The effectiveness of duration on the success of economic sanctions: A Meta-analysis

What is the effect of the length of sanctions episodes on the success of economic sanctions?

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List of Acronyms

CDA	Clustered Data Analysis
CO2	Carbon dioxide
FAT	Funnel Asymmetric Test
GNP	Gross National Product
HSE	Hufbauer, Schott and Elliott
HSEO	Hufbauer, Schott, Elliott and Oegg
IMF	International Monetary Fund
ISS	International Institute of Social Studies
LSE	Length of sanctions Episodes
MAER-Net	Meta-Analysis of Economics Research Network
MEM	Mixed Effects Multilevel
MRA	Meta Regression Analysis
MST	Meta-Significance Test
OLS	Ordinary Least Squares
PET	Precision Effects Test
SE	Standard Error
TIES	Threat Imposition of Sanctions
UN	United Nations
US	United States
VIF	Variance Inflation factor
WLS	Weighted Least Squares

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Patrick BITANDARO KIMARARUNGU

Abstract

The focus of this study is to investigate the sources of differences in the reported duration effects on the success of economic sanctions using meta-analysis. We analyse the contradictory views of the primary authors results and how they are affected by publication bias and estimation methods, specification, publication and data characteristics. Our meta-data set consists 13 empirical studies which are all published between 1985-2017 with 73 observations on the variable of interest.

The results show that reported duration effects suffered from negative publication bias and confirm an absence of the genuine effect on the success of economic sanctions. However, we further analyse if these findings are influenced by other factors and the results show, specification characteristics affects mostly the reported duration effects more than others whereas estimation methods have no effect on duration. Controlling for such effects, that the duration meta-effect is negative and statistically significant at the 99 per cent confidence interval on the success of economic sanctions: longer duration is associated with lower success rates. The general to specific method does not affect the publication bias towards negative estimates.

Relevance to Development Studies

The study on the success of economic sanctions as foreign policies tool is used mostly by large countries and international organisations to restrict and boycott small economy countries including developing countries to control trade and other political benefits as well as protect international agreement related to environment and nuclear weapons. Furthermore, number of sanctions have also been applied by African integrated regional organizations against their members states mostly to manage conflicts and other democracy problems. Charron and Portela (2015: 1369)

Economic sanctions should be imposed if it is necessary and policy makers should consider costs and other economic aspects. "reserve should be practised in the use of economic sanctions as an instrument of foreign policy. Only when the fundamental interests are at bay can the sanction instrument rightly be invoked, because the obligation to maintain an open multilateral trading system is a very important obligation of any international actor" (Van Bergeijk 1995:453).

In this regard, this research will assist both sanctions initiators as well as the target countries in policy making and control sanctions in case it is initiated and imposed, respectively.

Keywords

Economic sanctions success, Meta-analysis, Sanctions duration, Publication bias, Genuine effect

Chapter 1 Introduction

1.1 Economic Sanctions

Economic Sanctions are foreign policy instruments used to boycott and restrict countries which do not comply with the international agreement either on international trade or other kinds of benefits from other countries. Consequently, this should have a negative impact on the economy of the targeted country, especially its welfare. (Van Bergeijk 1989:385).

Hufbauer et al (2007:3) describe economic sanctions as "the deliberate, government-inspired withdrawal, or threat of withdrawal, of customary trade or financial relations". In this case, the sender country imposes costs to the targeted nation by ending exports, limiting imports and stopping financial transactions (inflows and outflows). Hufbauer et al (2007:45) claim that it can also restrict bilateral aid or IMF and World Bank credits towards target country. This includes also freezing target nation assets if the sender-country have control over them. Kozhanov (2011:144) defines economic sanctions as "restrictions on commercial relations between citizens and firms of at least two countries". It is understandable that both sender and target country will incur the costs but the target country in most cases will suffer more than sender country. The target country will lose exports markets, incur rejection of imports related to the target, the decrease in the level of prices on sanctioned exports and an increase in prices to get the substitution of imports. (Hufbauer et al 2007:45)

After the second World War, an international agreement among nations had been signed to enforce peace, trade and economic diplomacy. The international community decided and agreed to create the UN and other international organizations as the arbitrage of all the countries to solve the issues of conflicts, aid restructuring, financial support as well as trade. However, the economic sanctions and other types of embargoes had also increased due to unlawful behaviours of sanctioned countries mostly to protect their benefits. (Van Bergeijk 1995:443). This increment of bans and boycotts is connected to three main factors.

With globalization nowadays, countries are interconnected due to some economic and political benefits. This increased interdependence among countries in different sectors such as the trade of good and services, transfer of technology and attraction of foreign direct investments, aid and other types of soft loans from international organizations such as the IMF and World Bank. Globalization also facilitates the movement of labour as one of the greatest factors to increase the capital flows among nations (Van Bergeijk 1995:448). Despite all these benefits the interdependence among countries creates conflicts that may result in economic sanctions, self-insufficiency or economically dependent countries which will be of course the most vulnerable. "Many of the participants in that debate about new international economic order in 1970s asserted that globalization, rather than benefiting all nations, tended to produce gains for some at the expense of others, but the general view was that integration of world markets produced 'uneven development,' a rise in the living standards of rich nations at the expense of the poor, rather than the other way around" (Krugman and Venables 1995:858).

Environment and climate change agreement have increased the economic sanctions due to their linkage with economic factors. The fact that it influences the whole globe of countries is very restrictive on the pollution of the atmosphere and emission of CO2. (Folmer et al. 1991:25) proposed that a country should stop any kind of its economic relations with any nation that abuses the environment and climate change agreement since the environment is an international public good.

Another important factor is the policy related to the production of nuclear and chemical weapons and the export of weapons due to a fear of mass destruction like the one the world faced in both world wars; it increased economic sanctions because countries continued to break the agreement and produce weapons illegally. Mass killings in the last century have given the world a lesson of monitoring (and restricting if possible) the production, distribution and trade of arms (Van Bergeijk 1995:447). Despite the above factors in favour of an increase in economic sanctions; many authors have questioned their effectiveness on the sanctioned nations.

1.2 Length of Sanctions Episode

The length of sanctions has been a debatable topic due to its effects on the success of economic sanctions. Daoudi and Dajani (1983:168) displayed that the duration of sanctions plays an important role to reveal the effect of economic sanctions because with time the targeted country will struggle to meet its daily demand. Consequently, the targeted nation will become weak and collapse. This view is the same as Brady (1987:299) who argued that sanctions will be more effective with time because countries will decide to join the imposed sanction due to the fact that the targeted country does not comply with the international agreement which means, in this case, the length of the sanctions is positively related to the success of economic sanctions. Other scholars who claimed that there exists a positive relationship between sanctions duration and its success are Hanlon and Omond (1987:12) who stated that every sanction needs a lengthy period time (several years) to have an impact, regardless if it's tight or flexible sanction.

Nevertheless, many other scholars presented opposing views displaying a negative relationship between sanction duration and its success claiming that time will gradually destroy the effect of economic sanctions as the degree of the damage will depend on the health and flexibility of the target economy based on trade Kemp (1969:207-217). Among other authors who found empirically the negative relationship between duration and success of economic sanctions, there are (Van Bergeijk 1989,1994,2009; Kim 2013; Dashti-Gibson et al 1997; Early 2011; Van Bergeijk and Siddique 2017; Hufbauer et al 1985; Lektzian and Patterson 2015).

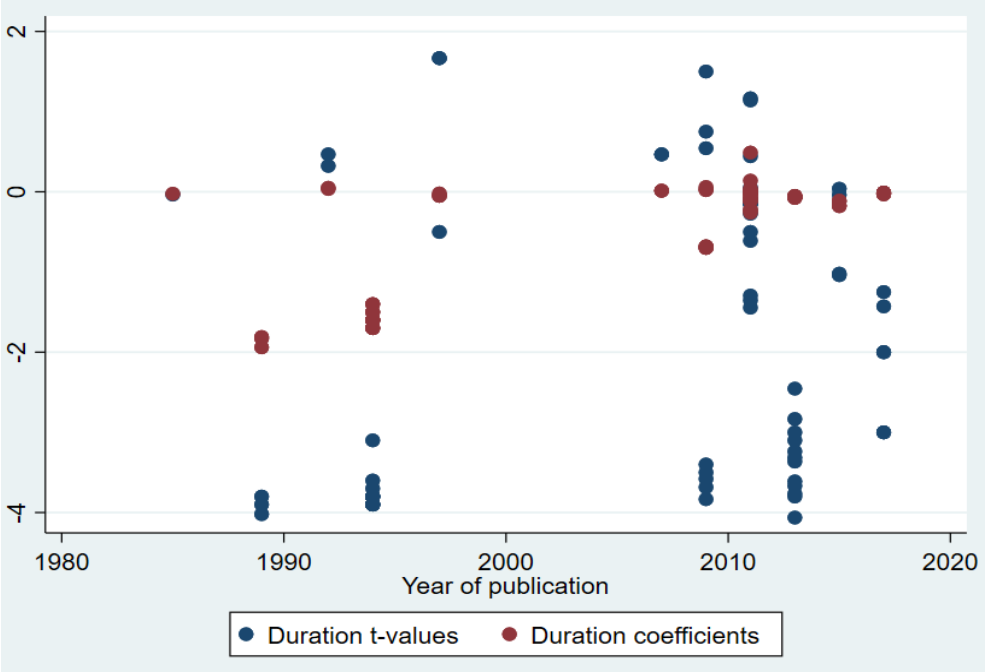
Van Bergeijk (1994:78) argued that the negative relationship between duration and success is a common understanding among economists as well as non-economists. Moreover, Layton-Brown (1987:308) emphasizes that ineffective sanctions tend to last longer and therefore the probability of having a negative relation is high.

The definition of the successful sanctions should be also be taken into consideration since at any time the sanctions can be successful or not as most of the empirical studies do not point out ongoing sanctions cases. Hufbauer et al. (1985:32) define "the success of economic sanctions episode as the extent to which the policy outcome sought by the sender country was in fact achieved and the contribution made by sanctions to a positive outcome." However, in the future ongoing sanctions cases can end up being successful.

Most of the previous literature was looking at the potential damages in the case where the target economy does not comply with the embargo and boycotts from the sender. However, time or duration plays a big role in the behaviour of the target. If the sanctions do not work immediately it simply means that there is no political compliance or economic adjustment (Van Bergeijk and Van Marrewijk 1995:75).

It is very important to draw attention to the duration of sanctions because it has been a source of opposing views as is stated above, especially the first literature that claimed that sanctions will be successful over time. Although there are two missing points that can have a negative impact on the success of sanctions. First, the ability of a target nation to modify its policy and find a substitution will decrease the success of economic sanctions. Second, the countries would forget what happened and reintroduce economic diplomacy (Van Bergeijk 2009:127). Empirically, sanctions duration variable measurement for ongoing sanctions cases cannot be calculated because no one knows when they can be terminated. This may provide biased results due to the underestimation of sanctions duration and consideration of ongoing sanctions cases as failures, yet they can take a long time to be successful (Van Bergeijk 2009:128).

Figure 1.1 Distribution of duration effects size by the year of publication(N=73)

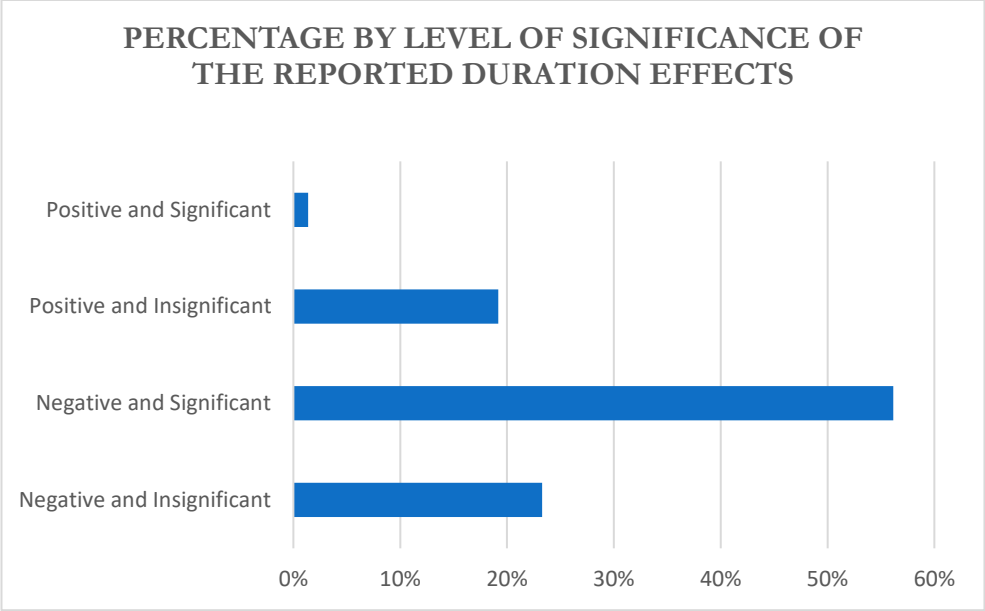


Source: author's data collection (June-August 2018)

Figure 1.1 indicates the distribution of duration effects size with t-values that range between -4.063 to 1.667 whereas coefficients vary between -1.940 to both duration t-values and coefficients appear to be normally distributed because the duration coefficients median is -0.074 while it is -2 for t-values. The minimum values for coefficients and duration are -1.940 and -4.063 respectively while the maximum values are 0.490 and 1.667.

Since the first published empirical study that reported duration effects the debate has become open and authors found different duration effects size both negative and positive as per the above shown and displays how authors have been investigating the duration effect based on sanctions cases reported in the first study HSE 1985,1990 second edition, HSEO 2007 and TIES data set. The topic related to the economic sanctions success as a foreign policy is still arguably because until 2017 there still published studies that reported empirical results on the effect of duration on the success of economic sanctions. Most of the reported coefficients of duration are negative. Moreover, sanctions are still imposed even now. All primary studies collected are published by the well-known journals and publishers and they are highly ranked from A rank to C.

Figure 1.2 The level of significance in percentage of the reported duration effects (N=73)



Source: authors' data collection (June-August 2018)

Figure 1.2 shows that the primary authors empirically results are contrasting as 56% of duration estimates reported a negative and significant effect of duration on the success of economic sanction, whereas 1.3% found positive and significant results. Even on the statistically insignificant findings, negative coefficients represent 23% while positive results reported are 19%. There is heterogeneity among the reported empirically primary studies. To resolve this inconclusive debate, we will use meta-analysis to put the stated opposite views into rest.

1.3 Problem Statement of the study

It is essential to recognize that empirical and qualitative study's findings have different views on this undertaken research that deals with the effect of sanctions duration on the success of economic sanctions. There are two different opinions among economists where some argued that there is a positive relationship between duration and economic sanctions success. On the other hand, others opposed that the relationship is negative. Thus, the more time it takes to comply the more the target finds solutions to reduce the issue caused by the sanctions. The damage will be very high and dependent on the rigidity of the target economy. However, economists argued that only time will reveal the weakness of the targeted nation.

These opposite views motivate us to conduct a research using meta-analysis and other potential graphical methods. Thus, the general objective of this research is to use meta-analysis to respond to the contrasting findings. Following these theoretical perspectives, it appears that there are no concluding findings. We collected all the reported duration coefficients to analyse the effects and show the opposite views from the existing literature.

1.4 Why Meta-Analysis?

This research can be done using different qualitative research methods such as interviews (either phone or face to face interviews), observation based on facts or other textual research surveys based on conventional settings but we choose meta-analysis because it helps to generalize results with more precise quantitative facts, it also improves the traditional review of data through its quantitative systematic way to measure the effects, Additionally, meta-analysis provides the overall insight of the relationships between variables. The stated advantages make meta-analysis to be the ideal review methods compare to qualitative methods review. (Thacker 1998:1685)

Meta-Regression Analysis (MRA) is defined as "the systematic review and quantitative synthesis of empirical economic evidence on a given hypothesis, phenomenon, or effect. MRA is a type of meta-analysis that is explicitly designed to integrate econometric estimates, typically regression coefficients or transformations of regression coefficients" (Stanley et al 2013:391). Meta-analysis is important because it uses statistical approaches by combining multiple studies to increase the statistical power and solve the contraction between reported duration effects. Since the topic of this paper is to measure the effect of the duration on the success of economic sanctions, MRA will be very helpful to know whether duration has negative or positive effects on the success of economic sanctions using Precision Effect Test (PET) to analyse the genuine effect or overall meta-effect of the reported duration effects. (Stanley et al 2013:393).

Meta-analysis has its own protocol of putting together different studies that make it special because it synthesizes, summarizes and gives a report of the literature on how research has been conducted as well as coding. (Demena and Van Bergeijk 2017:550-551). Afterwards, modelling issues must be checked such as descriptive statistics tables, publication bias, heterogeneity and robustness

(Stanley et al 2013:393). Nevertheless, the publication bias is found in many published studies and it gives rise to serious issues within empirical studies. "Publication bias, the phenomenon in which studies with positive results are more likely to be published than studies with negative results, is a serious problem in the interpretation of scientific research" (Begg and Berlin 1988:421).

This is due to the preference in the selection of research results focusing on those empirical findings that are statistically significant. (Stanley and Doucouliagos 2012:52) argued that reviewers and other commentators tend to accept research studies that are consistently on the same standard perspective with other studies. They also tend to treat with special attention the results that satisfy the expected theory. Thus, the researchers may be biased in publication selection model since their estimates to be chosen are numerous and countless to meet the editors and reviewers' expectations. On the other hand, the results with a small effect are "not statistically significant (and) are rare to be published (Stanley 2008:104). This may result in more statistically significant empirical results than what is the reality in the field which may also lead to wrong decisions from policymakers and other scientific decisions. Even though in the fields of medicine and psychology the problem has been addressed. Recently economists have taken into consideration with all their attention the issue; hence they have started addressing the publication bias problem (Stanley 2005:311; Demena 2015:1172)

Using Meta-Significance Test (MST) and funnel plots (Doucouliagos et al 2005:371) found that the literature is affected by the publication bias related to economic freedom on the economic growth, but he allows that it will be very "difficult to identify the magnitude of the genuine effect of the economic freedom on the economic growth". Doucouliagos et al. (2005:365) provide other examples connected to this subject such as Lazzaroni and Van Bergeijk (2014) who found a negative significant publication bias related to the impact of natural disasters at the macroeconomic level. By creating a dataset of 96 different returns to schooling, obtained from 27 studies positive and significant results based on the selection of statistically significant studies in the estimation of the rate of return to schooling was addressed (Ashenfelter et al. 1999:460-466). The same issues have been reported by other authors such as Card and Krueger (1995:239-241) who reported the publication bias problem in the study connected to the minimum wages on employment studies in the United States. The publication

biased results that are positive and significant also found in the rose effect literature related to the unions of currency on trade (Havranek 2010:254). It is important to investigate the publication bias in this undertaken research because it is vital to know if primary authors do not tend to report the negative or positive significant effects of duration on the success of economic sanctions and the fact, they have different views of sanctions duration effects on the success of economic sanctions.

1.5 Research Questions

1. To what extent does the duration of economic sanctions success literature suffer from publication bias?

2. What is the genuine meta effect of the duration on the success of economic sanctions?

3. What are the factors behind the heterogeneity of the duration reported results in the primary empirical studies?

1.6 Contribution of this study

The contribution of this research is to know whether the existing empirical studies are biased towards specific results and to settle the disagreement between the existing literature because studies are contrasting each other on the actual effect of the duration on the success of economic sanctions is not known. Therefore, this research will respond by showing the average meta effect of duration on the success of economic sanctions. This research will also explain the source of heterogeneity and guide the future empirical studies on how they should model primary studies related to duration and success of economic sanctions as by explaining the sources of heterogeneity we will also include the important variables that affect duration effect size. Moreover, to the best of our knowledge, there exists no other meta-analysis study related to the duration and success of economic sanctions.

1.7 Limitations

One of the limitations of this study is time as conducting a meta-analysis study requires a huge effort for data collection compared to the short postgraduate research time. It is important to mention that there are a few numbers of empirical studies that have the success of economic sanctions and duration as dependent and independent variables respectively. Four studies that could not include duration variable were automatically omitted with the examples of Hufbauer et al (2007); Elliott and Uimonen (1993); Lam (1990); Drury (1998) and HSE1990 second edition which does not contain econometrics results.

Primary authors analysis at the level of 85% (11 out 13 studies) is based on Hufbauer et al. datasets of sanctions cases (HSE 1985,1990, HSEO2007 and only 2 studies considered TIES 2006, 2009). While collecting data we try our best to get the data such as duration coefficients, standard errors or t-values as well as other important variables related to the study, but the definition of ongoing sanctions is not mentioned in majority of the selected studies which is difficult to define them as failed sanctions because at any time they can be successful. Additionally, the fact that qualitative studies can not be included in meta-analysis is a limitation because their contribution is not quantified to our results.

The remainder of this Research Paper is organized as follows. Chapter 2 consists of the review of the literature. Chapter 3 presents the empirical methodology that has been used during this research. Chapter 4 discusses the data and statistical analysis of the empirical results. Chapter 5 summarizes and discusses the main results.

Chapter 2 Review of the Literature

2.1 Empirical studies by estimation methods

The literature review is a very important part of the study because it creates a deep understanding of the undertaken research and it is used to build a foundation based on the main idea. This chapter is divided into two main important parts to display a complete understanding of sanctions' duration on the success of economic sanctions

Economic sanctions have been a trending subject among different political and economics authors over the last 3 decades. On display are the contrasting thoughts based on both qualitative research as well as empirical studies. However, our focus goes to empirical research. Qualitative studies such as Dauodi and Dajani (1983); Hanlon and Omond (1987) and Brady (1987) that claimed a positive relationship between duration and success of economic sanctions has been proven wrong by some empirical studies. However, some other researchers have agreed with them. The focus of this review will go through the empirical findings and the estimation method used to analyse the effect of sanctions duration on the success of economic sanctions**.** This study divides the literature into 2 major sections to report the empirical results. We divided the literature based on the estimation methods and by decades used to display their effect on the empirical results and change of results overtime respectively

2.1.1 Ordinary Least Squares (OLS)

Ordinary Least Squares (OLS) regression defined as "a generalized linear modelling technique that may be used to model a single response variable which has been recorded on at least on interval scale. The technique may be applied to single or multiple explanatory variables and categorical explanatory variables that have been appropriately coded" (Craven and Islam 2011:224).

Hufbauer et al (1985) used OLS to estimate some independent variables including the length of sanctions episode on the success of economic sanctions. The findings show an increase of sanctions by 1 year will reduce the success of economic sanctions by 2.4 per cent. Although, this is not statistically significant and thus there is a negative effect between sanctions' duration and success of

economic sanctions. Nevertheless, this approach has been criticized by many authors showing that the estimation used were not biased because the success of economic sanctions as a dependent variable must be estimated using a binary method of estimation (such as Logit or Probit models) because the success outcomes should be dichotomous instead of being continuous. For instance, it can be 1= if it is successful and 0 if otherwise.

2.1.2 Logistic Regression Model (Logit)

"The goal of logistic regression model (Logit) is to understand a binary or proportional response (dependent variable) on the basis of one or more predictors" (Hilbe 2009:15). The success of economic sanctions should be binary because it is either a failure or success which is labelled 1 if it is success or 0 if it is failed.

Van Bergeijk (1989: 396-397) employed the logit estimation method to estimate the relationship between the success of economic sanctions and some explanatory variables such as trade linkage, sanction length, stability, hindrance, reputation and cooperation. Although our focus will be limited to sanctions length. The results show the probability of success is negatively statistically significantly affected by sanctions length at the 99% confidence level of significance.

Dehejia and Wood (1992:78) used logistic model for estimation and their findings are different because they created sanctions duration in both linear and quadratic form to analyse the effect. They concluded that even though sanctions' duration coefficients were statistically insignificant the duration in a linear form has a positive effect on success while in the quadratic form has a negative effect. Thus, sanctions' duration augments the likelihood of success in the first 11 years and 8 months thereafter, it decreases the probability of success.

Van Bergeijk (1994:87-91) found that the length of the sanction episode affects the success of economic sanctions negatively. He stressed that all the specifications checked to analyse effects shows that duration reduces the probability of sanction success at a 99 per cent confidence level of significance. Moreover, empirical findings confirm that an increase by one year reduces the probability of success of economic sanctions by 9.6 percentage points.

Ang and Peksen (2007) investigate the duration effect on the sanctions success as well as other factors that can affect the success of sanctions such as

international cooperation, target's GNP ratio, trade, prior relations, the United States as a sender of the sanctions and both perception of target and sender. However, my focus will only point out the findings related to the duration. They found a positive statistically insignificant effect of duration on the success of economic sanctions from the regression table as an increase of the duration of a sanction by 1 year will increase the probability of the sanction to be successful by 1.4 percentage points.

Van Bergeijk (2009:130-131) emphasized that the likelihood of economic sanctions being successful by changing the target nations behaviour will be higher if the level of democracy and pre-sanction trade are high which will make the sanction duration to be short. He considered ongoing sanctions to estimate the effect of the sanction period on the success of sanctions, but duration coefficients remain negative and statistically significant which means that the effect of duration is negative. The conclusion using the average confirms that an increase of 1% of sanction duration decreases the probability of success by 0.3 percentage points.

Kim (2009:35-36) utilizes a multivariate analysis for the sanctions duration coefficient which is positive but not statistically significant in his sanction success model. Looking at the results, an increase in duration by 1 year increases the probability of success by 2.05 percentage points with the coefficient that is statistically insignificant.

The analysis of sanctions to end up as a success or failure in a given year was done empirically by Early (2011:393-396) and results found confirmed a negative statistically significant probability of success at 95% level and when he controlled for other variables such as commercial and political variables the level of significance grew to 99%. Overall results display that duration decreases the probability of sanctions success.

Lektzian and Patterson (2015:53-54) results are mixed, with both a negative and positive effect of duration on the success of sanctions. The estimation method used is a logistic regression to investigate sanctions cases. Due to mixed data the result outcomes are different. However, the negative effects of duration findings are statistically significant at the 99% confidence interval whereas the positive results effects of duration estimated from another dataset are not statistically significant.

2.2.3 Probit Regression Model (Probit)

"Probit regression, also called a probit model, is used to model dichotomous or binary outcome variables. In the probit model, the inverse standard normal distribution of the probability is modelled as a linear combination of the predictors" (Idre 2018)

Bapat and Morgan (2009:1089-1090) applied probit as an estimation method to analyse the success of multilateral vs unilateral sanctions by considering some explanatory variables that may influence the success of the stated sanctions types among those independent variables duration of sanction was included. The coefficients showed that the effects of duration on both the unilateral and multilateral sanctions were positive but not statistically significant.

Early (2011:400) checked the robustness of US sanctions outcomes effects using the probit model and he found that the effect of sanction time "denotes the number of years sanctions have been in place in each of the sanction episodes" on the success of sanctions is positive but statistically insignificant.

Kim (2013:93) in his study named "Determining the Success of Economic Sanctions" found that the effect of year (labelled the passage of time) on the success of economic sanctions were negative and statistically significant at the 99% confidence level. Finally, Van Bergeijk and Siddique (2017) compared HSE dataset 2nd and 3rd edition to see the success of economic sanctions and the results of the HSE 2nd edition which shows a negative statistically significant effect of duration on the success at the 99% confidence interval while the 3rd edition is negative but statistically not significant.

Table 2.1 Empirical studies by estimation methods and decades(N=73)

Estimation Methods	Studies By decades
LOGIT	Decade (1980's Studies)
van Bergeijk (1989)	Hufbauer et al (1985)
Hyung-Min Kim (2009)	van Bergeijk (1989)
Dashti-Gibson et al (1997)	Decade (1990's Studies)
Ang and Peksen (2007)	Dehejia and Wood (1992)
Dehejia and Wood (1992)	Van Bergeijk (1994)
Van Bergeijk (1994)	Dashti-Gibson et al (1997)
Van Bergeijk (2009)	Decade (2000's Studies)
Lektzian and Patterson (2015)	Ang and Peksen (2007)
Early (2011)	Hyung-Min Kim (2009)
PROBIT	Bapat and Morgan (2009)
Early (2011)	Van Bergeijk (2009)
Hyung-Min Kim (2013)	Decade (2010's Studies)
Bapat and Morgan (2009)	Early (2011)
Van Bergeijk and Siddique (2017)	Lektzian and Patterson (2015)
OLS	Hyung-Min Kim (2013)
Hufbauer et al (1985)	Van Bergeijk and Siddique (2017)

Source: author's data collection (June-August 2018)

2.2 Empirical studies by decades

2.2.1 The duration effect in 1980's studies

The first empirical research that is in line with the success of economic sanctions was by Hufbauer et al (1985) of 108 sanctions cases. Findings on the length of sanctions episode effects is negative and insignificant using Ordinary Least Square (OLS). Nevertheless, Van Bergeijk (1989) found a negative and significant effect of duration on the success of economic sanctions using the same dataset but with 103 sanctions cases.

2.2.2 The duration effect in 1990's studies

Van Bergeijk (1994) empirically found a negative and significant effect of duration on the success of economic sanction using the Hufbauer et al (1990) data set which is the addition of other 105 sanctions cases from Hufbauer et al (1985).

A negative and significant result was presented by Dashti-Gibson et al (1997). However, Dehejia and Wood (1992) found insignificant but positive effects of duration on the success of economic sanctions.

2.2.3 The duration effect in 2000's studies

Van Bergeijk (1994) empirically found a negative and significant effect of duration on the success of economic sanction using the Hufbauer et al (1990) data set which is the addition of other 105 sanctions cases from Hufbauer et al (1985). A negative and significant result was presented by Dashti-Gibson et al (1997). However, Dehejia and Wood (1992) found insignificant but positive effects of duration on the success of economic sanctions.

2.2.4 The duration effect in 2010's studies

Hyung-Min Kim (2013); Lektzian and Patterson (2015) and Van Bergeijk and Siddique (2017) empirically all found the same effect (negative and significant). However, Lektzian and Patterson (2015) findings are mixed due to the mix of data and models used as in model 1 and 3 year of sanction where the unit of their analysis this produced negative and insignificant results. Although, the average results related to the subject in the last 2 decades were negative and insignificant as some of the authors' findings differ as shown by table 2.1 All the studies mentioned above relied on either (HSE 1985, 1990, HSEO2007) or TIES for sanction cases. Hufbauer et al (1985,1990,2007) are considered the most dependable dataset since the majority of the authors relied on them to conduct research connected to sanctions in general and specifically sanctions empirical approach studies. The contradiction among the results is based on the methodology and coding of the dependent variable (success of economic sanctions).

The overall picture of literature findings shows that studies report a negative effect of the duration on the success are statistically significant whereas the positive effect results are all not statistically significant. Additionally, more than 55% of the primary studies results report a negative statistically significant effect. (Figure 1.2)

Chapter 3 Data and Hypothesis

3.1 Systematic Review Protocol and Data Collection

Meta-analysis has its own protocol to collect data in a systematic way, considering different views of authors on the success of economic sanctions, variables to be coded and data construction. This is done based on "MAER-Net instructions" from (Stanley et al., 2013:392). Our data collection was based on putting together all related individual studies. However, first and foremost to avoid bias the definition of the research objectives and questions were defined with explicit inclusion as well as exclusion criteria. (see Appendix 6). For instance, a study to be included must have the success of economic sanctions as a dependent variable, sanctions' duration (length of sanctions) as the independent variable and it should have clear empirical results (sanctions' duration coefficients, t-value or standard error). Otherwise, these studies would be rejected.

3.1.1 Search Strategy

It is used to retrieve all relevant of the studies and assess for eligibility & inclusion, the quality of the search strategy also affects what items may have been missed. Search strategy will use the following two sets of terms. Terms within each individual set are connected via OR whereas each set relates to the other sets through AND. All sets search in the title, abstract and keywords of papers.

The broad keywords used for searching is:("economic sanctions" OR "sanctions*" OR "success of economic sanctions" OR "sanction*outcome*") AND ("sanction* duration" OR "sanction time" OR "sanctions episode*" OR "sanctions imposition*" OR "length sanction episode*). The broad search query provided 300 related results in google scholar to review in which we intensively investigated the titles, keywords and abstracts to select the potential studies. This has been followed by checking the introductions and conclusions, thereafter the investigation provided 61 potential primary studies.

3.2 Selection Criteria:

Two-sections selection criteria were followed using the above electronic database to determine eligibility.

3.2.1 Screening process:

This section involves the quick selection of papers using paper title screening that appear as sanctions duration. This stage may also include papers with titles that are not clear with respect to relevance to the review and require more screening (e.g., via the key words, the source journal, the outlet or journal) for a decision to be made as to maximise the efficiency of the process.

3.2.2 Inclusion criteria:

This section contains more detailed screening of each paper which will be performed using the abstract, and if necessary, the full text. To qualify for the inclusion criteria, papers must satisfy the following conditions:

Studies which don't have the success of economic sanctions as a dependent variable and one of the three variables as independent variables (trade, time and politics), regression related coefficients including their t-values or standard errors which are not in English, the search comprised all the unpublished and published relevant empirical studies without any time span. This criteria process compelled me to remain with 13 studies dealing with sanctions duration vis a vis to its success for coding. Data coding and extraction were saved in a designed Microsoft Excel format which was imported later in Stata for data analysis.

3.3 Meta-dataset

The Meta-dataset is composed of 73 observations from 13 primary studies related to sanctions cases imposed in various countries across the world. The selected primary studies explicitly deal empirically with the success of economic sanctions regarding its duration. These studies contain books, journal articles and published papers that were published by different scholars.

For every potential empirical study, we coded some important parts of the study such as the duration coefficients, t-values or standard errors depend on the study collected, the research period of the primary study data, method used by the author for estimation, the method used to code and compute the success

of economic sanctions, Sanctions are still ongoing or not as well as the measuring unit(day, month or year) to capture the duration, the year of publication, the author and citations number in both Google scholar as well as ISI Web of Knowledge etc.... Afterwards, all the variables applied in every study were coded for the purpose of testing the heterogeneity between studies.

Based on the stated empirical methodologies we will test the following hypothesis:

Hypothesis 1: Literature related to the sanctions duration does not suffer from publication bias.

Hypothesis 2: Sanctions duration has a positive effect on the success of economic sanctions.

Hypothesis 3: The reported duration effects are likely to be affected by the estimation characteristics.

Chapter 4 Methodology and Specification

4.1. Model (Meta-Regression Equation)

Our research general model is based on the following regression equation:

$$\boldsymbol{Economic\ Sanctions\ Success = \beta_\theta + \beta_1 duration + \varepsilon_i}$$

Whereas duration is the length of sanction episode

$\boldsymbol{\varepsilon_i = Error\ term}$

$\boldsymbol{\beta_\theta}$ = ***Intercept***

4.1.1 Independent Variable (Sanctions Duration)

Sanctions duration is measured as the time that the sanction period can last from the imposition until it is uplifted. Thus, the length of sanctions episodes is calculated from the date of initiation until its termination date; it can be measured in days, months and years (Bolks and Al-Sowayel 2000:252).

From the above definition, there are 2 possibilities that either the sender country may hide and deny that it is imposing embargoes to a certain country or it can make the economic sanction official. In this case, the primary studies coded sanctions episodes with the starting date written in official sources. On the other hand, the termination of sanctions episodes is also unclear, thus it is coded as an ended sanction episode when both target and sender countries change their policies significantly. This is done by rounding the period of sanctions for the whole year without looking at the starting or ending month, but the minimum must be 1 year (Hufbauer et al 1990:48).

Based on our dataset only Van Bergeijk (2009) investigated the effect of sanctions ongoing cases which restrict us to do a comparative analysis of ongoing cases studies vis a vis to finished sanctions cases consideration by primary authors. Following the reported primary studies duration is estimated in either logarithm or linear, however, only Van Bergeijk (1989;2009) estimated the duration on logarithm which implies that the sanctions duration coefficients results are estimated in the log of years. Although, others linearize it.

4.1.2 When are economic sanctions considered as a success or failure?

Primary studies have different views on the success of economic sanctions computation. From the sender's country perspective there are two important policy outcomes to consider: First, to what extent the policy result of what the sender country search for is achieved. Second, the contribution of sanctions to the success of the policy outcomes (compared to the military action or other factors). Policy results can be assessed vis a vis to the foreign sender country objectives (Hufbauer et al 1990:49).

Policy result, ranging between 1-4 (1 for the failed result to 4 for the successful outcomes). For regression analysis (binary estimation method) the variable is labelled 1 if the policy outcome is 3 or 4 (successful sanctions results) and it is labelled 0 otherwise (failed sanctions outcomes). Contribution to the policy result is computed from 1 for a negative contribution to 4 for a positive contribution. Here also for the regression analysis (binary estimation method), contribution will be labelled 1 if it has a positive contribution to the policy result and 0 if otherwise (negative or insignificant contribution). Consequently, the success of economic sanctions (success score) which is the product of both policy results and the contribution will range from 1-16 (complete failure if the product result ranges between 1-3) and (success if it ranges 12-16). Here the regression analysis will be labelled 1 for success otherwise 0. (Hufbauer et al 1990:185).

Despite Hufbauer et al (1985) computations, many other scholars contradict the above success score. Lam (1990) used only policy results and argued that values of the success of economic sanctions as a dependent variable are collected together at the lower scale to make higher success sanctions episodes disproportionately to the sanctions outcomes. He also stressed that there is a problem of considering the contribution made by the policy since it is part of the definition of sanctions outcomes. "A more serious problem with the SUCCESS score is the CONTR=contribution component. which purports to measure the contribution of sanctions to a positive outcome, but the objective of this exercise is precisely that. The effectiveness of economic sanctions in achieving policy goals should be deduced from the coefficients of the sanction variables on the right-hand side of the regression equation" (Lam 1990:241).

Dehejia and Wood (1992:75); Dashti-Gibson et al (1997:612); Kim (2009:34,2013:91), Ang and Peksen (2007: 139) used only policy results based on Lam's (1990) assessment model. In this case, it is as simple as policy result= 1 for successful outcomes (3 or 4) and Policy result=0 failed outcomes (1 or 2). Although, both approaches have been used by sanctions authors such as (Hufbauer et al 1985,1990,2007); Van Bergeijk (1989:392,1994:75, 2009:125); Van Bergeijk and Siddique (2017:885-886); (Early 2011:390) all consider the success score ranging from 1 to 16.

Later, other types of sanctions episodes data were collected and called TIES (Threat Imposition of Sanctions) which has been used with many scholars as well and the success score is calculated in a similar way. For instance (Bapat and Morgan 2009:1082) choose to use a scale ranging between 1 to 3 instead of using HSE scale of 1-4. They categorized by using one of the most important variables connected to the effectiveness of economic sanctions which is the cost of both the target and the sender and finally (Lektzian and Patterson 2015:50) who use Success Score range of 1-16) using TIES data set.

Table 4.1 Primary studies computation of the success economic sanctions(N=73)

Author	Success Computation	Success condition	Success method	Duration estimation
Van Bergeijk(1989)	Success Score(1-16)	Success (HSE≥9)	binary =1 if it's success , 0 otherwise	Log
Kim(2009)	Policy result(1-4)	Success(HSE>2)	binary =1 if it's success , 0 otherwise	Linear
Dashti-Gibson et al(1997)	Policy result(1-4)	Success(HSE>2)	binary =1 if it's success , 0 otherwise	Linear
Bapat and Morgan(2009)	Sanctions success(1-16)	Success(TIES>9)	binary =1 if it's success , 0 otherwise	Linear
Ang and Peksen(2007)	Policy result(1-4)	Success(HSE>2)	binary =1 if it's success , 0 otherwise	Linear
Kim(2013)	Policy result(1-4)	Success(HSE>2)	binary =1 if it's success , 0 otherwise	Linear
Early(2011)	Success score(1-16)	Success(HSE>8)	binary =1 if it's success , 0 otherwise	Linear
Van Bergeijk and Siddique(2017)	Success Score(1-16)	Success (SDPIIE>8)	binary =1 if it's success , 0 otherwise	Linear
Dehejia and Wood(1992)	Policy result(1-4)	Success (HSE>2)	binary =1 if it's success , 0 otherwise	Linear
Van Bergeijk(1994)	Success Score(1-16)	Success(HSE≥9)	binary =1 if it's success , 0 otherwise	Linear

Van Bergeijk(2009)	Success Score(1-16)	Success(HSE≥9)	binary =1 if it's success , 0 otherwise	Log
Hufbauer et al(1985)	Success Score(1-16)	Success(HSE≥9)	binary =1 if it's success , 0 otherwise	Linear
Lektzian and Patterson(2015)	Success Score(1-16)	Success(TIES≥9)	binary =1 if it's success , 0 otherwise	Linear

Source: author's data collection (June-August 2018)

4.2 Meta regression equations specification

The issue of publication bias in this study is analysed using the FAT (funnel asymmetric model) because it allows us to test the presence of the true effect between sanctions duration and the success of economic sanctions as well as the publication bias itself. When there is a presence of publication bias, the effect of sanctions' duration will be positively correlated with its own standard error, other things remaining the same (ceteris paribus). If not, the standard error and estimate will be independent. This will give us an equation that shows the dependency of the magnitude of the reported estimate on its own standard error:

$$effect_i = \beta_0 + \beta_1 SE_i + \varepsilon_i \quad \ldots\ldots (1)$$

Where $effect_i$ is sanctions' duration effect and SE_i is sanction's duration standard error; $\beta_1 SE_i$ represents the publication Bias, whereas β_0 works for corrections of publication bias because if the sanctions' duration standard error is equal to 0, the duration effect($effect_i$) will be equal to β_0. Nevertheless, ε_i (error term) in (1) is unlikely to be independent and equally distributed. Since sanctions' duration($effect_i$) is a large sample, then the error term(ε_i) will be independent and equally distributed. Although, it is easy to understand that the variance of sanctions' duration effect($effect_i$) as well as the error term(ε_i) will change from one coefficient to another. Therefore, the equation (1) is clearly heteroscedastic which means it is not all correct to estimate it using Ordinary Least Square (OLS) but rather using the Weighted Least Squares (WLS) will be the corrected estimation method. This is because if the sanctions' duration effect standard error has different estimated variances, this makes WLS the appropriate method for weighting the squared errors which are done practically by inverting each of the coefficients' variance by SE_i. Therefore, the simplified equation becomes:

$t_i = \beta_1 + \beta_0 (1/SE_i) + v_i$ ..... (2)

From equation (2) t_i is the t-statistic of each sanctions' duration effect whereas $1/SE_i$ is the precision of the estimated sanction's duration, and lastly $v_i = (\varepsilon_i / SE)$ is the new error term that have approximately constant variance.

The WLS average effect equation is computed by sum up the duration effect ($effect_i$) and divide by the sum of the weighted sample size. Therefore, the WLS equation (2) becomes:

$t_i(effect_i/SE_i) = \beta_1 SE_i + \beta_0(1/SE_i) + v_i$ .....(3)

Based on the equation (2) β_1 is applied to detect the publication bias reported in the literature related to the sanctions' duration coefficients whereas its sign shows the publication bias direction. It is also important to mention that this model does not have an intercept because β_0 *in* both equations (3) is used for correction of the publication bias.

Meta-analysis of Economic Research Network (MEAR-net) guidelines suggests that we should include all the moderator variables estimated and then remove the non-statistically significant variables one by one to have a summarized result with statistically significant variables known as General to Specific Approach "The G-to-S approach begins with all explanatory variables included in the equation. Then the least statistically significant variable is removed, one at a time, until only statistically significant variables remain." (Stanley and Doucouliagos 2012:91).

As per the above explanation of inclusion of new variables, the equation (3) will be expanded to include the new defined variables for a better investigation source of the heterogeneity. This will be done by adding $\beta_k z_{ki}$ as moderator variables:

$t_i(effect_i/SE_i) = \beta_1 SE_i + \beta_0(1/SE_i) + \beta_k z_{ki}$ .....(4)

whereas t_i is the t-stat of the reported duration effects*($effect_i$) and* $1/SE_i$ denotes the inverse of the precision or standard error. β_0 indicates the magnitude and sign of the genuine effect this is verified by using a Precision Effect Test (PET) while the intercept β_1 denotes the size of the publication bias. (FAT)

Chapter 5 Discussion and Results

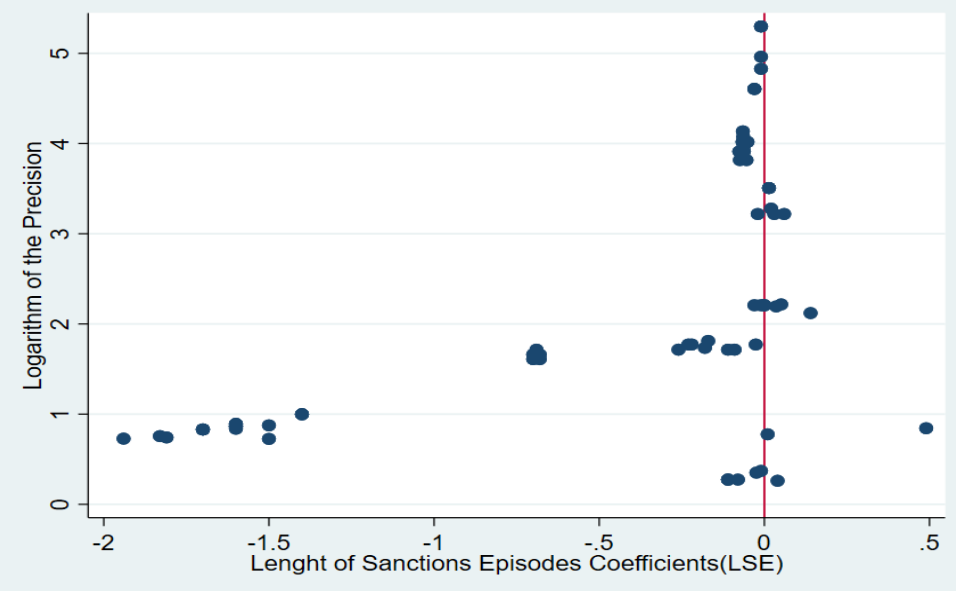
5.1 The graphical review of the funnel plot of duration effects

5.1.1 Funnel-asymmetric test (FAT)

Hypothesis 1: Literature related to the sanction's duration does not suffer from publication bias.

According to (Stanley and Doucouliagos 2012:53), "A funnel graph is a scatter diagram of all empirical estimates of a given phenomenon and these estimates' precisions (i.e. the inverse of estimates' standard errors,1/SE)" and Sutton et al. (2000:1574) identifies it as a straightforward method to check the publication bias as well as the most frequently used. The below funnel plot is for all the estimated sanctions' duration effects; it displays dots that are mostly condensed on the left side (negative side) of the reference line which shows that most of the findings reported in the literature display a negative relationship between the length of sanctions episodes and the success of economic sanctions.

Figure 5.1 Funnel Plots of estimated duration effects (N=73)



Source: author's data collection (June-August 2018).

As per Figure 5.1, the positive reported results on this graph are quite small compare to the negative results. Therefore, after testing hypothesis 1 the asymmetry of the above graph shows that the existing literature suffer from publication bias towards negative estimates.

5.1.2 Bivariate Meta Regression Analysis

Hypothesis 2: Sanctions duration has a positive effect on the success of economic sanctions.

According to (Doucouliagos et al. 2005:329) emphasized that the funnel plot is not enough to confirm the presence of publication bias (FAT) even if the graph is asymmetric which implies the presence of publication bias. This can also appear if the graph looks symmetric (normally distributed). Thus, the suggestion of meta-regression analysis (MRA) to identify the real effect of duration. This is done using the test called "Precision-effect testing (PET)" that serves to detect the genuine effect of duration on the success of economic sanctions.

The within-study and between-study variation is important to be checked to make sure that the same studies are not statistically correlated. Bateman and Jones (2003:247), Doucouliagos and Laroche (2009:160), Demena (2017:68), all recommend using the multi-level modelling. This consists of random effects at the study level and the measurement error of the error term. Therefore, we also prefer to use mixed-effects multilevel (MEM) modelling. Additionally, to check the robustness we apply the clustered data analysis (CDA).

Based on table 5.1 the results show that the literature related to sanctions duration suffers a negative publication bias while it reports the absence of a genuine effect of sanctions duration on the success of economic sanctions. Column (1) is the results regressed using a clustered data analysis (CDA) which clearly shows that the genuine effect of sanctions duration(1/SE) is not statistically significant (-0.00762), but it reports a negative publication bias which is significant at 10% level of significance. However, checking the robustness the mixed-effects multilevel model (MEM) confirms this by reporting an absence genuine effect of sanctions duration (-0.00371) on the success of economic sanctions and validates the negative and significant publication bias column (2).

Table 5.1 Bivariate PET-MRA for genuine effects of duration(N=73)

VARIABLES	(1) (CDA) t-value	(2) (MEM) t-value
Genuine Effect(1/SE)	-0.00762	-0.00371
	(0.00935)	(0.00455)
Bias	-1.588*	-1.018*
	(0.804)	(0.531)
Observations	73	73
Number of studies	13	13

Numbers in parentheses are robust standard errors

*****, **, *, level of significance 1%,5% and 10% respectively.**

Looking at the magnitude of the publication bias column (1), using CDA reports higher negative and significant publication bias from sanctions duration literature compared to the MEM model as it varies from -1.588 to -1.018 at the 10% level of significance. Opposingly, the genuine effects of sanctions duration on the success of economic sanctions varies from negative statistically insignificant figures of -0.00762 to -0.00371 which means that the MEM model reduces the magnitude of both the genuine effect of sanctions duration and publication bias but it opposes hypothesis 2. The MEM is considered as a preferred model because it checks both within and between the study variations

Based on the results shown by table 5.1 there is an overall absence of genuine effect of sanctions duration on the success of economic sanctions. Although, the related literature suffers from negative publication bias. However, the effect of sanctions duration on the success might be affected by other factors which is why the test of heterogeneity is needed to check this empirically.

5.1.3 Multivariate MRA for Testing the Heterogeneity

Hypothesis 3: The reported duration effects are likely to be affected by the estimation characteristics.

Economic features have a relationship among them on the macro and microeconomic level as seen in the examples of income and consumption,interest rates and loan demand, etc. However, the external factors such as political events and estimation models can also affect the relationship

significantly. Consequently, it makes the economics models more complex for economists and statisticians.. "The problem of heterogeneity arises from the fact that the expected value of reported estimate will often depend on many other factors: country or region, time period, presence (or absence) of other relevant variables in the original econometric model, dependent variable measure, functional form used, and the econometric technique employed, among others." (Stanley and Doucouliagos 2012:81). Coming back to our estimation model in which the success of economic sanctions can be affected by many other factors, choice of variables used in this model are constructed based on the literature and meta-analysis practice from previous scholars worked on different topics using meta-analysis. For instance (Demena 2017:69) classified potential sources of heterogeneity into four groups: characteristics of data, estimation method used, specification features as well as publication characteristics. Therefore, the same classification will be used in the estimation of sanctions' duration model effect on the success of economic sanctions.

Characteristics of the data: Since our data are based on the duration of sanctions the author reflects the fact that some sanctions are still ongoing or terminated. Nevertheless, we found that only one study, Van Bergeijk (2009), considered ongoing sanctions cases which forced us to omit the dummy variable that was created for it since the effect would be not significant. Dummy variables for the time span which is considered as the length of the dataset used were included to evaluate its effects on our dataset and control for the result of the same dataset. Additionally, a number of observations of every collected study were used to analyse the variation of samples and finally the source of data with a dummy variable if it employed HSE 1990 (highest to be used at 45%) and otherwise at 0 because sanctions episodes data source are largely collected by Hufbauer, Schott, Elliott (HSE 1985,1990), Hufbauer, Schott, Elliott and Oegg (HSEO 2007) and few of the Threat and Imposition of Sanctions (TIES). Note that sanctions episodes data are cross-sectional data which does not help to include the time dimension data dummy variable.

Estimation Methods Applied: Based on the primary studies collected only one (Hufbauer et al 1985) out of 13 studies used the OLS estimation method while the other 12 studies used either probit or logit estimation method. This makes these 2 methods (probit and logit) to be carefully considered in this model, but

we select probit and create a dummy variable if it is employed which is otherwise 0 since it is not correct to include both. The effect of sanctions duration coefficients reported in a linear form should be checked because it might have an impact on the effect of the whole model. It is in that regard the dummy variable was created to investigate its effect versus logarithm estimation method which presents 10 per cent of the whole dataset as 8 out 73 observations are estimated years of duration in the logarithm.

Specification Features (Control variables): The success of economic sanctions can be influenced by other factors rather than sanctions duration in our dataset. The construction is based on various dummy variables that can affect sanctions duration as they are from selected primary studies. At first, all the coded variables were 43 based on the theory of the success of economic sanctions and the most appeared variables. Using general to specific models we removed all control variables that appear in only one study. This is because their contribution in explaining the dependent variable is not significant and to avoid misspecification bias as many explanatory variables may affect the size of reported results, yet they are not explaining the dependent variable. This means the inclusion of all reported control variables is limited because it might bring in high multicollinearity and low statistical power (Stanley and Doucouliagos 2012:91) Consequently, only control 17 variables are eligible and controlled in this model (see table 5.2).

Publication Characteristics: Inclusion of the year of publication has a high importance as it can have an impact because the success of economic sanctions topic has been active from the first publication of HSE 1985 as a base year. The journal rank is also vital to measure the effect of the study quality. Thus, we created a dummy if a study is A ranked, otherwise 0.[1] Finally, the author citations in Google Scholar were controlled based on the age of the study to avoid biases because the longer the study lasts the more citations there are. Therefore, dividing by the period that has been in place is fair. The above analysis Table 5.1 is bivariate in which we don't include some other important estimates that can have an impact on the results of the estimated equation(3).

[1] The Research School for International Development (CERES) ranks journal quality from A-journals which is the high quality based on the ISI web of Knowledge impact factor see the link https://ceres.sites.uu.nl/valuation-system/journals/, therefore we created a dummy variable for A-journals and others serve as reference.

Table 5.2 Definition and Descriptive Statistics of Independent Variables

Moderator Variables	*Definition*	*Mean*	*Std.Dev.*
1/SE	Precision of estimated sanctions duration	24.423	43.221
	Data characteristics		
No Observations	Number of Observations	387.287	628.261
Data Source	=1 if HSE 1990 data are used	0.452	0.501
Time Span	The number of years of the data used	8.994	20.512
	Estimation Characteristics		
Linear	=1 if duration is estimated in linear	0.890	0.314
Probit	=1 if the estimation method is Probit	0.315	0.467
	Specification characteristics		
Trade Linkage	=1 if trade linkage is used	0.918	0.277
Stability	=1 if the target health/stability is used	0.643	0.482
Prior Relations	=1 if prior relation is used	0.521	0.503
Sender Cooperation	=1 if sender cooperation is used	0.479	0.503
Cost to the Target	=1 if cost to the target is used	0.384	0.490
Military Dispute	=1 if military dispute is used	0.342	0.478
Cost to the Sender	=1 if cost to the sender is used	0.315	0.468
International Sanctions	=1 if the international sanctions used	0.329	0.473
US Sanctions	=1 if US sanctions is used	0.260	0.442
Modest Policy Change	=1 if the Modest Policy change is used	0.273	0.449
Reputation	=1 if Reputation is used	0.288	0.456
Target Democracy Level	=1 if the target Democracy level used	0.260	0.442
Additional Policy	=1 if additional policy is used	0.288	0.456
Regime Change	=1 if regime change is used	0.205	0.407
Financial Sanctions	=1 if financial sanction is used	0.068	0.254
Year of sanction Imposition	=1 if year of sanction imposition is used	0.205	0.406
GNP ratio	=1 if the sender GNP ratio versus the target is used	0.068	0.254
	Publication Characteristics		
Journal Rank Quality	=1 if the journal rank is A	0.247	0.434
Google scholar Citations	Google scholar citations per age of the study	5.776	7.738
Publication year	The publication year of the study(base,1985)	21.329	9.124

Mean and standard deviation figures are converted with 3 digits after the decimal point

However, the choice of moderator variables is important since we have 75 moderator variables. But they are not all important to explain the source of heterogeneity we exclude all the control variables that appear in primary studies once since their impact is not significant which means a variable to be selected should appear at least in two primary studies, thus only 17 out 43 control variables remain. Moreover, as discussed above we choose other 9 moderator variables that may influence duration. Consequently, remain with 26 moderator variables as a general model (see appendix 1) all the moderator variables are connected to the theory of success of economic sanctions but the importance in explaining the heterogeneity is not equal among the moderator variables. Charemza and Deadman (1997:78) argue that the advantage of General to Specific model is that it starts from a general to a very reduced model with only statistically significant variables to avoid bias and data mining.

The use of General to Specific approach and the selection of the moderator variables allow us to select in total 26 moderator variables including 17 specification variables. (see appendix 1). 11 specification variables remain significant as it is shown in table 5.3 and by looking at all the 26 moderator variables and only 61% which means 16 out 27 remain significant. One of the roles of General to Specific approach it helps to minimize the multicollinearity since it reduces the number of moderator variables. It is in this regard, we further investigated the multicollinearity issue to see whether the 26 moderator variables are not correlated. The general to specific approach has reduced the multicollinearity significantly (see appendix 2,3 and 4) for both Variance Inflation Factor (VIF) and correlation matrix. Appendix 3 (general model correlation matrix) indicates the moderator variables correlation before removing the insignificant variables while Appendix 4 displays moderator variables after excluding the insignificant variables (Specific model correlation matrix). The same with appendix 2(Variance Inflation Factor (VIF) General versus Specific model).

Table 5.3 Multivariate MRA Specific Model for source of heterogeneity(N=73)

Moderator variables	Specific	CDA	MEM	Robust se
Genuine effect (1/SE)	-0.00667***	-0.00667***	-0.00667***	-0.00667***
	(0.00146)	(0.000731)	(0.00129)	(0.00123)
Bias Coefficient	-2.560***	-2.560***	-2.560***	-2.560***
	(0.296)	(0.110)	(0.262)	(0.221)
Data characteristics				
Number of observations	-0.000266***	-0.000266***	-0.000266***	-0.000266***
	(0.0000955)	(0.0000205)	(0.0000844)	(0.0000269)
HSE1990	-1.384***	-1.384***	-1.384***	-1.384***
	(0.163)	(0.0819)	(0.144)	(0.118)
Specification characteristics				
Trade Linkage	2.163***	2.163***	2.163***	2.163***
	(0.247)	(0.0765)	(0.218)	(0.150)
Prior Relations	3.525***	3.525***	3.525***	3.525***
	(0.315)	(0.209)	(0.278)	(0.248)
Sender cooperation	-3.821***	-3.821***	-3.821***	-3.821***
	(0.241)	(0.164)	(0.213)	(0.230)
Cost to the Target	-0.660***	-0.660***	-0.660***	-0.660***
	(0.213)	(0.160)	(0.188)	(0.170)
Military Dispute	-3.370***	-3.370***	-3.370***	-3.370***
	(0.179)	(0.129)	(0.158)	(0.121)
Cost to the Sender	0.711***	0.711***	0.711***	0.711***
	(0.193)	(0.107)	(0.170)	(0.135)
International Sanctions	0.857***	0.857***	0.857***	0.857***
	(0.148)	(0.0552)	(0.131)	(0.0931)
Reputation	-1.907***	-1.907***	-1.907***	-1.907***
	(0.205)	(0.132)	(0.181)	(0.160)
International Assistance	2.202***	2.202***	2.202***	2.202***
	(0.198)	(0.101)	(0.175)	(0.137)
Regime Change	-1.911***	-1.911***	-1.911***	-1.911***
	(0.309)	(0.200)	(0.273)	(0.233)
Year of Imposition	2.408***	2.408***	2.408***	2.408***
	(0.226)	(0.107)	(0.200)	(0.115)
Publication Characteristics				
Journal Rank Quality	1.602***	1.602***	1.602***	1.602***
	(0.144)	(0.0540)	(0.128)	(0.0979)
Observations	73	73	73	73
Number of Studies	13	13	13	13

Robust standard errors in parentheses

***** p<0.01, ** p<0.05, * p<0.1**

Starting from the data characteristics table 5.3 highlights the importance of the number of observations used by primary authors in explaining the source of heterogeneity indicates that it reduces the reported duration effects on the success by -0.000266 per observation. It also displays the impact of using data source (HSE1990) compare to other dataset such as HSE1985, HSEO2007, TIES and Mixed data set. Using HSE1990 has a negative effect on the reported duration coefficients.

The difference in estimation methods employed may be a source of heterogeneity which is why we included probit as a specification different from logit and linear estimation opposite to log form of duration coefficients to inspect their impact (probit and linear form) on the reported duration effects respectively (see Appendix 1). However, by using the General to Specific model both appear statistically insignificant which indicates that estimation methods used by primary authors do not have an impact of the reported duration coefficients which opposes hypothesis 3.

Specification characteristics such as the trade linkage, prior relations, international assistance, cost to the sender, year of sanctions imposition and sanctions imposed by international institutions all affect positively and statistically significant the reported duration coefficients at 99 per cent confidence interval while sender cooperation with international institutions and other countries, military dispute, sender reputation, cost to the target, regime change known as destabilization of the target government all affect negatively and statistically significant the reported duration coefficients at 99 per cent confidence interval. Specification characteristics have a large effect size on duration compare to data, estimation and publication characteristics categories.

Lastly, we controlled the impact of publication characteristics to investigate their effect on duration. The fact that a study is published in a higher ranked journal (A ranked journal compare to other ranked category journals) affects positively duration effects by 1.602 at 99 per cent confidence interval which shows how researchers, editors and reviewers are predisposed to publish significant results see the Table 5.3.

Briefly, Table 5.3 illustrates the findings of the Multivariate Specific MRA for the testing of sources of heterogeneity using general to specific model. It shows that the effect of the duration on the success of economic sanctions is

influenced by other factors. The reported duration coefficients will be smaller *ceteris paribus* if the duration estimated using number of observations, data source (HSE1990) are included, the sender country cooperate with the international community(institutions and countries),the heavier the cost to the target country the less the reported duration effects, and the military dispute, sender's reputation on imposing sanctions, destabilization of the target government to change the regime all are connected to the decrease of the reported duration effects. On the other hand, the reported duration effects will be higher if *ceteris paribus* the pre-sanctions trade (trade linkage), pre-relations (prior relations) between target's and sender, sanctions that have imposed by international institutions (international sanctions), international assistance to the target(international Assistance), the year in which the sanctions were imposed and the publication in a higher (A) ranked journal are included which means they are all associated with the increase of reported duration effects.

Chapter 6 Summary and Conclusions

6.1 Summary

On average the duration reduces statistically significant the success of economic sanctions by 0.00667 at 99 per cent confidence interval and our results show that on average the existing literature suffer statistically significant from negative publication bias by 2.560 at 99 per cent confidence interval. Lastly, the estimation methods used by primary authors have no effect on the reported duration estimates.

The clustered data analysis (CDA) and multilevel mixed-effects model (MEM) are important to check the robustness and within study correlation respectively, but results are almost similar in both models. It is important also to mention that sanctions duration coefficients reported in logarithm were checked by creating a dummy variable to analyse its effect on duration, but it is not statistically significant. It is similar to the sanction duration status to check whether the primary authors consider ongoing sanctions cases in their empirical studies. But only van Bergeijk (2009) reflects on ongoing sanctions effects. We also created a dummy variable to check if ongoing sanctions consideration influences the sanction duration, but the results were also statistically insignificant. This implies that the effects of log coefficients should be rejected However, ongoing sanctions case consideration is still needed to be worked on in the future to see if they can't make any impact.

6.2 Multivariate Regression versus Bivariate Regression Analysis

Based on the result provided by Table 5.1 where the effect of sanctions duration on the success of economic sanctions was not statistically significant, the inclusion of moderator variables in Table 5.3 has displayed different findings. This means they have an impact on the size and significance of the sanctions duration as we see with Table 5.3 as the overall genuine effect of sanction duration is negative and statistically significant at 99% level of significance. Implications

here support the fact that Meta-analysis is important in the inclusion and selection of moderator variables to be used.

Looking at the publication bias Table 5.1 shows a negative statistically significant of -1.588 and -1.018 in both CDA and MEM model at the 95% confidence interval, but due to injection of the moderator variables the size and significance level change by -2.560 at 99% confidence interval. Therefore, the inclusion of the possible causes of heterogeneity which are labelled as moderator variables increases the size negative publication bias.

6.3 Conclusions

We use FAT and PET to test publication bias and genuine effect respectively, the findings of Table 5.1 shows an absence of genuine effect of the reported duration coefficients on the success of economic sanctions, on the other hand, it confirms that the literature is suffered from the publication bias towards negative estimates. However, we checked the sources of heterogeneity of the reported duration coefficients using multivariate MRA and found an overall statistically significant genuine effect of the duration on the success of sanction duration. Which implies that duration reduces the success of economic sanctions while the existing literature suffer from publication bias towards negative estimates. This was done by grouping data into four categories: data characteristics, estimation methods characteristics, specification or control and publication characteristics and a choice of variables that can give an explanation of the sources of heterogeneity of the reported duration effects.

6.4 Suggestions for future research

The main objective of this paper is to put forward the contrasting findings related to duration effects on the success of economic sanctions using meta-analysis whereby we are gathering 13 primary studies with 73 observations which only related to sanctions duration as an independent variable. We follow MAER-Net guidelines to avoid the bias of meta-analysis systematic method by collecting all the empirical studies related to the success of economic sanctions.

Primary empirical studies results collection will be helpful for the future researches since the use of MRA based on general to specific approach will guide the future empirical studies on how they should model studies related to duration and success of economic sanctions. Grouping important variables into categories to investigate the sources of heterogeneity and which variables that affect duration size positively or negatively will also assist the future researches to know accurately the sources of heterogeneity of the reported duration estimates. This research will help also politicians and policymakers to understand the effect the duration has on the success of imposed economic sanctions. However, if we were able to re-design this research, we would add more time in data collection because 3 months seems not to be enough compared to meta data collection work, we would also furthermore investigate our data with so called "Jack knife experiment" since our number of studies is small to generalize the results.

APPENDICES

Appendix 1 Multivariate meta regression analysis general model (all variables)

Duration t-values	Coef.	Std. Err.	T	P>|t|	[95% Conf.interval]	
1/SE (Genuine effect)	-0.015	0.005	-2.840	0.007	-0.0250	-0.0043
Bias	-1.237	1.515	-0.820	0.419	-0.0003	-0.0003
Number observations	0.000	0.000	-19.370	0.000	-0.0346	0.0043
Time Span	-0.015	0.010	-1.570	0.125	-2.3082	-0.7463
HSE1990	-1.527	0.388	-3.940	0.000	-2.0996	0.7671
Probit	-0.666	0.712	-0.940	0.354	-3.2223	-1.0256
Linear	-2.124	0.545	-3.890	0.000	1.9713	5.3519
Trade Linkage	3.662	0.839	4.360	0.000	4.9755	7.3348
Prior Relations	6.155	0.586	10.510	0.000	-2.0433	0.4594
Stability	-0.792	0.621	-1.270	0.209	-7.3348	-4.9755
Sender cooperation	-6.155	0.586	-10.510	0.000	-3.1615	1.9212
Cost to the target	-0.620	1.262	-0.490	0.625	-6.4545	-4.3703
Military Dispute	-5.412	0.517	-10.460	0.000	0.2906	2.7933
Cost to the sender	1.542	0.621	2.480	0.017	-0.7204	1.8569
International sanctions	0.568	0.640	0.890	0.379	-1.4188	2.6743
US Sanctions	0.628	1.016	0.620	0.540	-0.6093	1.2926
Modest Policy Change	0.342	0.472	0.720	0.473	-3.9124	2.0511
Reputation	-0.931	1.480	-0.630	0.533	-0.7519	-0.2041
Target democracy Level	-0.478	0.136	-3.510	0.001	1.7756	3.1458
International assistance	2.461	0.340	7.230	0.000	-4.0886	-0.3453
Regime Change	-2.217	0.929	-2.390	0.021	-0.6516	0.2016
Financial sanctions	-0.225	0.212	-1.060	0.294	0.1736	2.3252
Additional policies	1.249	0.534	2.340	0.024	2.2739	3.8581
Year of imposition	3.066	0.393	7.800	0.000	-1.6172	3.2595
GNP ratio	0.821	1.211	0.680	0.501	0.6877	3.8921
Journal rank quality	2.290	0.795	2.880	0.006	-0.3102	0.2762
Google scholar citations	-0.017	0.146	-0.120	0.908	-0.0889	0.1101
Year of publication base	0.011	0.049	0.220	0.831	-4.2878	1.8142

Appendix 2 Variance Inflation Factor (VIF) General versus Specific model

Moderator Variable	**VIF(General)**	**1/VIF**	**VIF(Specific)**	**1/VIF**
Prior Relations	677.42	0.001476	12.84	0.078
Regime Change	403.12	0.002481	8.08	0.124
Sender cooperation	920.77	0.001086	7.54	0.133
Cost to the Target	1940.16	0.000515	5.69	0.176
Reputation	1276.61	0.000783	4.33	0.231
Year of sanction imposition	86.64	0.011543	4.33	0.231
International assistance	57.95	0.017256	4.19	0.239
Cost to the sender	243.74	0.004103	4.16	0.240
Military Dispute	483.88	0.002067	3.75	0.266
HSE1990	112.3	0.008905	3.41	0.293
International Sanctions	252.43	0.003961	2.51	0.399
Trade Linkage	219.28	0.00456	2.39	0.419
Precision(1/SE)	38.47	0.004633	2.05	0.488
Journal rank	590.09	0.001695	2.01	0.497
No observations	4.01	0.249468	1.84	0.542
Google scholar citations	4021.12	0.000249	-	-
US Sanction	1040.74	0.000961	-	-
Year of Publication	1026.24	0.000974	-	-
Probit	514.98	0.001942	-	-
GNP ratio	497.84	0.002009	-	-
Additional Policies	215.83	0.008905	-	-
Stability	168.45	0.005937	-	-
Linear	149.86	0.006673	-	-
Time Span	140.98	0.007093	-	-
Modest Policy Change	129.98	0.007694	-	-
Target Democracy Level	129.98	0.059885	-	-
Financial Sanctions	5.82	0.171765	-	-
Mean VIF	**564.27**		**4.61**	-

Appendix 3 General model correlation matrix

e(V)	1/SE	N	TimeSpan	HSE1990	Probit	linear	TL	PrRel	ST	Scoop	CoT	MID	CoS	IntISan	Ussan	MPC	Rep	TDemL	IntAssT	RCV	FinS	AdP	Yr	GNPr	JournalR	Googleschcit	yearofPubl	Bias
1/SE	1.000																											
N	-0.092	1.000																										
TimeSpan	-0.029	0.320	1.000																									
HSE1990	0.077	0.258	0.896	1.000																								
Probit	0.068	0.253	0.934	0.960	1.000																							
linear	0.351	-0.191	-0.198	-0.121	-0.043	1.000																						
TL	-0.118	-0.172	-0.949	-0.934	-0.969	0.057	1.000																					
PrRel	-0.263	0.156	0.425	0.318	0.287	-0.933	-0.305	1.000																				
ST	0.503	-0.016	0.358	0.507	0.508	0.503	-0.440	-0.336	1.000																			
Scoop	0.226	-0.134	-0.467	-0.356	-0.321	0.918	0.363	-0.989	0.330	1.000																		
CoT	-0.097	-0.188	-0.912	-0.907	-0.903	0.368	0.908	-0.594	-0.408	0.630	1.000																	
MID	0.206	-0.127	-0.629	-0.597	-0.565	0.805	0.577	-0.931	0.121	0.940	0.800	1.000																
CoS	-0.405	0.013	-0.160	-0.334	-0.383	-0.786	0.285	0.637	-0.863	-0.652	0.105	-0.419	1.000															
IntISan	0.224	0.072	0.818	0.925	0.935	0.045	-0.907	0.204	0.673	-0.238	-0.882	-0.512	-0.497	1.000														
Ussan	0.063	0.164	0.894	0.880	0.890	-0.391	-0.889	0.634	0.368	-0.662	-0.991	-0.830	-0.085	0.862	1.000													
MPC	-0.244	-0.110	-0.675	-0.814	-0.834	-0.357	0.767	0.132	-0.802	-0.124	0.657	0.178	0.755	-0.906	-0.627	1.000												
Rep	-0.307	-0.115	-0.838	-0.925	-0.931	0.020	0.911	-0.273	-0.681	0.307	0.921	0.552	0.461	-0.979	-0.902	0.868	1.000											
TDemL	-0.195	0.023	-0.454	-0.623	-0.639	0.073	0.537	-0.267	-0.553	0.229	0.645	0.469	0.446	-0.741	-0.679	0.663	0.745	1.000										
IntAssT	-0.280	-0.116	-0.615	-0.743	-0.769	-0.154	0.715	-0.016	-0.698	0.024	0.681	0.295	0.570	-0.863	-0.648	0.859	0.839	0.723	1.000									
RCV	0.257	0.092	0.775	0.899	0.906	0.071	-0.869	0.158	0.703	-0.182	-0.848	-0.465	-0.538	0.979	0.827	-0.923	-0.970	-0.773	-0.920	1.000								
FinS	0.000	0.000	-0.292	-0.292	-0.235	-0.200	0.237	0.096	-0.388	-0.082	0.203	-0.008	0.313	-0.277	-0.184	0.366	0.269	0.000	0.025	-0.236	1.000							
AdP	-0.349	0.043	0.470	0.406	0.395	-0.794	-0.439	0.877	-0.353	-0.894	-0.620	-0.916	0.579	0.344	0.654	0.003	-0.348	-0.297	-0.197	0.295	0.215	1.000						
Yr	-0.226	-0.008	-0.422	-0.587	-0.649	-0.584	0.580	0.395	-0.679	-0.388	0.366	-0.100	0.803	-0.706	-0.353	0.848	0.641	0.579	0.785	-0.736	0.042	0.143	1.000					
GNPr	0.026	0.197	0.895	0.893	0.885	-0.432	-0.882	0.655	0.346	-0.684	-0.991	-0.847	-0.052	0.851	0.992	-0.613	-0.889	-0.640	-0.628	0.809	-0.205	0.669	-0.318	1.000				
JournalR	-0.160	-0.170	-0.929	-0.944	-0.962	0.179	0.969	-0.433	-0.484	0.476	0.972	0.688	0.257	-0.942	-0.960	0.768	0.961	0.657	0.755	-0.910	0.219	-0.520	0.533	-0.955	1.000			
Googleschcit	0.085	0.158	0.918	0.914	0.924	-0.319	-0.936	0.566	0.383	-0.606	-0.991	-0.791	-0.122	0.899	0.989	-0.677	-0.925	-0.645	-0.687	0.859	-0.197	0.636	-0.420	0.985	-0.985	1.000		
yearofPubl	0.011	0.141	0.913	0.910	0.902	-0.363	-0.912	0.596	0.373	-0.635	-0.988	-0.810	-0.087	0.875	0.985	-0.647	-0.900	-0.621	-0.637	0.827	-0.244	0.645	-0.366	0.990	-0.966	0.990	1.000	
Bias	-0.097	-0.166	-0.937	-0.926	-0.949	0.070	0.944	-0.341	-0.575	0.380	0.935	0.592	0.354	-0.934	-0.925	0.806	0.944	0.620	0.718	-0.890	0.362	-0.405	0.560	-0.917	0.965	-0.946	-0.946	1.000

Appendix 4 Specific model correlation Matrix

e(V)	1/SE	N	HSE1990	TL	PrRel	Scoop	CoT	MID	CoS	IntISan	Rep	IntAssT	RCV	Yr	JournalR	Bias
1/SE	1.000															
N	0.032	1.000														
HSE1990	0.250	0.218	1.000													
TL	-0.232	0.323	-0.270	1.000												
PrRel	0.027	-0.035	-0.532	0.388	1.000											
Scoop	-0.062	0.100	0.473	-0.378	-0.868	1.000										
CoT	-0.019	0.201	-0.255	0.283	0.576	-0.349	1.000									
MID	-0.152	0.161	0.347	0.005	-0.481	0.494	-0.359	1.000								
CoS	-0.100	-0.214	-0.023	-0.065	-0.306	0.064	-0.584	-0.028	1.000							
IntISan	0.211	-0.196	0.253	-0.139	-0.428	0.222	-0.433	-0.038	0.322	1.000						
Rep	-0.147	0.079	-0.578	0.417	0.608	-0.520	0.444	-0.195	-0.013	-0.150	1.000					
IntAssT	0.030	0.084	-0.203	0.182	0.432	-0.453	0.190	-0.163	-0.196	-0.111	0.158	1.000				
RCV	-0.099	-0.072	0.411	-0.416	-0.738	0.653	-0.461	0.224	0.196	0.275	0.606	-0.720	1.000			
Yr	-0.085	-0.134	-0.419	-0.045	0.079	-0.248	-0.247	-0.372	0.038	0.316	0.092	0.228	-0.003	1.000		
JournalR	-0.475	0.134	-0.123	0.504	0.122	-0.020	0.110	0.222	-0.081	-0.159	0.268	0.123	-0.239	-0.038	1.000	
Bias	0.137	-0.477	0.117	-0.904	-0.383	0.295	-0.384	-0.056	0.160	0.058	0.501	-0.248	0.464	0.096	-0.547	1.000

Appendix 5 Meta- analysis on the success of economic sanctions

Report on the description of data collection

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Prof. Dr Peter Van Bergeijk

Dr. Binyam Afewerk Demena

Data Collection Process

We follow the Meta-analysis of economics research network (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 span. We have different broad keywords with different terminology based on individual interest of variables (duration, trade and prior relations) as specified in the individual study. 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 individual variables of interest such as duration, trade or prior relation (for a full report of excluded studies see every coder's paper) and report regression-based coefficients, sample size, t-statistics, or standard errors.

Every individual coder searched, read and coded the research literature independently. The 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 the 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 6 Reports excluded based on title and abstract with justification

First author and year	Source	Justification for exclusion
Elliott and Uimonen (1993)	Google Scholar	The sanctions duration is not considered as an independent variable only year is defined as the time trend in which the sanctions began
Whang (2011)	Google Scholar	The dependent variable is not success of economic sanctions but the sanctions initiation
Lam (1990)	Google scholar	They omitted duration due to the lack of updated information related to whether sanctions are still ongoing or not; and because also length of sanctions cannot be a truly independent variable only the year sanctions were imposed is considered
Drury (1998)	Google scholar	The dependent variable is not in line with the study as it is year sanctions were imposed not the length of sanctions episode
Cox and Drury (2006)	Google Scholar	Both dependent and independent variables are not in line with the study as they are year sanctions were imposed and sanction onset respectively
Wallace (2013)	Google Scholar	The dependent variable used is sanctions onset (if sanctions were imposed or not) which is not in line with the study

First author and year	Source	Justification for exclusion
McLean and Whang (2010)	Google Scholar	Sanctions duration is not included among other independent variables.
Dorussen et al (2001)	Google Scholar	Sanctions duration is a dependent variable
Early et al (2015)	Google Scholar	The dependent variable is not in line of our research (success of economic sanctions)
Von Soest and Wahman (2015)	Google Scholar	The dependent variable is not in line of our research (success of economic sanctions)
Hart (2000)	Google Scholar	Sanctions duration is not included among other independent variables.
Pape(1998)	Google Scholar	The study does not contain econometrics findings
Drury (2000)	Google Scholar	The dependent variable is not in line of our research (success of economic sanctions)
Biersteker et al (2018)	Google Scholar	The study does not contain econometrics findings
Hatipogluus (2014)	Google Scholar	Both the dependent and independent are not in line of our study
Neuenkirch and Neumeier (2016)	Google Scholar	The dependent variable is not success of economic sanctions
Afesorgbor and Mahadevan (2016)	Google Scholar	The dependent variable is not success of economic sanctions
Van Bergeijk and Van Marrewijk 1995	Google Scholar	The study does not contain econometrics findings

First author and year	Source	Justification for exclusion
Caruso (2003)	Google Scholar	The dependent variable is not success of economic sanctions
Peterson(2013)	Google Scholar	The dependent variable is not success of economic sanctions
Neuenkirch et al (2015)	Google Scholar	The dependent variable is not success of economic sanctions and it does not contain the sanctions duration.
Evenett (2002)	Google Scholar	The dependent variable is not success of economic sanctions
Ellison (2001)	Google Scholar	The study does not contain econometrics findings
Allen (2005)	Google Scholar	The sanctions duration is not included among other independent variables.
Dajani and Daoudi (1983)	Google Scholar	The study does not employ econometrics approach
Von Soest et al (2013)	Google Scholar	The success of economic sanctions is not the dependent variable
Parker(2000)	Google Scholar	The study does not employ econometrics approach
Cranmer et al (2014)	Google Scholar	The success of economic sanctions is not the dependent variable
Webb (2018)	Google Scholar	The dependent variable is not success of economic sanctions
Hafner-Burton et al (2008)	Google Scholar	The economic sanctions are excluded in this study which means the dependent variable is not in line with our research.

First author and year	Source	Justification for exclusion
Dizaji and Van Bergeijk (2013)	Google Scholar	The study does not have econometrics sanctions duration coefficients.
McGillivray et al (2004)	Google Scholar	The dependent variable is the length of sanction duration between the sender and the target which is not in the line of our study.
Peksen et al (2009)	Google Scholar	The dependent variable is not success of economic sanctions
Van Bergeijk (2015)	Google Scholar	The study does not contain econometrics estimates.
Escribà-Folch et al (2010)	Google Scholar	The depend variable is not success of economic sanctions
Bolks et al (2000)	Google Scholar	The depend variable is not success of economic sanctions
McLean et al (2018)	Google Scholar	The dependent variable is not in line with our research.
Escribà-Folch et al (2010)	Google Scholar	The dependent variable is not in line with our research.
Allen and Lektzian (2012)	Google Scholar	The dependent variable is not the success of economic sanctions.
Shin et al (2016)	Google Scholar	The dependent variable is not the success of economic sanctions
Marinov (2005)	Google Scholar	The dependent variable is not in line with our study
Escribà-Folch (2008)	Google Scholar	The dependent variable is not the success of economic sanctions
Martin (1993)	Google Scholar	The dependent variable is not the success of economic sanctions

First author and year	Source	Justification for exclusion
Peksen and Drury (2010)	Google Scholar	The dependent variable is not the success of economic sanctions
Peksen (2009)	Google Scholar	The dependent variable is not the success of economic sanctions
Drezner (2000)	Google Scholar	Sanctions duration is not included among other independent variables.
Chan (2009)	Google Scholar	The dependent variable is the contribution of sanctions on the sender's objective which is not success of economic sanctions.
Lektzian and Souva (2007)	Google Scholar	The dependent variable is not the success of economic sanctions
Early (2012)	Google Scholar	The dependent variable is not the success of economic sanctions
Wood (2001)	Google Scholar	The dependent variable is not the success of economic sanctions
Driscoll(2011)	Google Scholar	The Study does not have duration as an independent variable

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