

6. Failures and . . . Successes of Economic Sanctions*

The study of economic sanctions essentially requires an introduction in what has been called the ‘donkey psychology’ of economic diplomacy. Just like a donkey, it is assumed, countries can be induced to move in the right direction by means of both a stick and a carrot, that is to say, by negative and positive economic sanctions. The donkey psychology, however, also points out that sanctions can be counterproductive: if the donkey beater pulls a donkey by the tail, it will run away in an opposite direction. Continuing the donkey metaphor would be boring and cumbersome. So in the discussion the country or group of countries that imposes or threatens to impose the economic sanction is called the sender. The country (or group of countries) on which the sanction is imposed is called the target. Negative sanctions are the most visible economic instruments of foreign policy. A negative sanction is a punishment or a disincentive. Three kinds of negative economic sanctions can be distinguished: boycotts, embargoes and capital sanctions:

- A boycott restricts the demand for certain products from the target country. A boycott can be administered by governments and international organisations, but some notable consumer boycotts have been effective as well. The 1991 oil boycott against Iraq and the consumer boycott of South African agricultural products in the 1980s are examples of both types.
- An embargo restricts the exports of certain products to the target economy. Embargoes are enforced by a system of export licenses and controls of destination, transit and transport. The UN non-proliferation sanctions against North Korea in 2006 are an example.
- Capital (or financial) sanctions restrict or suspend lending (loans, credits, grants, etc.) to, and investment in, the target economy and often impose additional restrictions on international payments in order to hinder sanction-busting and trade diversion. In addition foreign assets of the target economy may be frozen. The sanctions by the United States against Iran in the wake of the 1979 hostage crisis are an example.

* [Draft: comments are welcome at p.a.g.vanbergeijk@minez.nl](mailto:p.a.g.vanbergeijk@minez.nl). Forthcoming in: P.A.G. van Bergeijk, *The Political Economy of Economic Diplomacy*, Edward Elgar Cheltenham 2009. Research assistance by rens Fenthur and comments by Tony Lowenberg are gratefully acknowledged.

This strict classification, however, may be blurred in actual sanction cases. Obviously, the combination of these three types may even be advisable in many cases. It is also not necessary that sanctions are complete in the sense that all trade and investment is blocked. An embargo, for example, may be partial; that is, it may cover certain specific products and technologies only.

Positive sanctions are less spectacular, because these rewards or incentives to a large extent, although not exclusively, belong to the domain of silent diplomacy. Many kinds of positive sanctions, such as aid and technological and military co-operation, belong to day-to-day-practice and are hardly ever distinct enough from the constant flows of international interactions to stand out against this background as 'reportable'. Consequently, much less is known about characteristics of positive economic sanctions (Mastanduno 2003) and this is the reason to focus in this empirically oriented chapter on negative economic sanctions, but we will encounter positive sanctions in the next chapter.

The debate on the effectiveness of negative economic sanctions runs since the early applications of sanctions by the League of Nations (see Daoudi and Dajani, 1983, for a review of this debate, and Baldwin, 2000 and Wallenstein 2000, for reassessments of the internally conflicting, ambiguous state of our knowledge at the end of the second millennium). This chapter tries to shed some light on the issue by means of an empirical analysis of post Second World War cases. The first section deals with some methodological questions related to the definition of the success of economic sanctions, distinguishing between effectiveness and success: effective sanctions may fail although the economic hardship that they impose on the target is substantial. Likewise, the threat of a sanction may be successful even when no economic damage is done. The next section first focuses on the question of what we mean by success and how this is related to effectiveness in the delivery of (potential) damage. Section 2 then discusses some promising economic theories of sanctions, related to (potential) impact assessment, political economy and public choice considerations and game theoretic aspects. Methodology and relevant explanatory variables are discussed in section 3 thus setting the stage for an econometric evaluation of the variables that economists deem to be most relevant for the success and failure of economic sanctions in section 4. The final section concludes and suggests further avenues for research.

1 EFFECTIVENESS VERSUS SUCCESS

The most striking characteristic of negative economic sanctions is the combination of their relative lack of success and the economic profession's

disbelief in the possible utility of boycotts and embargoes as instruments of foreign policy-making. According to *Economic Sanctions Reconsidered* (Hufbauer *et al.* 2008, the standard reference on this topic) on average only about one out of three sanction cases since the Second World War succeeded in achieving their stated political goals (compare Table 6.1). Moreover, only a rather limited number of cases appears to have induced substantial damage on the target economy. According to Hufbauer *et al.* (2008), sanction damage was less than 0.1 per cent of the target's GDP in about a third of the 181 cases over the period 1946–2000; only in 14% of the cases did sanction damage exceeded the threshold of 5% of the target's GDP.¹

Table 6.1 The success rate of economic sanctions (1946–2000)

Period	Sanctions (1)	Successes (2)	Success rate (2)/(1)
1946 – 1955	14	2	14%
1956 – 1965	26	12	46%
1966 – 1975	21	6	29%
1976 – 1985	41	13	32%
1986 – 1995	62	21	34%
1996 – 2000	17	6	35%
1946 – 2000	181	60	33%

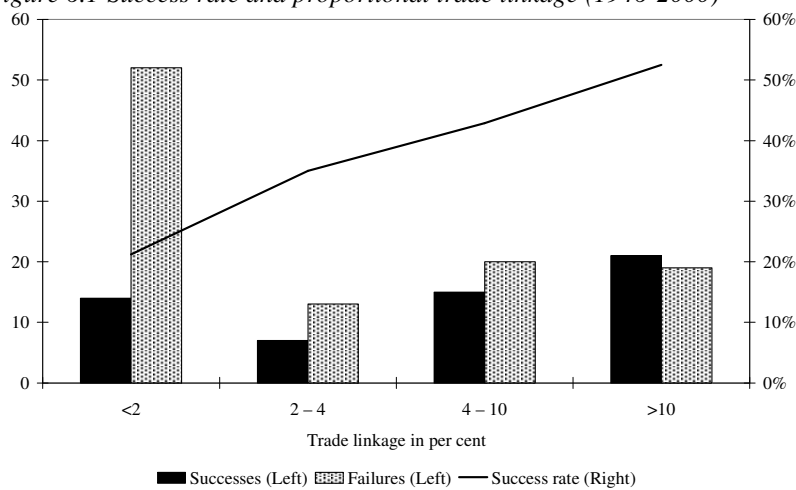
Source: Calculations based on Hufbauer *et al.* (2008)

Given this seeming ineffectiveness, it is not surprising that both popular and scientific interest in boycotts and embargoes as an instrument of foreign policy waned in the 1980s – that is after a period for which (with hindsight) can be observed that the success rate was comparatively speaking low and decreasing. Quite generally the usefulness of negative economic sanctions was considered to be rather low. Adler-Karlsson (1982, pp. 166–7) argued that it would hardly be possible to create the necessary political unity for forceful boycotts or embargoes and (if established at all) sanctions would be easy to circumvent. Lindsay (1986, p. 160), moreover, questioned the plausibility of a change in behaviour as a consequence of punitive economic damage: sanctions being public measures, compliance might damage the target's leadership's world prestige or diminish its domestic support. He considered economic sanctions to be merely symbolic gestures. Seeler (1982, p. 616) pointed out that the lapse of time between the decision to use economic sanctions and their actual bureaucratic implementation offers the target country the possibility to adjust its economy, thus reducing the potential damage of the sanction. And some even, as for example Reekie (1987) in the case of South Africa, went so far as to deny that sanctions could ever work. Indeed, according to Baldwin (1985, pp. 55–7), the tendency to

denigrate the utility of economic sanctions was a salient characteristic of the literature on economic statecraft at that time. Leitzel (1987, p. 286) accordingly observed that ‘the gulf between policy significance and theoretical and empirical development is probably wider in the area of economic sanctions than in any other region at the confluence of economic and political streams of thought’.

In sum, according to mainstream international economists in the 1980s five reasons pointed to the ineffectiveness of economic sanctions as an instrument of foreign policy. First, failure was considered to be evident in some widely publicised and discussed cases (South Africa, Israel). Second, the urge for free trade was considered to be too strong, implying that sanction-busting, smuggling and trade diversion were the most probable outcomes of economic sanctions. Third, the assumption that behaviour could be changed by means of economic damage was doubted on both political and psychological grounds. Fourth, a long-lasting complete embargo appeared hardly possible, either on economic grounds (for example, cartel theory) or on the basis of political arguments. Finally, the empirical evidence showed a rather low success rate.

Figure 6.1 Success rate and proportional trade linkage (1946-2000)



Notes: Proportional trade linkage is the bilateral trade flow between sender and target as a percentage of the target's GDP and is measured in the year prior to the sanction.

Figure 6.1 is based on fewer observations (161) than Table 6.1 (181) because data on bilateral trade flows or national products in the year prior to the sanctions are not available.

Sources. See the Data Appendix;

The numerical predominance of failures *per se*, however, hardly provides evidence for the ineffectiveness of the diplomatic use of international commercial relations. More specifically, a sanction should fail if the – theoretical – conditions for a success are not being met.

This caveat would seem to be fairly obvious. A sanction simply cannot be expected to succeed if, for example, economic linkages are too low so that no or hardly any damage can ever be done. To illustrate this point, Figure 6.1 relates the success rate of sanctions to the proportional trade linkage *ex ante*. As expected a clear positive relationship between the success rate and proportional trade linkage emerges: sanctions fail if trade linkage is not sufficient. This point, however, was generally overlooked in the analysis.

Consequently, it is clear that not every failure is evidence for the inefficiency of the economic instruments of modern diplomacy. Sanctions should be expected to fail if the necessary organisational conditions for a successful sanction are not being met (Frey 1984, pp. 106–7). Only from the comparison of sanction outcomes and the values of potential determinants of failure and success can we possibly draw some valid conclusions about the potential utility of economic sanctions.²

A first step toward such an evaluation is to distinguish between sanction success – that is the achieved change in political behaviour – and sanction effectiveness – that is the (potential) economic damage of an economic sanction (Losman 1972).³ The effectiveness of economic sanctions is probably the first natural line of approach for economists and this is the question with which we will be involved in the first part of the next section.

2 THE ECONOMICS OF SANCTIONS

The theoretical foundations for the use of a sanction as an instrument of foreign policy appear rather strong. The two basic premises belong to the core of economic science. First, boycotts and embargoes deprive the sanctioned economy from (some of) the gains from international trade and investment, and consequently sanctions reduce welfare. Second, the idea that (the mere threat of) this disutility influences the victim's behaviour can also be traced to the tenets of economic catechism.

The back bone of the economic analysis of sanctions is the traditional neoclassical trade model that we discussed in Chapter 3. Trade liberalisation and the associated gains from trade are useful concepts because complete embargoes and boycotts are the mirror images of the movement from the no-trade situation of autarky to a state of the world in which free trade prevails and all countries benefit from international specialisation according to their

respective comparative advantage. Leaving the political aspects aside, this is the economist's realm *par excellence*, as Pen (1967, p. 37) once remarked: the comparative advantage of economists lies in analysing comparative advantage. At intermediate levels – where economic isolation is not (expected to be) complete – political trade distortions can be modelled by taking the sender's market power into consideration for example through the analysis of residual demand (Bayard *et al.* 1983) or by considering imperfect competition and the number of relevant competitors in a market (Schultz 1989).

From the 'inverted trade liberalisation model' of economic sanctions (Kemp 1964, pp. 208–17, Frey 1984, pp. 103–21 and Carbaugh 1989, pp. 144–7) follows that a sanction will produce more hardship on the target economy, the larger the pre-sanction target's dependence on trade with the sender and the more inflexible the target's consumption preferences and production structures.⁴ Since both demand and supply rigidities basically are short term phenomena, it follows that the passage of time reduces the effectiveness of sanctions. This yields the testable proposition that sanctions have a better chance to succeed, the larger trade linkage and the shorter the duration of the sanctions.

Effectiveness, however, is not a sufficient condition for success. Consider, for example, the UN sanctions against the Iraqi occupation of Kuwait that were very effective in delivering economic damage to Iraq and showed that the achievement of the international political unity that is considered to be a necessary condition for a forceful – and difficult to circumvent – embargo can be a matter of days (Smeets, 1990). Indeed this is a unique case since the international community was able to impose severe and almost watertight sanction measures (Switzerland participated for the first time in history) and within an extremely short period of four days.⁵ At the same time, however, these very promising sanctions did not succeed and eventually by necessity were followed by the military intervention of 'Desert Storm' (see: Aspin, 1991 and Baldwin 2000, pp. 103–5). This suggests that the political economy aspects are also a crucial determinant for sanction success.

Political Economy and Public Choice Aspects

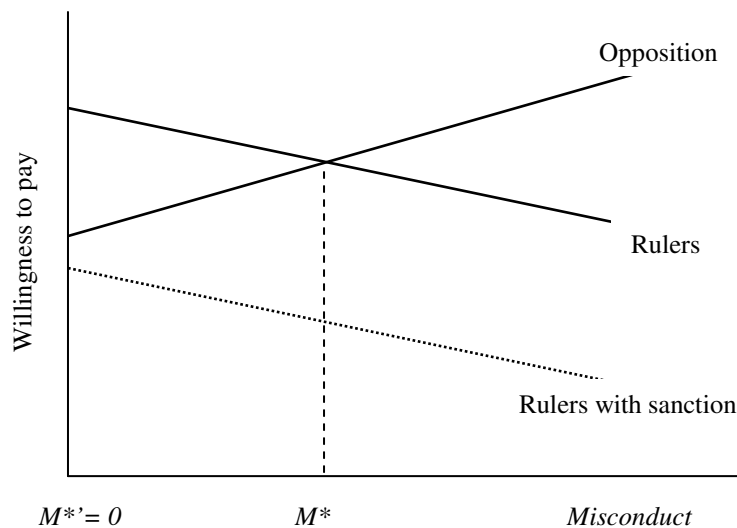
For long, the economic approach to the sanction phenomenon has merely asserted that damage (or potential damage) influences the target's behaviour, assuming that the target's population is homogeneous, that decision-making is rational and fully informed, etc. In reality, however, different (interest) groups of the target's population will be hit differently – both in a relative and in an absolute sense. These topics are dealt with in the public choice approach to economic sanctions, pioneered by Kaempfer and Lowenberg (1986, 1988

and 1992). The public choice approach would *a priori* seem to be viable for both the sender and the target: an embargo will create vested interests in the continuation of a sanction in the target country as competition from abroad is limited in the target's import competing industries. Likewise, a boycott may protect import competing industries in the sender economy generating the excess profits that provide a strong incentive for lobby-groups. Decisions about sanctions or policy changes in the target could thus require the simultaneous analysis of the public choice context of both actors. Empirical research, however, suggests that the applicability of the public choice approach is especially relevant for the target economy. Regarding the impact of different bargaining strategies on the duration of the sanction cases in the Hufbauer *et al.* 1990 data set, Dorussen and Mo (2001, p. 418) conclude:

Rent-seeking is particularly important for the target, whereas it is nearly insignificant for the sender. With respect to audience costs, we can only find evidence that support matters as a commitment strategy, and the substantive effect of this strategy is also much stronger for the target.⁶

How do pressures by interest groups work through the target's political system to yield some public goods or bads? Consider Figure 6.2 which describes the political market that determines the level of misconduct M .

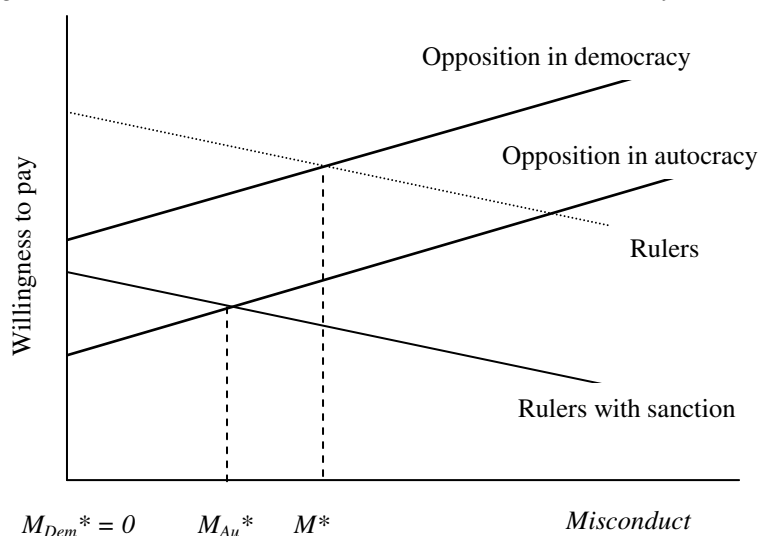
Figure 6.2 The political market for misconduct



We have two interest groups for which the demand schedule for misconduct is derived by aggregating the maximum willingness to pay to achieve more

(less) utility-enhancing (decreasing) misconduct through the political market. The opposition suffers from misconduct and is willing to pay or to make sacrifices in order to achieve lower levels of misconduct. Its schedule is upward sloping because a rational opposition will use instruments that entail larger costs (for example, the risk of execution) at higher levels of misconduct. The rulers derive positive but decreasing marginal utility from misconduct and their demand schedule slopes downward showing that their willingness to pay is larger at lower levels of misconduct. Note that this interpretation that the ruling interest group benefits from misconduct follows logically from the fact that economic sanctions would not be necessary if the decision-makers oppose misconduct. Figure 6.2 illustrates that the processes on the political market yield a positive equilibrium level of misconduct M^* . The primary channel, through which a sanction works, is through its potential impact on the demand schedule of the rulers that shifts downwards reducing the equilibrium level of misconduct.⁷ The outcome in the illustrated case in Figure 6.2 is an intersection of the demand schedules for the opposition and the rulers *cum* sanction to the left of the y-axis (so the sanction is a full success: $M^{*'} = 0$).

Figure 6.3 Democratic and autocratic institutions and success of sanctions.



Next consider Figure 6.3 which illustrates the impact of the strength of democratic and autocratic institutions on the success of sanctions. The stronger autocratic institutions *vis-à-vis* democratic institutions, the lower the

opposition's political effectiveness, as pointed out by Kaempfer and Lowenberg (1988, p. 790):

If a group is constitutionally excluded from the nominal policy-making process, the only option open to members of such a group are costly ones like insurrection or civil disobedience, which reduces their revealed willingness to pay for lower levels of [misconduct]

So the opposition's demand curve will *ceteris paribus* be lower if institutions are less democratic and less open. Figure 6.3 illustrates that a sanction that is a full success in a democracy $M_{Dem}^* = 0$ will be less effective in an autocracy $M_{Au}^* > 0$ even though the sanction is successful in reducing the level of misconduct from its original level M^* . This yields the testable proposition that sanctions against democracies have a larger change to succeed than sanctions against autocracies.

The sanction game

Game theory has contributed the insight that not only the implementation of economic sanctions, but also the mere threat to use them can be an adequate policy instrument. The sender utters a strategic threat consisting of the announcement that economic sanction measures will be applied. If behaviour is altered the game ends and the sender attains its objective in the most efficient way, as it does not have to bear the costs of the sanction. If, however, a threat is not sufficiently credible to change behaviour, punitive action has to be carried out. This is painful and costly for both the sender and the target since both parties will be unable to reap the full benefits of free and undisturbed trade. Consequently, a sanction might be too costly to be carried out and the threat may appear false. Against this background two stylized facts of sanctions are peculiar (see Table 6.2).

Table 6.2 Distribution of duration of post1945 sanctions

Duration	Failures	Successes
Less than and up to 1 year	17%	41%
2 years	6%	14%
3 years	15%	9%
4 years	11%	12%
5 or more years	51%	25%
	100%	100%

Source: Calculations based on Hufbauer *et al.* (2008)

Note: Totals may not add up to 100% due to rounding

Firstly, the implementation of a sanction today does not necessarily imply that this sanction will be implemented in the next period as well. Indeed, a bit less

than one out of five unsuccessful economic sanctions lasted one year or less. As the target of the sanction did not change its behaviour, the reason for implementing the sanction in the first place continued in these cases. Evidently then, continuation of a sanction is uncertain. Secondly, the majority of the successful foreign policy sanctions took longer than one year to succeed. If the intentions of the imposing countries and the perceptions of the target country are known with certainty, the sanctions should either work directly or never at all. Many successful sanctions appear to take some time to work. Indeed, about two thirds of the successful sanctions requires two years or more to achieve compliance, *i.e.* the desired change of behaviour..

The history of the economic sanction instrument thus contains cases of sanctions that work directly, of sanctions that work only after some time and of sanctions that never seem to work. This finding is essentially why any theory of economic sanctions should not start from a deterministic setting. Theory has to deal with the stochastic outcome of situations in which economic sanctions have been applied. Moreover, theory has to acknowledge the impact of (subjective) expectations and probabilities in the decision process. From this perspective the passage of time may also become a positive determinant of success, for example, if targets learn and understand the extent to which sanctions will (continue to be) applied in the next period (Bergeijk and Marrewijk 1993, 1995) If so, actual implementation of sanction measures increases the expected value of the threat as even partial implementation increases the probability of (possibly full) application in the next period.

Game theorists have also argued that it may be wrong to apply decision theory in stead of game theory when more than one rational actor is involved, an error coined the 'Robinson Crusoe Fallacy' by Tsebelis (1989), who also develops a model (Tsebelis 1990) in which these interactions are modelled explicitly. He shows that the target's equilibrium strategy only depends on the sender's payoff matrix. His model ably explains three stylized facts of the application of sanctions as an instrument of foreign policy: small countries are not inclined to use economic sanctions, few sanctions succeed and policy advice on the selection and application of sanctions is poor. Tsebelis's model, however, requires a number of unrealistic assumptions. The payoff matrices of the players have to be known and are assumed to be independent (the latter is simply wrong in international economics), much information is required about the valuation of uncertain outcomes and the sanction game is to be repeated a great many times. Tsebelis's model predicts that an increase in potential sanction damage does not influence the success rate, a proposition that will be tested empirically in the next section.

3 WHAT DRIVES SUCCESS?

Our short discussion of international trade economics, public choice and game theory suggests a number of hypotheses (potential determinants of success and failure) that can be tested econometrically. We will use 172 post-1945 cases that have been published in the 2008 volume and on the website of the Peterson Institute for International Economics (see: <http://www.iie.com/>). The appendix to this chapter discusses these data (and the sources for the explanatory variables) in detail. In the econometric investigation the binary variable y_i serves as the dependent variable.

$$\begin{aligned} y_i &= 1, \text{ if the } i\text{-th sanction is a success} \\ y_i &= 0, \text{ if not} \end{aligned}$$

The relation between the dependent and the explanatory variables will be estimated with LOGIT. LOGIT-analysis makes it possible to calculate the probability π that a specified sanction case ends successfully. If this probability exceeds 0.5, a success is ‘predicted’; if not, a failure. We may write:

$$\pi [y_i = 1] = 1 / (1 + e^{-\theta_{ij}}), \text{ where } \theta_{ij} = \alpha_{0,j} + \sum_{k=1}^N \alpha_{i,j,k} \cdot x_{i,k} \quad (6.1)$$

That is: we write the probability of success π for observation i and specification j as a function of the observed inputs (explanatory variables) x and the estimated coefficients α .⁸

A sanction is successful if behaviour satisfactorily changes and the sanction significantly contributes to this outcome.⁹ As a general rule, the outcome of a sanction case as given in the Hufbauer *et al.* 2008 study is adopted as the final decision about the value of y_i . As each outcome is the result of an evaluation of the literature on a specific case, it seems probable that differences of opinion exist about the value of the dependent variable in certain cases (Pape 1997). Hufbauer, *et al.* (1990, 2008), for example, code the British sanctions against Argentina in 1982 as relatively successful in getting Argentina off the Falklands, whereas the Royal Marines would seem more deserving of the credit. We will, however, not be concerned with their judgements about the outcome of sanctions in individual cases and simply accept their findings (however, in cases that have been split in order to reflect that multiple goals existed the dataset that is used in this chapter only takes the most difficult (*i.e.* lowest value of the success score) into account. A

second important difference is that the dataset in this chapter (unlike the calculations by Hufbauer *et al.* 2008) does contain the identified threat cases (*i.e.* cases that never went beyond the stage of a threat and were not actually implemented). These special cases are included for three reasons. First, we know from game theory that these are potentially the most cost effective cases. Second, in line with the Morgan and Schwebach (1995) it is accepted that inclusion of such cases reduces the risk and extent of biasing the research. Thirdly, the argument for non-inclusion, namely that in these cases no damage can be assessed (Hufbauer *et al.* 2008, pp. 106–7 and 182), is not valid: the costs *ex post* are after all known to be zero by definition.

This brings us to the choice of explanatory variables that measures the impact of the sanction. First of all it is, however, important that we recognize the necessity to be parsimonious. We will only have 172 observations available for our logit analysis. Aldrich and Nelson (1984, p. 81) argue that about 50 cases per explanatory variable should be available if the dependent variable is a dichotomous variable and this reasonable rule of thumb leaves us with 3 to 4 explanatory variables at most. Our strategy will thus be to construct a small quasi-reduced form equation that reflects the determinants that are a priori expected to be of most importance for the potential economic impact and the political setting, respectively. Next different versions or specifications of this equation (with different sets of variables) will be tested, so as to check for the robustness of the findings.

Impact variables: trade linkage and time

Hufbauer *et al.* (2008, p. 50) see costs as the main determinant of success:

Stripped to the bare bones, the formula for a successful sanction's effort is simple: The cost of defiance borne by the target must be greater than the perceived costs of compliance.

The *ex post* damage that appears as the costs of the imposition of sanctions in the Hufbauer *et al.* 2008 study may not be the most appropriate explanatory variable. It is not the actual *ex post* damage done but rather the *ex ante* threat of disutility that influences behaviour. The most efficient sanction immediately changes behaviour, implying that punishment is not necessary. As a consequence no externally imposed economic costs for the target economy might be measured.¹⁰ It is also less appropriate to include the costs of the sanction together with other variables that are supposed to explain the extent of the sanction damage, as multicollinearity can be expected. This motivates our choice to use trade linkage as a proxy for potential damage of the sanctions.

Wolf (1983) distinguishes absolute trade linkage and proportional trade linkage (incidentally both measures are shares). Absolute trade linkage relates the bilateral trade flow between sender and target to the target's total trade flow. High absolute trade linkage indicates dominance of the sender in the external economic relations of the target. The target's valuation of the potential sanction loss, however, depends on the importance of the bilateral trade flow in relation to other (domestic) economic activities. Low absolute trade linkage may imply a bigger loss for an open economy than high absolute trade linkage may imply for a closed, almost autarkic economy and this is the reason to consider proportional trade linkage as well.

Let $X_{s,t}$ be the sender's exports to the target. Our notation is that $X_{s,t} = M_{t,s}$ is the target's import from the sender.¹¹ Likewise $X_{t,s}$ is the target's export to the sender and $X_{t,s} = M_{s,t}$. Further Y_t is the target's national income, X_t is the target's total exports to all destinations including the sender and likewise M_t is the target's total import. Measurement always takes place in the year prior to the sanctions.¹² So we have:

$$\text{Absolute trade linkage} = (X_{t,s} + M_{t,s}) / (X_t + M_t) \quad (6.2)$$

$$\text{Proportional trade linkage} = (X_{t,s} + M_{t,s}) / Y_t \quad (6.3)$$

Remember that the neoclassical approach suggests that trade linkage will be an important driver of success, whereas the game theoretic contributions that were discussed in the previous section suggest otherwise as the gains and losses of the target will not be in the payoff matrix of the sender.

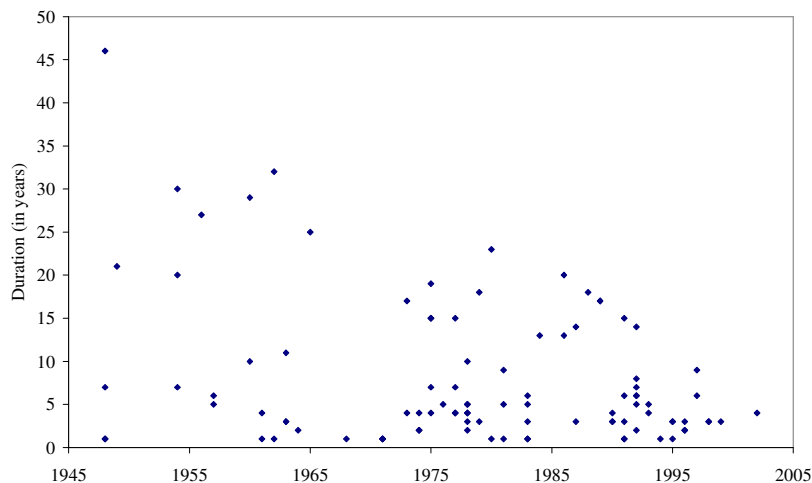
The second impact variable is time. Duration can only be observed *ex post*. So it is worth stressing that this chapter's aim is rather modest. The intention cannot be to guide the selection of potentially successful cases. Rather the goal is to understand *ex post* what the drivers have been of historical success and failure rates and to see how this reflects upon the sometimes contradicting theories that we discussed in the previous sections. Indeed, the influence of time is not *a priori* clear. The earlier literature (Daoudi and Dajani, 1983, Brady 1987 and Hanlon and Omond, 1987) stressed that total damage increases over time, missing the points that bygones are bygones and that substitution and flexibility increase over time thus reducing the impact of sanctions to some extent. These points would seem to be very relevant from an empirical point of view, but modern theories explain, as discussed, that time can also add to sanction success because it takes time to negotiate and to learn.

Regarding the time variable, it is important to note that the outcome of a number of sanctions cannot be determined yet as these sanctions were still

'ongoing' at the moment that the data base was constructed.¹³ Inclusion of these cases in the estimations may bias the results. First, the duration of the sanction is underestimated anyhow. Second, ongoing sanctions are typically seen as failures. Some sanctions indeed take very long to succeed. The sanctions against the South African Apartheid system are an example. Thus it is important that we do our estimations for the full sample and for a smaller sample that excludes the ongoing cases.

Another point that was often made in the older literature (*e.g.*, Layton-Brown, 1987, p. 308) related to the difficulty of ending unsuccessful sanctions without an awkward loss of face. The implied tendency of ineffective sanctions to last for long periods, however, is no longer confirmed by the data. Interestingly, as illustrated in Figure 6.4, duration of ineffective sanctions has significantly decreased over time (whereas duration of successful sanctions shows no time trend).

Figure 6.4 Duration of unsuccessful sanctions (excluding ongoing sanctions)



Public Choice variables

The inclusion of the target's political system at the start of the sanctions is straight forward and deploys a standard international political science data source: Polity IV (discussed in the appendix to this chapter). This data source provides an 'autocracy score' and a 'democracy score' for a specific country in a specific year. Subtracting the autocracy score from the democracy score yields a summary measure. These measures can be used in different specifications so as to test the robustness of the specification.

Public Choice, moreover, implies that the design of sanctions matters, as their impact on interest groups in the target and in the sender will differ. Thus it is relevant to include the type of sanction (boycott, embargo, financial sanctions) as an explanatory variable.

Other explanatory variables

Several variables will be used to check the impact of obvious factors: it is easier to win from a small country (approximated by the ratio of the sender's GDP and the target's GDP), simpler sanctions (with goals that can be more easily reached) are more prone to succeed, cooperation with the sender or hindrance (sanction-busting) and smuggling (to be proxied by the target's area) reduce the success rate, political and economic instability of the target increases the probability of success, etc. Of particular relevance may be the issue that the financial dimension is lacking from our core equation so that it may be pertinent to analyse whether financial sanctions or the impact of aid are important. The appendix discusses the merits and definitions of the data that have been used in this exercise.

Table 6.3 Summary of explanatory variables (excluding ongoing cases)

Explanatory variables	N	Mean	Standard deviation
<i>Core model</i>			
Absolute trade linkage (%)	148	29.3	21.7
Proportional trade linkage (%)	147	7.4	1.1
Sanction duration (years)	153	6.6	7.7
Autocracy score (index 1–10)	153	3.6	3.2
Democracy score (index 1–10)	153	2.8	3.5
<i>Financial variables</i>			
Financial Sanctions (dummy)	146	0.8	0.4
Aid to GDP (%)	152	0.6	3.7
<i>Cooperation, sanction busting, smuggling</i>			
Cooperation with sender (dummy)	146	0.3	0.4
Hindrance of sender (dummy)	146	0.2	0.4
Area (10^{-6})	145	0.7	1.6
<i>Political variables</i>			
Prior relations (index 1–3)	153	2.1	0.8
GDP sender to GDP target	149	1.7	6.4
Reputation (number of sanctions in 10 year)	153	1.5	1.2
Moderate goal (dummy)	153	0.2	0.4
Target is political and economic instabile	146	0.3	0.4
P.M. <i>Ex post</i> costs to GDP	153	1.9	3.4

All in all our core equation will include three variables for (absolute or proportional) trade linkage between sender and target, duration of the sanction and the political system (democracy vs. autocracy) and will be tested against the alternative variables that were summarized in Table 6.3.

4 EMPIRICAL RESULTS

Table 6.4 summarizes the econometric results for the small quasi reduced form equation. The results are satisfactorily from a statistical point of view as the coefficients are generally speaking significant at the usual 95% confidence level and better. The model ‘predicts’ the right outcome in roughly seventy per cent of the cases, thus beating alternative forecasting techniques such as tossing a coin or always predicting a failure. It should, however, be noted that the percentage of false positives (that is error of Type I, *i.e.* sanctions that the equation predicted to succeed, but that failed) is rather high and in the range of 37–41 percent.

As a point of reference (also in relation to the findings of Hufbauer *et al.* 2008) the first column reports results for a specification of the estimated equation that – ‘erroneously’ – uses the sender’s *ex post* costs of sanctions as an explanatory variables. The remainder of the table shows the results for our preferred indicators of potential damage (absolute and proportional trade linkage, respectively) and does so both for the unrestricted dataset and for the limited set of cases that were not ongoing. These four specifications are theoretically to be preferred and perform better than the *ex post* cost variant on statistical grounds.

The estimates show that the probability that an economic sanction succeeds in changing the targets behaviour is higher, the larger the pre-sanction trade linkage, the more democratic and open the target’s political system and the shorter the sanction period. This can be illustrated by means of the elasticities that we can derive for the hypothetical average sanction on the basis of the third and fifth specification (which exclude the ongoing cases). This hypothetical sanction is a case in which the explanatory variables assume the averages reported in Table 6.3, so average trade linkage is 21.7%, proportional trade linkage is 7.4 percent, sanction duration is 6.6 years and the autocracy score is 3.6 points. Substituting these values and using the estimated coefficients that are reported in Table 6.4 into equation 6.1 we can derive that the probability that this average case ends successful is about 40%. Next we show an increase by 1 percent influences this probability. An increase of trade linkage increases the probability by 0.2 percentage

points while an increase in sanction duration and the autocracy score yield a reduction by 0.2 and 0.3 percentage points, respectively.

Table 6.4 Success of sanctions: LOGIT estimates for the quasi reduced form equation of the success score of sanctions 1946 – 2002

	Cost	Absolute		Proportional	
	<i>ex post</i>	Trade Linkage		Trade Linkage	
Ongoing sanctions	yes	yes	no	yes	no
Number of observations	172	166	148	161	147
(Potential) cost variable	11.2 (4.5) {0.01}	1.1 (0.6) {0.08}	1.6 (0.7) {0.02}	3.5 (1.6) {0.03}	3.8 (1.7) {0.02}
Sanction period (log number of years)	-0.70 (0.19) {0.00}	-0.69 (0.18) {0.00}	-0.70 (0.20) {0.00}	-0.68 (0.19) {0.00}	-0.68 (0.20) {0.00}
Autocracy score	-0.11 (0.06) {0.06}	-0.11 (0.06) {0.04}	-0.13 (0.06) {0.03}	-0.15 (0.06) {0.01}	-0.12 (0.06) {0.04}
Constant term	0.33 (0.31) {0.29}	0.27 (0.36) {0.45}	0.25 (0.37) {0.51}	0.44 (0.33) {0.19}	0.39 (0.34) {0.26}
Log likelihood	-96.2	-93.2	-83.8	-90.3	-84.6
Errors Type I (False Positive)	41%	38%	40%	37%	40%
Errors Type II (False Negative)	27%	26%	27%	25%	28%
Percent correct	70%	71%	70%	71%	69%

Notes

(standard errors in parenthesis)

{two-tail significance test in brackets}

Errors Type I and Type II in per cent of cases $\pi > 0$ and $\pi < 0$, respectively.

Next consider Table 6.5 which summarizes the results of a set of extended core equations (for specifications for proportional and absolute trade linkage, respectively). The table shows coefficients and significance levels for variables that were added in order to control for factors such as sanction-busting and international co-operation, the status of diplomatic relations before the imposition of sanctions and the sender's reputation as an executioner of threats. These extensions also provide an additional test for the robustness of the estimated core equation.

Table 6.5 Extending the core equation

Added variable	Trade linkage variable	
	Proportional	Absolute
<i>Financial variables</i>		
Financial Sanctions	0.60 {0.21}	0.41 {0.39}
Aid to GDP	0.25 {0.25}	0.15 {0.32}
<i>Cooperation, sanction busting, smuggling</i>		
Cooperation with sender	0.60 {0.17}	0.22 {0.59}
Hindrance of sender	-0.03 {0.95}	-0.01 {0.99}
Area	-0.20 {0.20}	-0.24 {0.15}
<i>Political variables</i>		
Prior relations	0.50 {0.05}	0.60 {0.04}
GDP sender to GDP target	-2.35 {0.43}	-2.88 {0.61}
Reputation	-0.01 {0.46}	-0.01 {0.61}
Moderate goal	0.62 {0.17}	0.69 {0.12}
Political and economic instability	0.62 {0.15}	0.47 {0.25}

Note: {two-tail significance test in brackets}

General speaking the signs of the coefficients conform to *a priori* expectations, with the exception of the estimated parameter for the ratio of sender-GDP-to-target-GDP that is, however, not significant and, as argued before, may to some extent reflect selection bias in the Hufbauer *et al.* data bases. Anyhow, the addition of these variables does not add value. The only significant parameter relates to the pre-sanction relations between sender and target, but its significance is reduced to almost virtually zero if this variable is added to the core equation *in combination* with the other potentially relevant explanatory variables that were mentioned in Table 6.3, implying that the pre-sanction relations index, so to say, at best captures some aspects of other explanatory variables while it is also possible that the correlation is simply spurious.¹⁴

All in all the core equation provides a good empirical shorthand description of the key factors behind success and failure of economic sanctions since the Second World War.

6 CONCLUSIONS AND DISCUSSION

Occam's razor appears to be useful for the field of economic sanctions: parsimony has led to a simple yet highly significant explanation. This contrasts with many statistical analyses of the Hufbauer *et al.* data set, the most recent example being the Appendix to Hufbauer *et al.* 2008, pp 181–92) in which 78% of the reported coefficients are insignificant (and for the significant coefficients the interpretation is often ambiguous because the outcome of a sanction is not influenced according to the estimate, while the contribution of the sanction to that outcome is significant).¹⁵ The estimates in this chapter show that economic and 'non-economic' public choice variables play a significant role. In particular the findings refute by implication theories that assume that no relationship exists between the outcome of sanctions and objective characteristics of sanction episodes, such as punishment, signalling and symbolism (compare Bonetti 1998, pp. 805–6) as well as the empirical relevancy of the Robinson Crusoe Fallacy that we discussed earlier.¹⁶

This implies that sanctions can be effective instruments in international politics, because they result in a change of behaviour provided that the economic and political conditions are being met. This is to say, that the successes that have appeared (34 per cent of the cases over the period 1946–2002) should not be considered as mere accidents but can be explained theoretically. From a policy perspective the findings show that economic analysis (in tandem with political science) has a relevant role to play in the selection of cases as well as in the design of the actual measures that are considered. It is true that not all explanatory variables that are included in our core model can be used in the selection of cases, as the duration of sanctions essentially is a variable that can only be observed *ex post* (this argument, incidentally, also pertains to the use of the *ex post* cost by Hufbauer *et al.*)¹⁷ The point, however, is that the core model supports the notion that economic theory can help to identify the variables that are relevant such as pre sanction trade linkage and the extent to which changes of the production structure are possible.

It is further noteworthy that these quantitative results are essentially the same as the results that were derived from the earlier data sets of Hufbauer *et al.* This is relevant because about two thirds of the observations in the 2008 edition are new or revised (see Figure A.1 in the data appendix) and this suggests that the results are robust. Moreover substantial structural breaks

could be expected to occur regarding the efficacy and effectiveness of the use of economic relationships in an international context that is rapidly changing due to the end of the super power conflict, increasing globalization and an increasing use of multilateral sanctions. Indeed, the end of the Cold War (and the sanctions against Saddam Hussein) seem to have served as a starting point for a true proliferation in the use of economic sanctions as an instrument of foreign policy (*cf.* Bergeijk 1995c). Table 6.6 shows that the average annual number of imposed sanctions almost doubled, when we compare the pre-1990 and the post-1990 period.¹⁸

Table 6.6 Key characteristics pre-1990, post-1990 and for 1946–2002

	1946–1989		1990–2002		1946–2002	
	yes	no	yes	no	yes	no
Ongoing sanctions						
Number of sanctions	113	103	59	50	172	153
Annual average	2.6	2.3	4.5	3.8	3.7	3.3
Share successes	32%	34%	39%	40%	34%	36%
Trade linkage						
absolute	22%	23%	45%	45%	29%	29%
proportional	6%	6%	11%	10%	8%	7%
Period (years)	8.9	7.8	4.2	4.1	7.3	6.6
Share instable targets	21%	24%	48%	45%	30%	30%

Source: Calculations based on Hufbauer *et al.* (2008); see also the Data Appendix

The upshot of Table 6.6 is that there has been an increase in the use of sanctions, but that this has not deteriorated the success rate of the instrument as the share of successes increased by some 6 to 7 percentage points.

One obvious reason suggested by Table 6.6 is that this is a result of a better case selection as is shown by the doubling of trade linkage and instable targets (which was identified as a significant variable in earlier studies) and the halving of the sanction period (which was mainly achieved for failure cases, see Figure 6.4). This of course begs the question why the application of sanctions has become more intelligent. It may be the case that empirical research encourages learning and further improvements of case selection. If so, further research should show a further increase in success rate.

A new insight developed in this Chapter is the notion of the importance of the target's political structure. Sanctions against dictatorships and other autocratically ruled targets have a substantially lower probability of succeeding. Another insight relates to factors that were found to be empirically relevant in investigations of the 1990 data set, but no longer are found to be significant. A good example is the sender's reputation which after econometric experimentation was approximated by the number of prior sanctions in a decade. The loss of significance for this variable may be related

to the fact that it was an unsatisfactory measure for a difficult concept, but it may also be the case that the fact that many post-1990 sanctions have been imposed by new players such as the UN for whom the track record mattered less. Also this is a matter for further research.

Clearly we would not have known what we know today about the application of negative sanctions and the conditions for their success if the Hufbauer and Schott had not started their data collection effort in the 1980s. Unfortunately, a comparable dataset does not exist for the topic of the next Chapter on the use of positive sanctions as a tool for foreign policy. The experience with the Hufbauer et al datasets suggests that an effort to build such a dataset would be a wise investment with large expected payoffs for both science and policy.

NOTES

- ¹ Incidentally, Farmer (2000) argues that the Hufbauer *et al.* methodology overestimates the actual impact of sanctions.
- ² Often sanctions fail because checks on the observance of the economic measures at the borders are simply impossible, as in the case of the sanctions against disintegrating Yugoslavia in the early 1990s. Moreover, many sanctions can only come about after long-lasting and laborious international consultation; a general characteristic of EU decision-making on international political activities. Sometimes the costs of effective sanctions are too large for the sender so that diplomacy never gets beyond the stage of angry words without decisiveness.
- ³ Other classifications such as the one proposed by Smeets (1992), who distinguishes between success and efficacy, essentially boil down to the same. One always has to distinguish the question of whether damage can be done from the question of whether potential disutility will influence behaviour. Further note that compliance is not the only objective of sanctions. Punishment may be an equally important aim (Nossal 1989). Other goals include: subversion, deterrence (of other countries than the target), international symbolism and domestic symbolism; see Lindsay (1986).
- ⁴ An important practical implication of the neoclassical approach is its focus on the market mechanism. It is often assumed that the free availability of goods that are covered by the sanctions on the target's markets indicates a lack of effectiveness and, consequently, a failure. The absence, however, of formal rationing activities can easily be explained if the market mechanism functions properly. A decrease in the supply of goods automatically feeds into higher prices, reducing the quantity demanded until a new equilibrium between demand and supply is reached. Accordingly, the market mechanism automatically distributes the goods among the population in the most efficient way and a formal rationing scheme will only be necessary if the rise in prices is deemed socially unacceptable.
- ⁵ See, for example, K. Elliott *et al.*, 'Judging From History, the Anti-Saddam Sanctions Can Work', *International Herald Tribune*, December 11, 1990.

- ⁶ It is important to note that this conclusion was reached on the basis of the Hufbauer *et al.* 1990 data set.
- ⁷ I ignore specific utility enhancing attributes of the sanctions, *i.e.* ‘rally-around-the-flag’-effects or signalling effects that may influence the schedules of opposition and rulers. Such effects have been discussed and analyzed by other authors. Criticism will only be directed against the domestic government if the targeted regime falters (Lindsay 1986, p.162). If the regime has a stable position, it may actually utilise the threat for its own purposes. According to Scolnick (1988) in addition to transference of intra-group hostility, increased public support may bolster the target state’s government and may enhance both its short run and its long run material capacity to resist, thus deepening the enmities between target and sender, and economic sanctions will not call forth the desired result. My point is not that such effects are unimportant. I ignore these effects in order to clarify the impact of autocratic and democratic institutions as transparently as possible.
- ⁸ Note that if $\theta \rightarrow \infty$ so $\pi \uparrow 1$ and if $\theta \rightarrow -\infty$ so $\pi \downarrow 0$. Hence the logical restrictions on the dependant variable ($0 \leq \pi \leq 1$) are never violated.
- ⁹ The success score in this case equals or exceeds 9 (Hufbauer *et al.*, 2008, p. 50). See also the discussion in the Appendix to this Chapter.
- ¹⁰ Moreover, it is difficult to estimate the total costs that result from a sanction. In addition to the direct costs entailing financial and real outlays immediately related to the imposition of sanctions (such as rising transport costs), Losman (1972, pp. 28-30) identifies indirect costs due to dislocation and forced underutilization of factors of production, and forgone potential. The latter relates to certain expected future economies of production and revenues that will no longer be realisable. To estimate these more comprehensive costs, however, one has to have either a complete macroeconomic model of the economy concerned or an applied trade model of its detailed export and import relationships. Hufbauer *et al.* (2008, p. 105) restrict their analysis to the direct costs and believe that their numbers overestimate actual costs. Their procedure, however, yields a very rough underestimate of the potential welfare loss.
- ¹¹ Note that the exports from *A* to *B* should equal the imports in *A* from *B* in principle. Due to the registration issues discussed in the text this is of course not always the case, so that the point of measurement (*A*’s trade statistics or *B*’s trade statistics) matters. Still the trade data of all trade partners can be useful to estimate absolute trade linkage for a target for which national statistics are not available or totally unreliable.
- ¹² Note that this is not the case in the Hufbauer *et al* study implying that their trade variables can be corrupted by the impact of actual sanction measures (provided that the sanctions bite). Our measurement also helps in solving the issue of causality.
- ¹³ Incidentally the percentage of ongoing sanctions decreased from 20% in the 1990 dataset to 8% in the present dataset
- ¹⁴ The only combination in which prior relations remains significant is with the dummy variable for the goal of sanctions (which however is insignificant and thus should not be included).
- ¹⁵ The percentage of insignificant coefficients (*i.e.* a less than 90% confidence level, see the Appendix of Bergeijk, 1994b) is 67% in Deheja and Wood (1992), 68% in

Hufbauer *et al.* (1985) and 45–60% (depending on the specification) in Lam (1991). Only Bonetti (1998) attempts to estimate his model parsimoniously.

¹⁶ Tsebelis's main message is and remains valid of course: especially in analysing specific cases one needs to consider the reactions of targets and senders.

¹⁷ It is of course possible to use simulation techniques for duration in order to arrive at estimates for the conditional probability that a sanction case will succeed.

¹⁸ This is also illustrated by the UN's track-record. Before August 1990 only two UN sanctions came into force. Moreover, these sanctions against former Rhodesia and South Africa aimed at changing the status quo *inside* these countries (a by-product of the global process of decolonisation) rather than at restoring the *international* status quo. Since 1990 the UN imposed sanctions against Iraq (1990), Yugoslavia (1991) Haiti (1991), Liberia (1992), Cambodia (1992), Libya (1992), North Korea (1993), Angola (1993), Rwanda (1994), Sierra Leone (1997), Afghanistan (1999) DR Congo (2003) and Ivory Coast (2004).