Do Economic Sanctions Destabilize Country Leaders?

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Do economic sanctions destabilize the governments they target? A form of foreign pressure, sanctions are typically meant to alter the policies of other countries. There is much pessimism on whether they ever work. This article shows that economic pressure works in at least one respect: it destabilizes the leaders it targets. I present a theoretical argument that explains why destabilization is a necessary condition for successful coercion. I find evidence that pressure destabilizes in a large panel of cross-country time-series data. The destabilization finding indicates that sanctions may be more effective at altering policies than we think. I conclude by noting that greater optimism regarding the effectiveness of sanctions should be balanced by a careful consideration of the policy's real and sizeable costs for those caught in the middle.

Do economic sanctions work? The consensus view seems to be somewhere between "no" and "rarely."

In this article I show that economic sanctions work in at least one respect: they destabilize the leaders they target. The leader of a government who comes under economic pressure in a given year is more likely to lose office than a leader who does not. This finding confirms a basic intuition behind much of the theory and practice of economic sanctions. The practice of imposing costs through economic pressure is often justified as a means for changing the behavior of a foreign government. Leaders are more likely to compromise if pressure threatens their survival in office. My basic conclusion is that sanctions are more likely to coerce than previously thought.

The vigorous debate in academic and policy circles on the effectiveness of economic sanctions mirrors their growing use as a tool for intervention.[1] While only five countries were subject to economic pressure around 1950, that number had increased to 47 by the mid-1990s.[2] In the last decade, virtually nowhere could democratic rights and freedoms be suspended, human rights grossly abused, or a civil war break out without causing a group of states to react with economic sanctions.[3]

Proponents of the use of sanctions argue that economic pressure can help achieve desirable goals while avoiding the high costs of military intervention (Baldwin 1985). The benchmark for measuring success is typically whether economic sanctions can change the behavior of a foreign government at an acceptable cost. The most comprehensive study of the effectiveness of economic sanctions assesses that the measure works about 35% of the time (Hufbauer, Shott, and Elliott 1990).[4]

Critics respond that the success rate has been overstated (Pape 1997). At the same time, such measures have a certain and large negative impact on the welfare of the targeted populations. Sanctions can restrict significantly the flow of trade between states (Hufbauer et al. 1997).

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[1]Standard works from the long list of contributions to the literature include Hoffmann (1967), Knorr (1973), Nincic and Wallensteen (1983), Daoudi and Dajani (1983), Tsebelis (1990), Martin (1992), Elliott and Uimonen (1993), Morgan and Schwebach (1997), and Cortright and Lopez (2002).

[2]Based on data from Institute for International Economics (2002).

[3]The suspension of democracy in Fiji in 2000, the coup in Pakistan in 1999, the human rights violations in Colombia, the civil war in Sierra Leone are only some of the examples that can be cited.

[4]Some episodes are more likely to succeed than others: for example, those involving multilateral intuitions (Drezner 2000a) or pursuing modest policy goals with the right mix of trade and financial instruments (Dashti-Gibson, Davis, and Radcliff 1997).

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The impact of 12 years of comprehensive trade embargo adds to the challenges of reconstructing Iraq.[5] The costs of sanctions, together with their contested record of success, has fuelled pessimism regarding their use.

After more than two decades of debating the effectiveness of economic pressure, the state of disagreement on whether pressure works remains something of an embarrassment. Many explanations can be offered for why the controversy endures. One issue lies with the measurement of "success." What is success and how is it measured is often contested even by the very participants in an episode.[6] Another issue is whether success should be attributed to sanctions. Economic pressure typically takes place alongside other important events and developments, such as a weak economy or a foreign military intervention. Assigning the relative merits of economic coercion in each case can cause reasonable people to disagree (Elliott 1998).

One way debate can move forward is by verifying whether a basic ingredient for the successful use of economic pressure is, in fact, in place. Sanctions are more likely to extract concessions or induce compliance if targeted leaders have an incentive to avoid them (Hirschman 1945; Wagner 1988).

Do leaders have such incentives?

A natural way of answering this question is to look at whether economic sanctions hurt the survival of government leaders in office. Using panel data on 136 countries, observed over an average of 37 years, I find that the presence of sanctions against a government leader in a given year makes her or him significantly more likely to lose power in the following year.[7] Specifically, sanctions increase the baseline risk of losing power by 28%. The result holds after adjusting for other determinants of leadership survival such as domestic political institutions, the level of economic growth, time in office, and any residual country-specific heterogeneity.

What did the literature miss? Unlike existing work on economic sanctions, I compare cases in which coercion took place to cases it was absent. Studies of economic statecraft and coercive diplomacy look only within cases of coercion.[8] This is appropriate only if the question to be answered is why are some cases of coercion more successful than others. If the question is "Does coercion work?," we need to compare cases in which pressure was applied, to those in which it was not.

There are three main implications of the argument made.

First, to understand and evaluate the record of success of economic pressure, it is essential to use the right comparison. Given that existing studies have looked only within cases of coercion, it appears that *we have not really learned whether pressure works*. This also means that we cannot be confident that coercion is ineffective in producing policy change.

Second, if pressure is effective in destabilizing the leaders it targets, leaders would have an incentive to compromise once under pressure. This provides one reason to believe that sanctions may be more effective in securing policy change than previously thought.

Third, the evidence that sanctions destabilize indicates that they may work in an 'invisible' way. Because pressure threatens destabilization, leaders would have an incentive to avoid it. Some or many potential targets may pursue policies congruent with the sender's preferences, without ever crossing the threshold that would cause foreign pressure to be applied. To borrow some terms from game theory, the threat of punishment "off the equilibrium path" may be inducing compliance "on the equilibrium path."

A Theory about the Destabilizing Effect of Foreign Pressure

Foreign pressure, or attempts by entities and forces outside the state to project their influence within a state's borders, can take many forms. Sending troops to invade a country is a dramatic but infrequent example of intervention. Conveying a diplomatic note of protest is a mild and common measure. Economic coercion occupies the middle ground "between words and war." Its relatively frequent use can be explained as the intersection between high demand and available supply. The need to intervene is a practical necessity in a world in which the leaders and citizens of some states choose to (or are forced to) take interest in activities beyond the border of the territory they live in. The multiple ties of interdependence in the

[5]David Rieff, "Were Sanctions Right?," *New York Times Magazine*, 27 July 2003.

[6]While many observers would agree that sanctions against Cuba have failed, some would contend that they have succeeded. Thus, critics can point out to Castro's survival in office as a glaring flaw in the policy, and defenders can point out the importance of sanctions as a signal of disapproval, aimed at domestic and international audiences.

[7]The sanctions data comes from the most comprehensive dataset on economic sanctions available, that by Institute for International Economics (2002).

[8]See Lindsay (1986), Elliott and Uimonen (1993), and Pape (1997) for examples from the sanctions debate. For examples drawn from studies of coercive diplomacy more generally, see Art and Cronin (2003).

world system make economic coercion an available policy option, particularly to countries with large economies and generous budgets. Economic coercion is often chosen over the alternatives on the perception that it may succeed where words would not be enough, and the use of force is either infeasible or undesirable.

This article adopts the standard definition of sanctions in the literature: "government-inspired restrictions on customary trade or aid relations," "designed to promote political objectives" (Hufbauer, Schott, and Elliott 1990, 2). Essentially, sanctions occur when one government halts some aspect of economic exchange and presses for explicit policy concessions. This definition would normally exclude trade wars or raising tariffs to protect a domestic industry.

Do economic sanctions work? To answer this question, the researcher would need to establish why or when foreign pressure can be expected to work. The theory behind economic coercion retains a large intellectual debt to Albert Hirschman. In *National Power and the Structure of Foreign Trade*, Hirschman started from the Ricardian view of trade as a source of welfare benefits for all and formulated a theory of economic coercion. He argued that:

> . . . the influence effect of foreign trade derives from the fact that the trade conducted between country A, on the one hand, and countries B, C, D, etc., on the other, is worth *something* to B, C, D, etc., and that they would therefore consent to grant A certain advantages—military, political, economic—in order to retain the possibility of trading with A. (1945, 17)

The argument that coercion works because states fear losing the gains of cooperation is an important part of a strong tradition of research on economic statecraft. Subsequent research has broadened the definition of cooperation to include not only trade, but other forms of dependence, such as economic or military aid exchanged between states.

An important point that remains poorly understood is the relationship between the economic costs a state bears and the political costs borne by the political agent or agents holding office. Some scholars have argued convincingly against equating these (Smith 1996; Tsebelis 1990). For a variety of reasons the economic price paid by a state need not correspond to the political cost paid by its rulers. For example, foreign pressure may generate political support at home, or leaders may be able to shift the cost away from their supporters (Galtung 1967; Rowe 2001).

I argue that economic pressure would only work if it generates political costs for the leaders it targets. Specifically, if leaders are more likely to lose office following the imposition of economic sanctions, they should be willing to offer at least some policy concessions to avoid sanctions, as well as to secure their lifting once in place.[9]

This argument is different from the way the literature has approached the relationship between destabilization and the success of coercion. The conventional view seems to be that destabilization and coercion are two separate goals. Dashti-Gibson, Davis, and Radcliff, for example, argue: "In the most basic sense, sanctions are of two types: those that are designed to compel the target to make some concrete change in its policies (e.g., South Africa to end apartheid), and those that are entirely punitive (e.g., United States sanctions against Cuba to destabilize the Castro regime)" (1997, 610).[10]

I develop a theoretical argument that relies on the following assumptions. I assume that one state (the sender) seeks to obtain concessions from another (the target) by holding hostage some benefit the target values. Conceding on the policy of interest to the sender is costly to the leadership of the target. The leadership would only concede if the cost of noncompliance exceeds the cost of granting the sender's demands. For coercion to work, the political stability of the target should suffer more from coming under pressure than from conceding. The sender has some cost for imposing sanctions. Because of this, the sender would only engage in sanctions when it believes that there is some chance the target will concede.

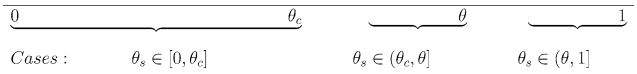
This argument can be developed as an explicit formal model. To underscore the intuitive nature of the main point, it is presented here informally.[11] Figure 1 represents the set of choices faced by the target graphically. In the figure, an incumbent's probability of survival in office during a given year is θ. The parameter θ measures a

[9] The assumption that leaders like to cling to power has generated a substantial literature in international relations. Scholars have argued that the fear of political consequences at home affects an incumbent's decision to escalate a crisis (Fearon 1994; Schultz 1998), to wage or end a war (Bueno de Mesquita and Siverson 1995; Gaubatz 1991; Goemans 2000).

[10] In their important study of economic sanctions, Hufbauer, Schott, and Elliott (1990) even list the episodes in which destabilization was a distinct objective. They include among these cases: U.S.-Argentina (1944), USSR-Yugoslavia (1948), UK, U.S.-Iran (1951), U.S.-Laos (1956), U.S.-Finland (1958), U.S.-Dominican Republic (1960), U.S.-Cuba (1960), USSR-Albania (1961), U.S.-Brazil (1962), U.S.-Indonesia (1963), U.S.-South Vietnam (1963), UK,UN-Rhodesia (1965), U.S.-Chile (1970), UK, U.S.-Uganda (1972), U.S.-Nicaragua (1977), U.S.-Libya (1978), U.S.-Nicaragua (1981), South Africa-Lesotho (1982), U.S., OECD-Grenada (1983), and U.S.-Panama (1987). See also Lindsay (1986).

[11] The results which follow have been derived as the product of a simple formal model in which the sender threatens sanctions, and the target chooses between sanctions and implementing the policy change in question.

FIGURE 1 When Do Sanctions Destabilize Enough to Make Conceding Preferable for Incumbent Leaders?



Notes: Parameter θ measures the probability that the leader of country *i* survives in office in year *t* (θ = no foreign pressure; θ_c = leader concedes; θ_s = sanctions are imposed).

leader's instability when she or he is "left alone": the outside world does not ask for concessions, nor are sanctions threatened.

If the outside world requests policy concessions *c*, and the leader agrees, a political price is paid. The leader's expected survival declines from θ to θ_c, $\theta_c < \theta$. The assumption that $\theta_c < \theta$ is designed to capture a central notion in the literature on economic pressure that concessions are costly.

Given that leaders maximize the probability of retaining office, it follows from the last assumption that a leader would never concede unless that also carries a price. In pressure episodes, the sender state or states back their demands for policy concessions with a threat to impose sanctions on incumbents who do not concede. If sanctions are implemented, the incumbent's probability of survival is θ_s. When pressed with foreign demands, the incumbent chooses between making policy changes and coming under sanctions. Which action is preferable would depend on the position of θ_s relative to θ_c. Three cases are possible.

First, it could be that $\theta_s \in (\theta, 1]$. This is the case in which the incumbent is *strengthened* by foreign sanctions. If sanctions do have this average effect, then the incumbent would never concede any demands. Because the sender wants to secure compliance with its policy demands, sanctions will not be used when they strengthen the incumbent.

Second, it could be that $\theta_s \in [0, \theta_c]$. In this case, sanctions are very costly for the target's leader. The incumbent is better off conceding the sender's demand for policy change outright. In this case, sanctions are very effective at securing compliance. They are also unlikely to be observed empirically. The targeted government has an incentive to concede without waiting for sanctions to be actually implemented.

Third, it could be that $\theta_s \in (\theta_c, \theta]$. I argue that this is the case in which sanctions are most likely to be observed. The incumbent is destabilized by sanctions, but not enough to make conceding on policy a preferable alternative. Given that the target prefers paying the cost of economic pressure to conceding, does the sender have any incentive to impose sanctions?

There are two reasons the sender would be willing to impose coercive measures.

By destabilizing the government on the other end, the sender may hope to speed up the replacement of that government with another. The next government may be more pliant to the sender's demands. The goal of the sender is to secure policy changes by unseating the incumbent.

Alternatively, the sender may want to: impose sanctions; modify its original demands; strike a deal with the current incumbent based on the modified policy demands. We note that the destabilization caused by sanctions opens up a bargaining range. The target would agree to concede any demand c' which would destabilize it less than sanctions. Presumably, the sender can find some smaller demand c' such that the target prefers accommodation to sanctions, $\theta_s \leq \theta_{c'} \leq \theta$. In this scenario, sanctions are imposed, cause some destabilization, and end with a compromise between the sender and the current incumbent in target.[12]

It is likely that most sanctions episodes that are observed empirically originate from this third case. This is because only here both the sender and the target have an incentive to engage in sanctions. To the extent that this is true, observed sanctions events should destabilize the incumbent in the country under pressure. Sanctions events should also cause policy change in the target state. This would happen either after a more pliant incumbent replaces the current leadership or after the sender decides to reach a compromise with the current leader.

This simple example shows why coercion cannot be separated from destabilization. If we find that incumbents are more likely to be replaced under sanctions, we can conclude that pressure leads to policy change through either of the two mechanisms outlined above.

The argument assumes that the sender government cares about policy concessions. This should be the primary, or at least an important, motivation for using sanctions. An alternative argument which has been made states that sanctions are designed to convey a signal to domestic audiences in the sender country.[13] Presumably, sanctions

[12]Theoretically, if the sender could start out by making the lower demand for concessions c', sanctions may not need to be imposed. In practice, imperfect information may make the sender overoptimistic about how damaging sanctions are to the opponent. Sanctions may need to be imposed because the sender starts out believing (mistakenly) that the target would be willing to offer significant concessions, *c*. Over time, the sender may learn that this demand needs to be revised.

[13]See, for example, Nossal (1989).

on Castro have more to do with gratifying an important voting community in the United States, than with the belief that the policy will bring democracy to the island. To the extent that this type of motivation is commonplace, sender states may be willing to impose sanctions that do not cause any destabilization. Domestic audience considerations would make any test of the destabilization hypothesis a hard test of the theory. On the upside, if we were to find that pressure destabilizes despite such complications, that would constitute a strong signal of support for the argument.

We can formulate the following testable hypotheses based on the argument:

> *H1: Economic sanctions should, on average, destabilize the governments they target ($\theta_s < \theta$ in observed sanctions events).*
> *H2: Those sanctions that would be most damaging for the regime stability of the target will not progress beyond the threat stage (this is the case when $\theta_s \in [0, \theta_c]$).*
> *H3: Sanctions should have some destabilizing effect on governments which choose, initially or eventually, to concede the sender's demands ($\theta_c < \theta$, by assumption).*

Hypothesis 1 is the main prediction of the theory. Below, I offer a quantitative test of H1. There are several specific cases in the historical record that illustrate how economic pressure has caused instability.[14] Because the most interesting aspect of the theory is that leaders, *on average*, are more likely to be destabilized by sanctions, an econometric test would be especially revealing.

Sanctions and Instability in Panel Data

Data

I take an approach analogous to that in the literature on the relationship between government instability and a country's level of wealth (Londregan and Poole 1990, 1996). The main dependent variable is leadership change. I ask whether the presence of sanctions against a state's leadership in a given year makes it more likely for the leader to be replaced.

I include in the test all countries with population over 500,000 (N = 160), and the period 1947 to 1999. This period is chosen both because it is more likely to produce findings that are relevant to the current historical period and because of data availability. I break down the data into country-year observations: a country gives rise to one observation for each calendar year. This makes for a total of 6,782 observations in the full data-set.

Two kinds of data are essential for conducting a test of the main hypothesis: data on the main independent variable, economic sanctions, and data on the main dependent variable, leadership succession.

Economic Sanctions. I measure sanctions participation as an indicator variable: a country is either subject to sanctions in a given year or not. In subsequent sections, I offer some alternatives.

To generate information on economic sanctions, I draw on the largest existing dataset on economic sanctions due to Hufbauer, Schott, and Elliott (1990; henceforth, HSE).[15] The latter is well-known, and I will only introduce key aspects of it relevant for the present study. The time-span of the data is 1914–1999. Because the period covered by this study is 1947–1999, pre-WWII events are not included.

The HSE dataset contains a very large number of sanctions events. But the authors do not claim that these are all sanctions cases that took place in the relevant time period. Absent more information on what events the authors may have missed, it is difficult to evaluate what problems this may cause. This means that there are potential selection issues. While it will be desirable to perform the analysis using a dataset that can stake a claim to being a complete and exhaustive list of sanctions events in the future, there are virtually no alternatives to the HSE study at this time. On the positive side, the HSE dataset has been used to criticize sanctions as being highly ineffective. This would seem to bias the test against the hypothesis that sanctions would work for destabilization.

Sanctions data is usually given in episode format. Each episode consists of a sender and a target; it lasts for a certain number of years; has a set of policy goals; covers a certain aspect of economic activity, involves certain costs to target's GDP, etc. The HSE (updated) dataset contains information on 169 individual episodes. I recast this data in country-year format. The total number of observations, years in which a given country is subject to economic sanctions, for the time period under study is 1,181. Sanctions become analogous to a shock that hits a country in a given year, much like a terms of trade shock

[14] A case study section with a number of cases is available from the author. See online reference in the acknowledgment section.

[15] To be precise, I use an updated version of the HSE original study: the chronological summary of sanctions events available from Institute for International Economics (2002). The author has also drawn on prior work by Drezner with the HSE dataset (Drezner 2000a, 2000b).

or a currency devaluation. This format of the data is most appropriate for a test of the destabilization hypothesis.[16]

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

Government Leaders. The principal source of data on government leaders is Chiozza and Goemans (2004b), as updated by Goemans et al. (2004).[17]

The authors record the leaders of 166 countries for the 1919–1999 period. The date on which a leader gained and lost power is recorded, allowing for multiple leaders of the same country in the same year. Leaders vacating office due to natural death are coded as censored observations.[18] Information on a leader's age is also available.

In order to use the data in this study, I drop instances in which multiple leaders held office during a given calendar year. In such cases, I keep a single country-year which records (1) that a leadership change took place, and (2) the leader who was still in power at the end of that calendar year. Because information on sanctions (and on the other covariates) comes in yearly observations, recasting the data in this format facilitates merging the separate data streams.[19] In this format of the data, there are 1,089 leaders being removed from office for the 1947–1999 period, and leaders stay in power for an average of 4.24 years.

Gathering information on other determinants of government instability would allow us to better specify the empirical test.

Economic Conditions, Political Institutions, and the Use of Force. Political institutions clearly play a role in how likely it is a government leader to be replaced. I follow Chiozza and Goemans (2004a) and include information on whether a country was a democracy, a mixed regime, or an autocracy in the form of dummies. The coding is based on the Polity IV dataset (Gurr 2000). Democracies are states that score 7 or more on polity, autocracies comprise the −10 to −7 range, and mixed regimes are in between.[20]

Economic conditions tend to determine strongly whether a government survives or falls (Londregan and Poole 1990). I include two measures of the prevailing economic conditions in a country. I include income per capita and economic growth (growth is the annual change in income). The source of this data is the Third Edition of the World Bank's 2003 World Development Indicators, as augmented by Golstein, Rivers, and Tomz (2003).

I also include a measure of whether or not a country was involved in a militarized-interstate dispute in a given year. I record whether a state was the target of a militarized-interstate dispute (MID) in a given year (the object of an initiator's attention) and the maximum level of force used.[21] The indicator variable *Force* is switched on if the hostility level in the dispute says that force is actually applied.

The availability of covariates reduces the total number of observations that can be used in the analysis from 6,782 to 5,716.

Coping with Omitted Variables. While it would be desirable to specify an econometric model that includes all variables driving the duration of a leader's tenure in office, a variety of measurement problems and other issues make this practically impossible. In particular, many factors that are specific to each country, such as its unique political culture or historical experience, are likely to be left out. Unless accounted for by the model, such country-level heterogeneity may bias the estimates.

A simple and powerful way to deal with country-specific omitted variables is to include separate dummies for each country in the regression. A dummy for Italy and a dummy for the United States will effectively capture any information not captured by the other regressors that

[16] Testing the destabilization hypothesis in a dyadic framework, which is standard in existing analyses of economic sanctions (Elliott and Uimonen 1993; Nooruddin 2002), is inappropriate. The number of possible dyads in this case would be quite large. More importantly, target states would have to appear in more than one dyad. This implies the same target state and year may be under sanctions in one dyad but not in another. For example, Nepal 1989 would appear once in a dyad with sanctions (India), and many times in a dyad without (China, etc.). If we ask the regression to evaluate whether sanctions destabilize, it will count the same target and year twice, once under sanctions, once without pressure. This makes no sense. The government really experienced sanctions, and that is what the data should reflect.

[17] See also earlier work by Chiozza and Goemans (2003).

[18] This approach is consistent with other scholarship on the subject, see Bienen and van de Walle (1991) and Bueno de Mesquita et al. (2003).

[19] This approach parallels that taken by Londregan and Poole (1996) in a similar setting. The main findings do not change if, alternatively, multiple entries are allowed for years with multiple successions.

[20] Polity scores are split in three rather than into the more common democracy-autocracy coding based on the argument that mixed regimes are neither as accountable as democracies nor as free of domestic control as autocracies. See the authors on how transitional regimes are treated.

[21] Source: Correlates of War-generated data on Militarized Interstate Disputes (Jones, Bremer, and Singer 1996). Version 3.01 is used, as updated through 2001 by Ghosn and Palmer at Penn State University.

determines why leaders in the United States stay in office for different number of years, on average, than the leaders of Italy.

Analysis

I specify a regression model that tests whether economic pressure causes instability and evaluates the size of its impact. What the regression will be estimating, expressed in terms of the argument from the theoretical section, is θ and θ_s: a leader's risk of losing power in a given year with and without sanctions.

The estimation procedure I use is logistic regression with fixed effects. This is an alternative to estimating a survival model. The approach builds on an argument in Beck, Katz, and Tucker (1998) that time-series cross-section data with binary dependent variable is equivalent to grouped duration data. The authors show that, when data on the failure of an event is measured at discrete intervals (as it is here due to the country-year format), an appropriately specified logit is technically equivalent to a survival model. Below, I give the intuition of why that is the case.

Two key characteristics distinguish survival models from other regression techniques. First, some units under observation are almost inevitably "censored," or exit the set of units at risk of failure before the observation is complete. Second, the risk of failure is history-dependent. A unit that has been longer under observation may be more or less likely to fail.

In this context, the dependent variable that logit maximizes the likelihood of is whether a leader remains in office at the end of the calendar year (0), or is replaced (1). Censored observations are handled appropriately. Leaders who have not been removed from office in 1999 simply get a 0 for that year, and contribute information up the year they are censored.

On the second issue, one strength of survival models is that they allow the risk of failure to be higher or lower as a function of the time a unit has been observed. The same can be accomplished in a logit framework. My solution is to include a count variable for the number of years a ruler has been in office, and natural cubic splines, among the dependent variables. The count and spline variables will capture the increase or decrease in the risk of losing office over time for leaders. Moreover, they can do so without forcing a specific functional form on the risk with respect to time (Beck, Katz, and Tucker 1998). This is a desirable feature when we are not certain what the shape of the underlying hazard is.[22]

3 splines, first leader is likely to lose, then its stable, in the end likely to lose again.

[22] Some scholars have argued that the baseline hazard decreases over time (Bienen and van de Walle 1991; Bueno de Mesquita et al. 2003), while others report increasing hazard over time (Londregan and Poole 1996).

In the analysis below, all independent variables are lagged one year to minimize endogeneity problems (e.g, we want to be sure that it is sanctions causing leaders to be replaced, and not the other way around).

Table 1 shows descriptive statistics on the main variables used. I implement the *conditional fixed-effects logit estimator* to derive consistent estimates of the impact of the independent variables on leadership change (Chamberlain 1980).[23] Table 2 shows the independent variables used.

The reason interaction terms between Democracy, Mixed Regime, and the natural log of years in office $ln(t)$ are included is to allow for the effect of political institutions to vary over time. As suggested by Chiozza and Goemans (2004b) and others, we can expect to find varying effects of institutions over time. Because the effect of autocracy is folded in the (nonlinear) baseline hazard, no separate dummy is included.

Estimating the model with fixed effects drops the number of countries from 160 to 136 and the observations that can be used from 5,716 to 5,295, a reduction of 8.2% . One of the following is true for excluded countries: (1) country experiences leadership change every year, (2) country experiences no turnover of leaders in office (perhaps because it is a "young" country), (3) country experiences one change of government leader but this is due to natural death.[24]

Table 2 shows the resulting estimates. Economic sanctions are significant as expected. A leader who is subject to economic sanctions in a given year is, on average, more likely to lose office in the following year. The result holds while adjusting for country-specific government instability and for a range of other factors, including the use of force.

All other variables, except for the use of force perhaps, are signed as expected. Lower economic growth hurts the political survival of leaders in office. The effect is strong and statistically significant. This finding is consistent with what we know about government instability in good and bad economic times (Londregan and Poole 1990). The level of wealth, however, does not matter. Once we control for country-specific heterogeneity, there is no distinguishable effect of wealth on leaders' tenure.

Democracy and the interaction between democracy and years in office are jointly significant. Democratic leaders are more likely to be replaced, and the risk grows over

[23] To ensure consistency, this model avoids estimating the country intercepts directly. While straightforward, the partial likelihood estimator leads to somewhat cumbersome notation and is omitted here in the interest of space. Wooldridge (2002, 491) is a good reference on the functional form and required assumptions.

[24] By the rules adopted in the literature and here, natural death does not constitute leadership failure.

TABLE 1 Summary Statistics of Main Variables

	Mean	Standard Deviation	Minimum	Median	Maximum
Leadership Change	0.16	0.36	0	0	1
Sanctions	0.16	0.37	0	0	1
Force	0.12	0.33	0	0	1
Growth	0.01	0.07	−0.57	0.02	1.60
Wealth	7.38	1.56	3.89	7.26	11.47
Democracy	0.34	0.47	0	0	1
Mixed Regime	0.27	0.44	0	0	1
Age	57.30	11.01	19	57	93
Years in Office, *t*	6.08	7.16	0	3	42
N = 5,295					

TABLE 2 The Effect of Economic Pressure on Leaders' Survival in Office

Sanctions	0.28** (0.13)	0.31** (0.13)	3.42 (2.16)
S ∗ Democracy			1.20*** (0.36)
S ∗ Wealth			−0.14 (0.09)
S ∗ Cost			0.017 (0.054)
S ∗ Institution			0.45 (0.44)
Force	−0.26* (0.14)	−0.26* (0.13)	−0.24* (0.14)
Economic Growth	−1.47** (0.67)		
Wealth	−0.09 (0.11)	−0.04 (0.10)	0.07 (0.11)
Democracy	0.17 (0.21)	0.17 (0.20)	0.032 (0.22)
Democracy ∗ ln(t)	0.76*** (0.11)	0.76*** (0.11)	0.79*** (0.12)
Mixed Regime	0.39** (0.18)	0.39** (0.18)	0.40** (0.19)
Mixed Regime ∗ ln(t)	0.38*** (0.10)	0.40*** (0.10)	0.45*** (0.11)
Age	0.02*** (0.004)	0.02*** (0.004)	0.02*** (0.005)
Years in Office, t	−0.96*** (0.12)	−0.99*** (0.11)	−1.004*** (0.11)
Spline 1	−0.17*** (0.02)	−0.18*** (0.02)	−0.17*** (0.02)
Spline 2	0.06*** (0.009)	0.06*** (0.009)	0.065*** (0.009)
Spline 3	−0.01*** (0.002)	−0.01*** (0.002)	−0.012*** (0.002)
N of observations	5,295	5,441	5,176
n of countries	136	137	131
Log-likelihood/df	−1,830.66	−1,878.88	−1,775.49

betareg?

Conditional fixed-effects logit, dependent variable leadership change in year. Standard errors in parentheses. *p < 0.10, **p < 0.05, ***p < 0.01, two-tailed tests. Calculations performed in STATA 8.

time. This is an artefact of the process of political accountability. Domestic publics would, if they could, replace their leaders. The same dynamic applies to mixed regimes. Rulers in mixed regimes can expect greater risk of removal than autocrats and the effect only increases with time. Any political opening is harmful for the tenure of an autocrat.

Perhaps surprisingly, the use of force *strengthens* a leader's hold on office. The use of force likely generates two types of effects. One, it may weaken a leader. Second, it may generate a "rally around the flag" effect. The finding here indicates that what *predominates*, or what these two effects average out to, is that a leader is less likely to lose power.[25] This way for controlling for the presence of foreign military pressure allows us to include in the regression important military interventions and major crises such as those accompanying the change from Eden to MacMillan

[25] I have also looked at disputes at a higher level, that of war, and the result is the same.

in the United Kingdom (1957), from Pol Pot to Heng Samrin in Cambodia (1979), from Galtieri and members of his junta to Alfonsin (1981–83), from Noriega to Galimay in Panama (1989), to name a few. The presence of a statistically significant effect of economic pressure after such crises are adjusted for testifies to the independent importance of sanctions.

To understand the substantive effect of economic pressure, I generate predictions from the model.[26] Setting all independent variables at their global mean may not produce very informative results in the context of fixed effects. We would have to create an imaginary country by weighing all country-specific intercepts. Especially where a country is away from this "average" example (in terms of its intercept, wealth, etc.), the prediction would not be meaningful.

An alternative approach is to set all independent variables at their *country-specific* means, and vary the sanctions dummy. In this way, each one of the 136 countries gets its own predicted level of instability (baseline risk) and its own predicted increase in that level when sanctions are imposed. The predicted baseline risk of losing office for each country can be thought of as its "stability" ranking. By this ranking, China is number one, immediately followed by Gabon, Cameroon, and Libya. Chinese leaders are only 0.016 likely to lose power in any given year. When sanctions are in place, this risk increases to 0.021, or 1.33 times. The least stable country is Latvia, with baseline hazard of 0.791, preceded by Estonia, Italy, and the Czech Republic. When sanctions are in place, the risk for the leader of an unstable country like Latvia increases to 0.836, or 1.05 times. The middle of the distribution is occupied by Armenia, Germany, Austria, and Australia, with approximately 0.125 predicted baseline risk. For countries in the middle of the ranking, sanctions increase the risk to incumbents 1.28 times, to 0.157.[27]

Averaged out over all 136 countries, the risk of losing office, when sanctions are not in place, is 0.146. When pressure is present, the hazard rises to 0.183. This means that sanctions cause a 28% *average* increase in the risk of losing power. This is, clearly, more than trivial trouble for incumbents.

The theoretical argument stated that one way pressure destabilizes is by lowering economic growth. If this is the case, growth and sanctions are not independent. This suggests that part of the effect of sanctions is currently being picked by economic growth. Dropping growth should strengthen the effect of sanctions. Column 2 on Table 2 shows that this is the case. When economic growth is dropped from the model, the coefficient of sanctions increases from 0.28 to 0.31. The significance level also improves, in line with expectations.

Are Some Sanctions More Destabilizing Than Others? It is very likely that not all pressure episodes are equally destabilizing. Not all coercive measures are alike: some are relatively mild (e.g., a partial withholding of economic aid), others are much harsher (a comprehensive trade boycott). The degree to which sanctions would destabilize may vary depending on the nature of the measure. In addition, a leader's specific circumstances, a country's economic health and resources, or the relationship between target and sender, may play a role.

We may want to check some of these hypotheses against empirical data. In this section, I test whether (1) sanctions against democracies, (2) sanctions that are more costly to the target, (3) events targeting a state with a small economy, or (4) involving international institutions are more destabilizing on average.

For all these cases, we have an intuition (perhaps supported by some literature) that indicates the answer should be positive. Democratic incumbents are easier to remove from power, everything else equal. They should see their risk of losing office increase disproportionately under pressure. Inflicting higher costs on the target should jeopardize the incumbent's tenure more. The same can be expected to happen in targets with small economies, because they have less of a capacity to absorb the impact of pressure. Finally, it has been argued that international institutions facilitate enforcement of embargoes and other punitive measures (Drezner 200a). This should increase the negative impact of sanctions on a leader's security in office.

I test (1) and (2) by interacting the lagged sanctions dummy with the democracy and GDP variables already defined. Information on (3) and (4) is available from the HSE study. The cost of sanctions to target is measured as a percentage of GDP (HSE describe their methodology).

[26] Even though the conditional fixed-effects logit estimator has desirable properties (consistency under weak assumptions), it cannot offer comparative statics on the predicted probabilities (see Wooldridge 2002, 490–92). Because substantive predictions are important, I reestimated the model in column 1 on Table 2 as an ordinary logit, with the country intercepts included as paramaters to be estimated by the model. I use this estimation to derive all predictions reported above. A comparison between the ordinary logit results and the conditional FE logit ones reveals virtually identical point estimates and standard errors. The potential trouble with using ordinary logit with fixed-effects is the possibility of inconsistent estimates, especially if only few time periods are available per unit (Abrevaya 1997). In this case, the large ($t = 30$) average number of periods available per country likely mitigates the problem.

[27] Estimations based on the model reported in column 1 of Table 2

The involvement of international institutions is a dummy variable. Again, both are interacted with sanctions.[28]

The results of the test are shown in the last column of Table 2. As with any model with interaction effects, the effect of sanctions is now rendered as the sum of two terms: the unconditional sanctions dummy, and the conditional interaction term.

Two points can be noted. First, the only interaction effect for which there is strong statistical support is the importance of democratic institutions in the target state. Pressure directed at democracies causes much more government instability. The interaction effect is significant, and the sum between the conditional effect and the sanctions dummy is also significant. Domestic political institutions matter.

Second, none of the other interaction effects reach statistical significance. All of them are signed as expected: incumbents in states with larger economies are impacted less, while events with higher costs or imposed by institutions generate more instability. A likelihood-ratio test reveals that they cannot be safely dropped from the model. Yet, the terms by themselves, and in a linear combination with the sanctions' parent term, remain generally insignificant.

Overall, the evidence that some sanctions events are more destabilizing than others paints a mixed picture. It should be noted that, because the sanctions dummy and the interaction terms are highly collinear, we can expect the standard errors on sanctions and the interaction variables to be large. This is the case. The same may help explain the weak findings on the interaction effects.

Below I discuss two kinds of robustness checks of the paper's main finding. First, I ask whether the destabilization result is due to sanctions and not to the use of force by a foreign state. Second, I ask whether leaders' self-selection into sanctions episodes may be affecting the results.

Robustness Checks

Sanctions or the Use of Force? Perhaps the strongest criticism against sanctions to date argues that the apparent success of sanctions is nearly always due to the successful use of force (Pape 1997). Foreign military intervention is one example of such uses of force. The proper way to assess and tell apart the role of foreign military intervention and economic pressure is to include a measure of the former among the covariates. The measure based on the Militarized Interstate Disputes project provides one way to do that. It is probably the single best systematically coded source of data of this kind.

As an additional robustness check, I look for alternative ways to assess the role of foreign military intervention in these results. A dataset due to Fearon and Hassan (2003) codes the incidence of political violence in leadership changes for all autocratic states for the period 1947–2001. With this data, we could check how often foreign military intervention played a role in leadership changes in autocratic states. We could also see how that correlates with sanctions' use. Even though this data excludes democratic leaders, the results we get would still be informative. It is less likely that democratic rulers would be subject to this type of intervention because they are less likely to pursue the types of risky policies that would bring in foreign troops.

Table 3 How Often Do Foreign Military Interventions Accompany Sanctions in Power Successions among Autocratic Regimes?

	No Intervention	Intervention
No Sanctions	295	9
Sanctions	70	7

The table lists all leadership changes in non-democracies. Whether sanctions were in place is noted, as well as whether a foreign power threatened or carried out a violent intervention.

Table 3 tabulates years with leadership changes in autocracies. It breaks down changes by whether a foreign power used (or threatened to use) force and by whether sanctions were in place when the leadership change took place.

Table 3 is reassuring for the hypothesized effect of economic pressure for two reasons. First, there are 70 leadership changes under the influence of sanctions and out of the shadow of force. Second, even for those seven cases where force and sanctions were simultaneously present,[29] one would suspect that the resort to sanctions made the military intervention more successful or even possible in the first place. Sanctions may provide potential invaders a forum to coordinate an attack and reassure each other that mutual support would be forthcoming.

[28] Data on institutions involved is given in the chronological list by Institute for International Economics (2002) and so goes through 1999; data on costs to target is available only in the original Hufbauer, Schott, and Elliott (1990) study and is limited to the pre-1990 period. In cases where more than one episode involved the same target, I summed up the separate costs. Cases where more than one institution was involved in sanctions against the target state are treated the same as cases involving one institution.

[29] These include the transitions from Kania to Jeruzelski in Poland, 1981; Bazin to Aristide in Haiti, 1993; Sankawulo to Perry in Liberia, 1996; Koroma to Kabbah in Sierra Leone, 1998; Amin to Binaisa in Uganda, 1979; Serrano Elias to de Leon Carpio in Guatemala, 1993, Pol Pot to Heng Samrin in Cambodia, 1979.

Selection Effects. If sanctions systematically target leaders who are more or less likely to be hurt by foreign pressure, the observed destabilization effect may diverge from the true one. Self-selection of leaders into crises has been noted as a serious problem in empirical work on regime type and war participation (Schultz 2001b; Signorino 1999).

How much of a problem are selection effects in these findings? Selection effects, generally, can arise in either of two ways: senders may pick out weak governments to target, or tough target governments may select themselves into sanctions. The first mechanism is less worrisome. Any information the sender may have on the target's stability is likely to be observable. Therefore, it would be, at least in principle, measurable by the researcher. It can be incorporated into the analysis. Once such factors are controlled for, the selection effect would be less of a problem.

In this analysis, two kinds of measures of government instability are present in the regression: the country-specific likelihood of leadership transition (this is what fixed effects do), and factors like economic growth, time in office, domestic political institutions. These types of controls are likely to reduce the influence of the first kind of selection effect.[30]

The second mechanism is more worrisome. The problem is, target governments are more likely to have private information on their prospects for surviving in office under pressure. Such information will not be measurable. The selection effect will remain undetected. And it will bias estimates of the impact of sanctions *downward*. The more prevalent this problem is, the more biased statistical estimates will be.[31]

Selection effects, to the extent they are present, are likely prejudicing the findings against the hypothesized relationship. This makes the statistical test particularly hard for the theory.

Discussion

The main reason practitioners use economic pressure and academics study it, is because pressure is believed to coerce. Does the finding that economic sanctions destabilize mean that they change policy?

Recalling a point made earlier, the sender may impose sanctions to secure policy changes in one of two ways: (1) by destabilizing the incumbent, sanctions may bring to power a pliant leader; (2) the sender may try to reach a compromise with the current incumbent by offering to lift sanctions in return for at least some change in policy. There is some evidence that both mechanisms are at work in actual sanctions episodes.

In a number of cases, the arrival of new leaders in targeted states has brought about the policy changes requested by sender states. As a way of testing whether there is a systematic link between leadership change and change in policy, we can check whether sanctions are more likely to be lifted after a new incumbent assumes power in a targeted state. We can expect to see this if new incumbents are more likely to concede. Survival analysis on the data at hand confirms that sanctions are, in fact, more likely to be lifted after a change of power in target.[32] A related study by McGillivray and Stam (2004) shows that leadership succession in at least some target states is significantly associated with the removal of economic sanctions.

There is also substantial evidence of sender states bargaining with incumbents over a compromise to have sanctions lifted. The success rate of 35% reported by Hufbauer, Schott, and Elliott (1990) in part reflects the willingness of senders to revise down their initial expectations of success. By reducing their demands, senders make them more acceptable to targeted leaders. When the political price for conceding foreign demands becomes lower than the price of being sanctioned for the target, sanctions end. Bargaining results in partial success to both sides.

It may seem, in view of the finding that sanctions destabilize, that the results reported here contradict the pessimistic view in the literature regarding sanctions' effectiveness.

I would argue that the alleged ineffectiveness of economic pressure may, in part, be due to faulty analysis. By examining only cases where sanctions were imposed, the literature has engaged in a classic case of selecting on the dependent variable. To find out how effective sanctions truly are, sound methodology requires that we compare policy outcomes with and without foreign pressure. Only by examining how much policy is changed in the case sanctions are imposed relative to where they are not, can we establish a reliable measure of the success rate of economic pressure. Surprisingly, no prior study takes this approach. This means that, for all we know, sanctions may be more effective than both their proponents and critics maintain.

[30] Advanced statistical techniques (e.g., a Heckman test) can be applied to adjust for the influence of this type of selection effect. In this way, the problem can be resolved altogether.

[31] Schultz (2001a), in a different setting, shows one way to assess the magnitude of the problem through the use Monte Carlo simulations.

[32] Not reported here, available from the author. The dependent variable is whether or not a sanctions' spell ends, the main independent variable is whether or not there is a leadership change in target.

Conclusion

The leaders of a large number of states around the world continue to pursue policies many outside observers would find objectionable. When strong normative grounds exist for disapproving of another state's policies, the case can be made for intervening from the outside to alter policies inside, sovereignty notwithstanding.

If intervention is needed, can economic statecraft be up to the task? Economic sanctions have been receiving poor reputation. A *New York Times* op-ed, after conceding the limited effectiveness of sanctions for ending apartheid in South Africa, proceeded to denounce them by arguing: "But in the more typical cases of Iraq, Haiti, Cuba and North Korea, sanctions have seemed only to empower dictators."[33]

One way to summarize the main conclusion of this study is to say that the cases of Cuba, Iraq, and North Korea are anything but typical. Long-run sanctions against some of the world's most vicious regimes have done much to obscure the average effect of economic sanctions. Such cases constitute highly *atypical* outliers in a set of pressure episodes which are, typically, associated with greater government instability.

The amount of attention such episodes have commanded is unfortunate in the sense that it has thrown other cases out of focus. In another sense, the attention that is given to cases like the Cuban embargo and the sanctions against Iraq is badly needed. The cost of sanctions should be scrutinized, in order to avoid it. The application of economic pressure rests on the assumption that its costs are sufficiently small to justify whatever other effect is sought by the policy. In is not much of a stretch to claim that in some instances this assumption has failed. For example, a drawn-out, total economic embargo is likely to produce a disputable effect at a large and certain cost for the vast majority of the population. Recent moves in the literature to understand how sanctions can be targeted on the deviant rulers, and not their subject populations, are a welcome step (Wallensteen, Staibano, and Eriksson, 2003).

Whether we wish it or not, as some leaders continue to overthrow democracy, kill large number of civilians, or shelter terrorist movements, the case for intervention will arise. The use of force may be effective for some purposes, but it is shrouded in its own controversies. It would be unfortunate to conclude, based on the little that we have established about their ineffectiveness, that economic sanctions would not work.

[33] "Our Man in Havana," op-ed by Nicholas Kristoff in *The New York Times*, Nov. 8, 2003.

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