Reputation or Interaction: What Drives Cooperation on Economic Sanctions?

Dawid Walentek

University of Warsaw

September 2021

Abstract

This article studies cooperation on multilateral economic sanctions. Despite low effectiveness and sanction-busting, multilateral economic sanctions are a popular tool of foreign policy. We explore an instrumental approach to sanctions and develop a game theory framework where sender states face a collective action problem when coordinating multilateral coercion. We indicate that cooperation can be achieved through repeated interactions and reputation. We test empirically the two mechanisms with the TIES data on economic sanctions and adherence to past sanction regimes and the Correlates of War data on membership in International Organisations. Our results indicate that reputation is a strong predictor of cooperation on multilateral economic coercion. The effect of repeated interaction appears conditional on reputation; states with poor reputation mediate its effect through repeated interaction.

1 Introduction

Why do states cooperate on economic sanctions? Multilateral sanction regimes are a popular tool of foreign policy (Morgan et al., 2014), despite marginal, and possibly counter-beneficial, effects of cooperation on the potential success of the policy (Morgan and Schwebach, 1997; Miers and Morgan, 2002; Hufbauer et al., 2007; Bapat and Morgan, 2009; van Bergeijk, 1994; Drezner, 2000; Bapat and Kwon, 2015). Scholars have overlooked this question, yet multilateral economic coercion is a striking example of cooperation in the anarchic international order (Martin, 1992, 1993) and has major economic (Afesorgbor and Mahadevan, 2016; Giumelli, 2017) and humanitarian (Neuenkirch and Neumeier, 2016; McCormack and Pascoe, 2017; Lektzian and Regan, 2016) consequences for the target states.[1]

The purpose of this article is to present and empirically test two mechanism for their systematic role in cooperation on economic sanctions. First, reputation, in which cooperation is driven by the leading sender's history of adherence to sanctions introduced in the past. And second, repeated interaction, in which cooperation on sanctions is an outcome of the expectation about future interactions (tit-for-tat) among the sender states. In our article we model economic sanctions as a Prisoners dilemma, simplifying the interaction between the senders of multilateral sanctions to two states. We depict the underpinning economic rationality, that are presented in the Prisoners dilemma, as a Cournot competition between the two sender states for the market of the target state.

We test the two mechanism that stem from our theory — role of reputation and repeated interaction — using the Threat and Imposition of Economic Sanctions (TIES) (Morgan et al., 2014) and Correlates of War (CoW) IGO (Pevehouse et al., 2020) data sets. We approximate reputation with the past commitment to economic sanctions of the primary sender, based on the TIES data. For repeated interactions we employ the number of years spent at the sanction-coordinating institutions; as this variable is rather limited in the TIES data set we also study the effect of the number of International Organisations that a primary sender is a member of at the time of sanction's imposition and years spent at these institutions at the sanction year. We employ a logistic regression to establish whether there is systematic relation between our proxies and the prospect for an imposed sanction to be multilateral and whether there is an interaction between the two. To start, we find that reputation strongly predicts multilateral coercion — both moderate and high levels of past commitment to economic sanctions by the sender states increase the prospects of cooperation. What is more, repeated interaction does not appear to be relevant for cases of strong reputation, yet it has a strong mediating effect for primary senders with weak reputation. As the number of years spent at a sanction-coordinating IO or the number of IO memberships increase, there is a higher probability for the sender to coordinate a multilateral sanction regime — despite weak commitment

[1] We employ the conceptualisation of Morgan et al. (2014), where economic sanctions are an "actions that one or more countries take to limit or end their economic relations with a target country in an effort to persuade that country to change its police".

to past sanction regimes. Thus, our results indicate that in cooperation on coercion in international relations reputation matters and repeated interaction helps to mitigate its deficit.

The article has the following structure. First, in Section 2, we offer a discussion of the literature — highlighting the dominant focus on the effectiveness of multilateral efforts. Second, in Section 3, we introduce our theoretical approach to cooperation on economic sanctions: we model competition for the market of the target state as a Cournot game. In Section 4, we outline our empirical strategy. Then, in Section 5, we discuss our empirical findings and, finally, in Section 6 we conclude the paper.

2 Literature review

Researchers have extensively studied the effectiveness of multilateral economics sanctions. Scholars first assumed that cooperation is a necessary condition for economic sanctions to succeed (Galtung, 1967; Doxey, 1980; Gilpin, 1984; Baldwin, 1985).[2] Later, systematic empirical research proved this assumption to be wrong. Multilateral sanctions were shown to not increase the effectiveness of the tool; potentially they could be even counter-effective (Hufbauer et al., 2007; Drezner, 1999, 2000; Morgan and Schwebach, 1997; Miers and Morgan, 2002; Bonetti, 1997; van Bergeijk, 1994). Three main theoretical frameworks were developed in order to explain this anomaly: selection effects, public goods problem and spatial theory.

The first framework, based on the selection effect (Drezner, 2003), suggests that multilateral economic sanctions are less effective because only issues of high salience are targeted with joint action. Coalitions of states are difficult to coordinate, and only critical threats provide sufficient motivation for states to organise and implement multilateral economic sanctions. But, precisely due to the high silence of the issue, the target of the sanctions will, most likely, perceive the demands of senders as of critical or even existential importance. This asymmetry places multilateral sanctions in an avenue where they are unlikely to succeed. As a result, we observe the relatively low effectiveness in comparison to unilateral efforts.

In the second framework, multilateral economic coercion as a public good (Martin, 1992, 1993), sanctions are a common resource on which each individual sender has incentives to deviate. This setting, consequently, leads to a series of deviation (including, eventually, the primary sender too). In this approach only sanctions introduced through international organisation can be robust, because sufficient supervision mechanisms are in place to deter deviation from the agreed coordinated sanction regime. If no international organisation is in place, then the primary sender should opt for unilateral sanctions. In the words of Drezner (2000) "unilateral sanctions can be more effective than multilateral effort; a small and sturdy stick is better than a large and brittle one."

Finally, the third framework, rooted in spatial theory (Miers and Morgan, 2002), suggests that

[2]Yet, Galtung warns against a "naïve theory of sanctions", where the effectiveness is a simple function of the severity of the sanctions; cooperation was seen as a necessary, but not a sufficient condition for multilateral sanctions to be effective.

the key feature for success of multilateral sanctions is the number of demands made by the sender states. For a single demand, multilateral sanctions are expected to be more effective than unilateral action. For multi-issue demands, multilateral sanctions will only be more effective than unilateral if, and only if, enforced through an international organisation. Otherwise, as chaos theorem suggests, multilateral sanctions may be counter-productive and likely less successful than unilateral sanctions over multiple demands.

Nevertheless, most studies of the effectiveness of multilateral economic sanctions appear to have suffered from a data problem. A study conducted with the TIES data set indicates that multilateral sanctions are, on average, more effective; particularly when addressing a security issue (Bapat and Morgan, 2009). The TIES data set used by Bapat and Morgan (2009) to deliver these findings is composed of 888 cases (522 imposed and 361 sanctions threats) and six times larger than the data offered by Hufbauer et al. (2007) — the data sources underpinning past research. Moreover, Bapat and Morgan (2009) indicate that the spatial model is supported by the findings from the TIES data set. Multilateral sanctions over a single issue or over a multiple issue but coordinated through an international organisation are most effective. An update of the TIES data set to 1412 cases Morgan et al. (2014) confirms the previous results of Bapat and Morgan (2009): multilateral economic sanctions are more effective than unilateral. Yet, the more extensive TIES data set is consistent with past research on the general effectiveness of sanctions — economic coercion, by far, more often fails than succeeds.

If sanctions so often fail to reach the designated policy objective and coordinated efforts do not guarantee success, why states do decide to engage in multilateral economics sanctions? A game theory approach, developed by Martin (1992, 1993) in which sanctions are a coercive foreign policy instrument, proposes that states face a collective action problem when deciding on cooperation on economic sanctions. On the one hand, cooperation on a sanction regime can increase the chances of success of the policy, but, on the other hand, there are economics incentives to free ride on the sanction regime and benefit both from trade with the target state and the additional security resulting from sanctions imposed by other senders.

Martin produces game matrices in which actors are classified by a set of characteristics: strong or weak leadership and strong or weak strategy. The games are played out by two states that have to decide on cooperation on a sanction regime; games are non-repeated and simultaneous. Martin indicates that there are three paths that can lead to multilateral economics sanctions: coincidence, coercion and coadjustment. For the first path, we can observe cooperation on economic sanctions if both potential senders have overlapping interest. This could be related to the weakness of a potential target or to ideological alliance of the senders, what has been particularly relevant in the context of the Cold War. In the second path, coadjustment, which is a regular Prisoners dilemma game, states face the problem that individually rational action may bring outcomes that are sub-optimal

on the aggregate level. Martin expects that institutions can stimulate cooperation in this setting. In the third path, coercion, a powerful state has the ability to force its partners to join the sanction regime. In this setting, the motivation for coercing partners into cooperation by the primary sender is the high cost of a potential sanction regime.

To summarise, most of the research focuses on the effectiveness of multilateral economic sanctions and overlooks why coordination happens, despite the recent increase in multilateral economic coercion. In the following part of the article, we develop a theoretical framework for the study of cooperation on economic sanctions that is strongly rooted in the literature dedicated to cooperation.

3 Theory

Following past research on cooperation on multilateral economic sanctions (Martin, 1992, 1993), we model the dynamic of cooperation on multilateral economic sanctions as an interaction between two sender states. Unlike previous studies, we formalise the trade game that senders observe and to this end we employ a Cournot model of competition. At a later stage, we use the result from the Cournot model to underpin the Prisoners dilemma that depicts the cooperation dynamics on economic sanctions between the sender states. In the Prisoners dilemma game, we relax the assumption of a one-shot game present in past scholarship (Martin, 1992, 1993) and seek for explanations for cooperation in the evolutionary game theory literature (Nowak, 2006; Nowak and Sigmund, 2005; Axelrod and Hamilton, 1981).

3.1 Cournot competition and sanctions

We assume that states operate as firms in international markets and compete in quantity for the demand for their goods in the target state. Both sender states can decide on the quantity produced (q_1 for State 1 and $q2$ for State 2) and the quantity produced by each state influence the price, thus $p = p(q_1 + q_2)$. We can also assume that both states supply a homogeneous product (e.g. computer processors) and observe the same cost structure, thus $c_1 = c_2 = c$.

Let us first discuss a scenario in which none of the two sender states imposed economic sanctions and trade operates uninterrupted. Here, we can denote the profit function of a State1 and State 2 as:

$\Pi_1 = pq_1 - cq_1 = (p(q_1 + q_2) - c)q_1$

$\Pi_2 = pq_2 - cq_2 = (p(q_1 + q_2) - c)q_2$

The Nash equilibrium for the optimal amount of quantity supplied can be derived by looking at the best responses of Firm 1 to Firm's 2 supply (and by the virtue of symmetry it is also the best response of Firm 2 to Firm's 1 supply decision). The demand for the good is described by the

following inverse demand curve $p(q) = a - bq$ and State 1 observes the following profit function:

$$\Pi_1 = [a - b(q_1 + q_2)]q_1 - cq_1$$

The first-order condition with respect to q_1, in order to find the profit-maximising quantity of output for State 1, is:

$$a - 2bq_1 - bq_2 - c = 0$$

Solving the above equation for $q1$ allows us to obtain the Best Response of State 1:

$$BR1(2) = q_1(q_2) = \frac{(a-c)}{2b} - \frac{q_2}{2}$$

And by the virtue of symmetry, we can assume that the Best Response of State 2 to State's 1 production decision is:

$$BR2(1) = \frac{(a-c)}{2b} - \frac{q_1}{2}$$

Based on the best responses. we can calculate the equilibrium output for each state, which is at the intersection of the two best response curves:

$$(q_1^*, q_2^*) = \frac{a-c}{3b}, \frac{a-c}{3b}$$

Let us know proceed to calculate the profit of each state under Cournot competition with no sanctions. First, let us calculate the aggregate output at the equilibrium, which is the sum of the output of the two states:

$$q^* = q_1^* + q_2^* = \frac{a-c}{3b} - \frac{a-c}{3b} = \frac{2(a-c)}{3b}$$

Second, we can calculate the market price, using the inverse demand curve:

$$p(q^*) = a - bq^* = a - b\frac{2(a-c)}{3b} = \frac{a+2c}{3}$$

Hence, the profit for State 1 in equilibrium is:

$$\Pi_1^* = p(q^*)q_1^* - cq_1^* = \frac{a+2c}{3}\frac{a-c}{3b} - c\frac{a-c}{3b} = \frac{(a-c)^2}{9b}$$

And by the virtue of symmetry the same profit function hold for State 2

$$\Pi_2^* = \frac{(a-c)^2}{9b}$$

Let us now assume that one state, for example State 1, introduces economic sanctions against the target state and the state operates in a regular fashion. Let us also assume that introduction of economic sanctions is publicly known; State 2 can take it into account when anticipating it's action. For now, we can assume that the economic sanctions introduced by State 1 are a full embargo and the trade between the two states reduced to zero, thus $q1 = 0$. Alternatively, we can think that this concerns only one branch of the economy — for example the banking and finance industry or technology for extraction of oil and gas.[3] This information can be used by State 2 and accounted for in its best response function. Quantity supplied, under economic sanctions, by State 2 is:

$$BR2(1sanctions) = \frac{a-c}{2b}$$

Which also is the profit-maximising quantity for a monopolist. This is not surprising, because in our stylised setting, after the imposition of economic sanctions by State 1, we observe State 2 obtaining

[3]One could consider the payoff to be smaller than zero, because apart from forgone profits, the sender state has also experienced a diplomatic failure; for simplicity we keep it at zero.

a monopoly position in respect to trade with the target state. Under a monopoly, with only one state introducing economic sanctions, the equilibrium price and quantity are, respectively:

$q_2^*(sanctions, trade) = q^*(monopoly) = \frac{a-c}{2b}$

$p^*(sanctions, trade) = p^*(monopoly) = \frac{a+c}{2}$

Which is a higher price and a lower aggregate supply then under the previous scenario with no sanctions and both states competing a'la Cournot for the demand of the target state. Thus the profit of State 2, when State 1 imposes sanctions is:

$\Pi_2(sanctions, trade) = \frac{(a-c)^2}{4b}$

Which is higher than in a setting when both sender states engage in trade with the target state, as:

$\frac{(a-c)^2}{4b} > \frac{(a-c)^2}{9b}$

Finally, let us now assume both introduce sanctions. This case is straightforward in our game. Both quantity and profits will be equal to zero, thus:

$q_1^* = q_2^* = 0$

$\Pi_1(sanctions, sanctions) = \Pi_2(sanctions, sanctions) = 0$

We summarise the results of our Cournot game in a matrix, in Table 1, where the payoffs are the profits of each state.[4]

Table 1: Overview of the profits.

		State 2	
		Trade	*Sanctions*
State 1	*Trade*	$\frac{(a-c)^2}{9b}, \frac{(a-c)^2}{9b}$	$\frac{(a-c)^2}{4b}$,0
	Sanctions	$0, \frac{(a-c)^2}{4b}$	0,0

Payoffs to: (State 1,State 2)

3.2 Repeated interactions and reputation

From Table 1 we can conclude that to trade is the dominant strategy in this game (i.e. regardless of the action of the other actor, I am better off selecting trade). Hence, in this game for both states to engage in trade is the Nash equilibrium. Yet, cooperation on economic sanctions does occur, and appears to be a systematic feature of international relations (Bapat and Morgan, 2009). Cooperation

[4]One could assume that economic sanctions should be modelled as an increase in the costs to the state that has introduced the sanction regime, as business will move on to bust sanctions through, for example, foreign direct investment in third-party states seeking indirect access to the market of the targeted state (Barry and Kleinberg, 2015; Early, 2012). However, the results with asymmetric costs as an outcome of economic sanctions would not change our core findings — the game that states play can be seen as a Prisoners dilemma. In an asymmetric cost setting, the state that introduced sanctions observes lower profits than with no sanctions in place (albeit possibly higher than zero, subject to the size of the cost asymmetry). And the state that continues to trade enjoys a profit larger than under a symmetric Cournot game (yet possibly smaller than a monopoly profit, subject to the size of the cost asymmetry). An interesting insight from this theoretical approach to economic sanction is that states that make it harder to bust sanctions also make it less appealing to cooperate. This is because the profits of the state that continues to trade move towards a monopoly profit — the highest possible return — together with the enforcement of the sanction regime on domestic business by the sender state.

puzzles a large number of scholar and we put forward in this article two theoretical arguments that support cooperation, despite mutual defection being the Nash outcome in a single-shot game, rooted in the study of evolution and cooperation (Axelrod and Hamilton, 1981; Axelrod, 1984; Nowak, 2006). This approach allows us, on the one hand, to follow the Cournot logic for economic sanctions and, on the other hand, to offer a logically consistent explanation for presence of cooperation that can be empirically assessed. First argument, repeated interaction, has been frequently brought forward in the study of conflict and cooperation in international relations (Axelrod and Keohane, 1985). The second argument, the role of reputation, is highlighted less often in the study of international relations — at least in the formal form, rooted in game theory (Nowak and Sigmund, 2005; Nowak, 2006; Milinski et al., 2002).

We can simplify the above payoff matrix from Table 1, without the loss of generality, to follow the set up of Hilbe et al. (2013), where b stands for benefit, c for cost and we assume that $b > b - c > 0 > -c$. The game is summarised by in Table 2, below and also shows a Prisoners dilemma setting.

Table 2: Simplified game.

		State 2	
		Cooperate	*Defect*
	Cooperate	$b-c$,$b-c$	b,$-c$
State 1			
	Defect	$-c$,b	0,0

Payoffs to: (State 1,State 2)

For a one-shoot game, from the above set-up we can conclude that economic sanction would never take place, as the Nash equilibrium in the static Prisoners dilemma is for both players to defect. However, given the repeated nature of international relation and economic sanctions (Portela et al., 2020; Bapat and Morgan, 2009; Moret et al., 2016; Giumelli, 2017) we can further our modelling efforts and study the outcome of a dynamic game. Motivation for this extension is that states repeatedly interact with one another on foreign policy issues (Oye, 1986) and are embedded in international organisations, where reciprocal interactions occur (Davis, 2004). In the repeated game the payoff structure of the Prisoners dilemma remains the same. The novelty is that we assume that actors will play an infinitely repeated number of rounds and there is a probability w that they will meet again. This allows actors to devise interactive strategies and creates opportunity for direct reciprocity — for example a tit-for-tat strategy in which if you cooperate with (defect on) me, I cooperate with (defect on) you. Following Nowak (2006), the condition for sustained cooperation can be summarised by the following formula:[5]

$$w \geq \frac{c}{b}$$

[5]If the probability of another encounter is w then the actor has to compare the payoff from mutual cooperation to being defected upon; thus, $w(b-c) = (1-w)(-c)$, which simplifies to $w = \frac{c}{b}$. For a more detailed discussion on the role of direct reciprocity please see the work of Imhof et al. (2007) and Axelrod and Hamilton (1981), among others.

Thus, cooperation on economic sanctions is an individually rational strategy, if the probability of another encounter, described by w, is higher than the $cost - benefit$ ratio, depicted in the game matrix. Therefore, other things being equal, we would expect that states that are joint members of an international organisation and have opportunities to interact on foreign policy issues are more likely to engage in multilateral economic sanctions.

H1: States that exhibit high levels of repeated interactions, are more likely to engage in multilateral economic sanctions.

It is not always possible for states to expect a tit-for-tat-like interaction with another state and rely on repeated interaction; yet this does not imply defection by both actors is the only plausible outcome Here, reputation appears to be another feature of repeated games that stimulates cooperation. Evolutionary scholars indicate that cooperation in larger groups is more difficult to achieve, because of free-riding (Suzuki and Akiyama, 2007). However, literature suggest that problem can be mediated through indirect reciprocity, more commonly referred to as reputation (Nowak, 2006; Nowak and Sigmund, 2005). And research has shown that reputation is both present and meaningful for economic sanctions (Peterson, 2013). Here, we assume that actors play an infinitely repeated game and, with a probability of q, are familiar with the past decisions of the player that they are facing in the current game. For cooperation to thrive, the probability of knowing past actions of the partner, described by q, has to be higher than the $cost - benefit$ ratio, depicted in the game matrix:[6]

$q \geq \frac{c}{b}$

Consequently, we would expect that states that have a solid reputation — strong past commitment on economic sanctions — are more likely to find partners to construct a multilateral sanctions regime.

H2: States that show a reputation of past commitment to economic sanctions, are more likely to engage in multilateral economic sanctions.

4 Research design

We build our argument further from the theory section, with the objective of an empirical test of the hypotheses developed with the use of the Cournot model and evolutionary dynamics in game theory. In this section, we discuss the data, variables and econometric strategy developed to assess our hypotheses on the role of repeated interaction and reputation for fostering coercive cooperation.

In our analysis we use the updated TIES data set for information on economic sanctions (Morgan

[6] As before, if the probability of familiarity with the past decisions towards others is q then the actor has to compare the payoff from mutual cooperation to being defected upon; thus, $q(b-c) = (1-q)(-c)$, which simplifies to $q = \frac{c}{b}$. For a more detailed discussion of indirect reciprocity please see the work of Nowak and Sigmund (1998), among others.

et al., 2014). It is the largest and most up-to-date data set on economic coercion; it consists of 1412 cases that span from 1945 to 2005. In this article, we use both imposed sanctions and threats-only of economic coercion, because senders already gather a coalition at the threat stage of the sanction regime and may succeed in coercing the target without restoring to an actual imposition of sanctions.[7] Following Jeong and Peksen (2019), we only use cases where a primary sender has been identified by the authors of the TIES data set. Our sample consists of 1,325 economic sanctions with a clear primary sender, where 285 cases are multilateral and 1,040 cases are unilateral. The success rate of unilateral and multilateral sanctions in our sample is, respectively, 35 per cent and 56 per cent. Multilateral sanctions are more successful in our sample, what is consistent with the research findings (Bapat and Morgan, 2009). We observe an international organisation coordinating the economic sanction for 353 cases. United States are among the leading senders of both multilateral and unilateral sanctions in our sample.

We use a binary outcome variable *Multilateral* that takes up a value of 1 if an imposed sanction is multilateral and a value of 0 if a sanction is unilateral. We determine whether a sanction is multilateral with the help of the TIES data set. The predictors of our interest are repeated interaction and reputation. We approximate repeated interactions with the *NumyrsIO* variable, that offers the number of years spent by the primary sender at the international organisation that is coordinating the sanction regime. We use the Correlates of War IGO data set that traces the membership of states in over 500 IOs to generate the years of memberships (Pevehouse et al., 2020). We assume that with time opportunities for a tit-for-tat like interaction increase among members states, as they continuously face conflict and competing interests in international relations.[8] Unfortunately, we observe the sanction-coordinating institution for a limited number of cases in the TIES data set. To address this, we approximate repeated interaction with two other variables, also generates from the Correlates of War data set, that are available for a larger number of sanction cases and reflect, albeit less precisely, the theoretical underpinnings of our argument. First, we employ the number of IOs that the primary sender is a member of at the year of imposing the sanction regime (*NumIO*). Second, we use the cumulative number of years that the primary sender spent at the IOs in the sanction year (*Numyrs*). We expect that a higher number of institutions where the primary sender resides generates room for reciprocity — with the potential mechanism of issue linkage in international negotiations (Davis, 2004) — and we expect that this relation is further advanced by the time spent at these institutions. The proxy for our second explanatory variable of interest — reputation — is *past commitment*. This variable is generated from the data on commitment to

[7] We have conducted a robustness test excluding multilateral threats that have not materialised into a sanction regime after the threat failed, as they may indicate inability of the primary sender to create a coalition willing to engage in multilateral coercion beyond a threat. Results from this robustness test do not impact our main findings.

[8] One could argue that institutions merely shadow the interest of states, echoing the debate advanced by Keohane and Martin (1995); in this work we set out with the assumption that "institutions sometimes matter, and that it is a worthy task of social science to discover how, and under what conditions, this is the case" (Keohane and Martin, 1995) — with repeated interaction a possible mechanisms that makes IOs relevant for cooperation. However, unlike Keohane and Martin (1995), we are interested in cooperation to coerce rather than to achieve "lasting peace".

a sanction regime, available in the TIES data set. It describes how dedicated the senders are to sanction. The commitment variable in the TIES data set identifies three levels of commitment — weak, moderate and high — coded with, respectively, a value of 1, 2 and 3. We create the past commitment variable by generating the mean value of up to five last sanction episodes of the primary sender. Finally, we add a number of control variables to our analysis. We control for the role of the US, given the suggestion in the literature for US-specific dynamic related to economic sanctions that stem from its position in the global trade and finance (Hafner-Burton and Montgomery, 2008). Second, we control for the level of democracy of the primary sender and the target state using the *Democ* measure from the Correlates of War Polity IV data set (Marshall et al., 2018). We expect that more democratic sender states are more likely to gather a coalition, as there is a strong link between democracy and multilateralism. In respect to the target states, we expect that democracies are more likely to be resilient targets — following the literature on economic peace (Wallace, 2013) — thus, harder to gather a coalition for the primary sender. Next, we control for whether the motivation for the sanction regime is related solely to trade (e.g. access to the market of the target state); we expect that sanctions motivated by trade are less likely to stimulate cooperation as the benefits may be focused on the primary sender. Finally, we control for security motivation for the sanction regime (e.g. non-proliferation). Here we expect that cooperation is more likely, as the benefits from security-related sanctions forms a type of a public good in international relations and spill beyond the primary sender of the sanction regime.

In Table 3, below, we provide an overview of our sample.

Table 3: Summary statistics.

Variables	N	Mean	SD	Min	Max
Multilateral	1,412	0.262	0.440	0	1
Past commitment	1,248	2.332	0.609	1	3
NumIO	1,273	73.18	22.25	3	123
Numyrs	1,273	2,382	1,139	3	4,895
NumyrsIO	311	24.65	16.88	0	111
$\sqrt{NumIO}$	1,273	8.414	1.546	1.732	11.09
$\ln Numyrs$	1,273	7.549	0.875	1.099	8.496
$\sqrt{NumyrsIO}$	311	4.684	1.647	0	10.54
Democracy score sender	1,221	8.376	3.316	0	10
Democracy score target	1,249	6.272	4.093	0	10
US	1,412	0.521	0.500	0	1
Trade	1,412	0.517	0.500	0	1
Security	1,412	0.305	0.461	0	1
Aid withdraw	1,412	0.135	0.342	0	1

We use the following logistic regression to test the effect of repeated interaction and reputation on cooperation on economic sanctions:

$$P(Multilateral) = \frac{1}{1 + \exp\{-(\beta_0 + \beta_1 V + \beta_2 I + \beta_3 C)\}} \tag{1}$$

where V is the independent variable that approximates reputation (*Past commitment*) and I is the independent variable that approximates repeated interaction (*NumIO, Numyrs NumyrsIO*). In the equation C represent a control variable. Note that in the regression analyses, we include more than one control variable.

5 Results

In Table 4, Models (1) to (3), we report the results of a logistic regression of our core predictors of interest — past commitment (*Past Commitment*) and years spent at the sanction-coordinating IO ($\sqrt{NumyrsIO}$) — our main proxies for, respectively, reputation and repeated interaction. In Model (4) to (6) we approximate repeated interaction with the number of IOs the primary sender is a member of at the sanction year ($\sqrt{NumIO}$) and, in Model (7) to (9), with the sum of the years spent at these institutions by the primary sender in the sanction year ($\ln Numyrs$). The use of two additional variables to approximate repeated interaction stems from a limited number of observations with a sanction-coordinating institution identified in the TIES data set. Following our theoretical framework, we expect our predictors to stimulate positively prospect for multilateral economic sanctions, which is our outcome variable in this analysis.[9]

In Model (1), we report the effect of past commitment and of the number of years spent at the sanction-coordinating institution on the probability of a multilateral sanction regime. In Model (2), we interact the two terms. In Model (3), we interact the two terms and control for the role of the US, democracy level of the sender state and the target state, trade motivation and security motivation for the sanction regime. In Model (1), we observe a statistically significant ($p = .05$) and positive (i.e. coefficient greater than one) relation between past commitment and the probability of a multilateral sanction regime. This result signals that a sender state that has, on average, adhered to any (i.e. unilateral or not, with different co-sender states or not) sanction regime in the past is more likely to be a primary sender of a multilateral sanction regime. This is in line with our theoretical predictions and yields support to our second hypothesis, that reputation stimulates cooperation. Hence, "I will do to you, what you have done to others" seems to hold in the realm of economic sanctions and states interaction, too. Yet, we do not find support for our first hypothesis — that repeated interaction stimulates cooperation — approximated with the time spent at the sanction-coordinating IO. While the respective coefficient points in the expected direction, the results for $\sqrt{NumyrsIO}$ are not statistically significant.

Model (2), where we interact the main predictors, reveals that there is a statically significant difference in the role the years spent at the sanction-coordinating institution for different levels of

[9] We have decided to transform the variables in a way that follows the data generating process, hence a square root for the years in a single IO and the number of IO memberships in a single year, and a natural logarithm for the years spent at all IOs in a single year by the primary sender — because the latter follows an exponential-like growth. We offer a robustness test where we do not transform the variables in the Appendix (Table 6), the data transformation does not affect our main findings.

past commitment to economic sanctions. We depict this dynamic with a margins plot in Figure 1, Panel (a). Both moderate and high commitment to past sanction regimes are strong predictor of cooperation on a sanction regime. What is more, we observe that years spent at the sanction coordinating institution appear to mitigate the effect of weak past commitment to economic sanctions — with an effect on prospect of cooperation comparable to moderate or high level of past commitment around the median of the distribution. This results suggests that repeated interaction in international relations can moderate the effect of reputation, thus the role of indirect reciprocity — "what we do to others" — seems to disappear as states learn about prospects of direct reciprocity within a specific institutional context. In Model (3) we add a set of control variables to the regression, with no effect on our main findings.[10]

We observe the same dynamic in Models (4) to (6) and (7) to (9) where we, respectively, estimate the effect of the number of years spent at IOs by the primary sender in the sanction year ($\ln Numyrs$) and the number of IOs the primary sender is a member of in the sanction year ($\sqrt{NumIO}$). The results can be easily read from the margins plots in Figure 1, respectively Panel (b) and (c). We see that that reputation is a strong predictor of cooperation on economic coercion; however, the number of years spent at IOs by the primary sender and number IOs a primary sender is a member of allow to moderate the negative effect of weak reputation. Nevertheless, we do not know what is the exact mechanism driving the effect of these two variables. On the one hand, we may observe the effect of repeated interaction within a sanction-coordinating organisation that has not been identified by the authors of the TIES data set. On the other hand, we may observe the role of issue-linkage across IOs. If the latter is true, we would then observe two separate mechanism at play in Panel (a) and Panel (c) in Figure 1, while Panel (c) shows the combined effect of the two mechanism.

Let us move to the control variables. First, the US appears less likely to engage in multilateral efforts, a results statically significant both in Model (6) and (9). This is consistent with our expectations and, given that literature suggests that US has a tendency for unilateral economic coercion. Second, a higher level of democracy of the target state indicates that multilateral efforts on economic sanctions is less likely to take place. This is also in line with our expectations and the finding is significant in Model (6) and (9) as well. In respect to the democracy level of the sender state, we observe that it increase the prospects of cooperation — in line with our expectations — yet the finding is weakly significant ($p = .1$) in only one model. This may stem for small variation in this variable, as most primary senders are relatively consolidated democracies. Third, trade related economic coercion appears to decrease the prospects of a coordinated sanction regime, yet again the finding is weakly significant in only one model. Finally, the security variable indicates that states are more likely to cooperate when the issue at stake is related to security, what also aligns with

[10]Interestingly, our empirical results are in line with the recent conclusions in evolutionary game theory on the relative importance of reputation and repeated interactions; research suggests that for games with few rounds of repeated interaction reputation has a dominant role in fostering cooperation (Schmid et al., 2021).

our expectations. It is worth to note that none of the control variables is statistically significant in Model (3), while all the coefficients point in the expected direction and are close to the estimates in Models (6) and (9). This stems from a smaller sample size in Model (3) and, consequently, larger standard errors (reported in the parentheses).

Finally, we conduct a number of robustness tests (reported in Appendix). First, in Table 5, we conduct an analysis on a sample where cases of aid withdraw are excluded from the TIES data set. One could argue that aid withdraw is a coercive action substantially different to economic sanctions, as it does not involve commerce and, as a consequence, is not relevant for our theoretical model and its predictions.[11] Second, in Table 6, we report the main analysis with untransformed variables that approximate repeated interaction. Thus, we do not take a square root of the *NumyrsIO* and *NumIO* variables, nor a natural logarithm of the *Numyrs* variable. Finally, in Table 7, we estimate our model — with a binary outcome — using an OLS regression (Angrist and Pischke, 2009). We offer a visualisation of the linear prediction from Table 7, Model (2), in Figure 3. There are no substantial difference between our main findings and the results from the robustness tests.

[11] At the same time foreign aid may have a commercial underpinning, for example through aid-for-trade like programmes, what motivates us to keep these observations in the main analysis.

Table 4: Estimation results for the logistic regression of reputation, repeated interaction and the product of the two variables. Robust standard errors are displayed in parentheses: *** indicates $p < 0.01$, ** indicates $p < 0.05$ and * indicate $p < 0.1$.

Variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)
Multilateral									
Past commitment	2.213**	97.71***	103.5***	1.262*	19.63*	8.747	1.279*	66.67***	144.3***
	(0.757)	(137.8)	(154.7)	(0.163)	(30.03)	(17.11)	(0.165)	(73.36)	(254.2)
$\sqrt{numyrsIO}$	1.185	8.895***	8.572***						
	(0.240)	(5.981)	(6.096)						
Past commitment $\times$ $\sqrt{numyrsIO}$		0.424***	0.423***						
		(0.122)	(0.127)						
$\ln Numyrs$				0.572***	1.418	1.217			
				(0.0655)	(0.709)	(0.802)			
Past commitment $\times \ln numyrs$					0.691*	0.776			
					(0.142)	(0.203)			
$\sqrt{numIO}$							0.883**	2.791***	5.221***
							(0.0551)	(0.966)	(3.132)
Past commitment $\times\sqrt{numIO}$								0.626***	0.591***
								(0.0802)	(0.116)
US			0.231			0.259***			0.273***
			(0.265)			(0.0647)			(0.0679)
Democracy score target			0.955			0.919***			0.911***
			(0.0746)			(0.0204)			(0.0214)
Democracy score sender			1.166			1.082*			0.938
			(0.132)			(0.0453)			(0.0441)
Trade			0.909			0.665			0.614*
			(0.804)			(0.184)			(0.164)
Security			1.347			2.142***			2.872***
			(0.776)			(0.588)			(0.776)
Constant	0.592	0.00***	0.00***	9.154**	0.0106	0.0442	0.371*	0.00***	0.00***
	(0.837)	(0.000258)	(0.000151)	(8.331)	(0.0396)	(0.218)	(0.218)	(0.00)	(0.00)
Observations	284	284	159	1,118	1,118	968	1,118	1,118	968
Interaction term	NO	YES	YES	NO	YES	YES	NO	YES	YES
Control variables	NO	NO	YES	NO	NO	YES	NO	NO	YES
Pseudo R2	0.0431	0.122	0.195	0.0375	0.0421	0.142	0.00895	0.0310	0.159
Log Lik	-97.64	-89.57	-54.33	-518.4	-515.9	-391.3	-533.8	-521.9	-383.4

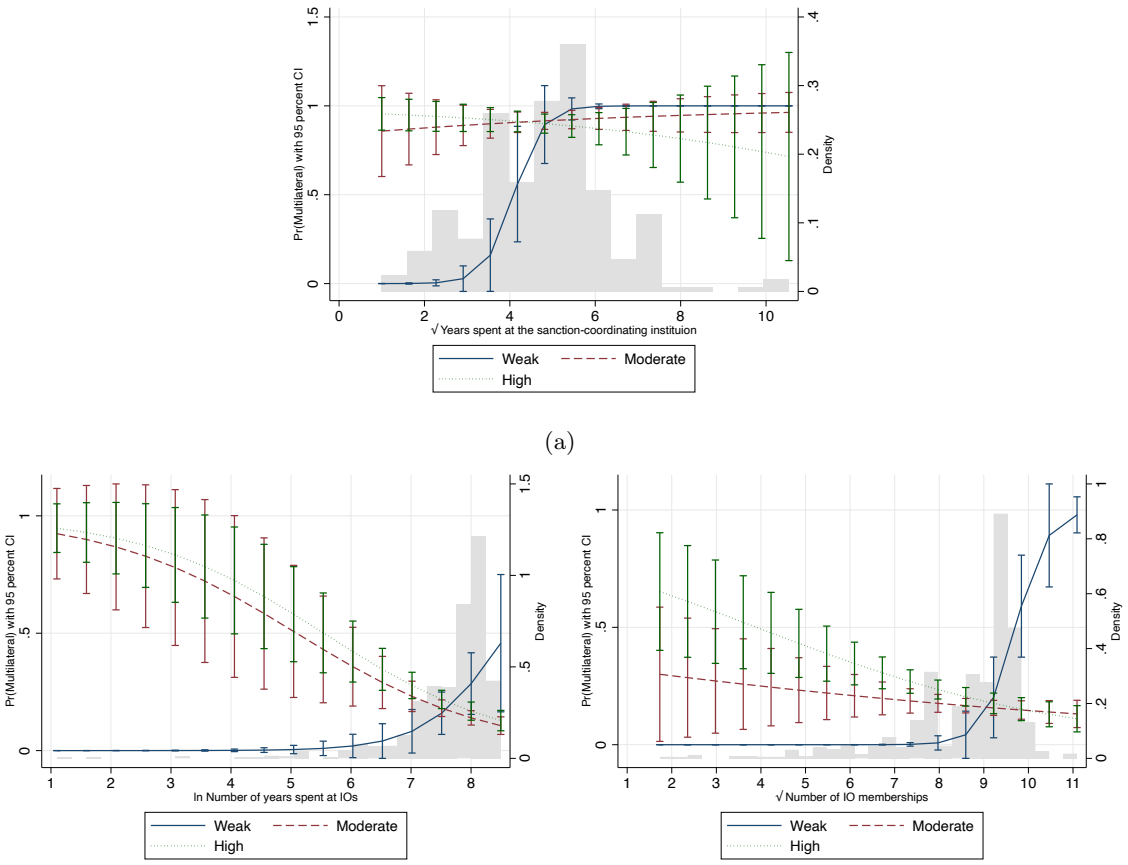


Figure 1: Prediction of multilateral sanctions: marginal effects of repeated interaction — (a) Years spent at the sanction-coordinating institution, (b) Number of years spent at IOs and (c) Number of IO memberships — in interaction with past commitment to sanctions of the sender state. Density of the continuous predictors.

6 Conclusion

The problem at the core of cooperation is concisely summarised by North (1993) — "the issue is straightforward: how to bind the players to agreements across space and time". In this article, we have focused on cooperation on economic sanctions — an popular tool of coercion in international relations (Morgan et al., 2014). We have modelled the interaction between sender states as a Cournot competition between two (potential) sender states in access to the market of the target state. Based on this, we have produced a dynamic game that states face, when deciding on cooperation on economic sanctions, that resembles a Prisoners dilemma in respect to payoffs. Thus, mutual defection is inferior to mutual cooperation; however, busting the sanction regime is superior to mutual cooperation for the party busting the sanction regime. This set up allows us to theorise further on the possible mechanisms that may "bind the players to agreements" on economic sanctions. We put forward two hypotheses rooted in game theory and suggest, following a formal argument, that reputation and repeated interaction may be the mechanism that drive cooperation among sender states.

We conduct an empirical test to assess the two hypotheses and use the TIES data set for observations on economic sanctions (Morgan et al., 2014). We measure reputation with an average score of dedication to past sanction regimes — generated from the TIES data set. As a proxy for repeated interaction, we use: (i) the number of years that the primary sender has spent at the sanction-coordinating institution and — due to limited number of observations in the TIES data set – we also use (ii) the number of institutions that the primary sender of the economic sanctions has been a member of in the year of imposition of the sanction regime and (iii) the number of years spent at these institutions by the primary sender, as two further proxies for repeated interaction. We generate the data on IO membership and associated years from the Correlates of War IGO data set (Pevehouse et al., 2020). First, we observe that reputation is a strong predictor of cooperation, and this finding holds both for moderate and high levels of past commitment to sanction regimes. Second, we find that the effect of repeated interaction is conditional on reputation. When past commitment of the primary sender is high or moderate the number of years (and the number of IO memberships) does not appear to be relevant for the prospect of cooperative sanction regime. However, for senders with weak reputation, repeated interaction mediates the negative effect — increasing (in years and in the number of IO memberships) the prospect of a multilateral sanction. In summary, it appears that for cooperation on coercion in international relations repeated interaction does matter if reputation is weak, and a strong reputation appears sufficient for the primary sender to gather a coalition.

The contribution of this article is two-fold. First, it brings forward the scholarship on cooperation on economic sanctions, currently predominantly focused on the issue of effectiveness of economic sanctions. Our article offers a clear theoretical framework on the dynamics that the sender states face

when deciding on cooperation on economic sanctions with both the sanction game and underpinning payoffs strongly rooted in rational choice theory. In addition, it offers an empirical test that makes benefit of the new data on economic sanctions, substantially larger and more sophisticated in relation to the work available to past research on the topic of driving factors for cooperation on sanctions (Martin, 1992, 1993).

Second, it speaks to the broader literature on why cooperation in international relations takes place and highlights the coercive aspect of cooperation. The latter is relevant as it shows a discrepancy between the common argument of the liberal institutionalism scholars and the findings of this paper. Keohane and Martin (1995) argue that "in a world politics constrained by state power and divergent interests, and unlikely to experience effective hierarchical governance, international institutions operating on the basis of reciprocity will be components of any lasting peace". Yet, as we show, the solution to the collective-action problem can also lead to more frequent multilateral coercion — and given the low effectiveness of economic sanctions, not necessarily "lasting peace". It is not lack of conflict *per se* that international institutions deliver, but more effective cooperation — and this is not synonymous to peace.

References

Afesorgbor, S. K. and R. Mahadevan (2016). The Impact of Economic Sanctions on Income Inequality of Target States. *World Development 83*, 1–11.

Angrist, J. D. and J.-S. Pischke (2009). *Mostly Harmless Econometrics*. Princeton, N.J.: Princeton University Press.

Axelrod, R. (1984). *The evolution of cooperation*. New York: Basic Books.

Axelrod, R. and W. D. Hamilton (1981). The Evolution of Cooperation. *Science, New Series 211*(4489), 1390–1396.

Axelrod, R. and R. O. . Keohane (1985). Achieving Cooperation under Anarchy : Strategies and Institutions. *World Politics 38*(1), 226–254.

Baldwin, D. A. (1985). *Economic Statecraft*. Princeton, N.J.: Princeton University Press.

Bapat, N. and B. R. Kwon (2015). When Are Sanctions Effective? A Bargaining and Enforcement Framework. *International Organization 69*(01), 131–162.

Bapat, N. and C. Morgan (2009). Multilateral versus unilateral sanctions reconsidered: A test using new data. *International Studies Quarterly 53*(4), 1075–1094.

Barry, C. M. and K. B. Kleinberg (2015). Profiting from Sanctions: Economic Coercion and US Foreign Direct Investment in Third-Party States. *International Organization 69*(04), 881–912.

Bonetti, S. (1997). The Analysis and Interpretation of Economic Sanctions. *Journal of Economic Studies 24*(5), 324–348.

Davis, C. L. (2004). International Institutions and Issue Linkage: Building Support for Agricultural Trade Liberalization. *American Political Science Review 98*(1), 153–169.

Doxey, M. (1980). *Economic Sanctions and International Enforcement* (2 ed.). London: Palgrave Macmillan.

Drezner, D. (1999). *The Sanctions Paradox: Economic Statecraft and International Relations*. Cambridge: Cambridge University Press.

Drezner, D. (2000). Bargaining, Enforcement, and Multilateral Sanctions: When Is Cooperation Counterproductive? *International Organization 54*(1), 73–102.

Drezner, D. (2003). The Hidden Hand of Economic Coercion. *International Organization 57*(03), 643–659.

Early, B. R. (2012). Alliances and Trade with Sanctioned States: A Study of U.S. Economic Sanctions, 1950-2000. *Journal of Conflict Resolution 56*(3), 547–572.

Galtung, J. (1967). On the Effects of International Economic Sanctions, With Examples from the Case of Rhodesia. *World Politics 19*(03), 378–416.

Gilpin, R. (1984). Structural Constraints on Economic Leverage: Market-Type Systems. In G. McCormick and R. Bissell (Eds.), *Strategic Dimensions of Economic Behavour*, pp. 105–128. New York: Praeger.

Giumelli, F. (2017). The Redistributive Impact of Restrictive Measures on EU Members: Winners and Losers from Imposing Sanctions on Russia. *Journal of Common Market Studies 55*(5), 1062–1080.

Hafner-Burton, E. M. and A. H. Montgomery (2008). Power or Plenty. How Do International Trade Institutions Affect Economic Sanctions? *Journal of Conflict Resolution 52*(2), 213–242.

Hilbe, C., M. A. Nowak, and K. Sigmund (2013). Evolution of extortion in Iterated Prisoner's Dilemma games. *Proceedings of the National Academy of Sciences 110*(17), 6913–6918.

Hufbauer, G. C., J. J. Schott, K. A. Elliott, and B. Oegg (2007). *Economic Sanctions Reconsidered* (3 ed.). Washington, D.C.: Peterson Institute for International Economics.

Imhof, L. A., D. Fudenberg, and M. A. Nowak (2007). Tit-for-tat or Win-stay, Lose-shift? Lorens. *Journal of Theoretical Biology 247*(3), 574–580.

Jeong, J. M. and D. Peksen (2019). Domestic Institutional Constraints, Veto Players, and Sanction Effectiveness. *Journal of Conflict Resolution 63*(1), 194–217.

Keohane, R. O. and L. L. Martin (1995). The Promise of Institutionalist Theory. *International Security 20*(1), 39–51.

Lektzian, D. and P. M. Regan (2016). Economic sanctions, military interventions, and civil conflict outcomes. *Journal of Peace Research 53*(4), 554–568.

Marshall, M. G., T. R. Gurr, and K. Jaggers (2018). Polity IV Project.

Martin, L. (1992). *Coercive Cooperation: Explaining Multilateral Economic Sanctions.* Princeton: Princeton University Press.

Martin, L. (1993). Credibility, Costs, and Institutions: Cooperation on Economic Sanctions. *World Politics 45*(3), 406–432.

McCormack, D. and H. Pascoe (2017). Sanctions and Preventive War. *Journal of Conflict Resolution 61*(8), 1711–1739.

Miers, A. C. and T. C. Morgan (2002). Multilateral sanctions and foreign policy success: Can too many cooks spoil the broth? *International Interactions 28*(2), 117–136.

Milinski, M., D. Semmann, and H.-J. Krambeck (2002). Reputation helps solve the 'tragedy of the commons'. *Nature 415*(January), 424–426.

Moret, E., T. Biersteker, F. Giumelli, C. Portela, M. Veber, D. Jarosz, and C. Bobocea (2016). The New Deterrent? International sanctions against Russia over the Ukraine crisis. Technical report, Graduate Institute, Geneva.

Morgan, T. C., N. Bapat, and Y. Kobayashi (2014). Threat and imposition of economic sanctions 1945–2005: Updating the TIES dataset. *Conflict Management and Peace Science 31*(5), 541–558.

Morgan, T. C. and V. L. Schwebach (1997). Fools Suffer Gladly: The Use of Economic Sanctions in International Crises. *International Studies Quarterly 41*(41), 27–50.

Neuenkirch, M. and F. Neumeier (2016). The impact of US sanctions on poverty. *Journal of Development Economics 121*, 110–119.

North, D. C. (1993). Institutions and Credible Commitment. *Journal of Institutional and Theoretical Economics 149*(1), 11–23.

Nowak, M. A. (2006). Five rules for the evolution of cooperation. *Science 314*(5805), 1560–1563.

Nowak, M. A. and K. Sigmund (1998). Evolution of indirect reciprocity by image scoring. *Nature 393*(6685), 573–577.

Nowak, M. A. and K. Sigmund (2005). Evolution of indirect reciprocity. *Nature 437*(27), 1291–1298.

Oye, K. A. (1986). Explaining Cooperation Under Anarchy: Hypotheses and Strategies. In K. A. Oye (Ed.), *Cooperation Under Anarchy*, pp. 260. Princeton: Princeton University Press.

Peterson, T. M. (2013). Sending a Message: The Reputation Effect of US Sanction Threat Behavior. *International Studies Quarterly 57*(4), 672–682.

Pevehouse, J. C., T. Nordstrom, R. W. McManus, and A. S. Jamison (2020). Tracking organizations in the world: The Correlates of War IGO Version 3.0 datasets. *Journal of Peace Research 57*(3), 492–503.

Portela, C., P. Pospieszna, J. Skrzypczynska, and D. Walentek (2020). Consensus against all odds: explaining the persistence of EU sanctions on Russia. *Journal of European Integration*.

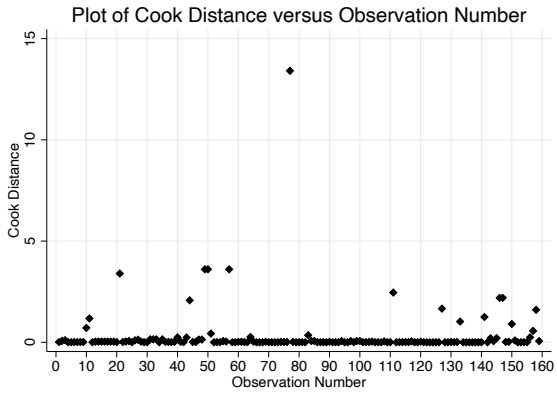
Schmid, L., K. Chatterjee, C. Hilbe, and M. A. Nowak (2021). A unified framework of direct and indirect reciprocity. *Nature Human Behaviour*.

Suzuki, S. and E. Akiyama (2007, 4). Evolution of indirect reciprocity in groups of various sizes and comparison with direct reciprocity. *Journal of Theoretical Biology 245*(3), 539–552.

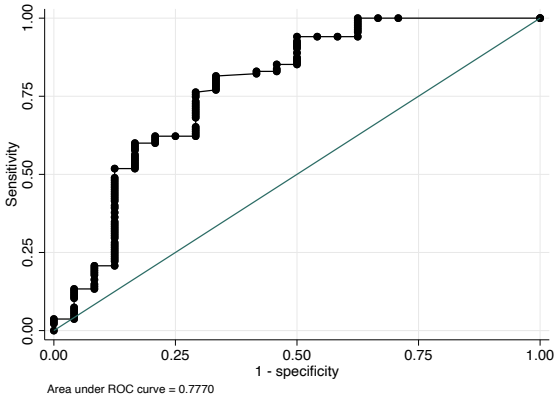
van Bergeijk, P. A. G. (1994). *Economic Diplomacy, Trade, and Commercial Policy*. Brookfield: Edward Elgar.

Wallace, G. P. R. (2013). Regime type, issues of contention, and economic sanctions: Re-evaluating the economic peace between democracies. *Journal of Peace Research 50*(4), 479–493.

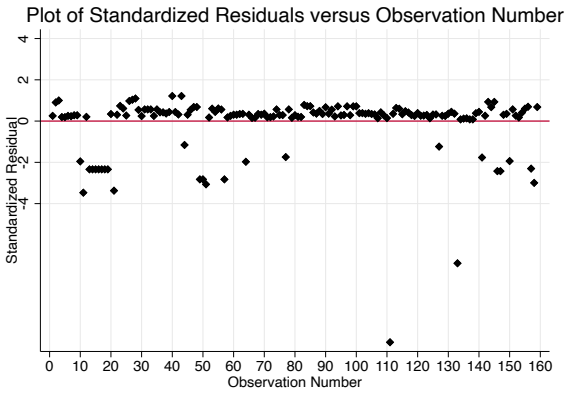
Appendix



(a)



(b)



(c)

Figure 2: Diagnostics for the main analysis (logistic regression, Model (2)): (a) the ROC curve , (b) the Cook Distance and (c) standardised residuals.

Table 5: Estimation results for the logistic regression of reputation, repeated interaction and the product of the two variables — excluding aid withdraw from the sample. Robust standard errors are displayed in parentheses: *** indicates $p < 0.01$, ** indicates $p < 0.05$ and * indicate $p < 0.1$.

Variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)
Multilateral									
Past commitment	2.215**	87.73***	60.46***	1.477***	7.194	2.802	1.531***	67.78***	130.2**
	(0.759)	(120.0)	(82.80)	(0.217)	(12.10)	(6.469)	(0.224)	(86.46)	(264.6)
$\sqrt{NumyrsIO}$	1.149	8.416***	6.574***						
	(0.242)	(5.760)	(4.678)						
Past commitment $\times\sqrt{NumyrsIO}$		0.433***	0.474***						
		(0.123)	(0.136)						
$\ln Numyrs$				0.550***	0.933	0.676			
				(0.0697)	(0.525)	(0.529)			
Past commitment $\times \ln Numyrs$					0.808	0.928			
					(0.183)	(0.285)			
$\sqrt{NumIO}$							0.876**	2.671**	4.435**
							(0.0565)	(1.081)	(3.051)
Past commitment $\times\sqrt{numIO}$								0.639***	0.616**
								(0.0943)	(0.138)
US			0.185			0.211***			0.209***
			(0.205)			(0.0570)			(0.0558)
Democracy score target			0.974			0.916***			0.910***
			(0.0737)			(0.0220)			(0.0225)
Democracy score sender			1.171			1.132***			0.987
			(0.133)			(0.0540)			(0.0506)
Trade			1.166			0.590*			0.550**
			(0.991)			(0.184)			(0.161)
Security			1.805			2.159**			2.761***
			(1.079)			(0.694)			(0.854)
Constant	0.612	0.000100***	0.000106***	8.620**	0.170	1.988	0.266**	0.00***	0.00**
	(0.884)	(0.000306)	(0.000343)	(8.895)	(0.713)	(11.70)	(0.169)	(0.00)	(0.00)
Observations	258	258	145	946	946	824	946	946	824
Interaction term	NO	YES	YES	NO	YES	YES	NO	YES	YES
Control variables	NO	NO	YES	NO	NO	YES	NO	NO	YES
Aid withdraw	NO	NO	NO	NO	NO	NO	NO	NO	NO
Pseudo R2	0.0422	0.120	0.211	0.0531	0.0546	0.176	0.0179	0.0381	0.182
Log Lik	-94.49	-86.78	-51.31	-434.5	-433.8	-323.3	-450.7	-441.4	-321.2

Table 6: Estimation results for the logistic regression of reputation, repeated interaction and the product of the two variables — without data transformation. Robust standard errors are displayed in parentheses: *** indicates $p < 0.01$, ** indicates $p < 0.05$ and * indicate $p < 0.1$.

Variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)
Multilateral									
Past commitment	2.104**	16.57***	17.75***	1.297**	3.122***	2.962***	1.288**	16.49***	30.11***
	(0.713)	(11.17)	(13.51)	(0.165)	(1.010)	(1.201)	(0.165)	(11.16)	(29.06)
NumyrsIO	1.002	1.265***	1.260***						
	(0.0192)	(0.0954)	(0.0944)						
Past commitment $\times NumyrsIO$		0.911***	0.911***						
		(0.0248)	(0.0259)						
Numyrs				1.000***	1.001*	1.001*			
				(0.00)	(0.000370)	(0.000431)			
Past commitment $\times Numyrs$					1.000***	1.000**			
					(0.000147)	(0.000164)			
NumIO							0.995	1.083***	1.138***
							(0.00464)	(0.0254)	(0.0388)
Past commitment NumIO								0.966***	0.963***
								(0.00832)	(0.0111)
US			0.218			0.241***			0.299***
			(0.261)			(0.0595)			(0.0730)
Democracy score target			0.951			0.920***			0.905***
			(0.0733)			(0.0210)			(0.0217)
Democracy score sender			1.172			1.047			0.881***
			(0.137)			(0.0408)			(0.0413)
Trade			0.846			0.624*			0.609*
			(0.766)			(0.175)			(0.163)
Security			1.199			2.165***			3.269***
			(0.684)			(0.608)			(0.903)
Constant	1.374	0.00889***	0.00439***	0.305***	0.0349***	0.0445***	0.184***	0.000314***	0.00***
	(1.399)	(0.0140)	(0.00794)	(0.103)	(0.0298)	(0.0490)	(0.0820)	(0.000600)	(0.00)
Observations	284	284	159	1,118	1,118	968	1,118	1,118	968
Interaction term	NO	YES	YES	NO	YES	YES	NO	YES	YES
Control variables	NO	NO	YES	NO	NO	YES	NO	NO	YES
Pseudo R2	0.0345	0.136	0.205	0.0310	0.0432	0.139	0.00576	0.0320	0.179
Log Lik	-98.52	-88.14	-53.66	-521.9	-515.3	-392.6	-535.5	-521.4	-374.1

Table 7: Estimation results for the OLS regression of reputation, repeated interaction and the product of the two variables. Robust standard errors are displayed in parentheses: *** indicates $p < 0.01$, ** indicates $p < 0.05$ and * indicate $p < 0.1$.

Variables	Model (1)	Model (2)	Model (3)	Model (4)	Model (5)	Model (6)	Model (7)	Model (8)	Model (9)
Multilateral									
Past commitment	1.090**	1.610***	1.685***	1.037*	1.768**	1.654*	1.037*	1.858***	2.000***
	(0.0423)	(0.214)	(0.241)	(0.0198)	(0.405)	(0.493)	(0.0198)	(0.237)	(0.341)
$\sqrt{NumyrsIO}$	1.017	1.247***	1.262***						
	(0.0185)	(0.0764)	(0.0860)						
Past commitment $\times\sqrt{numyrsIO}$		0.920***	0.914***						
		(0.0240)	(0.0262)						
$\ln Numyrs$				0.902***	1.074	1.075			
				(0.0182)	(0.0804)	(0.111)			
Past commitment $\times \ln Numyrs$					0.932**	0.941			
					(0.0282)	(0.0365)			
$\sqrt{NumIO}$							0.980*	1.151***	1.239***
							(0.0109)	(0.0416)	(0.0625)
Past commitment $\times\sqrt{numIO}$								0.933***	0.928***
								(0.0145)	(0.0188)
US			0.873			0.843***			0.846***
			(0.0928)			(0.0285)			(0.0278)
Democracy score target			0.999			0.988***			0.987***
			(0.00747)			(0.00319)			(0.00318)
Democracy score sender			1.014			1.010			0.992
			(0.0118)			(0.00640)			(0.00625)
Trade			1.041			0.959			0.954
			(0.110)			(0.0291)			(0.0284)
Security			1.055			1.124***			1.178***
			(0.0790)			(0.0450)			(0.0463)
Constant	1.832***	0.697	0.561	2.442***	0.654	0.685	1.322***	0.340***	0.210***
	(0.286)	(0.230)	(0.214)	(0.391)	(0.371)	(0.535)	(0.134)	(0.100)	(0.0894)
Observations	284	284	159	1,118	1,118	968	1,118	1,118	968
R-squared	0.032	0.095	0.167	0.042	0.049	0.140	0.009	0.032	0.150
Interaction term	NO	YES	YES	NO	YES	YES	NO	YES	YES
Control variables	NO	NO	YES	NO	NO	YES	NO	NO	YES

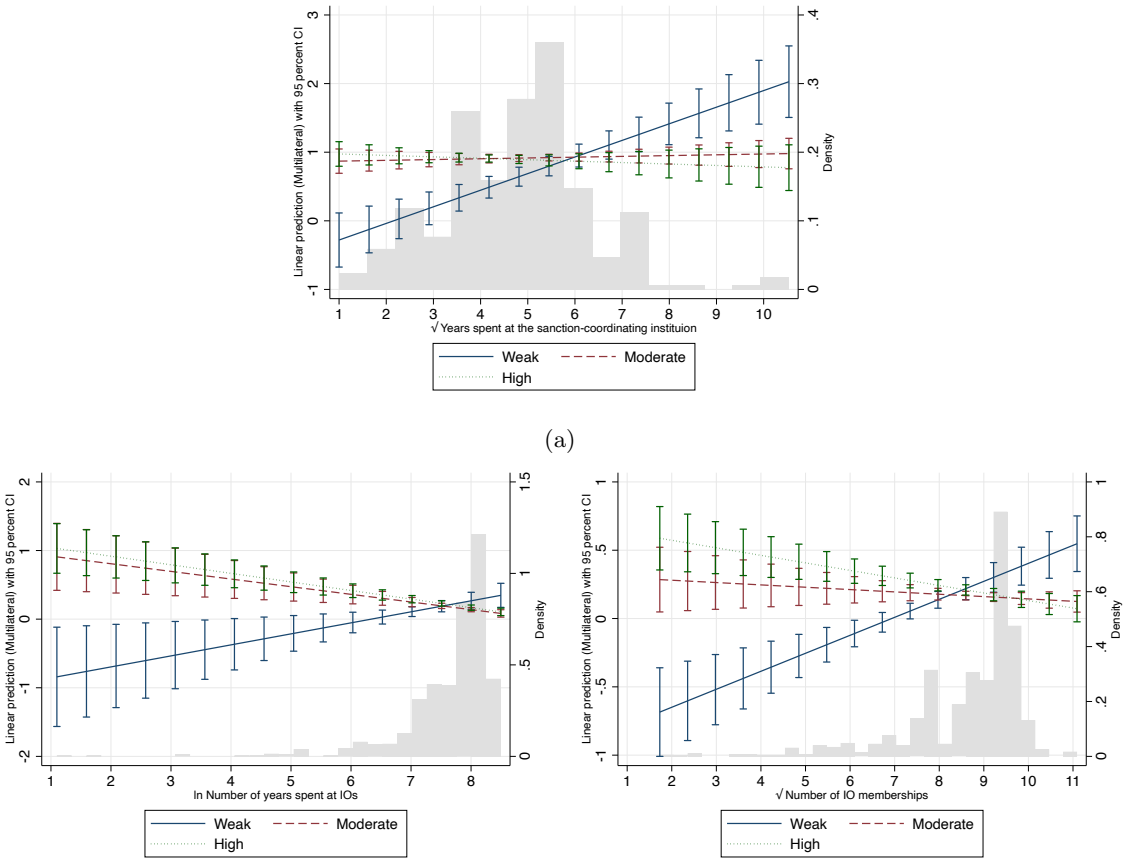


Figure 3: Linear prediction of multilateral sanctions (OLS): repeated interaction — (a) Years spent at the sanction-coordinating institution, (b) Number of years spent at IOs and (c) Number of IO memberships — in interaction with past commitment to sanctions of the sender state.