The Impact of Economic Sanctions on Growth

Master’s Thesis

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# Table of Contents

1. Introduction p. 3  
2. Literature p. 4  
3. Terminology p. 8  
4. Mechanisms by which Sanctions Damage the Target Economy p. 9  
5. Empirical Tests p. 16  
   5.1. Methodology and Data p. 16  
   5.2. The Tests p. 18  
      5.2.1. Exports and Imports as a Percentage of GDP p. 18  
      5.2.2. GDP Growth Rate p. 20  
6. Explaining the Results p. 32  
7. Conclusion p. 43  
List of References p. 46  
List of Tables p. 50  
List of Figures p. 50  
Appendix p. 51  
   A Chronological Summary of Economic Sanctions p. 51  
   B Case Studies p. 54
1. Introduction

Economic sanctions have long enjoyed considerable popularity both as tools of foreign policy and as topics of academic investigation. Sanctions are favored by nation states and international organizations as means of influencing foreign governments’ policies. They are expected to impose economic hardship on the target country, particularly on its ruling regime, inciting it to concede to the sender’s demands and thereby avoid further reprimands. They are a prolific and controversial topic of research, continuing to raise questions about their usefulness and effects many years after they first stirred academic interest. Notorious examples of sanctions include those imposed against Iraq to interrupt the invasion of Kuwait, against Haiti to topple the military government, and against South Africa to abolish apartheid.

Although the United States have been the most prominent actor in the sanctions scene, they are hardly the only one. The Russian Federation has also frequently resorted to economic coercion to exercise political control over neighboring states, such as Georgia, the Baltic republics and the Commonwealth of Independent States. There have been instances of neighborhood fights, like Indonesian sanctions against Malaysia in the mid-1960’s or the lengthy fight over Gibraltar between Spain and the United Kingdom. Even lesser powers such as Greece, Turkey and Nigeria have tried their luck, as have non-state actors. The United Nations implemented seven sanction plans in 1994 alone, although only two in the first forty-five years of its existence (Schlesinger, 1997). Regional associations such as the European Union also have the right to chastise members that do not meet contractual requirements, although practical implementations have been hesitant and half-hearted at best.

Evidently, sanctions have great potential in international politics, especially as a long-term alternative to armed conflict. There is reason to believe that their frequent use will not diminish in the future, despite voices from academia decrying their utility, as developed nations become increasingly unwilling to resort to military force. With the great and growing relevance of sanctions in international politics comes the need to gain better understanding of their workings and effects. Yet the issue of sanctions presents some difficulties for scholars and policymakers, because it is both technically complex and politically sensitive. Consequently, literature has focused on a limited number of aspects, particularly on the effectiveness of sanctions in influencing other nations’ policies. The mechanisms by which they do so are taken for granted and rarely inspected empirically. Two judgments are common to academic literature on economic sanctions: first, sanctions are rarely successful; and second, what little success they have increases with their
economic effect on the sanctioned country. To fill one of the blanks left in sanctions literature, this study investigates whether the economic effect of sanctions is as exceptional as their success is believed to be.

The remainder of this paper is organized as follows: section two provides a brief review of the literature. In section three, we define the terms and variables specific to the topic. Section four presents the mechanisms by which sanctions affect the target economy. In section five, we investigate whether the imposition of sanctions causes a fall in the GDP growth rate, and, if so, under which circumstances the latter is particularly pronounced. Section six provides explanations for the results and section seven concludes.

2. Literature

Most contributions to literature on economic sanctions comprise an assessment of their effectiveness as tools of foreign policy – or rather, as most authors conclude, of their ineffectiveness as such. Kirshner (1997) goes as far as saying “the debate in political science about economic sanctions has too often devolved into unhelpful caricatures about whether or not sanctions ‘work’”. Similarly, Baldwin (1985) deplores that “the two most salient characteristics of the literature on economic statecraft are scarcity and the nearly universal tendency to denigrate the utility of such tools…” Although literature on the topic has undoubtedly expanded since Baldwin’s classic work was published, the second characteristic seems to remain applicable even nowadays.

In *National Power and the Structure of Foreign Trade* (1945), Hirschmann argues that nations can use economic coercion to obtain concessions from one another. His work reflects the opinion common among his contemporaries that economic sanctions are a powerful tool in international politics. With the onset of the Cold War, the disruption of many diplomatic relations, and the numerous unpunished infringements on Western principles by the USSR and its allies, this philosophy was placed under a great amount of strain.

Milton Friedman stated that “all in all, economic sanctions are not an effective weapon of political warfare.” Wallensteen (1968) shares this pessimistic opinion, which permeated mainstream academic literature during the first decade of the Cold War, and became widespread. According to Drury (1998), the “archetypal example of the conventional wisdom” is Doxey’s (1971) work, which

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1 This is quoted in Daoudi and Dajani (1983).
delves on the ineffectiveness of sanctions, but also on their moral and legal implications. Doxey argues that the impact of economic coercion on the target is conditioned by the sender’s goals, and claims that economic sanctions will be most effective when they put the target economy under the greatest pressure. Pape (1997) doubts economic sanctions are capable of solving international political disputes, resting his case on the poor success rate of sanctions, which he claims is just 5%. A recent study by the Center for Strategies and International Studies (CSIS) concludes that unilateral sanctions rarely succeed in compelling other countries to change their behavior (CSIS, 1999). In a notable deviation from the mainstream, Galtung (1967) adopts the view that economic sanctions often fail because excessive hardship is imposed on the population, which alienates it from the sender country and motivates it to bear sacrifices in support of its government. In support of the “rally round the flag” theory, Mayall (1984) claims that sanctions are often counterproductive by “creating out of the siege mentality a sense of national cohesion and determination to triumph in adversity”.

In what is probably the most famous and encyclopedic classification of sanctions episodes, Hufbauer, Schott, Elliott and Oegg (2007) present 174 instances from 1914 to 2000, and conclude that 40 of them were “successful”. As the only large-N dataset of sanction cases, which allows for systematic testing of various hypotheses, HSEO has been the subject of the vast majority of published empirical studies on sanctions success. While they do not draw open pessimism from this poor success rate, their conclusion that 134 cases were unsuccessful seems to invite it, which, considering the popularity of their dataset, has certainly influenced subsequent works.

While empirics show that sanctions rarely achieve their implementers’ complete goals, some authors have challenged the pessimistic conventional wisdom. They argue that sanctions have long been underrated because of excessive focus on a few famous failures, such as the United States versus Cuba since 1960. Scholars who support this view do not paint a thoroughly optimistic picture of economic sanctions. Rather, they are aware of their limits, but believe in their usefulness under specific circumstances. Rogers (1996) claims that sanctions will enjoy some success in preventing regional conflict, and encourages governments to employ them frequently. Baldwin (1985) argues that restricting the definition of success to major policy changes in the target country (as some authors have done) may be too limiting, and that sanctions are at least effective in attaching costs to specific behavior. Lopez and Cortright (2004) consider that even though sanctions rarely induce a change in the sanctioned country’s policies, they achieve a success by reducing the amount of resources available to the misbehaving government.
Lindsay (1986) and Nossal (1989) consider that sanctions often have an expressive or demonstrative, rather than practical, purpose, and can serve as support of other foreign policy activities. Governments may use sanctions to respond to domestic pressure to “do something” against perceived misbehavior. In this light, sanctions should not be submitted to a rigorous cost-success analysis, as they were clearly never intended to have any particular effect. This theory is also supported by Tsebelis (1990) and Lundborg (1987).

Regardless of adherence to the “optimists” or the “pessimists”, most authors espouse the intuitive tenet that the probability of success increases with the severity imposed on the sanctioned country’s economy. In the words of Mack and Khan (2000), “the pain inflicted by sanctions on citizens of target states will cause them to pressure their governments into making the changes demanded by the sanctioning body.” Barber (1979) claims that economic costs are a necessary, but not sufficient condition for the sanctioned country to make concessions. Bayard et al. (1983) use the theory of cartels to show that the larger the exports share controlled by a cartel of exporters, the larger the exporters’ ability to inflict damage by restricting quantity and raising prices, and so the more effective the sanctions. Morgan and Schwebach (1996) use the spatial model of bargaining to predict the circumstances under which sanctions are most likely to be effective, one of which is high costs to the sanctioned country.

We must wonder why academics deliver such gloomy assessments, while policymakers continue to rely on sanctions. One explanation is that many studies on economic statecraft are either theoretical models divorced from empirics, or case-studies that cannot be generalized without loss of applicability. Many authors use an inductive approach: they develop economic statecraft theories after having observed the events that followed the imposition of sanctions on particular cases. Obviously, a number of important variables and questions get lost in the process. The problem is exacerbated by biased case selection. Sanctions episodes often become famous because they are spectacular; costly and ineffective at the same time, while cases where goals were met quickly and smoothly are of no particular journalistic interest.

Another explanation for the incongruity between scientific analysis and political action may be that effectiveness has so far been measured against broadly stated policy objectives. A number of dangers are associated with such an approach. First, taking official objective declarations at face value is clearly naïve. Politicians tend to announce sweeping, morally loaded policy objectives and keep quiet about the real, instrumental ones. Second, most studies treat the identified objectives as static, which they often are not.
Further, sanctions may be underrated because, unlike diplomacy, covert action and military force, they have no natural advocates. There is no lobbying group for sanctions, because most often no one in the sender country profits from them, whereas any of the alternative three strategies are likely to be supported by the U.S. State Department, the CIA and the Defense Department, as well as their equivalents in other nations. As a result, any successes achieved by sanctions may be unreported or underrated, and their failures exaggerated by parties with an interest in avoiding their deployment, or in promoting the deployment of other instruments.

In the same way, a part of the discrepancy may be traced back to the use of different definitions of “success”. Daoudi and Dajani (1983) comment: “Most studies have assumed that the objectives of economic sanctions were to return to the status quo that prevailed prior to the aggression (…). In reality, the aims of sanctions have been consistently less ambitious.” In peacetime, sender countries are likely to formulate their demands in a way that leaves space for compromise. Therefore, even if the goals are not met, the intentions of the target may still be satisfied, which often goes by unnoticed. Daoudi and Dajani name this the “bull’s-eye fallacy”, which leads academia to systematically underrate the true power of economic sanctions.

This overview shows that the literature on economic sanctions is unbalanced: it focuses on case studies rather than econometric analysis; on simplistic criteria of “success” and “failure” rather than descriptive analyses of the underlying mechanisms, and on economic consequences for the sender rather than for the target (Askari et al., 2002). Although Kaempfer and Lowenberg (2007) claim there is “no doubt that embargoes or restrictions on flows of goods and capital impose welfare costs on the target economy”, we find that little empirical work has actually established it. The rationale being that the political success of sanctions is correlated with their economic costs, it is essential to find out whether sanctions really impose any costs on the targeted country, because if they do not, policymakers would wait in vain for a political effect.

A dual linkage can then be explored. First, boycotts and embargoes deprive the target of critical gains from international trade and investment, and therefore reduce welfare and growth. Second, economic hardship increases the target’s readiness to conceded to the sender’s demands. This we regard as an issue best covered by political scientists. We believe the first link has been often overlooked in empirical literature, and deserves more attention and analysis. Considering the increased popularity of economic sanctions as a policy tool, it is necessary to develop a better

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2 The case of national companies in the sender state profiting from the temporary elimination of competitors from the target country is rather exceptional, since the latter tend to be smaller and less developed economies, exporting mostly raw materials and/or agricultural products.
understanding of their working and effect. As Kirshner says, “security specialists need to know not ‘if [economic sanctions] work’, but rather ‘how they function’.” This paper is an attempt to analyze exactly this aspect of the topic. Henceforth, we shall concentrate on determining whether sanctions have an economic effect on the targeted country, and if so, by which means.

3. Terminology

We define sanctions as the actual or threatened withdrawal of economic resources from one country to further foreign policy objectives. As this study deals with the detrimental impact of sanctions on the targeted country’s economy, “economic sanctions” will hereafter apply only to negative sanctions3. As is common in the literature, we employ the terms “sender” and “target” to denote the country imposing the sanction and the country receiving the sanction, respectively. More than one country may be involved in the campaign, but it is frequent for one nation to take the lead and sometimes for others to lend support. Likewise, it is more frequent for just one nation to be targeted, although there have been instances with several culprits.

There are three main types of economic sanctions: trade sanctions, investment sanctions, and targeted, “smart” sanctions. Trade sanctions can be subdivided into boycotts and embargoes. The former are import restrictions on one or several goods produced by the target, meant to lower its industries’ revenues, as well as reduce its foreign exchange earnings and thereby its ability to purchase foreign goods and services. They often also have the purpose of inflicting particular damage on specific sectors. Embargoes restrict exports to the target country, possibly depriving it of certain goods vital to the production process. Investment sanctions curb capital flows into and out of the country, and may also include mandatory disinvestment. They sometimes take the form of monetary sanctions, which undermine the value and stability of the target’s currency and create uncertainty around economic planning (Kirshner, 1997). The third type is smart sanctions, such as freezing or vesting the target’s foreign assets and travel bans for the ruling cadre. Although they have been used more rarely, they are gaining popularity, because they can be aimed more precisely at specific groups and sectors. 4

3 “Positive” sanctions are the extension of economic favors in return for future cooperation. The concept of “negative” sanctions obviously includes the withdrawal of existing positive measures, such as development aid, or the “most favored nation”-status

4 A fourth type of sanction, situated on the borderline between economic and political measures, are restrictions to the freedom of movement: bans on air traffic (as the one imposed on Libya between 1992 and 2003) are indubitably
All types of sanctions can be employed with varying degrees of intensity and scope: trade and financial flows can be interrupted fully or partially, tariffs be raised slightly or sharply, all or select assets be seized or frozen, the entire target economy or only sectors thereof be attacked, and so on. More wide-ranging sanctions are expected to impair the target’s economy more strongly. However, this does not necessarily indicate that they will also be most likely to affect the target’s policies.

4. Mechanisms by which Sanctions Damage the Target’s Economy

As mentioned above, we are mainly interested in the link between sanctions and economic deprivation. To verify it, we shall not only explain the mechanism by which sanctions hinder economic development, but also test empirically for a significant decrease in the target’s GDP growth rates during sanctioning periods. Since most sanctions directly or indirectly affect foreign trade (Bayard et al., 1983), we analyze their effect on GDP growth via their effect on trade. The explanation below rests on theoretical foundations from the core of economic science. Ricardian trade theory tells us that a country’s welfare is always raised by the possibility of trading. Therefore, a country that is denied, or partially denied, the right to trade, must suffer from a decrease in welfare.

There are again two linkages to be explored: first, the linkage between sanctions and trade; and second the linkage between trade and loss of economic welfare and growth. The gravity model is commonly used to describe the components of bilateral trade, one of which is the imposition of sanctions. Applying ordinary least squares, the effect of sanctions on trade can then be isolated, leaving other factors constant. An example of a gravity model specification is the following:

$$
\ln \text{TRADE}_{ijt} = \beta_0 + \beta_1 \ln \text{GDP}_{it} + \beta_2 \ln \text{GDP}_{jt} + \beta_3 \ln \text{POP}_{it} + \beta_4 \ln \text{POP}_{jt} + \beta_5 \ln \text{DIST}_{ij} + \beta_6 \text{SANCTION}_{it} + u_{ijt}
$$

where $\text{TRADE}_{ijt}$ denotes bilateral trade flows between country $i$ and country $j$ at time $t$; $\text{GDP}_{it}$ and $\text{GDP}_{jt}$ country $i$’s and $j$’s gross domestic products respectively; $\text{POP}_{it}$ and $\text{POP}_{jt}$ their populations, $\text{DIST}_{ij}$ the distance between them; $\text{SANCTION}_{it}$ a dummy variable for sanctions taking the value 1 if commercial sanctions; the imposition of visa requirements (as applied to Yugoslavia/Serbia in 1991), though primarily political, have undeniable economic consequences.
sanctions were imposed on country $i$ at time $t$, and 0 otherwise; and $u_{ijt}$ the usual random error term.

Although more complex specifications are normally published, the above captures the basic idea. The size of the sanctions coefficient depends on the exact specification, but authors largely agree that sanctions decrease bilateral trade between the sender and the target. Caruso (2003) finds that extensive multilateral sanctions decrease trade between the target and the sender by as much as 89%. Hufbauer et al. (1997) calculate that bilateral trade decreases by 90%. Askari et al. (2002) also find that comprehensive sanctions have a consistently negative impact. While results differ, there is reason to assume sanctions have at least a moderate negative effect on bilateral trade.

Further, we investigate the relationship between the disruption of trade and decrease in welfare and GDP growth. We define the total costs as the sum of the direct costs - the real and financial expenses immediately associated with the sanctions; the indirect costs, which are due to the displacement and underutilization of factors of production; and the foregone potential, which entails expected economies of production and revenues made impossible by the sanctions. Most studies fail to consider this last category, although McKinnell (1969) is a welcome exception.

The model hereafter leans on insight from Porter (1979). The setting is aggregative, static and neo-classical. Consider a hypothetical country $T$ that produces two goods, $x$ and $y$, and is initially free to trade with the only other country in the world, $S$, at exogenously determined prices. This situation is illustrated in Figure 1 a, with a concave production possibility curve ($PPC$), a convex indifference curve $I_1$, and an optimizing trade possibility line ($TPL$) tangent to both curves. The optimal point is described by $(x_0, y_0)$ and leads to maximal welfare $W_0$. The consumption point is $(x_1, y_1)$. Good $x$ is exported, good $y$ is imported.

Suppose country $S$ imposes a full trade embargo on $T$, fully depriving it of the possibility to trade. Only a point where the indifference curve is tangent to the production possibility curve is attainable now. To illustrate this, we refer to Figure 1 b. The new maximum welfare point is $(x_2, y_2)$. Clearly, welfare is lower at $(x_2, y_2)$ than at $(x_1, y_1)$, since it is on a lower indifference curve. Country $T$’s economy is hurt by the sanctions.
We infer from Figure 1 that the magnitude of country $T$’s welfare loss, as represented by the distance $I_1$ and $I_2$, is greater the more concave the production possibility curve, and the more convex the indifference curve. Further, the greater the initial importance of foreign trade for the economy, the more country $T$ can be hurt by the sanctions. In other words, trade sanctions are more effective the more inflexible the target’s production structure and consumption preferences, and the greater its initial dependence on trade.\footnote{An alternative model is provided by Kaempfer and Lowenberg (2007)}

This theory is of course only a crude approximation of reality. It hinges on the assumption that sanctions are universal; or, in our model, that there is only one country with which to trade, namely sender $S$. In reality, of course, some countries may bust the sanctions, and others fail to participate in them, so that the target has opportunities to divert trade. If only some countries participate in the trade embargo, the economic impact will critically depend on the size of the share of the target’s trade flows held by the senders, and on the ease with which imports to and exports from the sender can be substituted and new markets for exports found.

The static real income loss caused by sanctions should translate into lower GDP growth. In the Solow growth model, a loss of gross domestic product or of capital per capita is associated with higher short-term growth, as the scarcity of capital increases the rate of return. However, this hinges on the assumption that capital is available for investment. In a sanctioned country, this is unlikely to
be the case. Rather, the sanctions are expected to significantly decrease both domestic and foreign investment in the target; either directly or indirectly, depending on their type.

Investment sanctions will affect the level of foreign investment directly. At best, they imply a prohibition of select new investments in the target country, meaning that the latter cannot speedily grow back to its previous level of GDP; and at worst, a policy of rigorous disinvestment, where capital is retrieved from the target. Machinery, foreign scientists, know-how and assets may be retrieved. The unavailability of foreign capital may also make domestic investment less attractive. Although investment sanctions initially raise the rate of return to capital in the target country, the decrease in the inflow of new capital from abroad eventually constrains the target’s growth.

The exact extent of the damage ultimately depends on the target’s ability to replace or even forgo foreign investment. However, even if it succeeds in alleviating the scarcity of capital in the sanctioned sectors, a negative impact is inevitable for two reasons. First, the domestic capital stock is reduced, and the capital used to replace foregone foreign investment cannot be used for other purposes. Second, if a certain investment opportunity arises which would have been taken by a foreign investor in direct competition with domestic investors, it means that the foreign investor offers more favorable conditions. If said foreign investor is driven out by the imposition of sanctions, the investment may be made by a domestic competitor, but under less favorable conditions.

Trade sanctions will likewise have a dampening effect. As embargoes make many imports unavailable, some production processes are halted and many technologies cannot reach economic viability, and investment in certain areas becomes unprofitable. The disappearance or reduction of the export sector implies some economies of scale can no longer be carried out. Unavailability of key technology decreases productivity. Reduced foreign trade also implies lower foreign exchange revenue both for the target government and for industries in the country, which in turn prevents the acquisition of foreign capital and therefore decreases investment. According to Porter (1979), the welfare loss caused by sanctions represents losses at the critical margin, which will cause inefficiencies in the use of labor and capital. Again, both foreign and domestic investment becomes less attractive.

Further, the imposition of economic sanctions creates uncertainty. It sends the signal of a deteriorating economic and political situation, and puts the credit worthiness of the target state into question, which scares private investors away. In other words, the frequently used types of economic sanctions depress investment in the target country. This eliminates the “catching up”
effect typical in the Solow-Swan model. The target, having lost a certain percentage of its GDP due to the sanctions, cannot grow faster to regain its former position because capital is unavailable, and grows sluggishly until the effects of the sanctions wear out. By definition, a decrease in investment implies a decrease in GDP growth, since growth consists of investment.

To illustrate both the linkage between sanctions and a decrease in trade, and a decrease in trade and economic hardship, we present a case study on Iran, which was sanctioned by the United States from 1979 to 1981. In November 1979, following the seizure of the U.S. embassy in Tehran and the holding of American personnel as hostages, the Carter administration proposed an international embargo of Iran. After the letdown of the UN sanctions and having failed to gather support from its European allies, the US imposed unilateral sanctions from 1979 to 1981. They consisted of a break in diplomatic relations with the Iranian government, a prohibition of exports from the United States to Iran, a ban on the import of Iranian crude oil into the United States, an invalidation of visas issued to Iranian citizens for future entry and the blocking of $12 billion Iranian governmental assets held in the U.S. Nevertheless, the Iranian government remained intransigent, provoking the imposition of a full trade embargo. Eventually, a settlement was negotiated, including the release of the hostages in return for the unblocking of Iranian assets.

The common view that the sanctions on Iran had a swift and significant impact is to a certain extent supported by empirical evidence of economic indicators. In Figures 2 a through 2 d, we observe the development of Iranian exports, imports and GDP growth rate from 1974 to 1986, i.e. the five years before the imposition of the sanctions, the years during which the sanctions were imposed, and the five years following the end of the sanctions.

As we see in Figure 2 a, Iranian exports plummet immediately after the imposition of the embargo, remain steadily low from 1980 to 1981, and then start rising, almost regaining their pre-sanctions level by 1982. Imports, on the other hand, rise in 1979, remain high throughout the sanctions episode, and then rise further. It is noteworthy that imports had been falling from 1977 to 1979. This decline coincides with and is presumably due to the unrest preceding the Islamic revolution. In 1977, the influential commercial class began to rally with the Islamic opposition to the Pahlavi-regime, starting a series of long-lasting strikes and boycotts which considerably reduced all economic activities in the country. 1978 and 1979 were marked by increasing political and economic turmoil, the imposition of martial law, massive demonstrations, the Shah’s flight into exile, and finally the establishment of the new regime – all factors which can easily explain a sharp
drop in imports prior to the sanctions. The import restrictions may therefore not have had any possibility to bite, as U.S.-Iranian trade was already sharply reduced.

If we compare Iran’s performance to that of the rest of the Middle East\textsuperscript{6}, we can perhaps explain some of these movements with external influences. In these figures, Iranian and Middle Eastern exports and imports are indexed relative to the “base year” 1974\textsuperscript{7}. The indexed performances of Iranian exports and imports are markedly different from the regional trend, and more erratic. We can therefore assume that the decrease in exports observed for the period 1979-1981 is not due to a regional downturn. Whether it can at least partially be ascribed to the impact of the sanctions or whether it is essentially a result of the complex political situation within the country is difficult to determine. In any case, as we see in Figure 1 c, the trend is not well reflected in the relatively variable performance of the GDP growth rate. It does fall in 1979, but picks up again in 1980 and then begins a steady rise, which could be due to the “war boom” caused by the war against Iraq. The average growth rate is 3.3% during the five years before the sanctions, -8.6% during the sanctions, and 2.6% in the five years after the sanctions. While this looks like evidence that the growth rate was significantly lower during the sanction episode, it is important to note that GDP growth started increasing at the height of the crisis, \textit{despite} the sanctions, and had already started falling as early as 1977, before the sanctions. Although the evidence is not entirely convincing, many specialists agree that the actions undertaken by the U.S. were a necessary condition for the resolution of the crisis.

\textsuperscript{6} Following the classification by the International Monetary Fund, we calculate the statistics for the Middle East by averaging the performances of Bahrain, Egypt, Iraq, Jordan, Kuwait, Lebanon, Libya, Oman, Qatar, Saudi Arabia, Syria, the United Arab Emirates, and Yemen. Iran is excluded from the regional calculation to avoid bias.

\textsuperscript{7} For any index base year $b$ with a dollar value $v_b$ (here, 1974), the indexed value $V$ of any year $x$ with a dollar value $v_x$ is defined as follows: $V_x = \frac{v_x}{v_b}$
Figure 2 a: Iran’s Indexed Exports 1974-1986

Figure 2 b: Iran’s Indexed Imports 1974-1986

Figure 2 c: Iran’s Exports and Imports in Absolute Terms, 1974-1986

Figure 2 d: Iran’s GDP Growth Rate in Percent, 1974-1986

Figure 2: Performance of Iran’s Economic Indicators, 1974-1986

Source: World Bank World Development Indicators

Exports and imports are measured in current US$. 

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8 Exports and imports are measured in current US$. 

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5. Empirical Tests

In this section, we attempt to establish the circumstances under which the imposition of sanctions has a negative effect on the target’s GDP growth rate and foreign trade flows, if indeed it has any. Assuming that GDP growth in every country follows a certain trend, we would expect it to fall upon the imposition of sanctions, and rise back to its pre-sanction level once they are lifted. Both the fall in GDP growth when the sanctions are imposed and the subsequent rise when they are lifted will be tested for in the following. Statistically significant movements would lend support to the theory that sanctions have a negative impact on GDP growth.

5.1. Data and Methodology

To verify whether GDP growth and foreign trade are negatively affected by the imposition of sanctions, we have retrieved data on 174 episodes of economic sanctions from the Hufbauer, Schott, Elliott and Oegg (2007) database; as well as on the two indicators from the World Bank’s World Development Indicator database. We report GDP growth because it is probably the most commonly used indicator of economic performance, and exports and imports as a percentage of GDP because it could enable us to illustrate the mechanism by which sanctions affect the economy. We decided against a measurement of foreign trade in absolute terms, as this would make comparison among countries very difficult. The loss of one million dollars worth of exports is of little consequence to the United States, but of considerable consequence to Panama. Not all of HSEO’s observations are used. This documentation starts in 1960, because earlier data on economic variables and sanctions episodes is less reliable and easy to obtain, because less can be inferred from older episodes and because of the special character of the sanctions imposed during World War One, World War Two, and the interbellum. Data was unavailable for certain more recent episodes, which lead to the elimination of further observations from our database. Overall, 63 cases of economic coercion were dropped, leaving 111, all after 1961. The first such sanction was imposed on Ceylon (now Sri Lanka) from 1961 to 1965, and the last on Ecuador in 2000. Despite the associated risks we will describe in section six, we have restricted this study to the cases reviewed by HSEO to avoid endangering the comparability of the cases.

For each case of economic sanctions, we have collected measurements on the aforementioned economic indicators for the years the sanctions were imposed as well as the five years before and after. In the first part of the following subsection, we investigate whether foreign trade decreases following the imposition of sanctions, and rises following their lifting. For each observation, we
calculate average exports as a percentage of GDP across the five years prior to the sanctions, average exports across the period the sanctions were imposed, and average exports across the five years after the sanctions were lifted. We therefore obtain three values for each of the 111 observations: average growth before the sanctions, average growth during the sanctions, and average growth after the sanctions. We repeat the procedure with imports as a percentage of GDP, and then with GDP growth rates.

We employ the statistical software EViews to perform a Wilcoxon signed-rank test. It is a non-parametric statistical test of equality of medians for the case of two related samples or repeated measurements on a single sample. It was necessary for it to be non-parametric, as our data failed the Jarque Bera test of normality of distribution. The Wilcoxon signed rank test is conceived to evaluate $2n$ observations, i.e. two observations of each of the $n$ subjects. It compares the first set of $n$ subjects to the second set and determines whether they are statistically identical or not. In our case, $n$ is 111, and we have one series of observations “before the sanctions”, and one series “during the sanctions”. We also perform the test with one series “after the sanctions” and one “during the sanctions”.

The test works as follows. Let $i$ denote the particular episode being referred to, and $x_i$ and $y_i$ the first and second observation respectively. $x_i$ and $y_i$ are paired together for each $i$. Let $z_i = x_i - y_i$ for each $i = 1, ..., 111$. All $z_i$ come from a continuous population and are symmetric about a common median $\theta$. The hypotheses tested are

$$H_0: \theta = 0 \quad H_1: \theta \neq 0$$

(2)

The statistical software computes the Wilcoxon signed rank statistic $W_+$ by ranking the absolute values of $z_i$; i.e. $|z_1|, ..., |z_{111}|$ in order of size, so that the smallest value has rank 1.\(^9\) The rank of each $z_i$ is $r_i$. We denote the positive $z_i$ values with $\varphi_i = I(z_i > 0)$ where $I(.)$ is an indicator function. Then,

$$W_+ = \sum_{i=1}^{111} \varphi_i * r_i$$

(3)

Likewise, the test requires the computation of the sum of all negative $z_i$ values. $S$ is defined as the smaller of the sum of positive deviations from zero and the sum of negative deviations from zero. $S$

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\(^9\) For the test to work correctly, the two data sets must have the same shape of distribution, although it does not matter which one it is. This is the case for our observations. We have performed a Levene test for equality of variances for all our datasets, which confirmed homoskedasticity in all cases.
is then compared to a table of all possible distributions of ranks to calculate the p-value. The p-value is the statistical probability of obtaining the value $S$ from a population of scores that is symmetrically distributed around zero. Therefore, if the p-value is large, the data do not give any evidence to conclude that the two populations differ. Clearly, this is not the same as saying that they are identical. One merely has no reason to assume they differ. Conversely, if the p-value is small (a conservative threshold is 0.05), we have evidence to reject the null hypothesis and declare the two populations are different from each other.

5.2. The Tests

5.2.1. Exports and Imports as a Percentage of GDP

First, we verify whether exports fall once sanctions are imposed on the target country. Here, $x_i$ and $y_i$ are exports before the sanctions and exports during the sanctions, respectively. We define “exports before the sanctions” as average exports as a percentage of GDP across the five years prior to the sanctions, and “exports during the sanctions” as average exports as percentage of GDP across the years the sanctions were imposed.

The hypotheses being tested are:

$$H_0: \vartheta_{EBD} = 0 \quad H_1: \vartheta_{EBD} \neq 0$$

where $\vartheta_{EBD}$ is the median of the series $z_{EBD1}, \ldots, z_{EBD111}$. Here, $z_{EBDi} = EB_i - ED_i$, where $EB_i$ is observation $i$’s average exports as a percentage of GDP before the sanctions were imposed, and $ED_i$ is observation $i$’s average exports while the sanctions were in place. \(^{10}\)

The mean value of $EB$ across observations is 22.60%, and the mean value of $ED$ is 24.50%, which casts doubt on our initial hypothesis. The Wilcoxon test gives a p-value of 0.494. The null hypothesis cannot be rejected, and hence we do not have any evidence to support the theory that sanctions decrease exports.

To test whether exports increase once the sanctions are lifted, we define “exports after the sanctions” as average exports across the five years prior to the sanctions, and “exports during the sanctions” as above. In the case of open-ended sanctions, we used the first ten years following the imposition of the sanctions as “during the sanctions” and ignore the “after the sanctions” observation. The hypotheses are:

\(^{10}\)“E” stands for “exports”; “B” for “before” and “D” for during.”
\[ H_0: \vartheta_{EAD} = 0 \quad H_1: \vartheta_{EAD} \neq 0 \] 

where \( \vartheta_{EAD} \) is the median of the series \( z_{EAD1}, \ldots, z_{EAD111} \). Here, \( z_{EADi} = EA_i - ED_i \), where \( EA_i \) is average exports after the sanctions were lifted, and \( ED_i \) is average exports while the sanctions were in place\(^{11}\).

Average exports as a percentage of GDP increase from 24.50% during the sanctions to 26.32% after the sanctions on average, an insignificant change, as the p-value of 0.375 indicates. We therefore have no evidence to assume exports increase once the sanctions were lifted. Hence, we cannot confirm that sanctions impede exports\(^{12}\).

We perform the same tests for imports. We define “imports before the sanctions” as average imports as a percentage of GDP across the five years prior to the sanctions and “imports during the sanctions” as average imports as a percentage of GDP across the years the sanctions were imposed. The hypotheses are:

\[ H_0: \vartheta_{IBD} = 0 \quad H_1: \vartheta_{IBD} \neq 0 \] 

where \( \vartheta_{IBD} \) is the median of the series \( z_{IBD1}, \ldots, z_{IBD111} \). Here, \( z_{IBDi} = IB_i - ID_i \), where \( IB_i \) is average imports in the five years before the sanctions were imposed, and \( ID_i \) is average imports while the sanctions were in place.\(^{13}\)

The average across observations before the sanctions is 27.632%, compared with 29.866% during the sanctions. The p-value associated with this test is 0.425. We cannot reject the null hypothesis that the populations are identical, so we cannot say that imports fall once the sanctions are imposed.

Likewise, we test whether imports increase once the sanctions are lifted. For this, we define “imports after the sanctions” as average imports as a percentage of GDP across the five years after the sanctions were lifted, and “imports during the sanctions” as above.

\[ H_0: \vartheta_{IAD} = 0 \quad H_1: \vartheta_{IAD} \neq 0 \] 

where \( \vartheta_{IAD} \) is the median of the series \( z_{IAD1}, \ldots, z_{IAD111} \). Here, \( z_{IADi} = IA_i - ID_i \), where \( IA_i \) is average imports in the five years after the sanctions were lifted, and \( ID_i \) is average imports while the sanctions were in place.

\(^{11}\) “A” stands for “after”.
\(^{12}\) Obviously, this does not mean that sanctions do not affect the terms of trade. Even if average exports as a percentage of GDP remain stable, trades might be made under less favorable conditions, or even at a loss, during the period of sanctions.
\(^{13}\) “I” stands for “imports”.
The average across observations is 29.866% during the sanctions and 30.758% after the sanctions. The p-value is 0.5893. Again, the null hypothesis is rejected at a 5% significance level. Hence, we cannot say that imports increase significantly once the imports are lifted. It seems therefore that imports are not influenced by the imposition of sanctions.

General explanations for the lack of a statistically significant impact of sanctions on foreign trade are provided in section 6, but there are two reasons for the lack of a visible effect in the specific case of exports and imports. The first is that not all sanctions in our database are actually trade sanctions. It is difficult to say how many are, or to what extent they are, because sanctions episodes often involve a package of actions. However, this issue should be minor, since even non-trade sanctions are believed to often have an effect on the target’s level of foreign trade activity. Monetary sanctions, for example, by demonetizing the target, effectively impede the purchase of foreign goods. The second is that we use exports and imports as a percentage of GDP in our calculations. Suppose we witness an increase in exports share when the sanctions are imposed. This could suggest that exports grew in absolute terms, but also that GDP shrank while exports remained stable, hence increasing the share of exports and giving the illusion of more trade. The above picture may therefore be distorted.

5.2.2. GDP Growth Rate

We continue our investigation with GDP growth rates. As above, we calculate the average GDP growth rate in the five years before the imposition of the sanctions, in the years of their imposition, and in the five years after their imposition.

The first step was to test for an observable, statistically significant drop in GDP growth rate upon imposition of sanctions, all cases considered. The null and alternative hypotheses are as follows:

\[ H_0: \theta_{GBD} = 0 \quad H_1: \theta_{GBD} \neq 0 \]  

(8)

where \( \theta_{GBD} \) is the median of the series \( z_{GBD1}, \ldots, z_{GBD111} \). Here, \( z_{GBDi} = GB_i - GD_i \), where \( GB_i \) is average GDP growth rate in the five years before the sanctions were imposed, and \( GD_i \), is average growth while the sanctions were in place.

Mean GDP growth was 2.923% before the sanctions and 2.542% during the sanctions. However, the p-value is 0.4247, indicating that this small decrease is statistically insignificant. We have no evidence to conclude that sanctions noticeably depress GDP growth rate.
As a complement, we test whether growth increases once the sanctions are lifted, as would be expected. The null and alternative hypotheses are:

\[ H_0: \theta_{GAD} = 0 \quad H_1: \theta_{GAD} \neq 0 \]  

(9)

where \( \theta_{GAD} \) is the median of the series \( z_{GAD1}, \ldots, z_{GAD111} \). Here, \( z_{GADi} = GA_i - GD_i \), where \( GA_i \) is average growth in the five years after the sanctions were lifted, and \( GD_i \), is average growth while the sanctions were in place.

Mean growth across countries is 2.361% during the sanctions and 4.823% after the sanctions and the p-value associated with this test is 0.0064, which indicates countries grow significantly faster once the sanctions are lifted.

As a follow-up, we calculate whether the five years prior to the sanctions experienced a different average growth rate than the five years after the sanctions.

\[ H_0: \theta_{GAB} = 0 \quad H_1: \theta_{GAB} \neq 0 \]  

(10)

where \( \theta_{GAB} \) is the median of the series \( z_{GAB1}, \ldots, z_{GAB111} \). Here, \( z_{GABI} = GA_i - GB_i \), where \( GA_i \) is average growth in the five years after the sanctions were lifted, and \( GB_i \), is average growth before the sanctions were imposed.

Average growth rate increases by 0.904% from before the sanctions to after the sanctions. The Wilcoxon test confirms the hypothesis with a p-value of 0.0583, indicating growth rates were significantly higher after the sanctions episode than before. This has a rather intuitive explanation. Sanctions are often imposed because something is seriously “wrong” in the target country. It might be governed by a dictatorial regime (like Haiti during the sanctions from 1987 to 1990 and Indonesia during the sanctions from 1991 to 1997), be torn apart by civil war (like Somalia from 1988 onwards and Rwanda from 1994 to 1995), be engaged in full scale external war (like Iran during one year of the 1979-1981 sanctions), or suffer from any other growth-reducing circumstance. Therefore, the sanctions may be enforced at a time when the growth rate has already declined because of socio-political issues. For example, Ethiopia under the Mengistu regime was on the brink of war in 1976, when U.S. sanctions were imposed. Under such conditions, economies do not work at their full potential and experience lower growth rates. Further, targets may already be isolated from the world economy, so that their growth path is stunted and the sender has little opportunity to impose further damage. If the sanctions are effective, or if a solution to the issue they were imposed for is found in some other way, the growth-depressing factor may be eliminated while
they are in place, allowing growth rates to rise to their “natural” levels once the sanctions are lifted. Hence growth does not fall noticeably upon the imposition of sanctions being already low at the moment, but it does rise when they are lifted.

This paper also examines whether economies governed by autocratic regimes are more or less susceptible to the effects of sanctions than those governed by democratic regimes. We would expect this to be the case for two reasons. When the target country is ruled by an authoritarian regime, the latter can shield itself and strategic parts of the repressive apparatus (such as secret services or the military) from the effects of the economic sanction by shifting the burden to the population. A democratic regime, on the other hand, has an active interest in protecting its citizens from economic hardship in order to be re-elected. It is therefore more likely to give in quickly and easily to the sender’s demands, in order to maintain both popular support and a good reputation in international circles. Moreover, economic sanctions on autocracies are likely to be wide-ranging, thorough and strict, which should contribute to their economic effect. Sender countries faced with a misbehaving autocracy are likely to be strongly involved in the sanctioning process and willing to be very harsh in their intervention. This implies that the fall in growth rates be marked in authoritarian countries, or at least more marked than in democracies. To test this hypothesis, we have identified 40 autocratic regimes, 36 democratic regimes and 35 anocratic regimes, following HSEO’s categorization, which in turn relies on the Polity IIIa database (McLaughlin et al.,1999).

We first find out whether sanctions on autocracies have an effect on the GDP growth rate or not, with the hypotheses being:

\[ H_0: \theta_{GBDAu} = 0 \quad H_1: \theta_{GBDAu} \neq 0 \]  \hspace{1cm} (11)

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In terms of political geography, “anocracies” are situated in the gray area between obvious democracies and obvious autocracies. The term is not explained in much detail in HSEO. In fact, its introduction seems puzzling, as there are certain basic prerequisites to be a democracy that a government either fulfils or does not fulfil, leaving very little to personal interpretation. HSEO’s classification seems a little haphazard. Many of the countries categorized as anocracies belong to either of the other categories. Goulart’s Brazil, for example, was doubtlessly a democracy. It might have adopted dubious policies, but it was lawfully and rightfully elected and respected all major tenets of democracy. Presumably, HSEO introduced the term “anocracy” so as to not grant the status of “democracy” to certain regimes they disapprove of. In some cases, they may have genuinely been in doubt of whether to grant the “democracy” status or not. Before the universal elections of 1994, it is indeed unclear whether South Africa was a democracy or an autocracy. On the one hand, the white population participated in largely lawful elections. On the other, the vast majority of the overall population did not.
where $\hat{\theta}_{GBDAu}$ is the median of the series $z_{GBDAu1}, \ldots, z_{GBDAu40}$. Here, $z_{GBDAu} = GBAu_i - GDAu_i$, where $GBAu_i$ is average growth in the five years before the sanctions were imposed, and $GDAu_i$, is average growth while the sanctions were in place; for the case of autocracies.\(^{15}\)

Before the sanctions, average growth was 3.644%, and during the sanctions, 2.486%. The p-value for this test is 0.3734, indicating that the populations do not differ significantly. As mentioned above, the general lack of a visible effect may have a variety of explanations, which will be presented in section six. Specifically concerning the effect on autocracies, it is possible that their regimes have reached near-autarky and political isolation, so that the countries do not depend much on the interaction with the rest of the world and cannot be hurt much by sanctions. Further, sender countries may be intimidated, rather than infuriated, by an autocratic target. They possibly fear the actions such a regime may take under external pressure. For example, Western European nations were reticent to impose much hardship.

Complementarily, we test whether economies under autocratic regimes grows faster once the sanctions are lifted, with the hypotheses being

$$H_0: \hat{\theta}_{GADAu} = 0 \quad H_1: \hat{\theta}_{GADAu} \neq 0$$

(12)

where $\hat{\theta}_{GADAu}$ is the median of the series $z_{GADAu1}, \ldots, z_{GADAu40}$. Here, $z_{GADAu} = GAAu_i - GDAu_i$, where $GAAu_i$ is average growth in the five years after the sanctions were imposed, and $GDAu_i$, is average growth while the sanctions were in place; for the case of autocracies.

The average increase in growth across autocracies is 1.173%, but the p-value associated with this test is 0.154, so there is no reason to believe that growth increases significantly once the sanctions are lifted. Hence, we cannot say that sanctions significantly affect growth in autocracies. Nevertheless, this result is much closer to being significant than most other results in this study.

Further, we compare the effect of sanctions on autocratic regimes with the effect on democratic and anocratic regimes. As mentioned above, we would anticipate a difference in the effect on GDP growth between the three groups. We compute the difference between average growth before the sanctions and average growth after the sanctions for each observation in each group, thus obtaining three series of values that represent the impact of sanctions on growth. The purpose of the following calculation is to compare these three series and determine whether any one is significantly different from the other two.

\(^{15}\)“Au” stands for autocracy.
Since more than two groups are being analyzed, we choose a Kruskal-Wallis test. It is a non-parametric test of equality of medians among more than two independent samples. As stated above, due to the non-normal distribution of our entire data, it was necessary for the test to be non-parametric. The test only assumes an identically-shaped and scaled distribution for each group, which is given here. Kruskal-Wallis is appropriate for testing the null hypothesis of stochastic homogeneity, with stochastic heterogeneity being the alternative hypothesis. Intuitively, the null hypothesis is that the probability of a random observation from one group being greater than a random observation from another group is 0.5, i.e. all three groups are equal. If the null hypothesis is rejected, the populations are statistically heterogeneous. This means that at least one group has the tendency to contain observations that are larger or smaller to those from the other groups. The mechanics of the test are similar to those of the Wilcoxon signed-ranks test.

The null hypothesis is stochastic homogeneity, in other words, the impact of sanctions on GDP growth is the same regardless of the regime of the target. Autocracies experience a decrease in GDP growth of 1.178%, anocracies experience an average increase in GDP growth of 0.430%, and democracies experience an average decrease in GDP growth of 0.221%. Despite these apparently unequal values, the null hypothesis is not rejected with a p-value of 0.453. We cannot say that either autocracies, anocracies or democracies are hit harder by the sanctions than any of the other two regime types.

Similarly, the Kruskal-Wallis test was employed in the hopes of finding a significant difference in post-sanctions growth increases, with the null hypothesis being that all regimes experience the same growth increase. GDP growth in autocracies was on average 1.1734% higher after than during the sanctions, a figure that corresponds to 1.418% in anocracies and 1.669% in democracies. Once more, the result was insignificant with a p-value of 0.936. There is no reason to assume that any of the regimes fosters economic recuperation after the sanctions more or less than the others. Our expectations regarding the stronger impact of sanctions on autocracies seem to have been disappointed. Except for the straightforward explanation that they were simply wrong, we may also assume that data provided by autocracies, and sometimes even anocracies, is overly optimistic about the target’s economic performance under sanctions.

Next, we differentiate the cases depending on the purpose of the sanction: modest policy change, regime change and democratization, impairment of military potential, disruption of military adventures, or other major policy changes. The “modest policy change” is often of relatively small importance to the target but of sizeable importance to the sender. It may concern human rights and
religious persecution cases, or support of terrorism. “Regime change or democratization” implies a much more substantial policy change, presumably one that the target is less likely to adopt willingly. Examples of cases where a regime change was the ultimate goal of imposing sanctions are the attempts at destabilizing Fidel Castro in Cuba, Salvador Allende in Chile, or Saddam Hussein in Iraq (although the latter was never an official goal). An example of a case where disruption of military adventures was intended is U.S. sanctions against India and Pakistan to cease fighting in East Pakistan (now Bangladesh). Attempts at impairing the target country’s military potential are particularly frequent in times of heightened hostilities, as illustrated by the case of U.S. and UN sanctions against Iraq. Other examples are the numerous cases in which the U.S. and some of its allies have attempted to stop the spread of nuclear arsenal. Finally, the category “other major changes” includes miscellaneous policy demands such as the surrender of territory or hostages, or ceasing to support international terrorism or drug traffic.

In this categorization, we follow HSEO’s judgment, which recognizes 43 cases of modest policy change, 80 cases of regime change and democratization, 29 cases of military impairment, 19 cases of disruption of military adventures and 33 cases of other major policy changes. Due to the missing observations explained above, our database consists of only 28 cases of modest policy change, 51 cases of regime change and democratization, 12 cases of military impairment, 6 cases of disruption of military adventures, and 14 cases of other major policy changes appear.

We test whether sanctions depress growth more, less or equally depending on their purpose. We would expect sanctions with a more ambitious purpose to be more important to the sender, and hence designed to have a strong economic effect. Sanctions with such purposes are directed at more or less autocratic countries per definition. For the same reasons as above, one could therefore expect such sanctions to be more effective from an economic point of view.

We start by testing whether sanctions applied with the purpose of motivating a regime change or democratization have an impact on the growth rate. To test for a decrease in growth upon imposition of sanctions, the hypotheses are:

\[ H_0: \theta_{GBDRC} = 0 \quad H_1: \theta_{GBDRC} \neq 0 \]  

(13)
where $\hat{\theta}_{GBDRC}$ is the median of the series $z_{GBDRC1}, \ldots, z_{GBDRC51}$. Here, $z_{GBDRCi} = GBRC_i - GDRC_i$, where $GBRC_i$ is average growth in the five years before the sanctions were imposed, and $GDRC_i$, is average growth while the sanctions were in place.\(^\text{16}\)

For cases where a regime change or democratization were aimed at, the average growth rate before the sanctions across observations was 3.101%, compared with 2.687% after the sanctions. A p-value of 0.3879 is obtained, so we cannot reject the null hypothesis. We cannot say that the sanctions have a significant impact on GDP growth when the purpose is regime change or democratization. It may be that sanctions with ambitious purposes are simply not particularly well-designed or that sanctions with ambitious declared goals are only symbolic and not meant to be particularly effective. It may be that autocratic regimes do insulate their countries, as described above. The most probable explanation remains that governments that are under international pressure for a regime change provide false data.

The test on whether growth increases once sanctions are lifted is disappointing as well:

$$H_0: \hat{\theta}_{GADRC} = 0 \quad H_1: \hat{\theta}_{GADRC} \neq 0$$

where $\hat{\theta}_{GADRC}$ is the median of the series $z_{GADRC1}, \ldots, z_{GADRCB0}$. Here, $z_{GADRCi} = GARCl - GDRCi$, where $GARCl$ is average growth in the five years after the sanctions were imposed, and $GDRCi$, is average growth while the sanctions were in place.

Although GDP growth in countries sanctioned with the goal of a regime change or democratization increased by 1.1734% on average once the sanctions were lifted, the p-value is 0.140, giving no evidence for a significant change. We cannot say that sanctions influence the growth rate when they had the purpose of changing the regime or democratizing the target.

Further, we attempt to establish whether all five possible goals differ in their effect on the rate of GDP growth. For this, we compute the difference between the average growth rate five years prior to the sanctions, and the average growth rate during the sanctions, for every country. This difference represents the economic impact of the sanctions. We therefore obtain five series, one for each purpose.

The null hypothesis being that a randomly chosen element of any of the five populations has a probability of 0.5 of being larger or smaller than a randomly chosen element from another of the

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\(^{16}\) “RC” stands for “regime change”
five groups, the test gives a p-value of 0.9274. Clearly, the null hypothesis cannot be rejected. Therefore, we cannot say that sanctions have a stronger or weaker economic impact depending on what the purpose of their application is. Sanctions with the purpose of regime change or democratization provoked an average decrease of GDP growth of 0.415%. This figure corresponds to 0.611% for modest policy change and 1.619% for the impairment of military potential. Sanctions with “other” goals provoke nearly no change in GDP growth, -0.018%. Surprisingly, sanctions with the purpose of disrupting a military adventure improve economic performance by 3.077% on average. This is due to a single outlier (Liberia from 1992 to 1998), which has an average growth rate of -18.994% before the sanctions and 7.716% during the sanctions\(^{17}\). Since the number of observations is so small (six), the case of Liberia biases it considerably. Without it, the average fall in growth rates is 1.650%, a much more reasonable value. The results of this test must be treated with caution, as they may not be trustworthy due to the very small number of observations in the groups.

To specialize further, we test whether sanctions on autocracies with the purpose of regime change or democratization have an impact on the GDP growth rate. 24 observations fulfill these criteria. Considering we expected sanctions on autocracies as well as sanctions with the purpose of regime change or democratization to be particularly effective (for reasons stated above), we anticipate this test to be the most statistically significant. The hypotheses are as follows:

\[
H_0: \theta_{GBDRCAu} = 0 \quad H_1: \theta_{GBDRCAu} \neq 0
\]  

(15)

where \(\theta_{GBDRCAu}\) is the median of the series \(z_{GBDRCAu1}, \ldots, z_{GBDRCAu24}\). Here, \(z_{GBDRCAu} = GBRCAu_i - GDRCAu_i\), where \(GBRCAu_i\) is average growth prior to the sanctions and \(GDRCAu_i\), is average growth during the sanctions, for sanctions on an autocracies with the purpose of changing the regime.

Once more, the p-value of 0.1404 indicates that the difference is insignificant, although we perceive a small decrease in average growth, from 3.202% to 2.119%. At a conventional significance level (5% or 10%) the null hypothesis would not be rejected, although it would be at 15%. Sanctions with the purpose of regime change or democratization on autocracies seem therefore most likely to be economically effective. However, this is one of the more significant tests in this paper.

\(^{17}\) The case of Liberia is somewhat problematic, since the official statistics are even less reliable than in other non democratic countries: Both before and during the (first) Liberian civil war (1989-1996) the mining sector, which provided the essential part of the country’s exports, was under the control of various rivaling factions, many of which diverted substantial quantities of products (mainly diamonds), to unofficial channels, distorting official statistics.
Likewise, growth does not increase once the sanctions are lifted:

$$H_0: \theta_{GADRCAu} = 0 \quad H_1: \theta_{GADRCAu} \neq 0$$

where $\theta_{GADRCAu}$ is the median of the series $z_{GADRCAu1}, \ldots, z_{GADRCAu24}$. Here,

$$z_{GADRCAu i} = GARCAu_i - GDRCAu_i,$$

where $GARCAu_i$ is average growth after the sanctions and $GDRCAu_i$, is average growth during the sanctions, for sanctions on an autocracies with the purpose of changing the regime.

The growth rate before the sanctions, averaged across all observations, is 3.202%, compared with the average after the sanctions, 3.601%. The p-value is 0.183, giving no reason to assume growth increases upon the lifting of the sanctions. We cannot conclude that sanctions influence the growth rate of autocracies when they have the purpose of regime change or democratization. However, the small number of observations make this a somewhat unreliable result.

Next, this paper explores whether more universal sanctions, i.e. such where several countries participate in the sanctioning process, are more effective in depressing the economic growth of the target country. The purpose of invoking international cooperation is to exercise a wider denial of access to markets, and legitimize the intervention with the moral authority of a community of nations. International trade theory suggests that in cases where the embargoed good is homogeneous and easily substitutable, it is necessary for the sender to be responsible for at least half the supply of this good to the target for the sanctions to be effective. As this is very rarely the case for an individual sender, a coalition of several sender countries will be more likely to affect the growth rate of the target through trade reduction.

The following classification follows HSEO. We test for differences in the growth effects between four types of sanctions: those with no international cooperation, with minor international cooperation, with modest international cooperation, and with significant international cooperation. “No international cooperation” is a self-explanatory category, exemplified by the U.S. campaign against President Goulart in Brazil (1962-1964). 53 of the observations fall into this category. Minor cooperation implies verbal support and possibly token restraints by allies of the sender, and can be illustrated by U.S. sanctions imposed against India for its nuclear tests. This was the case for 27 observations. The next degree, modest cooperation, entails considerable, but limited restraints from some, but not all, countries involved in trading with the target, as in the case of U.S. sanctions against Cuba in the early phases of Fidel Castro’s dictatorship. This was the case for 24 observations. Finally, the sender enjoys significant cooperation when major commercial nations
fully, or nearly fully, support the initiative by limiting trade, aid and/or finance in a coordinated and considerable effort, although coverage need not be universal. This was the case for UN sanctions against Serbia, where a manifest, though deficient, porous and timid sanctioning activity can be distinguished on several fronts. Similar support was given in only 7 of 111 observations.

We compute the difference between growth before the sanctions and growth after the sanctions for the 111 observations, obtaining values that represent the impact of the sanctions on economic growth. Then the observations are split into their respective groups and compared in a Kruskal-Wallis test. The null hypothesis is stochastic homogeneity between the four populations, with stochastic heterogeneity being the alternative hypothesis. In other words, the null hypothesis states that all four groups experience the same drop in GDP growth, i.e. that universality neither augments nor diminishes the effectiveness of sanctions. The p-value of 0.1516 indicates that the null hypothesis cannot be rejected, so the availability of cooperation is not decisive for the change in GDP growth. However, this is a relatively significant test.

Sanctions imposed unilaterally depress the growth rate by 0.979% on average, those with modest international cooperation do so by 0.425%, while those where the sender received minor international cooperation increased it by 0.788%, and those where the sender received significant international cooperation increased it by 2.189%. This is particularly unexpected: from these averages, we gather that the test almost showed that cooperation reduces the economic effectiveness of sanctions. However, the result of the test above is not particularly reliable. Firstly, there are only seven cases of significant international cooperation, hardly enough for truly trustworthy statistical analysis. Secondly, the average difference in growth rates for cases with significant international cooperation is strongly biased by the single case against Liberia, although average growth in this category is higher during the sanctions than before sanctions even without this observation. The poor performance of widely-supported sanctions may be traced back to a bias: international cooperation becomes necessary and available in particularly difficult cases, where a single sender would have little chance of succeeding. Therefore, international cooperation is probably correlated with hopelessness of the situation. Further, Galtung (1967) proposes that being sanctioned from all sides might actually strengthen the morale of the target country, and thus motivate more effort to keep up living standards by the population. Also, as Drezner (2000) correctly remarks, sanctions coalitions involving a large number of countries with potentially different policy orientations can be very unwieldy. Conflicting interests may induce certain countries to free ride, permit illicit trade, and make a profit off rent-seeking. Hence, we can envision a situation in which multilateralism is irrelevant or even counterproductive for the outcome.
As a complement to this test, we explore whether growth rose more or less depending on universality of the sanctions, once the latter were lifted, with the same method as above. The resulting p-value is 0.240, indicating insignificance. Once more, we cannot conclude that sanctions had a significantly different impact depending on the level of cooperation they were imposed with.

Finally, we consider whether the effect of sanctions may hit with a lag. Therefore, we view the four years prior to the sanctions and the first year the sanctions were in place as “before the sanctions”, the years the sanctions were in place (except the first year) and the year after that as “during the sanctions”, and the five years after this as “after the sanctions”. We then test whether there is a significant difference between the GDP growth rate before and during the sanctions:

\[ H_0: \bar{\theta}_{G_{\text{BDL}}} = 0 \quad H_1: \bar{\theta}_{G_{\text{BDL}}} \neq 0 \]  
(17)

where \( \bar{\theta}_{G_{\text{BDL}}} \) is the median of the series \( z_{G_{\text{BDL}1}}, ..., z_{G_{\text{BDL}111}} \). Here, \( z_{G_{\text{BDL}i}} = GBL_i - GDL_i \), where \( GBL_i \) is average growth prior to the sanctions and \( GDL_i \), is average growth during the sanctions, considering a one year lag.\(^{18}\)

In this specification, the average growth rate before the sanctions was 2.012 %, compared with 3.334% during the sanctions. If anything, sanctions seem to have improved the economic situation. The p-value associated with this test is 0.2537, indicating the difference is insignificant. We do not perceive a lagged effect under these circumstances.

Similarly, we test whether growth increases in the second year after the lifting of the sanctions, with the following hypotheses:

\[ H_0: \bar{\theta}_{G_{\text{ADL}}} = 0 \quad H_1: \bar{\theta}_{G_{\text{ADL}}} \neq 0 \]  
(18)

where \( \bar{\theta}_{G_{\text{ADL}}} \) is the median of the series \( z_{G_{\text{ADL}1}}, ..., z_{G_{\text{ADL}111}} \). Here, \( z_{G_{\text{ADL}i}} = GAL_i - GDL_i \), where \( GAL_i \) is average growth in the five years after the year following the lifting of the sanctions and \( GDL_i \), is average growth during the sanctions.

This effect was significant, with a p-value of 0.041, indicating that growth in the five years following the sanctions, considering a one year lag, was significantly higher than growth during the sanctions. This can probably be explained in the same way as in the second test, which makes out a significant difference in growth rates between the period after the sanctions and the one during the sanctions, without considering a lag.

\(^{18}\) “L” stands for “lag”.  

30
It is important to note that all results presented above are robust to some alternative specifications. Additionally to the tests presented above, we performed all the tests with GDP per capita growth rates and exports and imports in absolute terms, as well as with data from the International Monetary Fund, to no avail. All tests remained persistently insignificant. The source of the insignificance can therefore not be traced back to the data and the economic indicators we use.

To shed light on the moment when the sanctions start biting, if they do so at all, we compute the average growth rate across countries for each of the five years before the sanctions were imposed, for the period they were in place, and for each of the five years after they were lifted. The values can be seen in Table 1, and are plotted in Figure 5.

The speed with which the effects of a sanction become noticeable is a vital variable for policymakers and depends on the type of sanction employed. When attempting to solve an urgent crisis or preventing a military operation, it is advisable to use sanctions that are felt quickly. However, the effect of such sanctions is likely to be ephemeral. Monetary sanctions, for example, have the power to swiftly and completely demonetize the target, but become easier to bear once the latter starts re-constructing its payments system. On the other hand, trade sanctions are better suited to accommodate long-lasting interest in influencing the target’s policies because, although they need more time to build up an effect, they become increasingly difficult to bear. Asset, aid and financial sanctions are in-betweens: they contract the target country’s resources quickly, but deploy their full effect only once the target has depleted all its unaffected assets.

We would expect the effects of sanctions to last beyond their imposition. The target is likely to need a considerable amount of time to rebuild trade relationships, restock inventories, adapt to changes in international trade, and so on. Long-term effects are expected to be more severe for particular sectors, such as sophisticated equipment and infrastructure, than for exports in the aggregate, as these are more difficult to produce locally and find alternative suppliers for.

<table>
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<tr>
<th>Year</th>
<th>t-5</th>
<th>t-4</th>
<th>t-3</th>
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<td>3.607</td>
<td>2.759</td>
<td>1.611</td>
<td>2.383</td>
<td>2.361</td>
<td>3.839</td>
<td>4.211</td>
<td>3.873</td>
<td>5.022</td>
<td>4.469</td>
</tr>
</tbody>
</table>

**Table 1: Average Growth Rate Before, During and After the Sanctions**

*Source: World Bank, World Development Indicators*
In table 1, \( t \) represents the year(s) during which the sanctions were in place. 2.361\%, therefore, is the average GDP growth rate across countries and years of sanctions. \( t - 1 \) represents the year before the sanctions, \( t + 1 \) the first year after the sanctions were lifted, and so on.

![Figure 3: Average GDP Growth Rate Before, During and After the Sanctions](image)

The table and figure show very little evidence of a fall in GDP growth rate caused by the imposition of sanctions. The growth rate in \( t \) is only 0.022\% below the growth rate in \( t - 1 \). It rises sharply in \( t + 1 \). This is not entirely discouraging, as an upward trend after the lifting of the sanctions was to be expected. On the other hand, the sharp decline at \( t-2 \) is surprising. The only way to link it to the sanctions is to assume that a certain amount of resources were lost in preparing for the onslaught of sanctions. Stockpiling, finding alternative sources of goods, forging new trade relationships, and all other possible ways of shielding one’s economy from external aggression must be costly. However, this is not an entirely convincing hypothesis, as not all governments invest in preparations. It is more likely that whatever incited the imposition of sanctions also took a toll on the target’s economy. The sanctions either contributed to the elimination of their own cause, or happened simultaneously with it. This would explain why the growth rate rises vertiginously at \( t+1 \). Either way, the sanctions have no visible effect on the GDP growth rate. The following section will delve into the reasons for this.

### 6. Explaining the Results

In the previous section, we failed to observe a significant negative impact of economic sanctions on two widely used indicators of economic performance, GDP growth rate and exports and imports as a percentage of GDP. We believe that this is not because sanctions are fundamentally flawed, but rather because specific circumstances contribute to their failure. The austerity of this environment is
exacerbated by inadequate methodology and the lack of truly reliable and comprehensive data. Although we provide an overview of these shortcomings in the following, further research on them would be welcome, as it might lead to the realization that sanctions are not as ineffective as is often believed.

There are a number of explanations for the overall lack of significant effects above. First and foremost, we observe that sanctions simply do not seem costly enough on the targets. If there is no economic effect to speak of, our measurements cannot pick one up. HSEO calculate the costs to the target as a percentage of its GNP for all the instances in their database. It is difficult to determine what represents a “costly” sanction, but costs smaller than the usual business cycle-related growth rate fluctuations cannot be particularly conspicuous. Out of the 111 cases from HSEO that we keep in this study, 26 entailed costs lower than 0.01% of the target’s GNP. 65 cost less than 1% and 79 cost less than 2% of GNP. A few countries even experienced negative costs, i.e. gains: Algeria (-0.09%), Argentina (-0.09%), Egypt (-0.4%), Rwanda (-5.6%), which is very puzzling. The average cost across all cases is 3.08%, which is partly biased by a few outliers: Turkmenistan (19.8%), Liberia (18.8%), Biafra (15.2%) and Haiti (14.2%). All other sanctions cost between -5.6% and 13%, with only two observations above 10%. If we take out these four outliers, the average cost is only 1.53%. Figure 4 shows the frequency of costs in each of 20 categories. For example, costs between nil and 1% were incurred in 48 of 111 cases. The distribution of costs is visibly skewed to the left. Obviously, such small impacts are likely to be swamped by the usual fluctuations of the growth rate. Then, the growth rate cannot fall noticeably when sanctions are imposed. This is the most straightforward explanation for this study’s failure to identify an economic impact of sanctions.

![Figure 4: Costs of Sanctions to the Target](source: HSEO (2007))
Clearly, and contrary to popular belief, most past sanctions efforts have been partial and half-hearted at best. One of the strongest weapons in sanctions arsenal, freezing the target’s foreign-held assets, was seldom used, while cuts in bilateral aid, which are not very harmful, were very popular. “Total” economic sanctions have been the exception rather than the rule. Out of the seventy four times the U.S. imposed sanctions against other countries before and during the Cold War, only five were total (Rogers, 1999). Rather, the majority of cases are partial, unilateral sanctions against countries that violated human rights, disregarded nuclear nonproliferation treaties or openly supported terrorism. These imposed little or no trade and financial penalties. Although this means that sanctions have not been economically effective so far, it also implies that they can be in the future, if they are applied completely and thoroughly. Of course, it remains to be seen whether this is desirable or not.

One must then wonder why sanctions do not impose more costs, or why our results do not show that they do. The senders may purposefully design them to be relatively harmless, for a variety of reasons. They may be reticent to induce great costs on the target because these sometimes go hand in hand with costs to the sender, as trade and investment opportunities are lost. They may shy away from grand gestures out of fear of alienating the target and strengthening its morale (Galtung, 1967). Further, according to Kaempfer and Lowenberg (1988), sanctions may be designed to cause little or no costs because they are a response to internal political pressure, not so much an instrument to motivate policy change. Governments impose them on foreign countries because their voters seem to expect or demand it. Therefore, sanctions are not necessarily designed to be effective, but rather to be showy and serve the interests of pressure groups at home. As British Prime Minister Lloyd George remarked after the League of Nations foray against Italy in 1935, “[Sanctions] came too late to save Abyssinia, but they are just in the nick of time to save the [British] government.”19 A related motive for imposing sanctions is to avoid damaging the sender country’s reputation through inaction (Lindsay, 1986).

Yet even when sanctions are designed in a way to impose considerable costs, a number of factors can diminish or disguise the impact. Sanctions are rarely completely unexpected. In fact, they are often publicly deliberated upon long before they are implemented, giving the target country ample time to build up immunity against them. As Doxey (1980) notes, even when the decision is taken fairly quickly, there is always some period of time during which international players debate on the “pros and cons” of the intervention, and during which the target may take preventative steps to

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19 This is quoted in Daoudi and Dajani (1983)
minimize the impact. For example, Rhodesia was warned in October 1961 that a unilateral declaration of independence would compel the British government to intervene, leaving Ian Smith’s government ample time to plan, strengthen Rhodesia’s defenses, and stage the declaration to its best advantage. Typically, a target country has a wide arsenal of advance action to reduce the effect of sanctions at its disposal: stockpiling, developing alternative sources of supply, stimulating and diversifying domestic production, gaining control of scarce and strategic resources, acquiring new means of transportation, etc. (Doxey, 1980). Foreign exchange and gold can be saved in advance to make up for losses under the sanctions. New trade partnerships can be formed, agreements signed, new markets for one’s exports and sources for one’s imports explored. Of course, an economy works best when it is not constrained by sanctions and the need to circumvent them, but the negative effects can still be greatly mitigated. The greater the share of the economy that is hit by the sanctions and the greater the number of countries participating in them, the less opportunities to soften the blow will be open to the target. Yet sanctions are most often limited and imposed by one or very few countries, leaving ample room for the target to cultivate other relationships.

Even once the sanctions are imposed, the target government still has ways to defend the economy. As almost everyone in the country stands to gain from such defensive behavior, the government is likely to receive support from all levels of society. In fact, a weakness of economic sanctions is that they can create their own antidote: the “rally-round-the-flag” movement (Galtung, 1967), which prompts defensive measures and greater unity within the sanctioned country. For example, the impressive willingness of Rhodesians to increase their savings enabled the government to raise loans in order to finance stockpiling and other supportive measures (McKinnell, 1969). There are essentially two measures the target government can take. The first is increasing self-sufficiency and reducing dependence on the outside world. While hardly an advisable step to take for a lengthy period of time, it can initially soften the blow. The second is the development of new relationships with states that do not participate in the sanctions, as mentioned above. Several industrial economies have attempted to manage without essential raw material imports since World War One. Germany in the 1930’s is an example that near-autarky can be achieved, albeit at a considerable price and not for an indefinite period of time.

Moreover, deprivation may act as a stimulus to a target’s industries in certain situations, as in South Africa, Australia and Rhodesia during World War Two. Sheltered from foreign competition by the embargoes, spurred by a patriotic “buy local” feeling on the side of the consumers, domestic production can flourish and investments become more profitable. Of course, this is no reason to promote this type of economic planning, as an economy can never grow to its full potential under
such circumstances, but it may effectively diminish or at least conceal the effects of sanctions for a limited period of time.

There are also numerous ways to evade the effects of sanctions “illegally”, such as large-scale smuggling. In Iraq, smuggling, especially on the Turkish border, prevented the much-maligned sanctions from damaging the structure of the regime by permitting both exports of petrol and imports of strategic goods. The target government is unlikely to combat smuggling if it allows the nation to survive on clandestine channels without giving in to the demands of the sender(s). Complicated systems of staged delivery can be developed, especially with assistance from friendly neighbors (Doxey, 1980), and financial transactions laundered by passing them through intermediaries.

Humanitarian exemptions from sanctions can also enable the target regime to obtain imports and sell exports semi-legally (Weiss, 2002). They have the objective of “reducing humanitarian damage without relieving political pressure on targeted governments” (Tostensen and Bull, 2002). While we do not doubt the theoretical merit of such an approach, it may offer the government an easy way out of the shortages. To reprise the example of Iraq, the famous “oil for food” resolutions, which enabled the country to export first $1.6 billion and then another $2 billion of oil (Alnasrawi, 20001), were misused by the government to obtain foreign exchange that was presumably not entirely spent for the humanitarian activities it was intended for.

Economic sanctions may even strengthen the target country’s economy. This hypothesis hinges on the theory that poor countries need to purposefully move away from the export of primary goods as the motor of their economy in order to be able to grow. Then, a trade embargo that prevents such a nation from exporting agricultural products may motivate it to concentrate on the production and export of secondary and tertiary goods, thus leading it onto a more productive path, permitting higher growth and an increase in living standards.

Another way in which sanctions may have positive long term effects on the target’s economy is via the frugality they impose on public finances. Countries that are cut off from international loans and aid programs simply cannot build up as big a public deficit as countries that have regular access to financing possibilities. For example, during the Cold War, Czechoslovakia’s “Stalinist” regime could not obtain international loans, and therefore had to moderate public expenditure. On the other hand, the more reformist Hungarian government was rewarded for its relatively pro-Western stance with the extension of numerous loans. It built up a huge deficit and came out of the Cold War with its public finances in much worse a state than Czechoslovakia’s. Of course, a condition for
sanctions to have a positive effect is that they be partial, effective enough to force the target
government to take productive action, but not so effective as to make economic development

Certain strategically located targets may enjoy the protection of powerful nations. For example, the
Soviet Union massively supported Cuba while it was being sanctioned by the United States. Although the island’s long-term growth potential was probably stunted nevertheless, the short-term
effects were largely cancelled. In such a situation, a sanctions episode may even be *lucrative* for the
target, as nations competing with the sender provide both political and financial assistance to make
up for sanctions-related losses. For example, Yugoslavia’s economy was generously propped by the
West at the time when the USSR sanctioned it for Marshal Tito’s refusal to adhere uncritically to the
official Stalinist policy line.

Further, sanctions may need a long time to build up an effect, in which case we would look in vain
for a drop in GDP growth in the year they were imposed. In fact, some of the effects are invisible to
the untrained eye until they cause a crisis. Boycotts, for example, not only impose higher prices for
imported goods on the target, they also force the latter to spend a considerable amount of gold or
foreign currency reserves, and thus lastingly weaken both its capacity for foreign investment and its
purchasing power. Such a development is unlikely to translate into weaker growth immediately, but
it may do so in the long run. One of the reasons why sanctions have remained an integral part of
diplomatic repertory despite many resounding “failures” is that they are believed capable of
creeping in on a target and weakening it considerably, if given sufficient time. Daoudi and Dajani
compare their effect to that of cancer: “international economic sanctions kill minute cells within the
economic structure of the target nation which are hard for the naked eye to detect at first. But the
accumulation of these dead cells leads to the eventual corruption of the eco-political ability of the
sanctioned nation to meet its domestic daily demands (...) eventually causing its collapse.” The last
test in the previous section denied the existence of a visible drop in GDP growth in the second year
of the sanctions’ existence, but this does not mean that there is no effect later. The variety of cases
examined is such that we cannot reasonably test for every year separately. Some sanctions may bite
immediately, others only after five years. Without detailed information on the elements of each
episode, it is difficult to make a credible prediction on the lag time.

Even in the unlikely situation that sanctions are correctly implemented, costly enough to have a
perceivable economic effect, and insurmountable by the target, the methods applied not only in this
study but also in established works may not be adequate to measure their impact.
A methodological issue that might tarnish the results presented above is the presence of a number of very lengthy cases, such as sanctions against Liberia, Libya and Iran. These cases witnessed changes in the purpose of the sanctions, in the type of sanction employed, in general world economic conditions, and so on, while they were in place. They should not be regarded as individual episodes, but rather series of episodes, and arguably lasted so long because they were ineffective, and the sender countries were waiting for an effect to kick in. They may considerably distort the database, and yet are indispensable to a complete investigation, as they are politically important episodes of international conflict.

A few important episodes of economic sanctioning are insufficiently documented due to missing data. Notable examples are certain sanctions on Iraq, Cuba, Afghanistan and North Korea. Iraq, in particular, is widely considered to be the costliest sanctions episode in modern history. However, data on growth rates and foreign trade flows is not available from well-known, reliable resources for these observations, making it difficult to include them, although it is reasonable to assume that they would influence the results.

Moreover, the tests in this study require an exact knowledge of when the sanctions were imposed and lifted, which is rarely given. The length of a sanctions episode is not defined with the precision of a metronome. Sanctions are often impressed and dismembered step by step, which makes it impossible to define indisputably when they were actually in place. The sender (and even the target) may attempt to conceal the imposition, possibly to avoid embarrassment, as in the case of U.S. sanctions against Chile in 1970, or not lose an official word on the matter at all, as in the case U.S. sanctions against the U.K. and France during the Suez crisis.

A further explanation for why we cannot see an impact of economic sanctions on the growth rate is that the yearly illustration is too crude. Some sanctions may have an impact that is visible only on a monthly basis, but is swamped by other developments in yearly representations. To illustrate this, we briefly refer to the sanctions imposed on India in 1998, after it conducted a series of nuclear tests. The sanctions lasted for just half a year and included a termination of foreign assistance and a prohibition of new loans, loan guarantees and credit insurance. Fourteen countries suspended bilateral aid programs. As a result of the sanctions, net capital inflows to India fell by about $4.2 billion, a modest but not insignificant figure (Morrow and Carriere, 1999). Private flows were

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20 Although Iraq would be an excellent example for this factor, it had to be dropped due to unavailability of data.
noticeably hit. Foreign investment and receipts from external commercial borrowing fell sharply in May 1998.

For lack of monthly data, Figure 5 shows quarterly data for the period in question. The sanctions were imposed in May 1998, the second quarter of 1998. India’s GDP growth rate starts falling at this time, and continues to do so until the last quarter, after which it embarks on a steady rise. This corresponds to Congress passing the Brownback Amendment in October 1998, which gave President Clinton the authority to waive many of the sanctions that were in place. Quarterly growth changes enormously during the time the sanctions were in place, from 2.611% in the first quarter of 1998 to -0.024% in the last quarter of 1998.

![Figure 5: Quarterly GDP Growth Rate in India 1997-1999](image)

Of course, these developments could be due to other factors, such as the Asian financial crisis of 1997, the threat of a possible military conflict in the region, and announcements by the Indian government that caused concern about an economic climate less hospitable to foreign investment. However, Morrow and Carriere conclude “that the timing of stock market movements and the explanations of those movements by stock market participants indicate that the sanctions themselves were a relevant (…) factor.” Overall, the fluctuations fit the timeline of the sanctions too well to be coincidental.

Plotting India’s GDP growth rate on a yearly basis results in the following figure:
No impact of economic sanctions appears. In fact, 1998 witnesses a considerable economic upturn, the yearly growth rate being 6.193%, a very good performance in comparison to the previous and following years. The downturn that was visible in the quarterly approach is swamped by the overall development of the year. We see that a yearly representation of the data obscures certain fluctuations in GDP growth. It seems obvious that for short, limited sanctions, which never presumed to have an enormous economic or political effect, the yearly observation is inadequate.

Evidently, it does not make sense to apply a monthly observation for all instances, as out of the 111 cases we consider in this study, only ten last less than a year. All the others must necessarily be observed on a yearly basis. The number of short episodes is insufficient for a statistical test, hence we cannot verify whether the sanctions have a more visible impact when they are short-lived and viewed on a monthly basis. Although we expected a more exact representation to improve the visibility of economic effects, when we eliminated the episodes that last for only a year (or less) from the database and performed the general test again, we obtained yet another insignificant result. The crudeness of yearly data is not a sufficient explanation for the lack of a visible effect, although it may contribute to it.

A related argument centers on the aggregation of the data frequently used in works on economic sanctions. Most sanctions being industry or product specific, their impact may not be detected in aggregate data. Askari et al. (2004) cite the example of U.S. sanctions against China, which mainly consisted of export restrictions on high technology products. While it is difficult to perceive an effect on overall bilateral trade, let alone GDP growth, it might be visible in disaggregated data on trade of products like high performance computers, nuclear power equipment and communication satellites.
Another potentially grave problem is that most databases on sanctions, including HSEO’s, which we use here, suffer from selection bias. This occurs when inferences are based on a nonrandom sample of cases that is not representative of the universe of cases from which it was drawn (Collier, 1995). Sanctions literature commits the error of considering almost exclusively situations in which sanctions were actually brought into play, not only threatened. However, standard game theory predicts that if the target knows that the sanctions, once imposed, will force it to concede, it will give in before they are imposed and inflict damage on its economy. Hence, sanctions with a high probability of succeeding economically and politically will most likely remain a threat. Only sanctions whose effects are considered to be bearable by the target will be imposed. This means that sanctions are more likely to be applied when they have a low probability of succeeding. Therefore, the sample understates the economic effect of sanctions.

A related source of errors is that most empirical research on economic statecraft (including this one) relies on a single data set by HSEO. As the only major study of sanctions, it has become “the bedrock study on the effectiveness of economic sanctions” (Pape, 1997). This is dangerous on its own. Any mistakes made by these authors are eternally perpetuated in literature. Baldwin (1985), for example, cites the HSEO study 21 times. Yet it seems that HSEO’s database suffers not only from the aforementioned selection bias, but also from a number of other flaws. First, all scientific studies, but studies on international trade and capital flows particularly, are prone to suffer from “normal” measurement errors. Second, much of the categorization undertaken by HSEO and reproduced here is a matter of judgment, prone to imprecision, subjectivity and differences in definitions. As mentioned above in a footnote, there are reasons to doubt the correctness of HSEO’s judgment in certain cases, as there would be reasons to doubt anyone’s judgment on a matter that cannot be indisputably verified. HSEO are also guilty of omitting certain instances of sanctions, notably many cases where sanctions were imposed between powers of the second and third rank, and by the USSR on its satellite states, both because these cases are not well-documented in the English language, and because official information has been regularly denied. While this is understandable, it may nevertheless bias the database. There may be reasons to assume sanctions between powers of lesser rank have stronger economic effects, for example, because the powers involved know each other’s weaknesses better or because sanctions are more easily enforced amongst neighbors. South Africa could impose enormous economic hardship on Lesotho, which it completely surrounds, for example. The omission of the numerous cases of economic coercion the USSR imposed on the former Soviet bloc states is perhaps the gravest error. Considering the
enormity of Soviet control on its satellites, the potential for serious welfare loss is arguably greater than in other situations.

There is, therefore, reason to believe that many studies, especially those based on cases provided by HSEO, suffer from certain biases, hence probably providing an excessively pessimistic interpretation of sanctions. There is a clear need to expand the habitually used dataset to include cases in which sanctions were threatened, but not actually implemented, as well as the other cases HSEO neglected.

Finally, certain issues severely limit the reliability of the data we retrieved from the World Bank catalog of World Development Indicators. In several instances, growth rates and foreign trade were reported by autocratic regimes with an active interest in distorting numbers. In fact, target countries tend to be ruled by dictatorial or authoritarian regimes which are often inclined, for propagandistic and other reasons, to publish embellished or totally fictitious statistic figures. This effect can apply in both directions: official growth rates may be manipulated “upward”, in order to convince public opinion that sanctions have no effect at all; or “downward” to underscore the cruel hardship imposed on innocent civilians by hostile foreign powers, particularly the United States. This might have been the case with traditionally communist countries such as China, the USSR, and Cuba, countries at war, such as Liberia or Angola, but also underdeveloped countries not equipped with the instruments and institutions necessary for correct data collection. Daoudi and Dajani (1983) report that both “the Italian and Rhodesian governments suppressed relevant data and censored governmental figures to conceal the impact of the sanctions”, referring to the imposition of sanctions on Italy following the invasion of Abyssinia, and on Rhodesia following the unilateral declaration of independence by the Smith government. The reported data should therefore not be accepted uncritically.

In the light of these concerns, it is hardly surprising that we measured no statistically significant effect of sanctions on GDP growth and foreign trade. Probably, this is because no effect actually existed, although this may not be the only reason. Even if an effect did exist, standard empirical methodology as employed in this study might have been inadequate to pick it up. It would be negligent to conclude from this that sanctions are useless.
7. Conclusion

This paper shows that sanctions have often failed to affect the target’s GDP growth rate significantly in the past, at least in appearance. This lends support to the widespread conviction that sanctions are ultimately doomed to fail, since the main mechanisms by which they are believed to induce political change is economic hardship. In our opinion, however, our results do not necessarily imply that sanctions are inherently incapable of having economic and consequently political effects. Rather, the lack of a visible effect can be traced back to a mixture of inadequate design and use of sanctions, and methodological flaws in recording their effects.

Gambino (1976) makes a very valid point: “The fact is that history should provide a lesson, not an example, and certainly not a rigid ‘law’.”21 This is not to say that historical events should not be taken careful note of, on the contrary. Yet scholars are often quick to deduce uselessness from past failure. Although most sanctions imposed since 1960 have not inflicted considerable costs on the target economy, scholars should beware of depreciating the utility of sanctions as a foreign policy tool, but rather identify the reasons for this failure and attempt to combat them in future sanctions. We should not generalize from cases where partial sanctions were imposed half-heartedly, at the risk of underestimating this tool’s potential effectiveness. It is important to learn from past mistakes in the application of sanctions, but one must not make the mistake of expecting history to repeat itself without fault.

This implies the need for further research on how to make sanctions more economically effective and how to better record their performance. Whatever the true utility of sanctions, they have not been exploited to their full potential in foreign politics and academia. Yet considering that they may represent a real, long-term alternative to armed conflict, it is imperative that they be better studied before they are given up on.

At first sight, it may seem intuitive that sanctions must have an economic effect to entail a change in policies. This is probably true for democracies, where the government is likely to respond to public resentment at the sanctions’ effects with policy concessions (as explained in section five). However, one must not forget that sanctions the imposition of costs is simply a means to an end. Sanctions need not have a general economic effect if they have a political one, and the former is by no means a necessary condition for the latter. As we have seen in the previous section, policy may be completely divorced from the overall economy. The point of a sanction is rarely to make the

21 This is quoted in Daoudi and Dajani, 1983
target population suffer; but rather to influence a specific group’s behavior. Nondiscriminatory sanctions often do not harm such groups, and may even have counterproductive consequences from the point of view of the sender. They may alienate the target population, generate significant emigration and stir social conflict. In this sense, it might be advisable to use targeted or “smart” sanctions, which minimize humanitarian costs while at the same time maximizing expected effectiveness in terms of political change. “Smart” sanctions are based on the evaluation of who is responsible for the policy behavior the sender wishes to change and/or punish, and “pinpoint the needs and desires that most strongly motivate them and hence fashion policies that frustrate their satisfaction.” (Minear et al., 1998). They avoid harming vulnerable social groups, such as women, children, and the elderly, by exempting specified commodities, such as food and medicine, from the embargo. Financial sanctions, arms embargoes and travel bans are better suited for this type of intervention than general trade embargoes.

The success of sanctions depends only partially on their impact on the economy as a whole, but rather on their impact on the specific groups that should be hurt. Whether this implies that the entire economy must be targeted, or only specific sectors therein, depends on case-specific circumstances. Each type of sanction will differ with regard to whom, how much, and in what way, it hurts. It is then essential to know under which circumstances the elements whose behavior the sender disapproves of will be affected by the sanctions. Only then is it possible to tailor the perfect sanction. Therefore, “sanctions which reduce overall GNP by 5 percent may be less effective (…) than a different set of sanctions which reduce GNP by 2 percent” (Kirshner, 1997).

Moreover, whenever scholars argue that sanctions do not “work”, they often imply that they should not be used. Pape (1997), for example, goes from asserting that sanctions work “less than 5 percent of the time” to claiming they are not “a reliable alternative to military force”. This is hardly a sensible conclusion. One cannot base a qualitative judgment on whether sanctions should be employed in international conflict or not merely on a success rate. Even if sanctions were truly incapable of exerting an economic effect in more than, say, 5% of cases, suppose that alternative ways of enforcing the sender’s demands were effective in only 2% of cases. Clearly, raw “effect rates” alone cannot provide a basis for serious judgment on the implementation of sanctions. They need to be compared to alternatives. Similarly, despite their apparently poor success rate, sanctions may be the more cost-effective variant. The case for employing sanctions rather than military force may rest on the relative costliness of force (Baldwin, 1999).
It is dangerous to conclude that the lack of an immediately visible economic effect on the target makes sanctions useless and obsolete. If the principal alternative to employing them is appearing to condone communism, despotism, terrorism, genocide, blatant disregard for human rights, etc., the question of whether sanctions “work” or not may be moot. Not doing anything might not be an acceptable alternative. Finally, sanctions may also be useful as signals. By imposing one, the sender country effectively demonstrates its determination to take further steps to impose its will on the target. Then, a sanction’s effectiveness in imposing the political will of the sender cannot be directly inferred from the amount of economic damage it causes. It is well possible that “symbolic” sanctions, such as the boycott of sports events, are more successful than embargoes that greatly impede economic development.

Regardless of the conclusion on the ultimate effectiveness of sanctions, policy consequences should be drawn with particular care. If the results in section five and the explanations in section six teach us anything, it is that policymakers should beware of relying on general cross-country data, but rather rest their decisions on thorough analysis of country-specific factors that determine the probability with which specific types of sanctions will succeed economically and politically. Just because sanctions have a disappointing history on the surface does not mean they cannot be improved upon.

Although analyses of sanctions, both theoretical and empirical, have increased in number and sophistication in the last years, a number of questions remain unsolved and certain aspect unexplored. To resolve the remaining issues, it is imperative to resort to more than the standard economic and political science literature that has been the cornerstone of previous research. We believe that cultural and historical factors of the target country, which have been neglected so far, can be greatly helpful in explaining the mechanisms via which sanctions have economic effects.
List of References


List of Tables

Table 1: Average Growth Rate Before, During and After the Sanctions p. 31
Table 2: Chronological Summary of Economic Sanctions 1960-2000 p. 53

List of Figures

Figure 1: Welfare Losses from Trade Prohibition p. 11
Figure 2: Performance of Iran’s Economic Indicators, 1974-1986 p. 15
Figure 3: Average GDP Growth Rate Before, During and After the Sanctions p. 32
Figure 4: Costs of Sanctions to the Target p. 33
Figure 5: Quarterly GDP Growth Rate in India 1997-1999 p. 39
Figure 6: Yearly GDP Growth Rate in India 1993-2003 p. 40
Figure 7: Performance of Nepal’s Economic Indicators, 1984-1995 p. 55
Figure 8: Performance of South Africa’s Economic Indicators, 1980-1995 p. 57
## Appendix

### A Chronological Summary of Economic Sanctions for Foreign Policy Goals

<table>
<thead>
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**Table 2: Chronological Summary of Economic Sanctions, 1960-2000**

Source: HSEO (2007)
B Case Studies

Nepal 1989-90
In June 1988, Nepal began to deepen its military ties with China in an attempt to preserve its sovereignty, which it saw threatened by India’s increasing regional assertiveness. Predictably, this development alarmed the Indian government. To coerce Nepal back into its sphere of influence, it refused to renew two agreements on trade and transit rights between the two countries, closed the railway from Calcutta to Nepal, and cancelled several million dollars worth of trade credits that had previously been regularly extended. This was at the time predicted to have potentially devastating effects. Landlocked Nepal’s economy was unusually dependent on India; the sole supplier of a number of strategic goods, the destination of 35% of its exports, and the only transit point for foreign imports.

As expected, the effect of the sanctions was quickly felt in the form of food, oil and medicine shortages, astronomical exporting costs, double-digit increases in inflation, and stagnation in the construction, transportation, and trade industries. Although the decrease in exports and imports is confirmed by Blanchard and Ripsman (1998), we cannot see this in the figures we provide. Exports and imports remain at the same level throughout 1988 and 1989, and are on a steady rise after 1990. Sanctions seem to have dampened foreign trade, as it did not grow during the time they were imposed, but they failed to decrease it. This could be explained by the rather positive development in Southern Asia. The growth rate follows a very volatile fluctuation that does not reflect the imposition of sanctions well. It declines twice during the time, and is lower throughout the episode than before, which is weak evidence for the presence of an economic effect, despite near-ideal circumstances for the sender country.

At the same time, domestic political pressure caused the King to capitulate and legalize political parties. The newly appointed government could not rely on international support, China being a famously fickle ally, and was in no risk of losing face, or suffering political costs, from complying with India’s demands. Therefore, Nepal looked like a target in which much political change could be achieved with little economic hardship. In fact, the government quickly yielded to pressure from India and asked China to delay its last shipment of arms. Subsequently, India lifted the embargo, agreed to resume negotiations on trade and transit agreements, and reopened the trade ports with Nepal.

22 Here, Southern Asian statistics are calculated by taking the average of the following countries’ data: Bangladesh, Bhutan, India, Maldives, Pakistan and Sri Lanka. Nepal has been excluded to avoid bias.
Figure 7: Performance of Nepal’s Economic Indicators, 1984-1995

Source: World Bank World Development Indicators
South Africa 1985-90
South Africa had long been in the eye of the international community for the persistence of apartheid and South African control of Namibia. Despite the U.N.’s vested interest in South Africa, its intervention was rather tentative, first inviting its members to participate in an arms embargo in 1963, and then extending the sanctions to include material for the manufacture and maintenance of weapons in 1977. The U.S. embargoed all exports of U.S.-origin goods and technical information that could be used in the military. Finally, in 1985, the Security Council proposed a broader, though still relatively specialized, range of sanctions, including the prohibition of new investment and export financing, as well as of trade with the krugerrand.

Figure 8 a shows a clear increase in both exports and imports from 1985 to 1989, as opposed to a decrease, but we do observe a fall in foreign trade from 1989 to 1990. This could indicate a belated effect of the sanctions. Figure 8 b presents the indexed development of exports both in South Africa and in Sub-Saharan Africa23 as a whole. There is some evidence of an upward trend both in exports and imports throughout Africa, so a part of the positive development can be explained, although the South African fluctuations differ quite markedly from the Sub-Saharan trend. The GDP growth rate follows a very haphazard course, both in the period when of the sanctions and in the years around it. The growth rate does start to plummet around 1988 and starts rising in 1992, two years after the sanctions were lifted. Evidence is overall limited, though not entirely absent.

There was some progress in the South African situation, though the extent thereof is disputable. As a consequence of the declaration of Namibian independence, in 1990, economic sanctions on South Africa were lifted, although the arms embargo remained in effect until 1994.

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23 Here, Sub-Saharan African statistics are calculated by taking the average of the following countries’ data: Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Dem. Rep. of Congo, Rep. of Congo, Côte d’Ivoire, Equatorial Guinea, Eritrea, Ethiopia, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mayotte, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia and Zimbabwe. South Africa was excluded to avoid bias.
Figure 8: Performance of South Africa’s Economic Indicators, 1980-1995

Source: World Bank World Development Indicators