CREDIBILITY, COSTS, AND INSTITUTIONS
Cooperation on Economic Sanctions

By LISA L. MARTIN*

IN December 1981 the Polish government imposed martial law. The Reagan administration, believing that the Soviet Union had played a key role in this action, imposed economic sanctions against both Warsaw and Moscow. The most significant U.S. sanction was an embargo of the oil and gas equipment needed to build a natural gas pipeline from Siberia to Western Europe. Unilateral U.S. sanctions would have had little impact on completion of the pipeline, however, since European firms—many of them subsidiaries of American firms or acting under contract from them—were to supply most of the necessary materials. Hence, the United States pressured European governments to prevent their firms from fulfilling contracts with the Soviet Union. When the Europeans refused to comply with these demands, the U.S. tried to improve extraterritorial application of the law in an attempt to stop European firms from completing their deliveries.1 The governments of Britain, West Germany, France, and Italy intervened to force firms to meet their contractual obligations. This precipitated a crisis in the NATO alliance, as the United States threatened to blacklist any firms not complying with the embargo. The situation was on the verge of an all-out trade war between the United States and Western Europe when the Reagan administration backed down. It did not impose the threatened countersanctions and indeed even lifted the restrictions on sales by American firms, thus ending the crisis.

* My sincere thanks go to Jeff Frieden, Jim Alt, Kimberly Elliott, Jim Fearon, Geoff Garrett, Robert Keohane, Gary King, Arthur Lupia, Michael Mastanduno, Jim Morrow, Richard Rosecrance, Duncan Snidal, Debora Spar, and George Tsebelis for valuable discussions and comments on this research. Any remaining deficiencies are solely my responsibility. I also gratefully acknowledge the support of the Social Science Research Council’s Advanced Foreign Policy Fellowship Program and the Hoover Institution’s National Fellows Program.


World Politics 45 (April 1993), 406–32
This story contrasts sharply with developments in the Persian Gulf in 1990 and 1991. After the Iraqi invasion of Kuwait in August 1990, the United States again took the lead in imposing economic sanctions. In this case, however, the Bush administration achieved an unprecedented level of international cooperation, even from countries for whom a boycott of Iraqi oil was expected to prove especially difficult. International acquiescence in the boycott was so extensive that Saddam Hussein’s sales of oil began to suffer immediately, and sanctions continued even after Iraq’s military defeat. While numerous factors distinguish these two cases from one another, they nevertheless also exemplify a pattern deserving explanation as levels of international cooperation on economic sanctions vary widely. Beyond posing this intriguing puzzle, cooperation has become an important substantive problem, since it is typically necessary for sanctions to be effective.

In examining international cooperation on economic sanctions, this article seeks to identify factors that influence the level of cooperation. The availability of data on many cases of sanctions allows testing of theories of international cooperation. The findings here support theories that focus on the credibility of commitments. The first section presents the cooperation problem, arguing that the leading sender’s credibility is the key to explaining the level of cooperation achieved. The second section discusses the concept of audience costs, how they establish credibility, and the types of actions that would force the leading sender to incur audience costs if it did not live up to its threats and promises. The third section presents a simple game to formalize these insights and develop testable hypotheses. The final section uses data on ninety-nine cases of post-1945 economic sanctions to test the central hypotheses—that self-imposed costs and international institutions will increase the level of international cooperation. Because measurement of the dependent variable is problematic, I develop statistical models using two different proxies for cooperation. The results of these two models are consistent with one another and with the hypotheses developed here. In every case costs and institutions have a strong positive relationship with the level of cooperation achieved. Thus, the results support the notion that credibility is a central problem in the organization of cooperation on sanctions and that costly measures accompany credible commitments by the leading sender. These findings suggest that international institutions can promote cooperation by establishing credible issue-linkages in situations with heterogeneous actors.
Analysts of economic sanctions have often pointed to the importance of gaining international cooperation if sanctions are to work. The reasoning behind this proposition is straightforward. States considering the use of export sanctions rarely have unilateral control over the goods they wish to deny to the target. Likewise, for states considering import sanctions, only a monopsonist would be able to deny a market to the target without international cooperation. Many unsuccessful cases, such as U.S. sanctions against Cuba or attempts to impose a grain embargo against the Soviet Union in 1980, are attributed to a failure to gain international cooperation. Unilateral sanctions may force the target to bear some transition costs as it finds new trading partners; it may have to pay higher prices for imports or accept lower prices for exports. Unless states achieve a significant level of international cooperation, however, market forces tend to make these effects transient and small in size.

Thus, states considering the use of economic sanctions attempt to generate support and promises of complementary actions from other potential sanctioners. The process of organizing multilateral sanctions typically occurs under conditions of significant asymmetry of interests among potential sanctioners, with one state having a strong interest in seeing sanctions imposed and thus assuming an entrepreneurial role in organizing the multilateral effort. In the most comprehensive study of economic sanctions to date, Hufbauer, Schott, and Elliott have clearly identified a "leading sender" in each of the more than one hundred cases they study. While the leading sender attempts to organize sanctions, other states often appear willing to free ride on its efforts and need extensive persuasion before they will agree to cooperate. This cooperation problem diverges significantly from the symmetrical Prisoners' Dilemma or coordination problems assumed in many theories of international cooperation.

A number of factors give rise to an asymmetry of interests between the leading sender and other potential sanctioners. Particularly between 1945 and 1989, many cases of sanctions arose in the context of the East-West conflict and thus took on the character of a conflict between NATO

---


and the Warsaw Pact. In this situation, the United States in its role as the leader of the NATO alliance faced high incentives to take the lead in confronting Moscow. Having the highest level of military commitment to NATO, low levels of trade with the Soviet bloc, and a unique position within cold war institutions such as NATO, Washington had little choice but to respond to perceived Soviet provocations. Domestic political pressures sometimes further pushed the government to take an active stance.\(^4\)

In cases of sanctions outside the East-West context, other contingencies gave rise to similar asymmetries in the pattern of interests. Some of these cases, such as the sanctions directed by Britain against Argentina during the Falklands War of 1982, arose from former colonial associations.\(^5\) Others took place in the context of regional rivalry, where neighbors or regional hegemons felt forced to respond. Indonesian sanctions against Malaysia in the 1960s illustrate regional power considerations.\(^6\) In other cases, the leading sender responded to a specific provocation, such as expropriation of property, or to domestic demands for action, as in U.S. sanctions against Latin America in response to human rights violations.\(^7\) Empirically, we find that this asymmetry of interests, with one state taking the lead in implementing and organizing sanctions, is a robust pattern.\(^8\) For the reasons discussed above, the leading sender will prefer multilateral to unilateral sanctions. However, even without international cooperation, the leader may be prepared to act, preferring unilateral sanctions to none at all.\(^9\)

The last decade has seen the growth of a large literature on international cooperation. A predominant strand in this literature, labeled “neoliberalism,” focuses on the collective action problems faced by states and the structural conditions that facilitate solutions of such problems.\(^10\) Neo-


\(^6\) Hubbauer, Schott, and Elliott (fn. 3), 2:247–59.


\(^8\) This result may be due in part to selection bias that results from only examining realized cases of economic sanctions. There may have been cases in which such asymmetry did not obtain, no state took the lead in imposing sanctions (in hopes that someone else would), and no sanctions were imposed. Given this kind of collective action problem, it is possible that sanctions never get organized without a leading sender even if they are Pareto-superior to no action. If this is so, situations without a leading sender will never make it into a data set on economic sanctions, which yields the empirical pattern found in studies of sanctions.

\(^9\) Baldwin (fn. 1), 174–89.

liberal theories, which emphasize the role of international institutions, common interests, and uncertainty, developed in response to the perceived failure of the major realist explanation of international cooperation—hegemonic stability theory.\textsuperscript{11} Realists have responded by elaborating an approach to international cooperation that focuses on power, the possibility of conflict, and distributional issues.\textsuperscript{12} On economic sanctions, states do not appear to have a symmetrical pattern of interests, with similar preference orderings, that would allow them to achieve mutual gains assumed by most neoliberal theories. Instead, the fact that the leader has a dominant strategy creates problems of issue-linkage and credibility, the kinds of problems traditionally found in realist analyses. I do not argue, however, that relative gains or other distributional conflicts explain patterns of cooperation on economic sanctions. Rather, I focus on factors that allow states to establish credibility.\textsuperscript{13}

Theoretically, we can begin to understand the dynamics of international cooperation on economic sanctions by considering dichotomous decisions about whether to impose sanctions made by each of two states, a leading sender (State A) and another potential sanctioner (State B). After this initial decision, they have to consider what kind of sanctions to impose, for what duration, and so on. Recognizing that states prefer cooperation to unilateral action for the reasons discussed above, we can put restrictions on the preference orderings for each state. First, it is


reasonable to assume that whatever its own decision, each state wants the other to impose sanctions. Thus, each prefers bilateral sanctions to unilateral sanctions, and free riding to no action. Second, at least one of the two—the leading sender—prefers bilateral sanctions to none at all. These restrictions rule out certain types of games, such as coordination games.\textsuperscript{14} I assume that State A, the leading sender, prefers to free ride over acting alone, letting State B act unilaterally. However, A has a dominant strategy to sanction due to its preference for bilateral sanctions and reluctance to let the crisis pass without any action. So while in the abstract it is possible for neither A nor B to impose sanctions, I consider only cases where at least one will.

Given State A’s dominant strategy, State B finds itself in a happy position. B, as a potential sanctioner, wants to see some action taken but prefers to avoid bearing the cost of sanctions; it is quite happy to free ride on State A’s efforts. Given this configuration of interests, and knowing that State A will sanction regardless of B’s actions, State B can achieve its highest possible payoff by simply refusing to impose sanctions. The leading sender finds itself imposing unilateral sanctions, even though it would prefer bilateral action or free riding on B’s efforts.\textsuperscript{15} However, within the isolated context of the sanctions game, A cannot credibly threaten to make its actions contingent on B’s cooperation. State A’s dominant strategy to impose sanctions means that regardless of how B acts, A is better off sanctioning than not. Thus, the only way for A to gain B’s cooperation is to change the nature of the game through issue-linkage so that B will come to prefer bilateral sanctions to free riding.

Issue-linkage to convince B to impose sanctions can take one of two forms. One is the use of side payments or inducements.\textsuperscript{16} With this tactic, State A attempts to increase B’s payoff from bilateral sanctions sufficiently that B prefers cooperation to free riding, thus making bilateral sanctions an equilibrium. Essentially, side payments involve a transfer of benefits from State A to State B. In this way A achieves the preferred outcome of bilateral sanctions, but at a price. These benefits must be contingent on B’s cooperation. During the course of sanctions against Iraq, we find significant use of this tactic with the United States offering


reluctant states, such as Jordan and Egypt, goods such as debt relief in an attempt to enhance the level of cooperation.

Threats constitute the second type of tactical issue-linkage that could be used to gain B's cooperation. In the language of economic sanctions, these threats are called countersanctions. State A uses them to decrease B's payoff from free riding to the level where B prefers bilateral sanctions. Carrying out such threats is costly for State A as well as for State B. Threats differ from side payments in that they are carried out if B refuses to cooperate, and they do not improve B's welfare. In the case of threats, unlike that of side payments, issue-linkage is not mutually advantageous but instead leaves B aggrieved. However, State A may prefer this tactic because if it is successful, threats do not have to be carried out. Thus, they can be a cheaper means of gaining B's compliance. In the 1982 pipeline crisis, the United States relied on threats of countersanctions to gain European cooperation. It declared that it would blacklist any firms that did not comply with the U.S. embargo.

Whether State A chooses to use side payments or threats, the credibility of this tactical issue-linkage is central to B's response. State B, under pressure to impose sanctions it would prefer to avoid, must assess A's commitment to carry out threats or come through with side payments. Since either is costly, and B's cooperation rarely coincides with the implementation of promises or threats, A would prefer to gain B's cooperation and then renege on the issue-linkage. Beyond this incentive for defection, other factors intensify the credibility problem. Often, A requires a domestic political consensus to provide inducements or carry out threats. For example, when a U.S. president threatens countersanctions or promises increases in foreign assistance, these linkages either require legislation or can be overridden by legislative action. Thus, without congressional support, the administration may be subject to "involuntary defection." This occurred in the 1982 pipeline crisis, as Congress made it clear that it was not willing to bear the costs of President Reagan's threatened trade war with Europe.

21 Firms lobbied their representatives heavily to decrease the stringency of sanctions, which suggests that escalating the conflict to a trade war would not receive legislative support. In
The problems of delays in carrying out threats and promises and the need for political approval create a credibility problem about the leading sender’s commitment to issue-linkages. In order to gain B’s cooperation, A must rely on some kind of commitment mechanism. In the domestic context, considerations of reputation and repeated play often make such commitment among domestic actors relatively easy, as the prevalence of logrolling behavior in legislative bodies demonstrates. However, the international context lacks the infrastructure of strong institutions and rule-governed behavior, which makes credible commitments more difficult to establish. In the following section, I argue that taking steps that would force the leading sender to bear audience costs if it reneges constitutes a potential commitment mechanism in international politics, but one that is available only under specific conditions.

**Audience Costs and Credibility**

In attempting to convince other potential sanctioners to cooperate in imposing sanctions rather than to free ride, the leading sender has to demonstrate a credible commitment to the threats and/or promises it uses to change the nature of the game. A viable commitment mechanism will raise A’s costs of reneging on threats or promises, so that A will bear the costs of side payments or countersanctions. In many cases, the high cost of reneging is a function of domestic support for sanctions and a willingness by the relevant veto groups to bear costs. Here, I argue that two mechanisms that accompany credible commitments are the initial imposition of high-cost sanctions and the use of international institutions. Each of these mechanisms enhances the leading sender’s credibility by increasing the “audience costs,” that is, the domestic political costs or loss of reputation in international settings that it would have to bear if it failed to make good on threats or promises.22

The following discussion and model are purely a commitment story; they analyze both the conditions under which the leading sender’s threats are credible and the equilibrium strategies and outcomes in a commitment game. Thus, the analysis assumes complete information on

---

22 For a rigorous development of a similar argument about audience costs in the context of deterrence and the original development of the concept of audience costs, see James D. Fearon, “Deterrence and the Spiral Model: The Role of Costly Signals in Crisis Bargaining” (Paper presented at the annual meeting of the American Political Science Association, San Francisco, August 30-September 2, 1990).
the part of both the leading sender and another potential sanctioner. What follows is development and solution of a complete information commitment game, not a signaling game. Because the second player knows precisely the leading sender's payoffs from different types of sanctions, countersanctions, and audience costs, the leading sender cannot bluff or try to send signals about its willingness to carry through with threats. Instead, this willingness is common knowledge and determined by the relationship between audience costs and the costs of countersanctions, as explained below. While signaling games could give rise to propositions consistent with those developed and tested here, I find the complete information commitment game a more useful tool since it leads to precise, testable empirical hypotheses.

The leading sender plays simultaneously to both domestic and international audiences. On the domestic level, the costliness of sanctions initially imposed reduces the incentives to back down from issue-linkages. Assume that the leading sender is the United States and that the president is attempting to gain the cooperation of other countries by threatening countersanctions. To carry out such threats, the president will have to obtain the acquiescence of Congress and possibly of other groups as well. When the president initially imposes sanctions against the target, the options include many types of sanctions, with widely varying costs. Some sanctions, such as purely symbolic moves or reducing foreign aid, are costless or may actually incur negative costs. Cutting foreign aid, for example, saves the leading sender some money. On the other end of the scale, some sanctions are quite expensive. The grain embargo against the Soviet Union, for example, was very costly for American farmers, and the government compensated them. By contrast, the costs of the pipeline sanctions in 1982 fell on just a few firms, which did not receive similar compensation.

The initial use of sanctions has domestic consequences that vary with the nature of those sanctions. Imposition of high-cost sanctions involves a significant exertion of political leverage—that is, the expenditure of a lot of political capital—to forge a domestic coalition in support of them. This refers especially to Congress if the United States is the leading sender. The imposition of symbolic or low-cost sanctions will, by contrast, face much lower resistance and therefore not require as much active support. In the process of imposing costly sanctions, the administration must convince skeptics that sanctions are worth the cost. To this end

23 Paarlberg (fn. 2).
it must advance credible arguments that the target's actions are egregious or threatening enough to warrant a vigorous response. Building a domestic coalition for costly sanctions also requires convincing the groups that bear the costs that international cooperation will be forthcoming. Exporters, for example, will be especially unwilling to assume those costs if other countries are thereby given an opportunity to claim markets in the target.

These considerations imply that the process of building domestic support for costly sanctions is one that cannot be reversed without political costs. An administration that justifies the use of costly sanctions by going to great lengths to persuade reluctant legislators and economic actors that vital interests are at stake will face high domestic costs if it then backs down from threats of countersanctions. Having committed itself to a particular policy, such reneging would call into question its initial arguments and damage its reputation. Thus, because the process of building such domestic support increases the costs of reneging, it also enhances the credibility of threats and promises used against other countries. If the administration is unable to build a coalition in support of costly sanctions, the credibility of threats to carry out costly countersanctions or make good on promises of side payments is severely undermined.

In a recent analysis of leadership in the formation of international regimes, Oran Young has similarly noted the role of domestic coalitions in creating credible leadership. Arguments about the relationship between costs and credibility are a staple of the literature on security affairs, particularly the study of deterrence. Thomas Schelling, in particular, has pointed out that in international politics actions speak louder than words precisely because actions involve incurring some cost, thus making them irrevocable. Merely declaring one's commitment to a particular course of action carries little weight with other governments. However, a course of action that actually imposes costs on the government indicates resolve. According to David Baldwin, this logic suggests that economic

---

26 Fearon (fn. 22).
28 However, when state interests are not as conflictual as in the case under consideration here, "cheap talk" may have a significant effect on outcomes. See James D. Morrow, "Modeling International Regimes" (Paper presented at the annual meeting of the American Political Science Association, San Francisco, August 30–September 2, 1990).
29 The model developed here focuses on a rational-choice approach to costs and credibility. This subject has also received attention from those adopting a psychological approach. See Robert Jervis, *The Logic of Images in International Relations* (Princeton: Princeton University Press, 1970); Deborah Welch Larson, "Order under Anarchy: The Emergence of Convention
sanctions are valuable tools in international politics, precisely because they force those who impose them to bear some costs.  

Such arguments imply that a refusal or inability to forge a domestic coalition in support of costly sanctions indicates low credibility for threats of countersanctions. The 1982 pipeline case illustrates such a dynamic. In 1982 Reagan was constrained by electoral considerations from imposing a grain embargo, which forced him instead to take actions that were of relatively low cost for the United States. Other potential sanctions noticed this and correctly surmised that the Reagan administration would not be able to carry through with countersanctions. Thus, the Europeans called Reagan’s bluff, and he backed down from threats to cut off their access to American technology.

To continue with the U.S. example, the administration must take account of international audiences as well. Thus, if the administration can create conditions for audience costs on the international level, its issue-linkages should be more credible. Above, I argued that credibility is a more serious problem in the international context than in the domestic context. However, many credibility dilemmas are mitigated when international bargaining takes place within the context of formal international institutions. Making threats and promises within an institutional framework significantly increases the audience costs of reneging.

Many theorists have argued that institutions perform functions that facilitate cooperation among states facing mixed-motive games. The neoliberal paradigm argues that institutions allow states to overcome market failures by such means as providing information about others’ incentives and actions, increasing the iterative nature of interaction, and setting standards by which to evaluate behavior. The argument advanced here recognizes these functions of institutions but applies them to a different context. If cooperation results from successful threats of countersanctions, it does not imply mutual adjustment of policies to achieve mutual gains. Instead, where both states impose sanctions, the cooperative outcome is coercive in nature. The leading sender uses threats or side payments to force other potential sanctioners to take actions they would


30 Baldwin (fn. 1), 107–8.


32 Keohane (fn. 10); Axelrod and Keohane (fn. 18), 226–54.
prefer to avoid. Thus, a credible threat of retaliation leads to a cooperative outcome, but relative to the prelinkage situation this is not an outcome that benefits all participants. The use of inducements rather than threats more closely fits a neoliberal model, as both players can benefit. However, even inducements constitute a more asymmetrical situation than that typically considered in neoliberal models, since the leading sender makes the decision to use side payments unilaterally.

Thus, the cooperation problem under consideration here differs in significant ways from the paradigmatic problem considered by neoliberals. Nevertheless, institutions can facilitate cooperation in the more asymmetric context of sanctions as well. Some of the functions noted above, particularly the provision of information and setting of standards, may continue to be relevant in some coercive games. However, an additional dimension of institutionalization—the forging of issue-linkages—also matters when states face the problem of making credible threats. Economists studying credibility problems have identified steps that governments can take to enhance their credibility; these include reducing possible future incentives to reverse policies and making it more difficult to change policies in the future if the temptation arises.33 These insights can be applied directly to the political problem of cooperation on economic sanctions, to suggest ways in which international institutions as well as self-imposed costs enhance credibility.

The leading sender can reduce incentives to renege by taking the sanctions issue to an international institution. Analogous to reasoning about domestic audience costs, achieving the support of the members of an institution requires the expenditure of political or economic resources that will raise the costs of changing course. For example, when Britain coordinated European Community sanctions against Argentina in 1982, it provided side payments to EC members on other Community issues.34 In this context, Britain would have been subject to high audience costs in the form of damage to its reputation within the Community if it had not come through with the promised side payments. Reneging on this particular issue would have made EC members more skeptical about Britain’s ability to live up to other Community deals, thus threatening the benefits Britain gained by participation in the EC. Audience costs would have taken the form of reduced British ability to achieve favorable deals in the EC.

34 Martin (fn. 5); Latin American Bureau, Falklands/Malvinas: Whose Crisis? (London: Latin American Bureau, 1982), 112.
By reducing incentives to change policies in midstream, the public, long-term forum of an institution thus increases audience costs. Charles Lipson has argued that formal agreements are more reliable than informal ones precisely because they involve a state’s reputation.\(^{35}\) Taking sanctions to such a forum involves a public commitment to action by the leading sender: having taken this step, its reputation within the institution would be damaged by backing down. As Robert Keohane has noted, by “rais[ing] the costs of deception and irresponsibility,” institutions allow states to make credible commitments.\(^{36}\) This effect results from the array of issue-linkages generated by international institutions. These structures provide benefits to states across a range of issues, and these benefits depend on members demonstrating that they can be trusted to live up to their institutional commitments. Once the leading sender has made a public institutional commitment to sanctions and countsanctions or side payments, reversing this policy would tend to decrease the level of benefits derived from other dimensions of the institution. In this way, an institutional commitment will reduce the leading sender’s incentives to reverse course and hence will enhance its credibility.

Thus, to the extent that they perform some of the functions recognized by analysts of international regimes, institutions can increase the leading sender’s credibility. Regime theorists have noted that once these structures are in place, they can increase members’ influence over the behavior of others.\(^{37}\) Work in economics supports this observation, by recognizing the role of institutions in establishing commitment and reducing incentives to renege on agreements. Thomas Schelling has argued that in order to establish credibility, states require “an occasion, an object, and a means of communication.”\(^{38}\) In the context of multilateral economic sanctions, institutions fulfill these functions. Like the process of imposing high-cost sanctions against the target, the process of generating the approval of an international institution for sanctions raises the future costs of reneging. In thus reducing the incentives to renege, the process makes commitments to tactical issue-linkages credible. These effects can be summarized by noting the impact of domestic and international audience costs on the leading sender’s incentives. The next section uses a simple extensive-form game (1) to formalize the impact of audi-


\(^{36}\) Keohane (fn. 10), 97.


\(^{38}\) Schelling (fn. 19), 51.
ence costs on the level of cooperation achieved under the strategic conditions discussed here and (2) to generate testable hypotheses.

**The Bilateral Sanctions Game**

Figure 1 illustrates the sanctions game. The first player and leading sender, State A, begins by deciding whether to adopt a low-cost or high-cost strategy. Since State A's dominant strategy is to impose sanctions, the only decision is what type of sanctions to impose. In this framework, a low-cost strategy would involve imposing low-cost sanctions, such as symbolic moves, embargoes on imports of luxury goods, and reductions in foreign aid. Such moves usually encounter little domestic resistance and do not require extensive coalition building by those who favor sanctions. In addition, a low-cost strategy means that the leading sender does not expend the necessary effort to gain the support of an international institution for sanctions. Such efforts are generally costly and difficult, as was demonstrated by U.S. attempts to introduce human rights concerns into the deliberations of multilateral development banks.\(^{39}\)

---

**Figure 1**

**The Countersanctions Game**

---

\(^{39}\) Jonathan E. Sanford, *U.S. Policy and the Multilateral Banks: Politicization and Effectiveness*, Staff Report to the U.S. Senate Foreign Relations Subcommittee on Foreign Assistance, May 1977; Schoutz (fn. 7), chap. 7.
State B moves next and decides whether to impose sanctions. If B joins
A in sanctions, the game ends here. If B does not impose sanctions, State
A decides whether to impose countersanctions. If A retaliates, both A
and B bear costs of retaliation. If, however, A takes the high-cost route
in the first round and does not retaliate, then it bears audience costs. In
Figure 1, h represents the payoff to each player when A chooses high-
cost sanctions, and l represents the payoff for low-cost sanctions. The
benefits or costs of State B’s sanctions are given by s. The costs of retal-
iation are given by r, and the audience costs by a.

Drawing on the above analysis, we can impose reasonable conditions
on the ordering of these payoffs. State A, being the leading sender, de-

erives high benefits from bilateral sanctions. Thus, the payoff from bilat-
eral sanctions \( h_A + s_A \) is greater than the payoff from unilateral low-cost
sanctions \( l_A \). I also assume that audience costs are significant, so that the
payoff from refusing to retaliate once a high-cost strategy has been
adopted \( h_A - a_A \) is lower than the payoff from unilateral low-cost san-
cions. Together, these conditions imply that \( h_A + s_A > l_A > h_A - a_A \).
For State B, I assume that the threatened countersanctions would be more
costly than cooperation, so that \( r_B > s_B \). Thus, if A’s threat is credible, B
will prefer to impose sanctions. B prefers to free ride but loses more if A
carries out countersanctions than if it (B) imposes sanctions.

This game has two equilibria, depending on State A’s audience costs
and the costs of retaliation against B. If retaliation is more costly than the
audience costs A would have to bear from reneging \( r_A > a_A \), State A
cannot credibly threaten to retaliate even if it has imposed high-cost
sanctions in its first move. Therefore, B will not cooperate if \( r_A > a_A \).
In this case, the only equilibrium is for A to adopt a low-cost strategy and
for B to refuse to cooperate. State A has no incentive to impose high-cost
sanctions, since it would then be forced to bear audience costs, and
\( l_A > h_A - a_A \). In this equilibrium, which results when the costs of carrying
out countersanctions would be high, we expect to see a low-cost strategy
by the leading sender—low-cost sanctions and no use of international
institutions—and no cooperation from State B.

A second equilibrium results when the relation between audience
costs and retaliation costs is reversed. In this case, where retaliation is
relatively cheap \( a_A > r_A \), State A’s threats of countersanctions are credi-
ble. Knowing this, and given the fact that State B would lose more from
countersanctions than by cooperating, B also imposes sanctions. Thus,
when audience costs are greater than retaliation costs, the equilibrium

---

40 This game could also be modeled with State A deciding whether to make side payments
if B does impose sanctions. The equilibria are similar to those in this threat game.
CREDIBILITY, COSTS, AND INSTITUTIONS

outcome is for State A to impose high-cost sanctions and for State B to cooperate. The outcome with low-cost sanctions and no cooperation is not an equilibrium when audience costs are higher than the cost of countersanctions. If A were to choose low-cost sanctions, it would incur no audience costs from reneging. Knowing this, B will never cooperate when A chooses low-cost sanctions. Therefore, when the costs of countersanctions are relatively low, A will maximize its payoff by imposing high-cost sanctions so as to gain B’s cooperation. We also see that in equilibrium retaliation is never actually carried out.\textsuperscript{41}

Overall, we find two equilibria in the commitment game. In the first, by imposing high-cost sanctions and/or using international institutions, the leading sender undertakes a high-cost strategy and gains the cooperation of the other potential sanctioner. In the second, the leading sender adopts a low-cost strategy and does not gain the cooperation of others. The choice between the two depends on the relationship between audience costs and the costs of retaliation. The results suggest that in looking at cases of economic sanctions, we should find a high correlation between high-cost strategies, such as bearing high domestic costs and using institutions, and the level of cooperation actually achieved. If the model here captures the fundamental dynamics of cooperation on economic sanctions, we should find relatively few cases where a low-cost strategy coincides with cooperation, or where retaliatory threats are actually carried out. One case in which the United States apparently came close to carrying out threats was the 1982 pipeline crisis mentioned above. In this case, when European firms refused to comply, the Reagan administration blacklisted some of them. However, when blacklisting did not induce other firms to cooperate, the administration backed down and dropped countersanctions.\textsuperscript{42} In the next section, I present an empirical test of the model based on data from post-1945 cases of economic sanctions.

**Testing the Impact of Costs and Institutions**

If the analysis of the above sections is correct, states can use self-imposed costs and international institutions to increase audience costs and thus make credible commitments. In equilibrium, we should see an increase in the level of international cooperation when the leading sender bears

\textsuperscript{41} This is one conclusion that clearly differs from what we would find in a signaling game. With incomplete information, one usually finds some equilibria that include the carrying out of threats.

high costs and when sanctions have been organized within the confines of an institution. This section subjects these hypotheses to a preliminary test by looking for aggregate relationships between these factors and the level of cooperation in ninety-nine post-1945 cases of economic sanctions.

For this analysis, I use data collected primarily by Hufbauer, Schott, and Elliott. They use these data—covering virtually all cases of economic sanctions for the end of World War II through 1989—to explain the impact of sanctions on target country policies. For the purposes of this analysis, in which cooperation is the dependent variable, I eliminate two cases from their data set, sanctions against Rhodesia and South Africa. These two cases are extreme outliers that exhibit a much higher level of cooperation than any other case in this period. Elimination of these cases is justified not because of their score on the dependent variable but because they are substantively unique: both involve global protests against white minority rule, in which international consensus far exceeded that on other issues that have led to sanctions. Inclusion of these two cases has a strong effect on the results. In particular, when we include Rhodesia and South Africa we find that the impact of institutions is much larger than when these two cases are eliminated.

We are interested in two independent variables: institutions and the costs borne by the leading sender. Hufbauer, Schott, and Elliott have coded the level of costs in each of their cases, assigning each a value ranging from 1, sanctions that actually result in a net economic benefit for the leading sender, to 4, sanctions that involve very high costs. Sanctions coded cost = 1 typically involve the cutoff or reduction of foreign economic or military assistance to the target, steps that cost the leading sender nothing. A value of cost = 4 might be assigned, for example, to sanctions that involved an oil embargo or other significant reduction in vital economic relations with the target.

Although it is the most comprehensive descriptive study of sanctions to date, Economic Sanctions Reconsidered (fn. 3) has been criticized for some of its methods. Other students of economic sanctions have questioned in particular the definition and measurement of success. Hufbauer, Schott, and Elliott define success narrowly as a desired policy change in the target country; they constructed a 16-point scale that captures varying degrees of success. Baldwin, for one, disagrees with this definition; see Baldwin (fn. 1), 130–34. The 16-point scale also takes into account the contribution of sanctions to the observed change in policy, which perhaps is better left as a separate variable. Economic Sanctions Reconsidered also exhibits some weaknesses from a statistical perspective. Because the 16-point success scale is constructed by the multiplication of two 4-point scales, it is impossible for any case to achieve certain values, such as 7, 13, 14, and so forth. The results also do not meet the usual standards of statistical significance and examine only bivariate rather than multivariate relationships, so that correlations among the independent variables make the observed relationships unreliable. In this study, I do not use the success score but use only Hufbauer, Schott, and Elliott's measures of some independent variables, along with additional variables added to their data set. I also develop statistical techniques appropriate for the kinds of data used, rather than relying on bivariate correlations.
Thus, cost appears to be a good measure of the concept we are interested in testing, the self-imposed costs of sanctions to the leading sender. However, we face one difficulty in using cost in this form—it is an ordinal-level rather than interval-level variable. The models used here assume that the independent variables are measured at an interval level, at a minimum. Thus, I have recoded cost to make it a dichotomous variable, $\text{costd}$, by combining the categories cost = 2, 3, and 4 into one. $\text{costd} = 1$ now reflects cases in which the leading sender bore negative or negligible costs, while $\text{costd} = 2$ reflects cases where sanctions imposed at least minimal costs on the leading sender.

The other independent variable I wish to test is the involvement of international institutions. I have created the variable inst to measure this dimension. inst is a dummy variable, with inst = 0 if no international organization called on its members to impose sanctions, and inst = 1 if some organization did. This variable clearly does not capture many of the dimensions of institutionalization of interest, which may be accessible only through detailed case studies. However, it will allow us to make some generalizations about the impact of institutions in the aggregate.

The following analyses control for four other factors that may be expected to have an impact on cooperation on sanctions: international assistance to the target (assist), the political stability and economic health of the target (target), whether the sanctions were imposed across East-West lines (coldwar), and the goals of sanctions (goal). The coding of these variables is described in the appendix. They are included to control for alternative explanations of cooperation. If common interests resulting from East-West competition or assistance to the target account for cooperation, coldwar or assist should have significant effects. Likewise, if cooperation is simply a function of the demand for multilateral action, goal and target should have an impact.

The next problem is to develop a measure of international cooperation that is applicable across the array of cases in this data set. Although the last few years have seen the development of an extensive literature on international cooperation, this work lacks attempts to operationalize cooperation in ways that fit more than a few specific cases. Here, I suggest two potential measures of cooperation. Each has its strong points as well as its weaknesses, and neither is a perfect measure of cooperation. Thus, rather than relying on just one measure, I develop statistical models appropriate for the analysis of each, assuming that these measurements are

---

44 Note that cost is not intended as a direct measure of audience costs. Instead, it is an indicator of the strategy adopted by the leading sender, with higher levels of cost indicating a higher-cost strategy. This is assumed to lead to higher audience costs in case of reneging.
different realizations of an unobservable variable. In spite of the inherent difficulties of measurement, therefore, consistent results across the different models should increase our confidence in their validity.

Hufbauer, Schott, and Elliott have developed one measure of cooperation. They assign each sanctions episode a cooperation score, which can range from 1, indicating no cooperation, to 4, for significant international cooperation. \(^{45}\) "No cooperation" means that only one country imposes sanctions. Many instances of U.S. sanctions against Latin American countries, such as Paraguay from 1977 to 1981, exemplify a cooperation score of 1. A value of 2 indicates "minor cooperation," typically meaning that the major sender is able to get some rhetorical support and possibly symbolic measures from other countries. The 1982 pipeline sanctions receive a score of 2. Hufbauer, Schott, and Elliott code "modest cooperation" as a 3, indicating that more than one state has imposed actual economic restraints but that they are limited in scope and duration. U.S. sanctions against Iran in 1979 over the taking of hostages receive a score of 3. Finally, a cooperation value of 4 indicates "significant cooperation," in which important trading partners of the target endeavor to restrict trade to a major degree, although enforcement of sanctions may not be perfect. The early years of CoCom, when the United States and its allies were pursuing a form of economic warfare against the Soviet Union, illustrates a case with a cooperation score of 4. I call this variable coop.

coop is a reasonable measure of cooperation that is susceptible to analysis with ordinal probit techniques. However, one of its drawbacks is that it is somewhat subjective. A more objective measure of cooperation might be simply a count of the number of countries imposing sanctions. I call this variable NUMBER, and use a variation of Poisson regression to analyze it. NUMBER is not a perfect measure of cooperation, since countries are not equally significant when it comes to their contribution to a multilateral effort. However, if the results from this independent measure of cooperation are consistent with those from coop, they are clearly robust. In addition, this variable allows us to explore one other dimension of the sanctions problem, the contingent nature of decisions to cooperate.

Ordered Probit Analysis

The first analysis uses coop as the measure of cooperation. coop is an ordinal variable, reflecting an order but not an interval-level measurement. An appropriate method for analyzing a variable of this type, such

\(^{45}\) Hufbauer, Schott, and Elliott (fn. 3), 1:35.
as coop, is ordered probit analysis.  Ordered probit analysis estimates threshold values for the points at which the underlying continuum of cooperation is divided into categories and produces estimates of the placement of each case on this unobserved cooperation scale. Table 1 presents the results of the ordered probit model.

I have marked coefficients significant at the .05 level with an asterisk. The coefficients of costd and inst are positive, as expected, and statistically significant at the .05 level. This indicates that increases in the cost to the major sender lead to greater cooperation, as does the involvement of an international institution. These findings are what we expect from the above discussion and analysis. When the leading sender bears high costs or gains the approval of an international institution, the level of cooperation it achieves increases significantly. This is the pattern we would expect if the leading sender needs to establish credibility through creating the potential for high audience costs in order to convince other countries to cooperate.

Table 2 presents fitted values for various combinations of costd and inst, holding coldwar and assist fixed at 1, target at 2, and goal at 0.47

<table>
<thead>
<tr>
<th>Independent Variable&lt;sup&gt;a&lt;/sup&gt;</th>
<th>Estimated Coefficient</th>
<th>Standard Error</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>-1.15</td>
<td>0.482</td>
<td>-2.39</td>
</tr>
<tr>
<td>coldwar</td>
<td>0.404</td>
<td>0.290</td>
<td>1.39</td>
</tr>
<tr>
<td>assist*</td>
<td>0.946</td>
<td>0.304</td>
<td>3.12</td>
</tr>
<tr>
<td>target</td>
<td>-0.190</td>
<td>0.183</td>
<td>-1.04</td>
</tr>
<tr>
<td>costd*</td>
<td>0.641</td>
<td>0.302</td>
<td>2.12</td>
</tr>
<tr>
<td>inst*</td>
<td>1.68</td>
<td>0.297</td>
<td>5.66</td>
</tr>
<tr>
<td>goal</td>
<td>-0.439</td>
<td>0.271</td>
<td>-1.62</td>
</tr>
<tr>
<td>thresh 1*</td>
<td>1.05</td>
<td>0.175</td>
<td>5.99</td>
</tr>
<tr>
<td>thresh 2*</td>
<td>2.47</td>
<td>0.306</td>
<td>8.07</td>
</tr>
</tbody>
</table>

Log Likelihood                   | -86.3                 |
Percent Correctly Predicted      | 62.6                  |
Number of Observations           | 99                    |

<sup>a</sup> Asterisks indicate variables statistically significant with p < .05.


47 Ordered probit assumes that the dependent variable, cooperation, is an unobserved linear function of the independent variables. While the precise level of cooperation is unobserved, ordered probit assumes that we can split the cooperation continuum into four parts
As these results show, both costs and institutions have a significant positive impact on cooperation as measured by coop. inst appears to have a larger substantive impact, increasing the expected level of cooperation by 1.68 points, while costd increases cooperation by 0.641 points. Overall, they support the hypotheses about the factors that enhance credibility and therefore cooperation.

**Event Count Analysis**

Above, I proposed a straightforward count of the number of countries imposing sanctions as a possible measure of cooperation. Analyzed in isolation, number is probably not an adequate direct measure of cooperation; it does seem plausible, however, that it is positively correlated with the level of cooperation. Thus, if we think about the process by which number is generated from an unobservable variable, we can develop a model that uses number to estimate the underlying level of cooperation. I adopt this approach to develop the event count analysis of this section.⁴⁸

As in the probit analysis, I begin by assuming that there is some unobservable underlying continuous level of cooperation. We could think of cooperation as the rate at which countries decide to impose sanctions, λ. While we cannot directly observe λ, we can count up the number of countries imposing sanctions and use this number as an estimate of the underlying variable. In this framework, the decision to impose sanctions is an event, and the only data we have are the number of events during each sanctions episode.

Researchers have typically estimated event counts using a Poisson disand observe in which of the four each case lies. See Gary King, *Unifying Political Methodology: The Likelihood Theory of Statistical Inference* (New York: Cambridge University Press, 1989), 115–17. Thus, the third column in Table 2 refers to the expected score on the unobserved cooperation scale, while the fourth column translates this score into an expected value for the observed variable coop.

tribution. Here, I use a variation of the Poisson distribution, the negative binomial distribution. This distribution differs from the Poisson in that it includes an additional parameter, \( \gamma \), which measures the amount of “contagion” in the data.\(^{49}\) The Poisson distribution results from an accumulation of a series of independent events. Formally, this means that the probability of an event occurring at time \( t + 1 \) is independent of what has happened up to time \( t \). In this case, a Poisson distribution relies on the assumption that the probability of one country imposing sanctions is independent of the decisions of all other countries. The assumption of independence, which results in the specification of variance equal to \( \lambda \), for all observations, is clearly incorrect in this case. In fact, the theoretical framework underlying the hypotheses being tested here assumes strategic interdependence—that states make their decisions based in part on what other states do.

We could think of strategic interdependence as “contagion” among states. Positive contagion resembles a situation of bandwagoning. Here, a decision by one state to impose sanctions will increase the probability that others will take a similar step. Likewise, a refusal to sanction will be followed by similar decisions from other states. In repeated trials this process of positive contagion would lead to relatively many cases where an unusually large or small number of states impose sanctions; extreme results would occur more frequently than under independent decision making. In other words, the variance of \( Y \) (the number of events occurring) will increase, so that \( \text{Var}(Y) > \lambda \); in the Poisson, \( \text{Var}(Y) = \lambda \). Thus, we set \( \text{Var}(Y) = \lambda \exp(\gamma) \).\(^{50}\) Independence of decision making will result in \( \gamma = 0 \) and positive contagion in positive values of \( \gamma \). The process generating sanctions is specified as:

\[
E(Y_i) = \lambda_i = \exp(x_i \beta),
\]

where \( x \) is a vector of explanatory variables and \( \beta \) is a parameter vector, indicating the effect of each explanatory variable on the underlying rate of cooperation, \( \lambda \).

The probit model estimated above suffers from one weakness: it did not correct for selection bias present in the data. This bias results from the fact that there are no cases of zero sanctions in the data set. That is, I have not been able to include cases where no country has decided to impose sanctions. This kind of selection on the dependent variable creates a downward bias in the resulting estimates of the effects of explanatory variables. One gets an intuitive sense for why this would be so from

\(^{49}\) King (fn. 47), 218–20.

\(^{50}\) Ibid., 126–29.
a consideration of the impact of inst. It is reasonable to assume that cases where no country imposed sanctions would be positively correlated with the variable inst, since it is unlikely that we would see institutional involvement if no countries imposed sanctions at all. Theoretically, we should expect very few cases in which an international institution called for sanctions but no country imposed them, because the act of getting sanctions on an institution's agenda requires that at least one country have a strong interest in sanctions. Thus, when these “noncases” are excluded from the sample, we will tend to underestimate the actual effect of international institutions.

The negative binomial distribution can be modified to take into account the fact that the data have been truncated at zero, so that the event counts are always positive integers. Table 3 shows the results of the truncated-at-zero negative binomial model.

Gamma has an estimated value of 0.872, indicating that a significant amount of positive contagion is likely to be present in the data. This finding is consistent with a hypothesis that sanctions episodes tend to show bandwagoning behavior, where states jointly decide either to impose or not to impose sanctions. It fits the model developed here, where cooperation is dependent on a credible commitment to economic sanctions by the leading sender. Other potential sanctioners will cooperate only if they believe that the leading sender has a serious commitment to sanctions, reflected in high audience costs of reneging. Thus, we should expect a certain amount of positive contagion. An example may help to clarify the meaning of a positive value for gamma. In the case of inde-

### Table 3
**Truncated Negative Binomial Results**
*(number as dependent variable)*

<table>
<thead>
<tr>
<th>Independent Variable</th>
<th>Estimated Coefficient</th>
<th>Robust Std. Error</th>
<th>t-Statistic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Constant</td>
<td>0.214</td>
<td>0.295</td>
<td>0.725</td>
</tr>
<tr>
<td>COLDWAR</td>
<td>0.0326</td>
<td>0.187</td>
<td>0.174</td>
</tr>
<tr>
<td>ASSIST*</td>
<td>0.300</td>
<td>0.191</td>
<td>1.57</td>
</tr>
<tr>
<td>TARGET</td>
<td>-0.0520</td>
<td>0.102</td>
<td>-0.510</td>
</tr>
<tr>
<td>COSTD*</td>
<td>0.351</td>
<td>0.152</td>
<td>2.31</td>
</tr>
<tr>
<td>INST*</td>
<td>1.29</td>
<td>0.187</td>
<td>6.90</td>
</tr>
<tr>
<td>GOAL</td>
<td>0.0832</td>
<td>0.170</td>
<td>0.489</td>
</tr>
<tr>
<td>Gamma*</td>
<td>0.872</td>
<td>0.225</td>
<td>3.88</td>
</tr>
</tbody>
</table>

Log Likelihood 371.03
Number of Observations 99
pendence, \( \text{Var}(Y_i) = \lambda_i \lambda \). Thus, if \( E(Y_i) \), the expected number of sanctioning countries for some particular set of circumstances, were 4, the standard deviation of the distribution of \( Y_i \) would be the square root of 4, or 2. However, the negative binomial model estimates gamma at .872, so that \( \text{Var}(Y_i) = \lambda_i (e^\gamma) = 9.57 \). The standard deviation of \( Y_i \) thus would increase to 3.09, one and a half times greater than for the case of independent decision making. Substantively, this means that strategic independence has increased the variance in the expected number of countries participating in sanctions, making the outcome less predictable than it would have been if states made decisions independently of one another.

\( \text{costd} \) and \( \text{inst} \) both have significant positive effects, as in the probit model. Table 4 presents fitted values for values of \( \text{costd} \) and \( \text{inst} \), holding the other independent variables fixed as above.\(^{51}\)

As this table shows, if the leading sender bears low costs and does not involve an international institution, we expect approximately one additional country to impose sanctions, for a total expected number of 2.21. If the leading sender gains the approval of an institution, an additional six countries would be expected to come along, while bearing higher costs would persuade one additional country, on average, to impose sanctions. If the leading sender bears high costs and gets institutional approval, the expected number of sanctioners jumps to over eleven. These results reflect the nonlinear nature of the event count model.\(^{52}\) The negative binomial model thus supports the results of the probit analysis, by

<table>
<thead>
<tr>
<th>( \text{costd} )</th>
<th>( \text{inst} )</th>
<th>( \text{Expected number} )</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0</td>
<td>2.21</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>8.03</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>3.14</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>11.4</td>
</tr>
</tbody>
</table>

\(^{51}\) These values are calculated by substituting the estimated parameters and specified values of \( \text{costd} \) and \( \text{inst} \) into the systematic component of the negative binomial model as given in Equation 1.

\(^{52}\) As discussed above, the positive coefficient of gamma indicates positive contagion, thus making precise predictions of the expected number of cooperating countries impossible. This is reflected in large confidence intervals around the expected value of \( \text{number} \). For example, in all cases in Table 4, the lower bound of a 95% confidence interval would include \( \text{number} = 1 \). Thus, the fitted values should not be taken as precise estimates but only illustrative of the logic of the event count model. More important for interpretive purposes are the estimated parameter coefficients.
showing that self-imposed costs and international institutions have a positive relationship with cooperation.

Overall, these quantitative results provide strong evidence that cooperation on economic sanctions is positively related to the costs borne by the leading sender and the activities of international institutions. Two different specifications, necessary because of the difficulty of measuring cooperation, gave consistent results to this effect. Thus, we find general support for the model of credibility developed above. Of course, these results are not in themselves conclusive. It remains possible that the causal link between these independent variables and cooperation flows through some channel other than the leading sender’s credibility. Such relationships are best examined through more detailed case studies.\textsuperscript{53} However, this work provides a complement to such studies by showing the generalizable nature of these effects. In addition, the lack of any relationship between cooperation and the other independent variables controlled for here suggests that the credibility model performs better than alternatives. Cooperation has no relationship to \textsc{coldwar}, suggesting that common interests created by East-West competition do not explain cooperation. Lack of significance for \textsc{target} and \textsc{goal} suggests that cooperation is not simply a function of the difficulty of the goals of sanctions. States cannot simply achieve cooperation when they need it but must establish credible commitments to the extent they are allowed by the constraints in which they interact.

\textbf{Conclusion}

The concept of credibility has occupied the attention of political scientists and economists in recent years. While theorists of international cooperation have noted credibility problems, their assumptions of symmetrical patterns of state interests do not seem appropriate to many cases of economic sanctions, where one state has a dominant strategy to act and others prefer to free ride. Instead, the sanctions situation is analogous to that studied by Schelling and other analysts of deterrence who have argued that the ability to take costly actions allows states to establish credible commitments. This paper finds that this insight applies to problems of international cooperation as well as to those of deterrence and conflict.

Credibility is as important to gaining international cooperation as it is to the eventual impact of sanctions on their target. The model of sanctions used here considers two states. The leading sender can only gain

\textsuperscript{53} Martin (fn. 14), chaps. 5–8.
cooperation if it transforms the sanctions game through issue-linkage, using either threats or promises to change the payoffs of the other potential sanctioner. Regardless of the tactic used, the other potential sanctioner considers whether the leading sender will actually carry out threats or make side payments. One mechanism by which the leading sender can establish a commitment involves increasing the audience costs that it will bear for reneging on threats or promises. The leading sender can increase audience costs on either the domestic or international level by building a coalition in support of stringent sanctions.

Given these conditions, we find two equilibria in a complete information commitment game. In the first, the leading sender imposes low-cost sanctions, does not use institutions, and gains no cooperation. In the second, the leading sender bears high costs and does gain the cooperation of other potential senders. This suggests that we should find a strong positive relationship between the costs of sanctions or the use of institutions and the level of cooperation observed. Data on ninety-nine cases of post-World War II economic sanctions support these hypotheses.

States do not cooperate simply because they have a common interest in doing so. Rather, they build their cooperation on tactical issue-linkages, making credibility of commitments a powerful explanatory variable. Similarly asymmetric patterns of interests are likely to exist in many issue-areas, such as environmental problems including global warming and acid rain. If so, tactical issue-linkages and credibility will be central to successful resolution of some of the most pressing issues facing states today.

Theorists of international relations in general and of international cooperation in particular are engaged in a debate about the value of formal modeling techniques. Formal approaches have the virtue of forcing theorists to consider rigorously their assumptions about the incentives facing actors and the capabilities of those actors, as well as the internal logic of their hypotheses. However, in order to persuade more theorists to use them, formal models must also be shown to lead to clear-cut, empirically testable propositions. In the case of cooperation on sanctions, a formal model of the commitment problem satisfies these criteria and thus should add to the growing evidence that such approaches will contribute to the development of tested, internally consistent bodies of theory.

Appendix: Control Variables

International assistance to the target has been coded by Hufbauer, Schott, and Elliott, with a dummy variable I call assist. assist = 0 indi-
icates that the target did not receive assistance in response to the imposition of sanctions, while \( \text{assist} = 1 \) indicates that it did. The target received assistance in twenty-three out of ninety-nine cases. Hufbauer, Schott, and Elliott have also developed an indicator of the political stability and economic health of the target. This is a three-category variable I call \( \text{target} \). \( \text{target} = 1 \) indicates that the target of sanctions was undergoing severe domestic stress prior to the imposition of sanctions; \( \text{target} = 2 \) reflects a more stable, prosperous state, but one with significant problems; and \( \text{target} = 3 \) indicates that sanctions were directed against a stable, relatively wealthy state. Like \( \text{cost} \), \( \text{target} \) is an ordinal-level variable. However, unlike \( \text{cost} \), statistical analyses have shown that recoding \( \text{target} \) into two dummy variables makes no significant difference in the results. The mean of \( \text{target} \) in this data set is 2.09.

I include a dummy variable, \( \text{coldwar} \), designed to reflect the nature of the conflict leading to economic sanctions. If sanctions were imposed by some Western allies on the Soviet bloc, as in the pipeline case, or vice versa, \( \text{coldwar} = 1 \). If not, \( \text{coldwar} = 0 \). For example, British sanctions against Argentina during the Falklands War or U.S. sanctions against Latin America for human rights violations are coded \( \text{coldwar} = 0 \). Twenty-six cases in this data set are coded as cold war cases. Finally, the variable \( \text{goal} \) represents Hufbauer, Schott, and Elliott’s assessment of how ambitious the goals of sanctions were. \( \text{goal} \) is a dummy variable coded 0 for sanctions with modest goals, such as settlement of expropriation disputes or minor improvements in human rights conditions. Major goals are coded 1 and include attempts to change governments, reverse or deter military adventures, and so on. Half of the cases here had major goals.