior relations as an explanatory variable. |
| Hufbauer et al. | 1990 | This study was not found. |
| Elliott and Uimonen | 1993 | This study did not include prior relations as an explanatory variable. |
| Bergeijk van | 1994 | This study did not include prior relations as an explanatory variable. |
| Dashiti Gibson | 1997 | This study did not include prior relations as an explanatory variable. |
| Cox and Drury | 2006 | This study used as dependent variable whether economic sanctions were used. |
| Lektzian and Souva | 2007 | This study did not include prior relations as an explanatory variable in the model of interest (success). |
| Hufbauer et al. | 2007 | This study did not include standard errors for any of their explanatory variables. |
| Wood | 2008 | This study used as dependent variable the state repression. |
| Mclean and Whang | 2010 | This study did not include prior relations as an explanatory variable in the model of interest (concede). |
| Whang | 2010 | This study did not include prior relations as an explanatory variable in the model of interest (compliance). |
| Peksen and Drury | 2010 | This study used the success of economic sanctions as an independent variable. |
| Whang | 2011 | This study used as a dependent variable the number of sanctions imposed in a month. |
| Major | 2012 | This study did not include prior relations as an explanatory variable in the model of interest (success). |
| Wallace | 2013 | This study used as a dependent variable if sanctions onset. |
| Soest van and Wahman | 2014 | This study used as a dependent variable the sanctions. |

*Source:* Author's elaboration

**Appendix VI:** Complete list of coded information

| Parameter | Definition |
|---|---|
| No. | Number of coded observations |
| Studyid | Identifier per study |
| Coder | Person's initials coding the empirical study |
| 2nd Coder | Person's initials second coding the empirical study |
| Author | Last name of the first author of the empirical study |
| YearPub | Year of publication of the empirical study |
| Title | Title of the empirical study |
| Outlet | Journal's name / Book's name where the study was published |
| gscholar | Number of citations in Google Scholar as of August 2018 |
| ISI | Number of citations in Web of Knowledge as of August 2018 |
| impact | Journal Citation Report (JCR) impact factor in 2017 |
| impdum | Dummy variable taking the value of 1 if journal/book has JCR impact |
| N | Number of observations in the used sample of every empirical study |
| start | Year of beginning of the used sample of every empirical study |
| end | Year of ending of the used sample of every empirical study |
| method | Description of the method used by the author(s) to obtain empirical results |
| cate | Dummy variable taking the value of 1 if method used is logit/probit/tobit |
| ols | Dummy variable taking the value of 1 if method used is OLS |
| pro | Dummy variable taking the value of 1 if method used is probit |
| log | Dummy variable taking the value of 1 if method used is logit |

*(Continued)*

**Appendix VI.** *Continued*

| Parameter | Definition |
|---|---|
| panel | Dummy variable taking the value of 1 if method used is related to panel data (fixed, random effects) |
| cs | Dummy variable taking the value of 1 if the sample data is cross-sectional data |
| pl | Dummy variable taking the value of 1 if the sample data is panel data |
| ts | Dummy variable taking the value of 1 if the sample data is time series data |
| dependent | Description of the dependent variable |
| dprocedure | Procedure used to calculate the dependent variable |
| dummy | Dummy variable taking the value of 1 if the dependent variable is coded in the empirical study as a dummy |
| details | Details about the methodology used to code the dependent variable |
| dsourcequal | Description of the source where the dependent variable was obtained |
| dsourcequant | Quantitative description of the source where the dependent variable was obtained. 0=mixed, 1=HSE1985, 2=HSE1990, 3=TIES, 4=HSEO2007 |
| politics | Description of the independent variable of interest |
| dumpol | Dummy variable taking the value of 1 if the independent variable is coded in the empirical study as a dummy |
| details2 | Details about the methodology used to code the independent variable |
| isource | Description of the source where the independent variable was obtained |
| pollagged | Dummy variable taking the value of 1 if the independent variable was lagged |
| coeff | Coefficient of the independent variable of every empirical study |
| tvalue | T-statistic of the independent variable of every empirical study |
| stderror | Standard error of the independent variable of every empirical study |
| signif | Significance of the independent variable's coefficient. 0=negative and insignificant, 1=positive and insignificant, 2=negative and significant, 3=positive and significant |
| signif2 | Statistical significance of the independent variable's coefficient. 0=none, 1=10%, 2=5%, 3=1% |
| cv1-cv17 | Control variables used in every empirical study.<br>0=None<br>1=Trade: trade related variables (linkage, level, etc.).<br>2=Duration: duration of sanctions (years, length, etc.).<br>3=War: If sanctions occurred during I, II, Cold, Post-Cold War.<br>4=Perception sender: Salience score of the sender, reputation.<br>5=Hindrance or international assistance to target from neighbors or allies.<br>6=International Cooperation for sender during the sanction.<br>7=Cost of sanctions for the sender.<br>8=Asymmetry between sender and target countries (perception).<br>9=US: If US is the sender or is hegemony.<br>10=Distress or health and stability of the target.<br>11=No institution involved in sanctions. |

*(Continued)*

**Appendix VI.** *Continued*

| Parameter | Definition |
|---|---|
| cv1-cv17 | 12=Financial sanctions.<br>13=Policy change (destabilization / regime change / modest / big).<br>14=Military or security policy change.<br>15=Economy impact.<br>16=Military alliance: If target has military alliances with other countries.<br>17=Interaction between international assistance and trade.<br>18=GNP ratio: Gross National Products level between sender and target.<br>19=Power: Power variables (power balance, relative power sender/target, etc.).<br>20=Democracy: Democracy variables (include regime, interaction).<br>21=Multilateral sanctions.<br>22=Accompanying threat or companion policies (military / quasi / covert).<br>23=Import sanctions<br>24=Human rights sanctions<br>25=UK: If UK is the sender or is hegemony.<br>26=Interaction between international institutions and international cooperation.<br>27=International institution is sender or co-sender of sanctions.<br>28=Distance/Area between target and sender.<br>29=Export sanctions.<br>30=Knights: If any knight variables are included.<br>31=Interaction trade: If any other variable is interacting with trade variable.<br>32=Number of senders<br>33=Invulnerable countries: Countries which are more difficult to harm.<br>34=GDP per capita: Gross Domestic Product of the sender or the target.<br>35=Perception target: Salience score of the target, reputation.<br>36=Interaction between US sender and US hegemony.<br>37=Cost of sanctions for the target. |

*Source:* Author's elaboration

**Appendix VII:**
Multivariate MRA for Source of Heterogeneity: general model

| Variables | General | CDA | Robust se | MEM |
|---|---|---|---|---|
| | (A1) tvalue | (A2) tvalue | (A3) tvalue | (A4) tvalue |
| Genuine effect/PET | 0.0853 | 0.0853 | 0.0853 | 0.0853 |
| (Precision, Bo) | (0.0797) | (0.174) | (0.0928) | (0.0564) |
| Bias/FAT | 3.961** | 3.961*** | 3.961** | 3.961*** |
| (Intercept, B1) | (1.909) | (1.345) | (1.541) | (1.350) |
| SES Source HSE1990 | 0.892 | 0.892* | 0.892 | 0.892 |
| | (1.215) | (0.512) | (0.563) | (0.859) |
| Logit | -0.511 | -0.511* | -0.511 | -0.511 |
| | (0.487) | (0.266) | (0.799) | (0.344) |
| SES Procedure HSE | -0.0277 | -0.0277 | -0.0277 | -0.0277 |
| | (0.859) | (0.292) | (0.163) | (0.607) |
| PR Dummy | -2.141 | -2.141** | -2.141** | -2.141** |
| | (1.309) | (0.811) | (0.951) | (0.925) |
| Trade | 0.389 | 0.389 | 0.389 | 0.389 |
| | (0.824) | (0.478) | (0.564) | (0.583) |
| Duration | 1.560 | 1.560* | 1.560 | 1.560 |
| | (1.802) | (0.816) | (1.100) | (1.274) |
| War | -0.506 | -0.506* | -0.506 | -0.506 |
| | (1.354) | (0.254) | (0.622) | (0.957) |
| Perception sender | 0.902 | 0.902* | 0.902* | 0.902 |
| | (1.395) | (0.518) | (0.487) | (0.986) |
| Cooperation | -0.908 | -0.908 | -0.908 | -0.908 |
| | (1.329) | (1.099) | (0.729) | (0.940) |
| US | 0.810 | 0.810 | 0.810 | 0.810 |
| | (1.670) | (2.017) | (1.126) | (1.181) |
| Distress | -2.003 | -2.003*** | -2.003* | -2.003 |
| | (2.244) | (0.673) | (1.140) | (1.587) |
| No institution | -0.902 | -0.902 | -0.902 | -0.902 |
| | (1.206) | (0.762) | (0.600) | (0.853) |
| Financial sanctions | 0.115 | 0.115 | 0.115 | 0.115 |
| | (0.791) | (0.232) | (0.417) | (0.559) |
| Policy change | -0.159 | -0.159 | -0.159 | -0.159 |
| | (0.735) | (0.525) | (0.588) | (0.520) |
| Military policy goal | -0.362 | -0.362*** | -0.362 | -0.362 |
| | (0.674) | (0.0982) | (0.293) | (0.477) |
| Military alliance | 2.940 | 2.940 | 2.940** | 2.940 |
| | (2.848) | (1.904) | (1.344) | (2.014) |
| GNP Ratio | 1.583 | 1.583*** | 1.583** | 1.583 |
| | (1.678) | (0.263) | (0.763) | (1.187) |
| Power | -0.371 | -0.371*** | -0.371 | -0.371 |
| | (1.223) | (0.110) | (0.595) | (0.865) |
| Democracy | -0.0762 | -0.0762 | -0.0762 | -0.0762 |
| | (1.122) | (0.0606) | (0.504) | (0.794) |

*(Continued)*

**Appendix VII.** *Continued*

| Variables | **Specific** | **CDA** | **Robust se** | **MEM** |
|---|---|---|---|---|
| | (A1) | (A2) | (A3) | (A4) |
| | t-value | t-value | t-value | t-value |
| Accompanying threat | -0.323 | -0.323 | -0.323 | -0.323 |
| | (0.933) | (0.569) | (0.597) | (0.660) |
| Import sanctions | -1.937 | -1.937*** | -1.937*** | -1.937** |
| | (1.197) | (0.0441) | (0.154) | (0.846) |
| Interaction institution and cooperation | -1.639 | -1.639* | -1.639** | -1.639* |
| | (1.281) | (0.867) | (0.733) | (0.906) |
| International Institutions | 0.474 | 0.474*** | 0.474 | 0.474 |
| | (0.777) | (0.107) | (0.293) | (0.549) |
| Knights | -2.087 | -2.087* | -2.087*** | -2.087** |
| | (1.391) | (1.122) | (0.646) | (0.983) |
| Perception target | -0.906 | -0.906* | -0.906* | -0.906 |
| | (1.404) | (0.519) | (0.487) | (0.993) |
| Cost target | -0.151 | -0.151* | -0.151 | -0.151 |
| | (1.033) | (0.0760) | (0.234) | (0.730) |
| Publication date | -0.0218 | -0.0218 | -0.0218 | -0.0218 |
| | (0.0866) | (0.0314) | (0.0211) | (0.0612) |
| Study citations | -0.114 | -0.114* | -0.114** | -0.114 |
| | (0.107) | (0.0633) | (0.0436) | (0.0754) |
| Observations | 60 | 60 | 60 | 60 |
| Studies | 18 | 18 | 18 | 18 |

*Notes:* Standard errors are in parentheses. ***, **, * stands for 1%, 5%, and 10% level of significance.

**Appendix VIII:** Correlation Matrix for the General Model

| **Variables** | Precision (1/se) | SES Source HSE1990 | Logit | SES Procedure HSE | PR Dummy | Trade | Duration | War | Perception sender | Cooperation |
|---|---|---|---|---|---|---|---|---|---|---|
| Precision (1/se) | 1.00 | | | | | | | | | |
| SES Source HSE1990 | -0.20 | 1.00 | | | | | | | | |
| Logit | -0.34 | -0.20 | 1.00 | | | | | | | |
| SES Procedure HSE | 0.35 | -0.44 | 0.02 | 1.00 | | | | | | |
| PR Dummy | 0.32 | -0.01 | 0.10 | -0.16 | 1.00 | | | | | |
| Trade | -0.10 | 0.50 | -0.04 | -0.42 | 0.12 | 1.00 | | | | |
| Duration | 0.01 | -0.27 | 0.12 | -0.07 | 0.07 | 0.07 | 1.00 | | | |
| War | -0.17 | -0.56 | 0.10 | 0.43 | -0.39 | -0.63 | 0.29 | 1.00 | | |
| Perception sender | -0.08 | -0.07 | 0.25 | 0.11 | 0.01 | 0.17 | 0.11 | -0.13 | 1.00 | |
| Cooperation | -0.29 | 0.22 | 0.02 | 0.16 | -0.30 | 0.26 | 0.32 | 0.14 | 0.13 | 1.00 |
| US | -0.30 | 0.47 | -0.08 | -0.79 | 0.25 | 0.38 | 0.28 | -0.37 | -0.05 | -0.13 |
| Distress | -0.07 | 0.60 | -0.29 | -0.31 | -0.15 | 0.67 | -0.03 | -0.44 | 0.17 | 0.23 |
| No institution | 0.59 | -0.22 | -0.21 | 0.11 | 0.17 | -0.15 | 0.11 | 0.04 | -0.05 | -0.42 |
| Financial sanctions | -0.15 | 0.02 | 0.05 | -0.02 | -0.16 | 0.10 | -0.27 | -0.10 | 0.27 | -0.02 |
| Policy change | 0.14 | -0.33 | -0.13 | 0.32 | -0.30 | 0.01 | 0.12 | 0.14 | -0.05 | 0.25 |
| Military policy goal | 0.24 | 0.47 | -0.47 | -0.31 | 0.13 | 0.22 | 0.15 | -0.40 | -0.22 | 0.06 |
| Military alliance | -0.10 | -0.46 | 0.26 | 0.54 | -0.32 | -0.65 | 0.24 | 0.82 | -0.11 | 0.26 |
| GNP Ratio | 0.03 | 0.27 | 0.03 | -0.02 | 0.31 | 0.42 | -0.20 | -0.23 | 0.01 | 0.21 |
| Power | -0.08 | 0.65 | -0.42 | -0.33 | -0.27 | 0.46 | 0.04 | -0.36 | 0.03 | 0.26 |
| Democracy | -0.20 | -0.32 | 0.15 | 0.45 | -0.29 | -0.60 | -0.14 | 0.60 | 0.14 | 0.01 |
| Accompanying threat | 0.29 | 0.10 | -0.05 | -0.02 | 0.63 | 0.22 | -0.15 | -0.35 | -0.20 | -0.31 |
| Import sanctions | -0.14 | -0.10 | 0.03 | -0.18 | -0.23 | 0.13 | -0.11 | 0.06 | -0.08 | 0.05 |
| Interaction institution and cooperation | -0.19 | -0.01 | -0.15 | 0.01 | -0.58 | -0.23 | 0.42 | 0.45 | -0.19 | 0.39 |
| International Institutic | -0.30 | 0.00 | 0.14 | -0.16 | -0.25 | -0.10 | 0.47 | 0.29 | -0.25 | 0.13 |
| Knights | -0.11 | -0.12 | 0.29 | 0.46 | -0.13 | -0.36 | 0.05 | 0.55 | -0.15 | 0.28 |
| Perception target | -0.12 | 0.24 | 0.25 | -0.20 | 0.01 | 0.17 | 0.11 | -0.13 | 0.30 | 0.13 |
| Cost target | -0.20 | 0.54 | -0.26 | -0.50 | -0.27 | 0.48 | -0.07 | -0.29 | -0.24 | 0.18 |
| Publication date | 0.32 | -0.21 | -0.18 | 0.17 | 0.17 | -0.15 | 0.41 | -0.01 | 0.02 | -0.06 |
| Study citations | -0.30 | -0.11 | 0.34 | 0.07 | 0.13 | -0.16 | -0.01 | 0.31 | 0.27 | -0.15 |

| **Variables** | US | Distress | No institution | Financial sanctions | Policy change | Military policy goal | Military alliance | GNP Ratio | Pow er | Democracy |
|---|---|---|---|---|---|---|---|---|---|---|
| Precision (1/se) | | | | | | | | | | |
| SES Source | | | | | | | | | | |
| HSE1990 | | | | | | | | | | |
| Logit | | | | | | | | | | |
| SES Procedure | | | | | | | | | | |
| HSE | | | | | | | | | | |
| PR Dummy | | | | | | | | | | |
| Trade | | | | | | | | | | |
| Duration | | | | | | | | | | |
| War | | | | | | | | | | |
| Perception sender | | | | | | | | | | |
| Cooperation | | | | | | | | | | |
| US | 1.00 | | | | | | | | | |
| Distress | 0.27 | 1.00 | | | | | | | | |
| No institution | -0.05 | 0.02 | 1.00 | | | | | | | |
| Financial sanctions | -0.20 | 0.21 | -0.11 | 1.00 | | | | | | |
| Policy change | -0.45 | -0.26 | -0.05 | -0.02 | 1.00 | | | | | |
| Military policy goal | 0.40 | 0.39 | 0.24 | 0.02 | -0.10 | 1.00 | | | | |
| Military alliance | -0.43 | -0.62 | -0.11 | -0.24 | 0.26 | -0.46 | 1.00 | | | |
| GNP Ratio | -0.18 | 0.52 | 0.01 | 0.29 | -0.13 | 0.06 | -0.32 | 1.00 | | |
| Pow er | 0.47 | 0.48 | -0.14 | -0.31 | 0.00 | 0.28 | -0.30 | -0.11 | 1.00 | |
| Democracy | -0.34 | -0.35 | -0.02 | 0.05 | -0.07 | -0.46 | 0.62 | -0.29 | -0.32 | 1.00 |
| Accompanying threat | -0.05 | 0.04 | 0.11 | 0.07 | -0.23 | 0.10 | -0.41 | 0.42 | -0.25 | -0.25 |
| Import sanctions | -0.30 | 0.14 | -0.08 | 0.53 | 0.18 | -0.10 | -0.16 | 0.37 | -0.21 | -0.25 |
| Interaction institution and cooperation | 0.19 | -0.13 | -0.19 | -0.34 | 0.23 | 0.06 | 0.56 | -0.58 | 0.37 | 0.27 |
| International Institutic | 0.41 | -0.20 | -0.25 | -0.47 | 0.06 | 0.00 | 0.43 | -0.54 | 0.20 | 0.13 |
| Knights | -0.30 | -0.33 | -0.15 | -0.33 | -0.07 | -0.41 | 0.72 | 0.02 | -0.17 | 0.48 |
| Perception target | -0.05 | 0.17 | -0.05 | 0.27 | -0.05 | 0.08 | -0.11 | 0.34 | 0.03 | -0.17 |
| Cost target | 0.34 | 0.72 | -0.08 | 0.15 | -0.22 | 0.47 | -0.49 | 0.23 | 0.31 | -0.44 |
| Publication date | 0.24 | -0.33 | 0.19 | -0.51 | 0.21 | 0.22 | 0.20 | -0.61 | 0.21 | 0.08 |
| Study citations | 0.09 | -0.09 | 0.03 | -0.14 | -0.44 | -0.34 | 0.21 | 0.07 | -0.23 | 0.45 |

| **Variables** | Accompanying threat | Import sanctions | Interaction institution and cooperation | International Institutions | Knights | Perception target | Cost target | Publication date | Study citations |
|---|---|---|---|---|---|---|---|---|---|
| Precision (1/se) | | | | | | | | | |
| SES Source | | | | | | | | | |
| HSE1990 | | | | | | | | | |
| Logit | | | | | | | | | |
| SES Procedure | | | | | | | | | |
| HSE | | | | | | | | | |
| PR Dummy | | | | | | | | | |
| Trade | | | | | | | | | |
| Duration | | | | | | | | | |
| War | | | | | | | | | |
| Perception sender | | | | | | | | | |
| Cooperation | | | | | | | | | |
| US | | | | | | | | | |
| Distress | | | | | | | | | |
| No institution | | | | | | | | | |
| Financial sanctions | | | | | | | | | |
| Policy change | | | | | | | | | |
| Military policy goal | | | | | | | | | |
| Military alliance | | | | | | | | | |
| GNP Ratio | | | | | | | | | |
| Pow er | | | | | | | | | |
| Democracy | | | | | | | | | |
| Accompanying threat | 1.00 | | | | | | | | |
| Import sanctions | 0.16 | 1.00 | | | | | | | |
| Interaction institution and cooperation | -0.67 | -0.28 | 1.00 | | | | | | |
| International Institutic | -0.36 | -0.37 | 0.76 | 1.00 | | | | | |
| Knights | -0.06 | -0.22 | 0.26 | 0.30 | 1.00 | | | | |
| Perception target | 0.11 | 0.43 | -0.19 | -0.25 | -0.15 | 1.00 | | | |
| Cost target | -0.03 | 0.32 | 0.07 | 0.06 | -0.31 | 0.07 | 1.00 | | |
| Publication date | -0.22 | -0.71 | 0.44 | 0.41 | -0.10 | -0.32 | -0.39 | 1.00 | |
| Study citations | -0.01 | -0.29 | -0.17 | 0.02 | 0.54 | -0.11 | -0.25 | -0.13 | 1.00 |

*Source:* Author's elaboration

**Appendix IX:**
VIF for the General Model

| Variable | VIF | 1/VIF |
|---|---|---|
| Military alliance | 117.22 | 0.0085 |
| Distress | 112.91 | 0.0089 |
| US | 66.65 | 0.0150 |
| GNP Ratio | 58.83 | 0.0170 |
| Duration | 50.14 | 0.0199 |
| Publication date | 43.64 | 0.0229 |
| Knights | 39.20 | 0.0255 |
| Interaction international & cooperation | 38.52 | 0.0260 |
| PR dummy | 35.77 | 0.0280 |
| SES Source HSE1990 | 35.60 | 0.0281 |
| War | 33.18 | 0.0301 |
| Cooperation | 30.51 | 0.0328 |
| Power | 29.32 | 0.0341 |
| Democracy | 28.23 | 0.0354 |
| Cost target | 25.71 | 0.0389 |
| Study citations | 20.78 | 0.0481 |
| Accompanying policies | 20.64 | 0.0485 |
| SES Procedure HSE | 17.49 | 0.0572 |
| Trade | 14.93 | 0.0670 |
| International institution | 14.43 | 0.0693 |
| Import sanctions | 12.44 | 0.0804 |
| Military policy goal | 10.96 | 0.0913 |
| Financial sanctions | 9.66 | 0.1036 |
| Policy change | 9.33 | 0.1072 |
| Perception target | 9.04 | 0.1106 |
| Perception sender | 8.92 | 0.1121 |
| Precision (1/se) | 8.27 | 0.1210 |
| No institution | 6.67 | 0.1500 |
| Logit | 5.66 | 0.1766 |
| Mean VIF | 31.54 | |

*Source:* Author's elaboration

**Appendix X:**
Correlation Matrix for the Specific Model

| **Variables** | Precision (1/se) | PR Dummy | Duration | War | Perception sender | Asymmetry | US |
|---|---|---|---|---|---|---|---|
| Precision (1/se) | 1.00 | | | | | | |
| PR Dummy | 0.59 | 1.00 | | | | | |
| Duration | 0.66 | 0.53 | 1.00 | | | | |
| War | 0.27 | 0.00 | 0.56 | 1.00 | | | |
| Perception sender | 0.11 | 0.13 | 0.25 | 0.00 | 1.00 | | |
| Asymmetry | 0.05 | 0.23 | 0.14 | 0.00 | 0.00 | 1.00 | |
| US | 0.34 | 0.53 | 0.69 | 0.10 | 0.11 | 0.19 | 1.00 |
| Policy change | 0.69 | 0.37 | 0.81 | 0.49 | 0.17 | 0.00 | 0.43 |
| Power | 0.34 | 0.11 | 0.49 | 0.00 | 0.14 | 0.24 | 0.65 |
| Democracy | 0.34 | 0.15 | 0.49 | 0.72 | 0.25 | 0.00 | 0.21 |
| Accompanying policies | 0.63 | 0.76 | 0.54 | 0.10 | 0.00 | 0.00 | 0.42 |
| Import sanctions | 0.14 | 0.00 | 0.24 | 0.21 | 0.00 | 0.00 | 0.00 |
| Perception target | 0.08 | 0.13 | 0.25 | 0.00 | 0.33 | 0.00 | 0.11 |
| Study citations | 0.38 | 0.39 | 0.53 | 0.44 | 0.23 | 0.10 | 0.49 |

*(Continued)*

| **Variables** | Policy change | Power | Democracy | Accompanying policies | Import sanctions | Perception target | Study citations |
|---|---|---|---|---|---|---|---|
| Precision (1/se) | | | | | | | |
| PR Dummy | | | | | | | |
| Duration | | | | | | | |
| War | | | | | | | |
| Perception sender | | | | | | | |
| Asymmetry | | | | | | | |
| US | | | | | | | |
| Policy change | 1.00 | | | | | | |
| Power | 0.46 | 1.00 | | | | | |
| Democracy | 0.50 | 0.10 | 1.00 | | | | |
| Accompanying policies | 0.49 | 0.19 | 0.25 | 1.00 | | | |
| Import sanctions | 0.36 | 0.00 | 0.00 | 0.32 | 1.00 | | |
| Perception target | 0.17 | 0.14 | 0.00 | 0.23 | 0.47 | 1.00 | |
| Study citations | 0.41 | 0.30 | 0.57 | 0.50 | 0.14 | 0.08 | 1.00 |

*Source:* Author's elaboration

**Appendix XI:**
VIF for the Specific Model

| Variable | VIF | 1/VIF |
|---|---|---|
| US | 6.79 | 0.147311 |
| PR dummy | 6.41 | 0.155985 |
| War | 5.15 | 0.194095 |
| Accompanying policies | 4.47 | 0.22386 |
| Power | 3.86 | 0.258913 |
| Democracy | 3.65 | 0.273759 |
| Import sanctions | 3.28 | 0.304508 |
| Duration | 3.26 | 0.306459 |
| Policy change | 3.09 | 0.323862 |
| Perception sender | 2.19 | 0.456091 |
| Precision (1/se) | 2.15 | 0.464137 |
| Asymmetry | 2.06 | 0.484354 |
| Perception target | 1.85 | 0.539326 |
| Study citations | 1.76 | 0.566683 |
| Mean VIF | 3.57 | |

*Source:* Author's elaboration

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# Notes

[1] Hufbauer, G.C., J.J. Scott and K.A. Elliot developed in 1985 the most high-profile debate centered on the question of whether sanctions "worked" as a policy tool. They used the first large-N data set (HSE) and concluded that sanctions succeed 34% of the time.

[2] See Section 3.2 for more details regarding the criteria that was used to make the choice of empirical articles.

[3] Sample selection bias is a type of bias caused by "self-selection by the individuals or data units being investigated" or by sample selection decisions that analysts or data processors take causing that the obtained results are distorted (Heckman 1979: 153, 157).

[4] Publication selection bias, contrary to sample selection, is a type of bias that "arises if researchers, editors, or reviewers use statistical significance as one model selection criterion" causing that the obtained results are distorted (Stanley and Doucouliagos 2012: 4).

[5] Kemp, M.C. (1964) *The pure Theory of International Trade.* New Jersey: Prentice-Hall.

[6] Frey, B. (1984) *International Political Economics.* Oxford: Blackwell; Kaempfer, W and A. Lowenberg, 'The theory of international economic sanctions: A public choice approach', *American Economic Review* 78(4): 768-793; Marinov, N. (2005) 'Do economic sanctions destabilize country leaders?', *American Journal of Political Science* 49(3): 564-576; Porter, R. (1979) 'International Trade and Investment Sanctions: Potential Impact on the South African Economy', *Journal of Conflict Resolution* 23(4): 579-612.

[7] See Banks, M. (1984). 'The Evolution of International Relations Theory', in Banks, M (ed.) *Conflict in World Society: A New Perspective on International Relations,* pp. 3-21.

[8] Banks names these traditions Realism and Liberalism (Banks 1984: 5-7), while Carr E.R. refers to them as Realism and Utopianism (Carr 1946: 22-89).

[9] Later HSE developed an update of their study in 2007. This time the study included to B. Oegg which is a collaborator in the develop of this database. This study/database is known as HSEO again due to the initials of their surnames.

[10] Bapat, N. A. and T. Clifton Morgan in 2009 with their research 'Multilateral Versus Unilateral Sanctions Reconsidered: A Test Using New Data' were the firsts using this database. To see how the database was constructed see Morgan, T., N. Bapat and V. Krustev (2009) 'The Threat and Imposition of Economic Sanctions, 1971--2000*', *Conflict Management and Peace Science* 26(1): 92–110.

[11] Modest in the scale of national goals (Example: human rights, terrorism, and nuclear nonproliferation cases) (Hufbauer et al. 1990: 38).

[12] This includes the surrender of territory (Ibid).

[13] To review in more detail the methodology, characteristics of each study, control variables and results consult the available bibliography.

[14] Since the initial research topic was suggested by Prof. Dr. Peter van Bergeijk and Dr. Binyam Demena, they expected to create a work group to realize the coding and future research of the topic. Finally, this work group was formed by Patrick Kimararungu, Gabriela Benalcazar and Alemayehu Reta. We were the ones in charge of coding and second coding the final databases used for this investigation, following MAER-Net guidelines and the members of the examining committee's guidelines.

[15] The disagreements consisted in: the definition of TIES dataset because I coded it without the distinction of 2006 and 2009, and the suggestion of a broader definition of the methodology used in every empirical study which I did not modify because I explained the way of describing it that was the same used by the second coder.

[16] Demena and Bergeijk (2017: 566) stated that sample mean, and covariance are necessary to calculate an effect size as in the following equation:

$$\log Y_i = a + bX_i * Z_i + dZ_i + \cdots + \varepsilon_i$$

The effect size (e) and the standard error (Se):

$$e = 100\left(b + c\hat{X}\right); \qquad S_e = 100\sqrt{var(b) + 4\overline{X_i * Z_i}var(c) + \hat{X}_i cov(b,c)}$$

[17] Insignificant moderator variables excluded from the reduced model are (ordered from least significance): SES procedure HSE, democracy, financial sanctions, cost target, publication date, policy change, war, international institution, accompanying threat, logit, military policy goal, power, trade, SES source HSE1990, perception target, perception sender. In support of the removal of these variables, the null hypothesis of a zero joint effect cannot be rejected, F (15, 30) = 0.39 (p-value 0.970): jointly the 16 variables appear to be statistically indistinguishable from zero, and thus not contributing to the explanation of the heterogeneity).

[18] Studies that examine determinants, descriptive and quantitative studies as well as papers that could not be downloaded are excluded. First, we tried to contact authors for inaccessible papers if contact info was found. For example, Bergeijk and Siddique (2017) standard errors were not accessible online and Bergeijk (2009) standard errors were not included in his book. Both studies were included after communicating with the authors. Conversely, one book by Hufbauer et al. (1990) *Economic Sanctions Reconsidered* was not found; while another from the same authors published in 2007 *Economic Sanctions: [in two volumes]* did not include standard errors for any of their explanatory variables and due to time constraints, their authors could not be contacted, and both were excluded.