Leveraging Alliances: Indirect Geopolitical Influence and International Trade

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Abstract

Powerful nations can exert their economic leverage against other nations, but they can wield even more influence if they can convince other nations to cooperate in coordinated economic actions. Using a notion of 'ally likelihood' that is microfounded and then empirically constructed, we introduce a measure of indirect trade leverage which quantifies how much trade one country can convince its allies to disrupt in order to harm an adversary. Then, using data on restrictive trade policies we provide suggestive evidence of the predictive power of the aforementioned ally likelihood measure. We then present empirical results consistent with the argument that when countries can inflict more economic damage via allies than they can on their own, they also tend to rely more on multilateral trade policies rather than unilateral ones. This gives preliminary support to the claim that leverage procured via allies vs. leverage generated unilaterally are substitutes which jointly determine the relative benefit of multilateral trade policies.

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1 Introduction

In a multipolar world, almost no nation can act completely unilaterally: countries must form coalitions and alliances to coordinate actions against adversaries. This has long been salient in the arena of international trade, where restrictive trade policies such as sanctions or embargoes are often collectively levied against countries like Russia or Iran. The effectiveness of such restrictive policies is related to how reliant the target country (like Russia) is on imports from the countries implementing the policy; the enacting countries are afforded leverage if the target relies on them for much of their imports. But, the countries possibly willing to participate in such collective action will not simply accept any demand to engage in a trade policy against another nation: there is a complex interaction of political, economic, and security-related pressures that influence willingness to participate in these sorts of coordinated strategies. Despite the complexity of the underlying situation, coalition-based trade policies are increasingly common, with countries like the USA turning to allies in East Asia to help curb China's influence.

As a result, this paper aims to define and empirically describe a notion of international influence stemming from *indirect* trade leverage, i.e. from one's ability to recruit allies to coordinate a trade action against a targeted country. We begin by defining a measure of *ally likelihood* in which we use a measure of bilateral political influence to quantify how likely it is that a auxiliary country would cooperate with one nation's request to cut off trade to another. After empirically validating said measure, we then quantify the amount of trade that a nation can leverage via allies to economically damage another country. Having constructed a measure of indirect trade leverage, we then answer two questions: 1. Is indirect leverage a substitute for leverage produced unilaterally? and as a result, 2. Are coordinated, multilateral trade policies a substitute for unilateral policies?

In order to eventually quantify how much trade leverage a country trying to coerce another has access to, we need to measure which other countries would be willing to cooperate with such coercion. Calling the bellicose country the *coercer*, we suppose that the other countries asked to participate (called the *auxiliary* countries) in some restrictive trade action against a given *target* country will weigh the costs and benefits of such an action. They first consider the consequences of refusing the coercer's demand, which could result in themselves becoming a target and facing negative political or economic repercussions. However, giving in to the coercer's demand may lead to retaliation from the target against the auxiliary country, and so the potential accomplice must also weigh the costs of angering the target as well.

Thus the auxiliary country must compare the influence it faces from both the target

and the coercer. In order to capture the magnitude of influence—both political, economic, and security-related—that is faced from the coercer and target, we make use of a measure popular in the political science and international relations literature called Formal Bilateral Influence Capacity (FBIC) that captures multiple dimensions of dependence and interaction between states. A coercer who has much more influence over an auxiliary country than vice versa can make credible threats of repercussions (if the demand is rejected) to the auxiliary country if they do not join a multilateral policy, since the coercer can do more damage to them than can the auxiliary country to the coercer. Conversely, if the auxiliary country faces more influence from the target than from the coercer, they are less likely to accept the demand since retaliation from the target would be more harmful than it would be from the coercer.

Following this reasoning, we can construct a measure of how likely the auxiliary country is to appear as an ally for the coercer in a specific coercer-auxiliary country-target triplet. This is a function of the auxiliary country's willingness to accept the proposed measure against the target and also of the coercer's probability of approaching that auxiliary country in the first place. One determinant of the coercer's desire to attempt to recruit the auxiliary country is how useful that country would be in harming the target. We can approximate the damage the auxiliary country can do to the target country by using import shares as a general measure of economic reliance. We argue that as one country relies more heavily on another for imports, restrictive trade actions will generally have a larger impact on their economic welfare.

Thus, we call the coercer's *direct* leverage over the target to be the target's share of imports that come from the coercer; naturally, auxiliary countries also have direct leverage over the target. However, we introduce political feasibility constraints using the ally likelihood measure to construct the coercer's expected *indirect* leverage against the target, i.e. the share of the target's imports that the coercer could convince other countries to disrupt. This provides proxies of how much economic damage the coercer could inflict on their own vs. with the help of allies.

If the coercer's goal is to maximize potential economic damage to the target, then higher leverage (indirect or direct) gets them closer to that objective. However, accessing indirect leverage—calling on allies to cut off trade—involves political efforts that controlling one's own trade flows does not. So if we suppose that calling on allies is costly, then it is natural that the coercer will exert more effort to recruit allies if the benefit to doing so is higher. Since the benefit to calling on allies is related to the economic damage done to the target, which itself is proxied by the target's import shares from auxiliary countries, we would expect that the coercer should call on allies more when their indirect

leverage is large relative to their direct leverage. This is because the coercer trades off the marginal cost of recruitment vs. the marginal gain in damage to target stemming from allies' leverage, and so allies are more useful if they have more leverage over the target than does the coercer. In other words, we would expect that indirect and direct leverage are as substitutes.

In summary, we argue that relying on allies vs. relying on one's own national economic leverage are substitutes, and that the benefits of those two strategies are well-approximated by our notions of indirect and direct leverage. If this argument is valid, then one should observe that countries with more indirect leverage initiate multilateral actions/policies more often, since recruiting allies is more beneficial. We test this theory in the context of trade policy, specifically focusing on the difference in the number of multilateral vs. unilateral restrictive trade policies. We do so using data on trade policy from Global Trade Alert (GTA), which has been studied in various papers (e.g. Juhász et al. 2022) and contains information on countries' trade policies towards each other.

Policies in this dataset can be categorized based on whether or not the action is *unilateral*, meaning the coercer acts alone to implement some policy against a target, or the policies can be *multilateral*, where multiple countries act together to implement a policy against a target. Identifying the 'lead' country (i.e. the coercer) of a multilateral policy as the country in the set of participants who has the most leverage over all others, we can then validate the ally likelihood measure and illustrate the relevance of indirect leverage to the use of multilateral policies.

We validate the ally likelihood measure in two ways. First, we demonstrate that it predicts the frequency of involvement of the auxiliary country in multilateral policies with the coercer against each target. Next, we show that formulating a 'naive' version of indirect leverage which ignores ally likelihood—thereby neglecting political constraints—fails to predict the use of multilateral policies. On the other hand, the notion of indirect leverage which takes into account political constraints (via the ally likelihood measure) is predictive of the number of multilateral policies used by a coercer against a target.

Then we move to testing the main prediction of the paper, which is that as a coercer has more indirect leverage relative to direct leverage over a target, they should rely on multilateral (rather than unilateral) policies more. Using a regression comparing the difference in multi/unilateral policies against the difference in indirect/direct leverage, we show that as this measured benefit from allies grows, so too does the relative use of multilateral policies.

The underlying logic of the relationship between the relative amount of indirect leverage to reliance on multilateral policy can be understood from the perspective of a gravity

model of trade. Targets close to a coercer will have more trade with, and thus more reliance on, the coercer. As a result, the coercer may not have to call on its allies if it wants to coerce that country since its direct leverage is sufficiently high to generate the desired response. However, countries that are geographically distant from the coercer will exhibit less reliance and therefore afford the coercer less direct leverage. With the knowledge that their direct leverage is too low to be effective, the coercer will turn to their allies in order to exert influence over the target via indirect leverage. Thus in the case of more distant targets, the coercer will gain relatively more from the help of allies (because their own direct leverage is too low), and thus they should enact multilateral policies on more distant countries more often. In summary: distance between the coercer and target generates a disparity between indirect and direct leverage, which creates a larger incentive for recruitment of allies to influence the target.

It is well known from the extensive literature relating to the gravity model of trade that trade shares, i.e. direct leverage, are decreasing with geographic distance. The relationship of indirect leverage to distance, however, is a priori ambiguous. We show empirically that indirect leverage is increasing—albeit very slightly—with distance. We then demonstrate that the gap between direct and indirect leverage is increasing with distance to target, providing empirical evidence for the reasoning discussed above.

We also provide other descriptives which help to characterize various features of the indirect leverage measure. In order to quantify how easy it is for a country to replace its direct leverage with indirect leverage, we plot indifference curves which show for a given coercer how many allies they would need to recruit to match their indirect leverage to their direct leverage for each target. This shows that small countries can easily replace their direct leverage with indirect leverage, but only because their own leverage is so low; large countries have the opposite problem. In addition, we hope to inform discussions relating to the US and China's relative power by showing that although reliance on China has grown over time while reliance on the US has fallen, the still US boasts far more indirect leverage than does China. This means that although the US cannot exert influence unilaterally like China can, the Western superpower can exercise far more influence via allies than can its Eastern counterpart.

Our econometric approach in this paper is informed by developments in the trade and wider applied econometrics literature relating to best practices when using data that contains zeros. Trade data on imports, as well as event count data (e.g. number of multilateral policies) contain many zeros. This feature of data can, as originally explained by Silva and Tenreyro (2006), introduce biased estimates. Following recommendations in both Chen and Roth (2023) and Yotov et al. (2021), we make use of Poisson pseudo-maximum

likelihood (PPML) estimation when the regression's outcome variable is weakly positive. When the outcome variable can take on negative values, we rely only on OLS. In addition, our regression results feature extensive fixed effects, often on the country-pair and year level.

This paper's contribution sits within a rapidly growing literature about the intersection of trade and politics. Older contributions include Hirschman (1945), which provided one of the first modern conceptualizations of how trade can act not just as a means of maximizing welfare, but as a source of leverage used for coercion. In addition, McLaren (1997) shows that in the case of one large and one small country, liberalized trade may make the smaller country worse off because fixed production costs incurred to meet the large country's imports orders puts the small country in a weak bargaining position. More recently, theoretical contributions which also include the role of network/second-order trade relations can be found in the recent prominent developments in Clayton, Maggiori, and Schreger (2024a) and Clayton, Maggiori, and Schreger (2024b).

The aforementioned research is mostly theoretical, and the empirical political economy literature relating to the intersection of international relations and trade is small. The papers most closely related to this one are Liu and Yang (2024) and Broner et al. (2024). The analysis in this paper differs from those papers in a few key ways. Firstly, Liu and Yang (2024) analyze only unilateral (i.e. direct) trade leverage and discuss its relation to bilateral diplomatic engagement. Secondly, Liu and Yang (2024) develop a purely economic measure of trade influence and then relate it to political outcomes. This paper does somewhat of the reverse: we create a measure of trade leverage that is microfounded by a measure of political influences, which is then used to predict outcomes related to trade. Broner et al. (2024) develops a model that describes how hegemons can act as a coordinating device for smaller countries to align their political actions. They then provide empirical evidence for the model's predictions using a new database of treaties and show that hegemons drive a large share of treaty-signing. In contrast, our paper studies how political constraints lead to different gains from multilateral vs. unilateral action, and then relate this to trade policy.

The remainder of the paper is structured as follows: Section 2 introduces the definition of ally likelihood and indirect leverage, and then provides descriptives results. In Section 3, we make use of data on restrictive trade policies to show that ally likelihood is predictive of countries' real behavior and that higher indirect leverage is associated with more use of multilateral trade policies. Section 4 concludes.

2 Indirect leverage

In order to properly study countries' ability to generate influence via coordinated trade actions with other countries, it is necessary to develop a measure of how much trade leverage a nation can generate through auxiliary countries; naturally, this requires defining which countries are willing to help them. We provide a definition for indirect leverage as well as the measure of ally likelihood in Section 2.1, then introduce the data sources used to calculate those measures in Section 2.2, and provide descriptives of those measures in Section 2.3.

2.1 Definitions

Import shares serve as the foundational object for measuring trade leverage in this paper since they can approximate the impact that one country's trade policies could have on another, regardless of the size of those countries. Denote the share of a country ℓ's total imports that come from country n as $s_{\ell n}$; a higher value of $s_{\ell n}$ means that n can disrupt more trade with ℓ and thus have a bigger impact. We define the *direct leverage* that a country n has over another country ℓ as that import share $s_{\ell n}$. But a coercer does not need to rely only on its own trade flows to disrupt another country's economy, as it can recruit other countries to disrupt trade and thus increase the damage.

A coercer i wishes to levy some sort of restrictive trade policy against a target country j, and they hope to maximize the impact of the policy. They can increase the impact of the policy if they can convince auxiliary countries k to join in their action against the target. If they are asked by the coercer to participate in a policy against the target, the auxiliary country k makes a binary decision of whether or not to participate. They do so by weighing the consequences of accession vs. refusal. Denoting the amount of bilateral influence—political, economic, and security-related—that country i has over k as $p_{i \to k}$, we suppose that a demand from the coercer i to country k to participate in some trade policy carries with it an implicit threat. Namely, we assume that the coercer has the capacity to bring negative consequences proportional to $p_{i \to k}$ to the auxiliary country if they do not agree to join the policy. However, the implicit threat of retribution if the auxiliary country does not act as an ally also carries with it the auxiliary country's own response to the coercer. So, if the coercer demands that k join the policy, the difference in influence that each country has over the other is the relevant quantity. Therefore, the pressure felt by country k to give in to coercer i's threat should be a function of the difference $\Delta p_{i \to k} \equiv p_{i \to k} - p_{k \to i}$. Thus the likelihood that the auxiliary country k join a policy proposed by i

should be increasing in $\Delta p_{i\to k}$.

Importantly, however, the coercer's policy has a specific target, country j. The auxiliary country k expects that if they agree to engage in an action which economically damages the target j, then country j will respond in kind. As a result, country k's willingness to join a policy with i depends on who is the target j, and so their decision to join the policy rests on which country's retaliation (i or j) they prefer more. If they refuse to join the policy, they will face some negative consequences $p_{i\to k}$; but if they join the policy and disrupt trade with the target, then they could face retaliation from the target of size $p_{j\to k}$. So, the auxiliary country also weighs the quantity $\Delta p_{\{i,j\}\to k} \equiv p_{i\to k} - p_{j\to k}$.

Assuming linearity, we can say that the auxiliary country j is more likely to cooperate with i against j if the following quantity is larger:

$$P_{k,i\to j} \equiv \Delta p_{i\to k} + \Delta p_{\{ij\},\to k} = (p_{i\to k} - p_{k\to i}) + \left(p_{i\to k} - p_{j\to k}\right) \tag{1}$$

It is necessary to have both $\Delta p_{i\to k}$ and $\Delta p_{\{ij\},\to k}$ in Equation 1. The first term represents the power of the coercer to make demands to country k in general, and the second term represents the target-specific considerations made by auxiliary country k. If one were to include only $\Delta p_{\{ij\},\to k}$, then this would imply that country k would be willing to join any policy for which the target has less influence over them than does the coercer. But the auxiliary country loses out from trade when they participate in these policies, and so k would prefer to not be involved at all: this is why it is necessary to capture, as given in the first term, the ability of the coercer to pressure the auxiliary country.

We assume that there is some randomness not captured by the value $P_{k,i\to j}$ which impacts the utility that the auxiliary country gets from joining the policy, and so we write their utility as:

$$v_{k,i\to j} = \Delta p_{i\to k} + \Delta p_{\{ij\}\to k} + \eta \tag{2}$$

Normalizing the outside option to zero, we assume that $\eta \sim N(0, \sigma^2)$, and so the auxiliary country's utility is distributed $\tilde{v}_{k,i\to j} \sim N(P_{k,i\to j},\ \sigma^2)$. Therefore the probability that the auxiliary country wants to help the coercer i against the target j if asked is:

$$\mathbb{P}\left(\tilde{v}_{k,i\to j} > 0\right) = \Phi\left(\frac{P_{k,i\to j}}{\sigma}\right) \tag{3}$$

Where Φ is the CDF of the standard normal distribution. So, the probability that k helps i against j is increasing in $P_{k,i\to j}$.

With knowledge of the auxiliary country's problem, the coercer i makes a binary decision of whether to request that the auxiliary country k join the multilateral policy against j. We assume that sending the request carries a fixed cost and that there is some random-

ness in the utility that i gets from k, and so the utility from requesting country k to join is:

$$U_{i,k\to j} = s_{jk} \cdot \mathbb{P}\left(\tilde{v}_{k,i\to j} > 0\right) + \epsilon - c \tag{4}$$

Where $\epsilon \sim N(0, \sigma^2)$. Beyond the randomness in ϵ, the coercer's utility rests on the expected leverage that k will provide them against j. So, if a country is somewhat unlikely to join a policy it can still be worthwhile to incur the cost c to attempt to recruit them if their leverage s_{jk} is sufficiently high. But also, some countries who would be sure to join the policy ($\mathbb{P}\left(\tilde{v}_{k,i\to j} > 0\right) \approx 1$) will not be pressured to join the policy if their trade leverage is insufficiently large.

Writing the coercer's utility from requesting k's help as $\tilde{U}_{i,k\to j} \sim N(s_{jk} \cdot \mathbb{P}\left(\tilde{v}_{k,i\to j} > 0\right) - c, \sigma^2)$, then the probability that the coercer wants to request k's help in coercing j is given by:

$$\mathbb{P}(\tilde{U}_{i,k\to j} > 0) = \Phi\left(\frac{s_{jk} \cdot \Phi\left(\frac{P_{k,i\to j}}{\sigma}\right) - c}{\sigma}\right) \tag{5}$$

Then the probability that k is observed participating in a trade policy with i against j, called the *ally likelihood*, is:

$$\begin{aligned}\mathcal{P}_{k,i\to j} &\equiv \mathbb{P}\left(\tilde{v}_{k,i\to j} > 0 | \tilde{U}_{i,k\to j} > 0\right) \cdot \mathbb{P}\left(\tilde{U}_{i,k\to j} > 0\right) \\ &= \Phi\left(\frac{P_{k,i\to j}}{\sigma}\right) \cdot \Phi\left(\frac{s_{jk} \cdot \Phi\left(\frac{P_{k,i\to j}}{\sigma}\right) - c}{\sigma}\right)\end{aligned} \tag{6}$$

Then, a given coercer's expected *indirect leverage* against a target j is given by:

$$\text{Indirect leverage}_{i\to j} \equiv \sum_{k\neq i} \mathcal{P}_{k,i\to j} \cdot s_{jk} \tag{7}$$

The above definition provides a way to describe the amount of target j's imports which are vulnerable to i's influence. The degree of indirect leverage depends critically on the joint distribution of $P_{k,i\to j}$ and s_{jk}: if the coercer has lots of political influence over the auxiliary countries on which the target relies most, then the target is vulnerable to the coercer. However, if the coercer only has political influence over countries that are not significant trade partners with the target j, then the coercer will not possess much indirect leverage.

In order to empirically operationalize the notions of ally likelihood $\mathcal{P}_{k,i\to j}$ and indirect leverage, data related to trade shares s and bilateral influence p are required. Finally, note that all definitions above have omitted the time subscript for legibility, but that all of the data used vary over time and thus time is a relevant dimension in the empirical analysis.

2.2 Data

The relevant data to construct indirect leverage is that related to trade shares and some measure of political influence. For trade data, we use the BACI international trade database, which improves on the UN Comtrade database and provides data on bilateral trade flows for 200 countries at the product level.[1] The BACI database corrects for reporting inconsistencies between importers and exporters, and classifies products at the 6-digit HS code level. We aggregate trade to the exporter-importer-year level, and use data from 2001 to 2021. This dataset provides the information needed to construct the import shares s.

In order to empirically incorporate pressures resulting from bilateral influence that includes political factors, we rely on the Formal Bilateral Influence Capacity (FBIC) measure.[2] This is a directed (between countries) measure which represents the influence that one country has over another, as calculated using a variety of sources, such as arms imports or formal diplomatic representation. Like trade shares, this measure is bounded between zero and one. For the years 2001-2021, we have 584,932 coercer-target-year observations with data for both FBIC and trade.

2.3 Descriptives

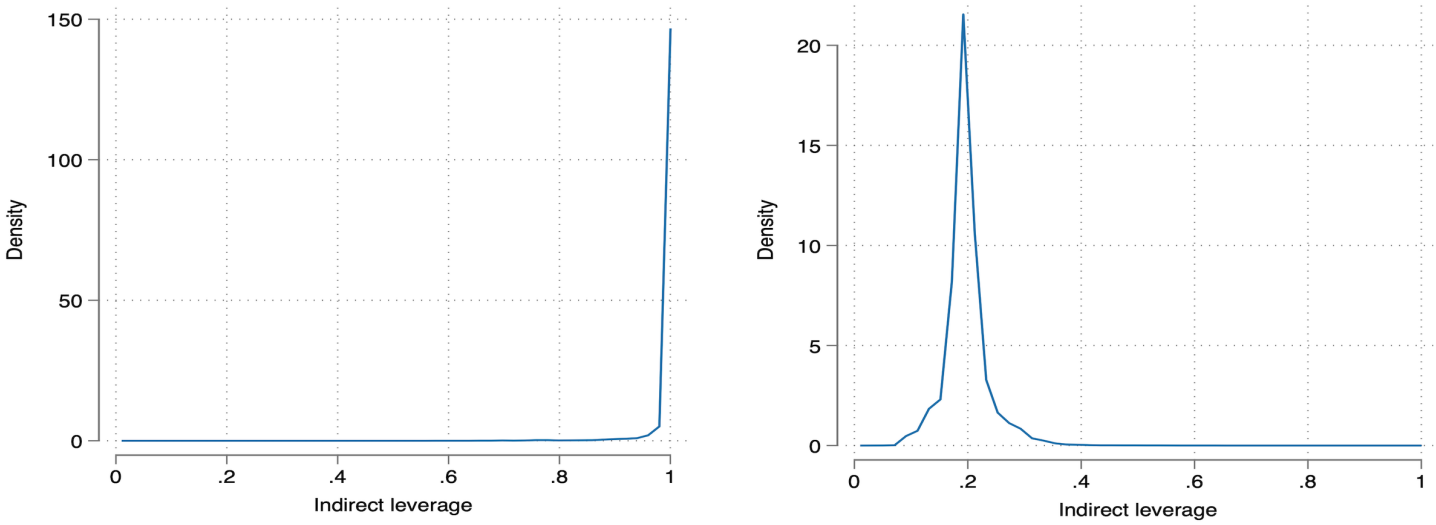
In this section we present a set of descriptive results that illustrate various key features of the indirect leverage measure. First, we demonstrate that the feasibility constraints imposed by considerations of political influence (as discussed in Section 2.1) meaningfully change the portfolio of countries to which a coercer has access. Then, we compare indirect leverage to direct leverage, and show over-time trends that focus specifically on the US and China. Next, we plot indifference curves where we plot the number of allies needed to match the level of indirect leverage to direct leverage for coercers and all of their targets. Finally, we present results which suggest the importance of distance between the coercer and target in determining the relative importance of direct vs. indirect leverage.

Relevance of political constraints Although introducing political feasibility constraints when considering auxiliary countries is conceptually clear, it is necessary to empirically demonstrate the impact of these constraints. Therefore we illustrate the relationship between our notion of indirect leverage—which takes into account political constraints—and a naive version of indirect leverage, called *unconstrained indirect leverage*. This unconstrained version instead assumes that coercers have free access to all auxiliary countries' leverage, i.e. $\mathcal{P}_{k,i\to j} = 1 \; \forall k, j$ in Equation 7.

1. See Gaulier and Zignago (2014) for details of the BACI database.
2. See https://korbel.du.edu/fbic for details.

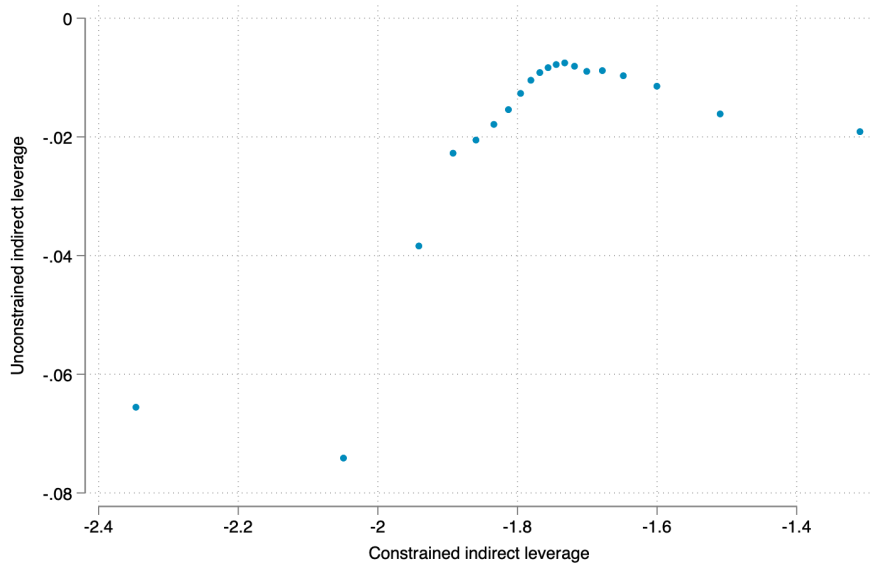
Unsurprisingly, unconstrained indirect leverage exhibits little variation, whereas the measure proposed in Section 2.1—*constrained* indirect leverage—features more heterogeneity. The kernel density plots of each variable are plotted in Panels a) and b) of Figure 1. In addition, we plot the relationship of (the natural log of) unconstrained and constrained indirect leverage in a binned scatterplot in Panel c):

Figure 1: Distribution of unconstrained/constrained indirect leverage



Panel a) Unconstrained indirect leverage$_{i \to j,t}$

Panel b) Constrained indirect leverage$_{i \to j,t}$



Panel c) ln unconstrained indirect leverage$_{i \to j,t}$ vs. ln constrained indirect leverage$_{i \to j,t}$

Notes: Panel a) plots the kernel density estimate of unconstrained indirect leverage across all years and coercers; Panel b) repeats that exercise but with constrained indirect leverage. Panel c) plots the binned scatterplot of the log of unconstrained indirect leverage vs. the log of constrained indirect leverage with year fixed effects.

Given that unconstrained indirect leverage lacks much variation, it is unsurprising that the binned scatterplot of $\ln\left(\text{unconstrained indirect leverage}_{i\to j,t}\right)$ vs. $\ln\left(\text{constrained indirect leverage}_{i\to j,t}\right)$ is highly non-linear and non-monotonic; it is unclear if there is an obvious relationship between the two.

We continue to emphasize the distinction between constrained and unconstrained leverage by separately analyzing their relationship to direct leverage. To do so, we run the following linear regression:

$$\text{Indirect leverage}_{i\to j,t} = \beta_1 \text{Direct leverage}_{i\to j,t} + \gamma_{ij} + \alpha_t + \epsilon_{ij,t} \tag{8}$$

Where γ_{ij} is a pair fixed effect and α_t is a year fixed effect and the outcome variable is either unconstrained or constrained indirect leverage; column (1) uses the former and column (2) the latter.

Table 1: Indirect vs. direct leverage

	Indirect leverage$_{i\to j,t}$	
	Unconstrained	Constrained
	(1)	(2)
Direct leverage$_{i\to j,t}$	-0.990***	0.286***
	(0.00407)	(0.0291)
Observations	693254	693254
Year FE	Y	Y
Pair FE	Y	Y

The outcome variable in column (1) is unconstrained indirect leverage and the outcome variable in column (2) is constrained indirect leverage. Columns (1) and (2) have both year and pair fixed effects. Standard errors are clustered at the pair level. The regression is estimated via OLS. Standard errors are clustered on the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

The negative relationship seen in column (1) of Table 1 is initially striking, but this result demonstrates the key issue with failing to account for feasibility constraints. Since unconstrained indirect leverage is by definition $\sum_{k\neq i} s_{jk} = 1 - s_{ji}$, then as direct leverage s_{ji} increases, the outcome variable in column (1) should decrease linearly. The fact that the magnitude of the coefficient is almost exactly unity follows from this mechanical relationship.

The second column shows the positive relationship between direct leverage and con-

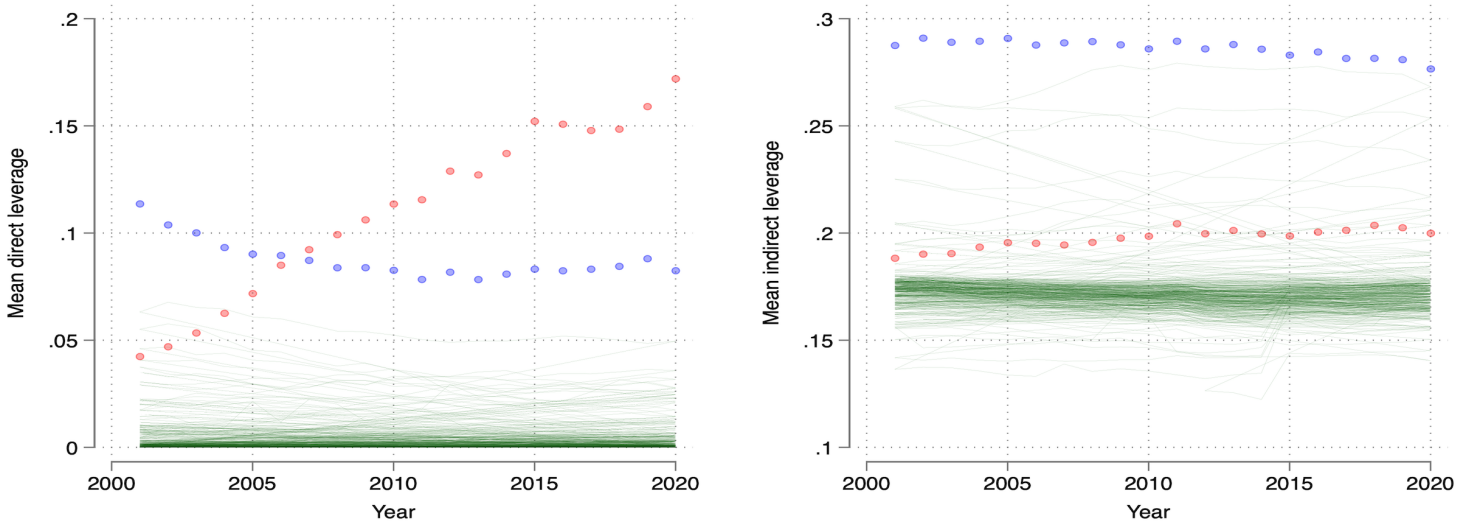
strained indirect leverage. This is more intuitive, since direct and indirect leverage will both be related to the target country's importing behavior. For example, if the target has a more diversified import portfolio and thus generally lower import shares, one would expect that this would be reflected in both direct and indirect leverage.

In general, the results in Figure 1 and Table 1 show that the inclusion of feasibility constraints on coercers' indirect leverage introduces an empirically meaningful distinction from the unconstrained case. Moreover, these results demonstrate why unconstrained indirect leverage induces a mechanical relationship to direct leverage, which is undesirable.

Over time changes in indirect leverage Recent research (like that in Liu and Yang 2024) around the global influence of the United States and China typically depict the Western hegemon in decline and the Eastern superpower as either ascendant or already dominant. Undeniably, the world has grown more reliant on China and less reliant on the USA; we plot the mean direct leverage of China (in red) and USA (in blue) over time in Panel a) of Figure 2, with all other countries represented with green lines. In the first panel, it is clear that more countries rely on China for imports than they do the US, making apparently obvious China's dominance and the US's decline.

However, the story looks strikingly different when considering indirect trade leverage:

Figure 2: Over time changes in direct vs. indirect leverage



Panel a) Mean direct leverage

Panel b) Mean indirect leverage

Notes: Panel a) plots each coercer's mean direct leverage (over all targets) in a given year. Panel b) plots each coercer's mean indirect leverage in a given year. The United States appears in blue, China in red, and all other countries as green lines.

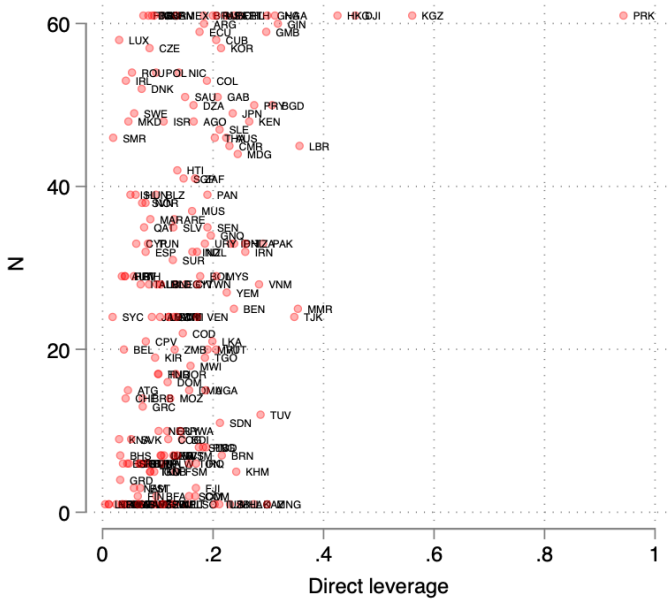
In Panel b) we plot its mean over each year and although the trends look similar (albeit on a much smaller scale), we find that the United States boasts far more indirect leverage than does China. This makes clear that although direct and indirect leverage are correlated, they nonetheless capture types of influence that can be quite distinct.

Indifference curves When a coercer has a target whose trade they wish to disrupt, they have two options: they can rely on their own direct leverage, or they can turn to allies whose leverage can increase the economic damage incurred by the target. What is empirically non-obvious, however, is how easy it is for a country to substitute between direct and indirect leverage, i.e. how many allies a coercer would need to match their level of indirect leverage against a specific target with their direct leverage.

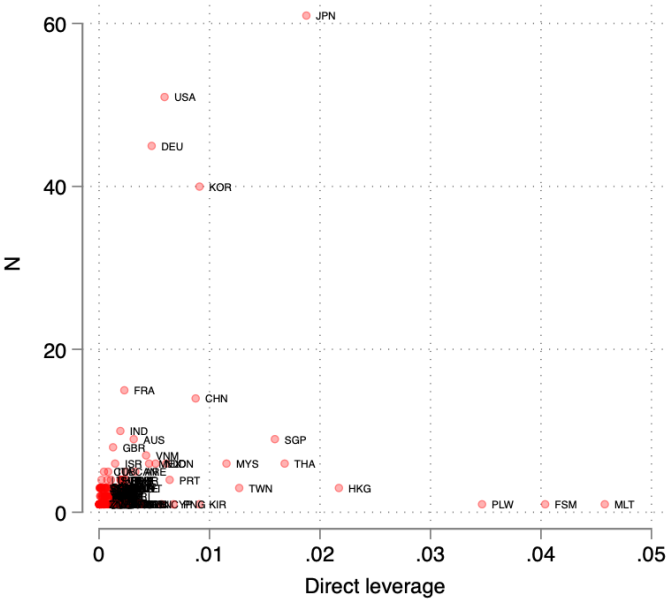
We can investigate this by recording, for a fixed coercer-year, the amount of direct leverage for each target j (given by s_{ji}) and then finding the minimum number of allies $N^*_{i\to j}$ needed such that $\sum_k^{N^*_{i\to j}} \mathcal{P}_{k,i\to j} \cdot s_{jk} \geq s_{ji}$. This will return the least number of allies needed such that the indirect leverage is weakly greater than the direct leverage. Plotting $N^*_{i\to j}$ against s_{ji} provides an indifference curve, as it shows how many allies a coercer needs to be indifferent between their direct and indirect leverage.

We present three figures, where the first two fix a coercer-year and then plot the coercer's direct leverage against each target vs. the minimum number of allies needed to equalize that direct leverage. Panel a) of Figure 3 shows China's indifference curve in 2017, Panel b) shows the Philippines' indifference curve in 2017, and Panel c) shows the average indifference for all countries and years. So, a point in Panel a) shows the direct leverage that China has over a given target in 2017 and the number of allies needed to equalize that direct leverage. For legibility of the figures, we limit the maximum value of $N^*_{i\to j}$ to be 60, and so plot all targets for which the coercer's direct leverage cannot be matched with the indirect leverage from 60 allies above the red dotted line.

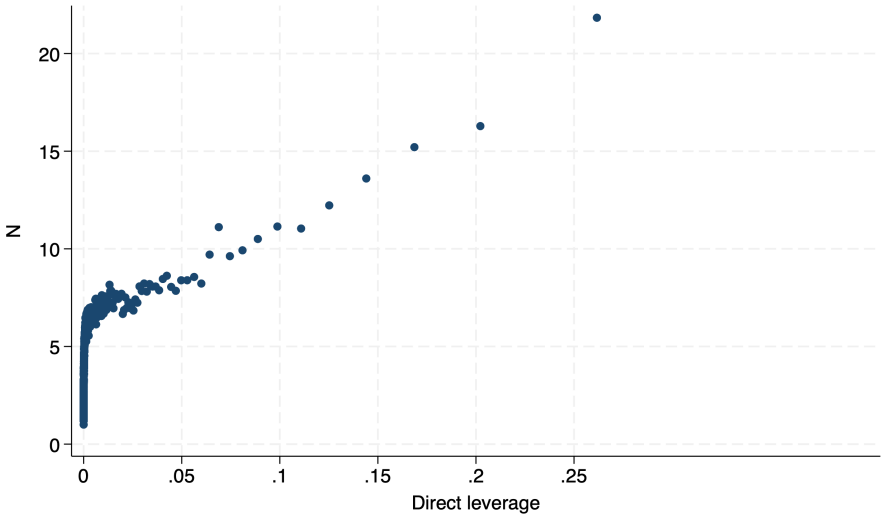
Figure 3: Indifference curves



Panel a) China in 2017



Panel b) Philippines in 2017



Panel c) Average indifference curve, all countries and years

Notes: Panels a) and b) plot China and the Philippines' direct leverage over each target in 2017 against the number of allies needed to match that level of direct leverage, denoted $N^*_{i \to j,t}$. Panel c) plots the average indifference curve for all countries and years using a binned scatterplot.

China and the Philippines are shown because they are economies of very different sizes, and thus possess direct leverage of starkly distinct magnitudes. The majority of China's direct leverage sits between 0 and .4, whereas the Philippines' largest value of direct leverage is .05. This difference in direct leverage also implies a difference in the number of allies needed: whereas for the Philippines a large majority of direct leverage over targets can be compensated for with less than ten allies, China requires more than twenty allies for a sizable proportion of targets.

This illustrates a larger tension for a nation wishing to maximize its influence over other countries. Although having larger direct leverage makes coercion cheaper since allies are seldom needed, it also makes it easier to be targeted. Because a large proportion of China's total leverage is concentrated in their direct leverage, countries hoping to weaken China's influence can be effective by targeting China alone. Smaller countries on the other hand cannot be so easily targeted: since the Philippines' total leverage is dispersed through a small set of close allies rather than their own direct leverage, a country hoping to limit the Philippines' influence would have to contain the Philippines and their allies. This could prove to be more difficult to coordinate than action against a single nation.

In Appendix Figure 4, we present figures analogous to Panels a) and b) of Figure 3 but for unconstrained indirect leverage: they are both essentially flat, with $N = 1$ for nearly every target. This further demonstrates the lack of variation that arises when feasibility constraints are neglected.

Distance The key distinction we draw is about the relative presence of direct leverage vs. indirect leverage, and one would expect that the gap between the two would vary across targets. One especially salient source of target-specific heterogeneity is geographical distance between countries i and j. The relationship of distance to direct leverage is empirically well-known and theoretically well-founded (see, for example, Anderson and Wincoop 2003): when the distance between the coercer and target increases, trade shares, and thus direct leverage, fall. However, the relation of indirect leverage and distance between coercer and target is a priori unclear. This ambiguity is made more obvious by looking at Equation 7 and denoting the distance between coercer i and target j as δ_{ij}. Then, we have that:

$$\frac{d \text{ Indirect leverage}_{i \to j}}{d\delta_{ij}} = \sum_k \frac{d\mathcal{P}_{k,i \to j}}{d\delta_{ij}} \cdot s_{jk} + \mathcal{P}_{k,i \to j} \cdot \frac{ds_{jk}}{d\delta_{ij}} \tag{9}$$

As the target is further from the coercer, it is unclear if auxiliary countries should generally provide more or less support to the coercer ($d\mathcal{P}_{k,i \to j}/d\delta_{ij}$), since it depends on the

auxiliary country's own geographic, political, and economic relationship with the target. In addition, the relation of distance from coercer to target vs. the auxiliary country's direct leverage over the target ($ds_{jk}/d\delta_{ij}$) is not obvious.

To empirically investigate the theoretical ambiguity, we run the following regression:

$$\text{Leverage}_{i\to j,t} = \exp\left[\beta \ln\left(\text{distance}_{ij}\right) + \gamma_i + \gamma_j + \alpha_t\right] + \epsilon_{ijt} \tag{10}$$

Where γ_i, γ_j, α_t are fixed effects for the coercer, target, and year. Either indirect or direct leverage is the outcome variable; we show the regression with direct leverage in column (1) to provide a benchmark against which to compare the relation of distance to indirect leverage, as shown in column (2). In Table 2, we demonstrate that the distance between coercer and target is very slightly positively (but significantly) associated with more indirect leverage.

Table 2: Leverage vs. distance

	Direct leverage$_{i\to j,t}$	Indirect leverage$_{i\to j,t}$
	(1)	(2)
$\ln\left(\text{distance}_{ij}\right)$	-1.273***	0.0250***
	(0.0239)	(0.000935)
Observations	658542	658542
Coercer FE	Y	Y
Target FE	Y	Y
Year FE	Y	Y

The outcome variable of column (1) is direct leverage, and the outcome variable in column (2) is (constrained) indirect leverage. All columns feature coercer, target, and year fixed effects. This regression is estimated via Poisson pseudo-maximum likelihood. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

To provide context for the interpretation of the coefficient in column (2) of Table 2, we begin by discussing the coefficient in the first column. With coercer, target, and year fixed effects, the coefficient on distance against direct leverage is -1.27 and significant at the 1% level; this gravity coefficient is roughly 50 times larger (in magnitude) than the coefficient on distance when indirect leverage is the outcome variable. Given the ambiguity in Equation 9, it is not surprising that the coefficient in column (2) of Table **??** is so small.

The immediate consequence of the above discussion is that as a target is more distant, the gap between indirect leverage and direct leverage grows. We show that both the difference and share of indirect vs. direct leverage grows as the target is more distant.

This can be shown in two different regressions, the first estimated via OLS and the second PPML:

$$\text{Indirect leverage}_{i\to j,t} - \text{Direct leverage}_{i\to j,t} = \beta \ln\left(\text{distance}\right)_{ij} + \gamma_i + \gamma_j + \alpha_t + \epsilon_{ijt} \tag{11}$$

$$\frac{\text{Indirect leverage}_{i\to j,t}}{\text{Direct leverage}_{i\to j,t} + \text{Indirect leverage}_{i\to j,t}} = \exp\left[\beta \ln\left(\text{distance}\right)_{ij} + \gamma_i + \gamma_j + \alpha_t\right] + \epsilon_{ijt} \tag{12}$$

If countries have more indirect leverage relative to their direct leverage as the target is further, then β will be positive. In Table 3, we see that the coefficient is positive and significant at the 1% level:

Table 3: Gap in leverage vs. distance

	OLS	PPML
	$\text{Indirect leverage}_{i\to j,t} - \text{Direct leverage}_{i\to j,t}$	$\frac{\text{Indirect leverage}_{i\to j,t}}{\text{Direct leverage}_{i\to j,t}+\text{Indirect leverage}_{i\to j,t}}$
	(1)	(2)
$\ln\left(\text{distance}_{ij}\right)$	0.0137***	0.0331***
	(0.000509)	(0.00106)
Observations	658542	658542
Coercer FE	Y	Y
Target FE	Y	Y
Year FE	Y	Y

The outcome variable of column (1) is the difference in indirect and direct leverage, and the outcome variable of column (2) is the share of total leverage that is indirect. All columns feature coercer, target, and year fixed effects. The regression in column (1) is estimated via OLS, and the regression in column (2) is estimated via Poisson pseudo-maximum likelihood. The difference in the number of observations is because of Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

Thus we see that countries will have more indirect leverage than direct leverage when the targets are geographically further. This may suggest that indirect leverage is an especially important substitute for direct leverage when the target is too distant for the coercer to have sufficient direct leverage to wield against their adversary.

These descriptives demonstrate that constrained indirect leverage looks meaningfully different from unconstrained indirect leverage, which provides empirical evidence of the importance of introducing feasibility constrains when considering second-order trade relationships. In addition, we found that although direct leverage and constrained indirect leverage are correlated (as shown in Table 1), the gap between the two grows as the target is more distant. This highlights that the importance of indirect leverage as a substitute for direct leverage is amplified when the target is geographically distant. We now turn to examining the consequences of the gap between indirect and direct leverage.

3 Policy outcomes

Having provided descriptives about the behavior of the measure of indirect leverage in Section 2.3, we now can test the relevance of indirect leverage in predicting trade policy. In Section 3.1 we motivate the exercise, Section 3.2 explains the trade policy dataset, and Section 3.3 validates the ally likelihood measure and then shows how indirect leverage is associated with the use of multilateral trade policies.

3.1 Motivation

As assumed in Section 2.1, coercers wishing to enact restrictive trade policies towards a target must incur a cost of recruiting allies. On the other hand, we assume that coercers can costlessly restrict their own trade, allowing them to exert influence via direct leverage. This creates a trade-off: coercers can hurt their adversaries more when they recruit more allies, but at the cost of recruiting more allies. Thus one would expect that as indirect leverage grows larger—increasing the return to incurring the cost of recruitment—coercers should rely on auxiliary countries more when enacting restrictive trade policies. Stated concisely: as indirect leverage increases relative to direct leverage, so should reliance on allies.

We measure reliance on allies vs. unilateral action by analyzing restrictive trade policies. These trade policies can be unilateral (i.e. one coercer acting against one target) or they can be multilateral, i.e. when multiple countries act against one target. The goal in this section is to demonstrate a) that the ally likelihood measure developed in Section 2.1 is indeed predictive of countries' patterns of reliance on a specific auxiliary country k and b) that constrained indirect leverage is predictive of the use and reliance on multilateral trade policies. Further, we demonstrate that unconstrained indirect leverage is not predictive of the use of multilateral policies.

In order to contextualize this empirical exercise, it is necessary to detail the dataset used for this analysis.

3.2 Global Trade Alert Data

The outcome variable we study is the frequency of restrictive trade policies as recorded in the Global Trade Alert (GTA) dataset. Including data from 2008-2023, this dataset is structured on the coercer-target-state act-intervention level, where there can be multiple interventions within a single state act. A state act could be the announcement of twenty trade actions from one country against another, where the trade actions will each be recorded

as a separate intervention associated with that one state act. We consider the intervention to be the relevant unit, since two state acts could be less/more expansive depending on how many interventions they include and thus treating all state acts as the same would be erroneous. As a result, all references to a 'policy' are references to an intervention.

The GTA dataset contains categorization that describes if the policy is certainly restrictive, probably restrictive, or liberalizing. We keep only the policies that are coded as certainly restrictive, and this results in a dataset with roughly $700,000$ observations.

Importantly, this does not mean that there are $700,000$ unique policies. This dataset records both unilateral and multilateral trade policies, in that it includes policies which have a single enacting country and a single target country, as well as policies with multiple enacting countries. Given that the dataset also includes multilateral policies, there are repeats of the same policy but with different implementing countries. For example, a restrictive import quota imposed by the USA, Malaysia, and Japan against China will appear three times, once for each country participating in the implementation of the policy. Thus for each multilateral policy, we must identify who is the country that should be considered as the 'leader' of the other countries implementing the policy. We identify this leader as the country that has the most direct leverage over all other implementing countries. As a result, the leader of a multilateral policy is the state which all other actors directly rely on the most. This procedure is a systematic way to reliably identify the country who plausibly lead a policy. In the example of USA, Malaysia, and Japan, this procedure yields the USA as the leader/initiator of the policy against China.

3.3 Multilateral policy and indirect leverage

Validation of ally likelihood measure Before presenting the main results regarding the relation of indirect leverage to trade policy, it is necessary to first validate the key component underlying the definition of indirect leverage: ally likelihood. If indeed the measure of ally likelihood is accurate, then we should find that higher values of $\mathcal{P}_{k,i\to j}$ are associated with auxiliary country k appearing as an ally to i against j more often.

With the aim of demonstrating that the ally likelihood measure developed in Section 2.1 is indeed predictive of an auxiliary country's willingness to serve as an ally for a coercer against a target, we construct a dataset on the coercer-auxiliary country-target-year level. This dataset records the number of times that an auxiliary country k was involved in a multilateral policy with coercer i against target j in the year t.

Calling the frequency of k's appearance in a multilateral trade policy with i against j in year t as Number of multilateral policies$_{k,i\to j,t}$, we can validate that the ally likelihood

measure $\mathcal{P}_{k,i\to j,t}$ is indeed predictive of the relevant outcome with the following regression estimated via PPML:

$$\text{Number of multilateral policies}_{k,i\to j,t} = \exp\left[\beta\mathcal{P}_{k,i\to j,t} + \gamma_{ij} + \gamma_{ik} + \gamma_{jk} + \alpha_t\right] + \epsilon_{ijt} \tag{13}$$

Where γ_{ij}, γ_{ik}, and γ_{jk} are a pair fixed effects for each pair formed out of the *ikj* triplet, and α_t is a year fixed effect. The coefficient on $\mathcal{P}_{k,i\to j,t}$ is displayed in column (1) of Table 4 and displays a positive and significant coefficient. Each column introduces an increasingly restrictive set of fixed effects.

Table 4: Number of multilateral policies

	Number of multilateral policies$_{k,i\to j,t}$			
	(1)	(2)	(3)	(4)
Ally likelihood$_{k,i\to j,t}$	7.338***	4.586***	2.344***	2.453***
	(0.538)	(0.900)	(0.446)	(0.508)
Observations	96441	96441	96441	96441
Pair *ij* FE	Y	Y	Y	N
Pair *ik* FE	N	Y	Y	N
Pair *jk* FE	N	N	Y	N
Triple *ikj* FE	N	N	N	Y
Year FE	Y	Y	Y	Y

The outcome variable in all columns is the number of multilateral policies that country k appeared in with country i targeted against country j in year t. All columns feature year fixed effects. Column (1) uses coercer-target pair fixed effects, column (2) adds coercer-auxiliary country fixed effects, column (3) adds target-auxiliary country fixed effects, and column (4) replaces all pair fixed effects with ordered coercer-auxiliary country-target triplet fixed effects. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

The first through third columns of Table 4 introduce a different set of pair fixed effects, one for each pair formed out of the coercer, target, and auxiliary country. In the final column, the pair fixed effects are replaced with (ordered) triplet *ikj* fixed effects. The fixed effects reduce the size of the coefficient, but the coefficients in the specifications that feature the most fixed effects nonetheless display large and highly significant coefficients on $\mathcal{P}_{k,i\to j,t}$. Table 4 provides evidence that indeed the ally likelihood measure $\mathcal{P}_{k,i\to j,t}$ is predictive of involvement in multilateral policies, even with extensive fixed effects.

Multilateral policies and indirect leverage Having provided evidence that the ally likelihood measure is predictive of participation in multilateral policies, we turn to relating the volume of indirect leverage to the use of multilateral policies. The dataset used for

this analysis is on the coercer-target-year level, and records the number of multilateral policies that coercer i enacted against target j in year t.

We continue to demonstrate the validity of the ally likelihood measure and therefore the importance of political constraints by relating the frequency of multilateral policies to constrained/unconstrained leverage. In addition, we separate out the importance of direct vs. indirect leverage by executing the following regression:

$$\text{Number of multilateral policies}_{i\to j,t} = \exp\left[\text{Indirect leverage}_{i\to j,t} + \text{Direct leverage}_{i\to j,t} + \gamma_{ij} + \alpha_t\right] + \epsilon_{ijt}$$

The indirect leverage variable is in its constrained version in columns (1) and (2) of Table 5 and its unconstrained version in columns (3) and (4).

Table 5: Number of multilateral policies

	Number of multilateral policies$_{i\to j,t}$			
	Constrained		Unconstrained	
	(1)	(2)	(3)	(4)
Indirect leverage$_{i\to j,t}$	17.75***	16.99***	-18.87***	-0.728
	(0.924)	(1.116)	(2.687)	(1.536)
Direct leverage$_{i\to j,t}$		2.312		21.23***
		(1.817)		(3.679)
Observations	28518	28518	28518	28518
Pair FE	Y	Y	Y	Y
Year FE	Y	Y	Y	Y

The outcome variable in all columns is the number of multilateral policies that coercer i initiated against target j in year t. The independent variable in columns (1) and (2) is direct leverage and constrained indirect leverage; columns (3) and (4) use unconstrained indirect leverage instead. All columns have both pair and year fixed effects. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

The results in Table 5 provide two key pieces of evidence. The first piece of evidence is seen in the first two columns, in which it is clear that indirect leverage is positively and significantly associated with use of multilateral policies. This is true even when including direct leverage, which demonstrates that specifically indirect, not just any, leverage is relevant to multilateral policies. Recalling that indirect leverage is a measure of how beneficial it is to call on auxiliary countries to join a multilateral trade policy, we see that our measure of benefit is related to the revealed preference for that option. One of the main

arguments made so far is that if countries have more indirect leverage, then multilateral policies should be more beneficial; the fact that indeed countries do use multilateral policies more when they have more indirect leverage is good support for this argument.

The second piece of evidence is related to the importance of considering political constraints when defining indirect leverage. Columns (3) and (4) of Table 5 execute the same regression as in the first two columns, but these regressions use unconstrained indirect leverage. Not only does unconstrained indirect leverage look negatively related to multilateral policies in the third column, but column (4) shows that indeed it appears entirely irrelevant once one accounts for direct leverage.

The results in Table 5 demonstrate that indirect leverage is relevant to the use of multilateral policies, whereas direct leverage is not. We also wish to show, however, that indirect leverage is relevant to the reliance on multilateral policies *relative* to reliance on unilateral policies. Although we have shown that indirect leverage is related to the use of multilateral policies, it may be true that it is also associated with the use of unilateral policies. In order to rule out the concern that indirect leverage is simply a good proxy for the use of any sort of policy, we turn now to investigating the use of multilateral policies in comparison to unilateral policies.

To do so, we denote the difference in the number of multilateral vs. unilateral policies enacted against j by i in year t as $\Delta\text{Policies}_{i\to j,t} \equiv$ Number of multilateral policies$_{i\to j,t}$ − number of unilateral policies$_{i\to j,t}$. We then compare this difference in policy usage against the difference in leverage in the following regression:

$$\Delta \text{ Policies}_{i\to j,t} = \beta \left(\text{ Indirect leverage}_{i\to j,t} - \text{ Direct leverage}_{i\to j,t} \right) + \gamma_{ij} + \gamma_i + \gamma_j + \alpha_t + \epsilon_{ijt} \qquad (14)$$

We then see that the difference in leverage is positively and significantly related to the difference in policy usage:

Table 6: Difference in policy vs. difference in leverage

	$\Delta\text{Policies}_{i\to j,t}$		
	(1)	(2)	(3)
Indirect leverage$_{i\to j,t}$ − direct leverage$_{i\to j,t}$	39.81***	21.92***	18.78*
	(13.21)	(8.319)	(10.23)
Observations	58564	58564	58564
Pair FE	Y	N	Y
Coercer FE	N	Y	Y
Target FE	N	Y	Y
Year FE	Y	Y	Y

The outcome variable in all columns is the difference in the number of multilateral policies initiated by i against j in year t and the number of bilateral policies from i against j in t. All columns feature year fixed effects; columns (1) and (3) have pair fixed effects, and columns (2) and (3) have separate coercer and target fixed effects. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$

A variety of fixed effects are used across the columns in Table 6. All columns feature year fixed effects, and the first and third column include pair fixed effects. The second and third column also included individual coercer and target fixed effects. We find a positive and significant relationship between the gap in leverage and the gap in policy usage, even with coercer, target, pair, and year fixed effects. This empirically evidences that countries rely more on multilateral policy rather than unilateral policy when they have more indirect leverage than direct leverage in a demanding econometric specification.

The results in this specification serve to justify the use of the ally likelihood measure $P_{k,i\to j}$, as it predicts auxiliary countries' involvement in coercer-target specific multilateral policies. Having justified the measure that is used to construct indirect leverage, we then show that a) unconstrained indirect leverage fails to predict the use of multilateral policies and b) as the gap between indirect and direct leverage grows, so too does the reliance on multilateral policy. Taken together, this set of empirical results serves to provide evidence for the usefulness of the indirect leverage measure, as well as the fact that direct and indirect leverage are substitutes.

4 Conclusion

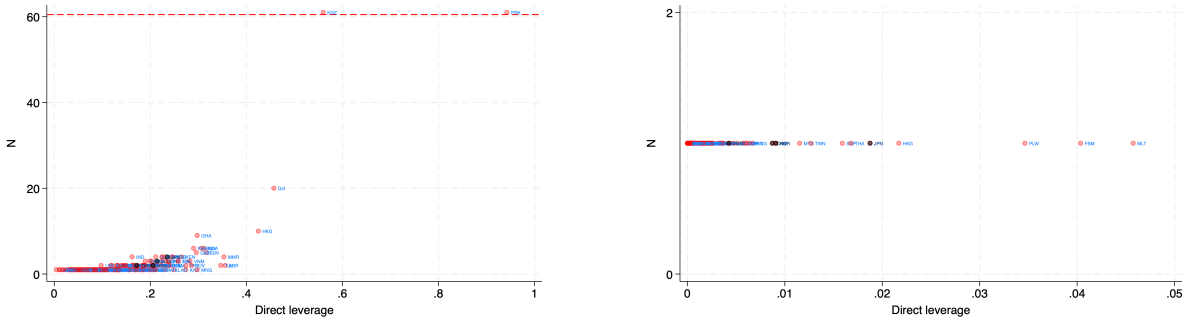
In this paper, we study international influence borne out of the ability of a country to recruit allies to help it pressure adversaries. To do so, we develop a measure that empirically predicts which countries serve as allies to each other, and from that measure we empirically construct indirect leverage. We demonstrate that indirect leverage not only predicts the use of multilateral policies beyond direct leverage, but we also show that failing to consider political feasibility when constructing indirect leverage leads to undesirable results. Finally, we provide empirical evidence that countries see unilateral vs. multilateral actions as substitutes, and that direct and indirect leverage are good measures of the benefits derived from each type of action.

More generally, the analyses included in this paper demonstrate the inherent difficulty in quantifying international power. Although much has been said about the dominance of China, the ability of the US to build coalitions and thus procure influence via allies is important to account for when measuring the balance of power. This is particularly relevant to American economic and foreign policy in the coming years, as the United States faces a new wave of isolationist sentiment. Given that American direct leverage has fallen in recent years, a large proportion of their remaining advantage may be related to their ability to lead coalitions.

This paper's main contribution is to incorporate a notion of second-order/indirect trade leverage in a tractable, empirically-tested framework; this is not done without important omissions, however. Although the importance of distance and trade is referred to throughout the paper, no formal model of trade is proposed. Without that formalism, it is possible that important aspects of the problem studied are being neglected. In addition, the notions of political influence used to create the ally likelihood measure do not take into account the very object they are used to study—indirect influence. China may not demand Taiwan to join a multilateral policy because they fear Taiwan itself, but instead because China recognizes that the United States is a close ally of Taiwan; failing to account for second-order relationships when measuring ally likelihood could lead to oversight. There are many exciting avenues for future research on this topic, and there is no doubt that the topics discussed here will become more important in the coming years.

A Figures

Figure 4: Indifference curves: unconstrained indirect leverage



a) China in 2017 **b)** Philippines in 2017

Notes: Figures a) and b) plot China and the Philippines' direct leverage over each target in 2017 against the number of allies needed to match that level of direct leverage when considering unconstrained indirect leverage