International Power

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Abstract

An interconnected world increases economic efficiency, while providing some nations with leverage over others. We investigate international power stemming from trade. We first write an illustrative model of trade with possibilities of international disputes, highlighting key features of how nations can exert coercive power toward one another through trade. The model yields a measure of international power, which we operationalize across nation-pairs over the past 20 years. Using this measure, we examine the consequences and causes of international power. We compile comprehensive data on bilateral engagement events, and we develop a high-frequency measure of bilateral geopolitical relationships. We show two main empirical results. First, increases in international power between countries — which raise the credibility of threats of trade disruptions — induce more bilateral engagement and negotiations. Second, worsened geopolitical relationships — in anticipation of future disputes — prompt nations to build up greater international power through changes in trade activities.

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1 Introduction

International power that nations possess traditionally arise from their military might. During peacetime, can nations exert coercive power toward one another through non-military means?

Power through commerce and trade potentially provides a method of coercion and may become an alternative to war. Writing towards the end of the World War II, Hirschman (1945) argues that relationships of dependence, of influence, and even of domination can arise out of trade relations. In fact, every sovereign nation has some power of this kind: through the control of its borders and the power over its citizens, a sovereign nation can at any time interrupt its own export and import.

In this paper, we aim to investigate international power stemmed from trade. We develop an illustrative model to highlight key features of international power through trade, which guides our empirical investigation. Following the model, we measure international power across nation-pairs over the past 20 years. Using this measure, we examine the consequences and strategic considerations of international power through trade. We ask: *(i)* does international power induce more bilateral engagement and negotiations? And *(ii)* do adversarial geopolitical relationships prompt greater power build-up through changes in trade activities?

We begin with a model that combines trade and bargaining over geopolitical tensions. In an *ex-ante* stage, countries make plans for international trade. *Ex-post*, an international dispute may arise, and one country (the coercer) can threaten to reduce trade with another (the target). Because it is ex-post difficult for the target to alter trade plans made ex-ante and substitute towards other trade partners, the coercer can leverage power stemming from trade dependence to extract political rents from the target. The target can threaten to retaliate. The degree of asymmetric trade dependence determines the negotiation outcome. Anticipating the ex-post negotiation and hold-up, a government valuing domestic welfare has incentives to enact industrial and trade policies to reduce the ex-ante dependence on adversaries. These protectionist incentives are stronger against adversaries with whom trade is more asymmetric, especially in goods that are harder to substitute away from. The model, while stylized, demonstrates the two primary sources of power that Hirschman (1945) proposes: dependence and asymmetry. The model yields a measure of international power based on import dependence and has two core predictions: shocks to power would affect bilateral engagement, and shocks to geopolitical alignment would affect power build-up.

We next construct an empirical measure of international power. Guided by the conceptual framework, our primary measure of power aims to capture asymmetric import dependence (export power) across nations. Specifically, we define exporter i's power over importer n at year t as the share of exporter's contribution to importers' total import, either over all sectors or over specific sectors that would maximize such share. We then define (undirected) asymmetry between country-pair in at year t as the absolute differences in n's import dependence on i and n's import dependence on i. We discuss a range of alternative measures in Section 3. Importantly, international power reflects, but is not simply driven by, the asymmetry in nations' size (such as asymmetry in total GDP) and total trade activities across the corresponding nations. In other words, it captures meaningful variation as a result of sectoral composition of trade activities. Taiwan exhibits a high degree of power towards many countries not necessarily because of its total trade volume or its overall economic size, but rather because of its dominance in export of certain key sectors such as semi-conductors. Similarly, Germany is vulnerable towards China not necessarily because of the asymmetry in total economic size, but particular as a result of its dependence on China for several raw minerals that are difficult to substitute away.

With the measurement handy, we then investigate the consequences of international power through trade. As predicted by the conceptual framework, as power rises between two nations, diplomatic engagement and negotiation would increase in response to the increased threats and bargaining stakes. We measure bilateral engagement across all nation pairs during the sample period based on the Integrated Crisis Early Warning System (ICEWS) dataset, which covers 19 million events ranging from nations expressing intent to meet or negotiate, appeal for economic aid from specific countries, or impose military threats or aggression. We find that, controlling for country-pair fixed effects and year fixed effects, bilateral engagement and negotiation increase substantially and significantly when the power asymmetry between the pair rises. Moreover, following the logic of sectoral trade composition and overall bilateral trade expansion, we construct a shift-share instrument to predict corresponding bilateral power. We show that the predicted power leads to increased engagement and negotiation, suggesting that this relationship is unlikely to be driven by reverse causality, unobserved factors that affect countries' engagement but are unrelated to trade, or endogeneous trade manipulation that targets specific countries.

We find two additional results regarding international power's stimulation of bilateral engagement and negotiation. First, engagement and negotiation are substantially more elastic to export power (i.e., import dependence) than import power (i.e., export dependence), as the conceptual framework describes — export disruption imposes first order costs to importers while import disruptions' costs on exporters are second order. Second, power stemming from specific sectors — chemical products, optical medical instruments, and machinery electrical equipment, in particular — matter more for engagement and negotiation. In fact, the impact of sector-specific (export) power between two nations on their negotiating and engagement is strongly associated with the sector's trade elasticity across countries, consistent with the central role that adjustment cost plays in international power.

We next examine the strategic causes of international power. As predicted by the conceptual framework, as the arrival rate of potential trade disruptions increases as a result of geopolitical alignment shifts, nations would build up trade-based power, for example through industrial and trade policies that would then influence trade. We measure geopolitical alignment by constructing a statistical model of political proximity by combining annual Polity scores and Gallup Poll data, which allows us to capture alignment across all pairs of nations and with high-frequency changes. We find that fluctuations in bilateral alignment are predictive of a significant portion of the over-time variation in bilateral trade flows, suggesting that it reflects trade costs that may arise from changing geopolitical conditions.

To identify the causal relationship of alignment changes to power build-up, we use abrupt shifts in geopolitical alignment as a result of political party turnover after close presidential elections in one of the countries in the bilateral pairs. This captures, for example, the sudden souring of the relationship between China and the US after President Trump won the 2016 election, which was a result of domestic politics in a country in the bilateral pairs rather than bilateral shocks *per se*. We observe a strong first stage: electoral turnover after close elections abruptly reverts the pre-existing trend in alignment. Responding to such changes in geopolitical alignment due to others' domestic electoral turnover, nations increase (decrease) their power towards a partner when bilateral alignment worsens (improves). Consistent with the conceptual framework as well as the earlier result on the elasticity of power on bilateral negotiation, we also find that such strategic power build-up is more acute in export power than import power.

Taken together, an interconnected world that maximizes economic welfare can be very different from one that interconnects in order to provide some countries more power and leverage over others. While economic returns from trade is positive sum in nature (at least across countries), power accumulation can be negative sum. In this paper, we show that the latter is, at least in part, true — power can indeed arise as a result of trade.

This paper relates to several strands of literature. First, we bring quantitative empirical evidence of a largely theoretical literature on how countries exert power through trade and economic dependence. Hirschman (1945) offers a seminal work on conceptualizing trade not necessarily as maximizing economic gains, but as a source of power across countries. McLaren (1997) theoretically demonstrates that due to trade dependence, in the context of trade liberalization between between a large country and a small one, anticipated negotiations may make the small country strictly worse off than autarchy. More recently, Farrell and Newman (2019) describes a framework of weaponized interdependence, of which trade and other economic exchanges constituting such interdependence, and its role in fostering strategic coercion across countries; Thoenig (2023) combines a trade framework with geopolitical bargaining in order to understand the structure of trade amid geopolitical tension; Clayton, Maggiori, and Schreger (2023) provides a theoretical framework of geoeconomics, analyzing how governments use their countries' economic strength from existing financial and trade relationships to achieve geopolitical and economic goals. We provide, to the best of our knowledge, first empirical attempts to investigate the consequences and causes of international power through trade exposure.[1] Our findings—asymmetric trade-based power triggers more negotiation, and such power is strategically built up in anticipation of upcoming diplomatic tensions—enrich the theoretical literature and highlight the value of endogenizing power in future investigations.

Second, we join a small empirical literature in political economy that analyzes international relations. Much of the literature focuses on international influence through military threats (Herrera, Morelli, and Nunnari 2022), coordination around great powers' sphere of influence (Camboni and Porcellacchia 2024), foreign aid (e.g., Kuziemko and Werker 2006, Nunn and Qian 2014), or covert operations (Berger et al. 2013). We add to this literature a first systematic analysis of power derived from trade activities.[2] In so doing, we also contribute to the literature that studies how economic (and in particular, trade) interdependence may influence the tendencies for countries to enter conflict with one another (e.g., Martin, Mayer, and Thoenig 2008, Jackson and Nei 2015). We examine countries engagement with each other more generally—both peaceful and non-peaceful—and show that power derived from trade, above and beyond simple trade linkages and trade flows, substantially influence such engagement.

Third, this paper connects to the literature that examines the interaction between foreign and domestic politics. Fearon (1994) models the escalation of international conflicts

1. This is distinct from, but complements, the *incidental* foreign influence of trade exposure, such as political repercussion of labor market consequences stemmed from exposure to manufacturing exports from China (e.g., Autor et al. 2020)

2. By showing that diplomatic policies are influenced by trade power exposure, we also connect to the large literature in international relations that analyze factors that shape foreign policies (e.g., the realism vs. liberalism debate).

in order to serve domestic political purposes; Antràs and Miquel (2011) studies how foreign influence shapes trade policies.[3] By showing that domestic electoral turnover affects geopolitical alignment, which in turn shape other countries' (domestic) policies to adjust trade power, we demonstrate an important channel in which foreign influence, domestic politics, and domestic policies (that in terms shape foreign influence on others) co-determine and interact.

Finally, we hope the three sets of empirical measures that we construct complement existing efforts, and can be broadly applicable to the literature that studies international politics. The bilateral power measure—complementing Kleinman, Liu, and Redding (2022)—provides an infrastructure where more complex factors to be incorporated in order to understand countries' exposure to one another in terms of welfare. The bilateral engagement database that we compile and standardize provides a granular observation on international engagement, in particular extending beyond the tail events such as war and conflicts. The bilateral alignment measure that we build based on two sets of data provides high-frequency, more nuanced variation than the predominant metrics used in the literature such as the autocracy/democracy alliances (e.g., Morrow, Siverson, and Tabares 1998; see Mansfield, Milner, and Rosendorff 2000 for a recent review) and that based on the United Nations vote agreement (Bailey, Strezhnev, and Voeten 2017).

The rest of the paper proceeds as follows. Section 2 presents a model of trade under the possibility of international disputes which guides the power measure and lays out predictions on the consequences and causes of power which we empirically test. Section 4 studies the consequences of power, investigating whether power induces more bilateral engagement and negotiation. Section 5 studies the strategic origin of such power, examining whether countries build up power facing shifts in bilateral alignment. Section 6 concludes.

2 Illustrative model of trade with international disputes

Countries deciding to continue a trade relationship with another nation face a trade-off between two possibly countervailing forces. On one hand, trading with another country results in gains from trade that arise from the economic exchange involved therein. However, dependence on another country has a geopolitical cost, as *ex post* the trade partner could try to leverage power stemming from trade dependence to extract political rent. This tension yields a natural question: how does a country balance the benefits

3. Fearon (1998) surveys the earlier literature, primarily in political science, that examines how diplomatic policies may be shaped by domestic politics.

(economic) and costs (political) of trade dependence?

We construct an illustrative model in which governments can enact industrial policy to influence trade activities while facing the possibility of disputes with other countries with whom they trade. The model formalizes politically intuitive aspects of international trade by explaining how a given country i has the incentive to utilize industrial policy to *(a)* raise export penetration into other countries, thereby increasing foreign dependence on country i's products and *(b)* reduce i's import dependence on foreign adversaries.

2.1 Economic environment

Consider a world with N economies indexed by n, i, j, and K sectors indexed by k, k'. There are three types of agents in each economy: *(i)* a representative consumer, *(ii)* competitive producers, and *(iii)* a government that can enact industrial policy to influence production, trade, and thus domestic welfare.

The game has two stages. In the first ("ex-ante") stage, governments set industrial policy, producers make ex-ante investments and production plans, and consumers place import orders. In the second ("ex-post") stage, international disputes may arise as countries bargain over trade and transfers, after which production takes place and trade materializes.

Despite the uncertainty in whether international disputes arise, there is no uncertainty in equilibrium quantities and prices. Hence, we first describe the preferences, production technologies, and the problem of decentralized agents (i.e., consumers and producers) as if there is no uncertainty. We then introduce uncertainty later as we describe the government's problem and the bargaining process under international disputes.

Consumer preferences The representative consumer in each country n consumes final goods from all sectors k ("good k") in differentiated varieties produced by all countries i (including the domestic variety). The consumer problem is:

$$u_n \equiv \max_{c_{ni}} \sum_k \beta_n^k \ln \left(\sum_i \left(c_{ni}^k \right)^{\frac{\sigma^k - 1}{\sigma^k}} \right)^{\frac{\sigma^k}{\sigma^k - 1}} - \sum_k \sum_i p_{ni}^k c_{ni}^k + \Pi_n + T_n, \qquad \sum_k \beta^k = 1 \quad (1)$$

where β_n^k is the consumption share for sector k, c_{ni}^k is the quantity consumed of final good k variety from country i, p_{ni}^k is the corresponding unit price faced by consumer n, and $\sigma^k > 1$ is the elasticity of substitution across varieties of good k. We denote $\theta^k \equiv \sigma^k - 1$ as the trade elasticity. Π_n is the transfer of firm profits back to the consumer, and T_n is a lump-sum transfer from the government.

The utility function (1) features quasi-linearity in payments and transfers. This can be interpreted as quasilinear preferences over a homogeneous outside good, which has its price normalized to one and is used to settle trade imbalances (see Appendix D.1 for the microfoundation).

Production The final goods production requires two steps. In the first step, each country produces a variety of intermediate goods in each sector. These intermediate goods are traded internationally. In the second step, the intermediate goods are processed by each importing country and turn into the final consumption goods. Both production steps require investments in the ex-ante stage of the game.

Specifically, each country i has a representative firm producing its variety of intermediate good k, with production function

$$q_i^k = a_i^k \left(\frac{\mu_i^k}{1-\alpha} \right)^{1-\alpha} \left(\frac{x_i^k}{\alpha} \right)^{\alpha}, \tag{2}$$

where a_i^k is the productivity, μ_i^k is the investment to commit ex-ante, and x_i^k is the flexible input chosen ex-post. For simplicity, both inputs μ_i^k and x_i^k have marginal costs equal to one.

Intermediate goods are traded across countries subject to iceberg costs. The production function for each variety of the final consumption good in sector k is:

$$c_{ni}^k = \left(\frac{q_{ni}^k / \tau_{ni}^k}{\omega} \right)^{\omega} \left(\frac{z_{ni}^k}{1-\omega} \right)^{1-\omega}, \tag{3}$$

where q_{ni}^k is the quantity of intermediate good k that country n imports from country i, $\tau_{ni}^k \geq 1$ reflects iceberg trade costs of sending good k from i to n, and z_{ni}^k is the domestic investment into the production capacity of the final good. We assume z_{ni}^k needs to be committed in the ex-ante stage and has marginal cost equal to one.

For expositional simplicity, we refer to μ_i^k as the ex-ante investment into exports, and z_{ni}^k as the ex-ante investment into imports. We note that when the two subscripts are equal, q_{nn}^k captures domestic absorption of intermediate good k, which also needs to be processed into the final consumption good. We assume $\tau_{nn}^k \equiv 1$ for all n, k, so there is no trade cost for domestic absorption.

Government Each country i's government may use industrial policy to selectedly target sectoral investments into intermediate and final good production. In addition, when international disputes arise, each government i can engage in costly negotiations with foreign governments, extracting economic and political concessions F_{ni} from each country n as the outcome of Nash bargaining. We model concessions as a net transfer across countries (i.e., $F_{in} \equiv -F_{ni}$ is the concession from i to n); in practice, due to the prevalence of "issue linkage"—many policy areas are negotiated simultaneously; see Maggi (2016)—these transfers may capture any political and economic outcomes of the negotiations that favor one nation at the expense of the other. The concessions are borne by the representative consumers; along with the proceeds from subsidies and taxes, the net transfers from international concessions are rebated to the consumer as a lump-sum transfer T_i.

A government values domestic consumer welfare u_i. In addition, there is a cost of engaging in international negotiations. The government's value function is

$$\mathcal{W}_i = u_i - \text{cost of negotiation.} \tag{4}$$

We describe the cost of negotiation later in Section 2.3.

2.2 Decentralized equilibrium without international disputes

Prices We assume that governments can enact industrial policy to affect the ex-ante investments into the production of both the intermediate goods and the final consumption goods. Specifically, let t_i^k denote the proportional subsidy on the investments into exports μ_i^k, and let η_{ni}^k denote the tax on the investment into imports z_{ni}^k. Given these interventions, the equilibrium prices p_i^k of good k sold by country i and p_{ni}^k of the consumption good available in country n satisfy:

$$p_i^k = \frac{1}{a_i^k \left(1 + t_i^k\right)^{1-\alpha}}, \qquad p_{ni}^k = \left(p_i^k \tau_{ni}^k\right)^{\omega} \left(1 + \eta_{ni}^k\right)^{1-\omega}. \tag{5}$$

Quantities The solution to (1) features a total expenditure on tradables equal to one, with expenditure β_n^k on good k by the representative consumer in country n. The expenditure on imports from country i of good k is

$$s_{ni}^k \equiv p_{ni}^k c_{ni}^k = \beta_n^k \frac{\left(p_{ni}^k\right)^{1-\sigma_k}}{\sum_j \left(p_{nj}^k\right)^{1-\sigma_k}}, \tag{6}$$

s_{ni}^k is the share of n's expenditure on good k imported from i. The consumer utility is

$$u_n = \sum_k \beta_n^k \frac{1}{\theta^k} \ln \left(\sum_j \left(p_{nj}^k\right)^{\theta^k} \right) - 1 + \Pi_n + T_n. \tag{7}$$

The import processor makes import orders and ex-ante investments:

$$q_{ni}^k = \omega s_{ni}^k / p_i^k, \qquad z_{ni}^k = (1-\omega)\, s_{ni}^k / \left(1 + \eta_{ni}^k\right). \tag{8}$$

To fulfill import orders, the producer of good k in each country i makes production plans

$$q_i^k = \sum_n q_{ni}^k. \tag{9}$$

The producer makes ex-ante investments and plans for ex-post inputs according to

$$\mu_i^k = \left(1 + t_i^k\right)(1-\alpha)\, p_i^k q_i^k, \qquad x_i^k = \alpha p_i^k q_i^k. \tag{10}$$

Profits and lump-sum taxes In an equilibrium, producers make zero profits, $\Pi_n = 0$. The government transfers to the domestic consumer a lump-sum rebate T_n that equals to the proceeds from industrial policy and international transfers:

$$T_n = (1-\omega) \sum_k \sum_i \frac{\eta_{ni}^k}{1+\eta_{ni}^k} p_{ni}^k c_{ni}^k - (1-\alpha) \sum_k t_n^k p_n^k q_n^k + \sum_i F_{in} \tag{11}$$

On the right-hand side, the first term captures the revenue from taxing import capacities, the second term captures the fiscal burden of production subsidies, and third term captures the sum of international transfers that country n collects from each country i.

2.3 International disputes

In the ex-ante stage, investments μ_i^k and z_{ni}^k are chosen, and production orders (prices and quantities $p_i^k, p_{ni}^k, q_{ni}^k, c_{ni}^k$) are placed. The game then moves onto the ex-post stage. In the absence of international disputes, production inputs are hired to fulfill the production orders (c.f. production function 2):

$$x_i^k = \alpha \left(\frac{q_i^k}{a_i^k}\right)^{1/\alpha} \left(\frac{\mu_i^k}{1-\alpha}\right)^{\frac{\alpha-1}{\alpha}}. \tag{12}$$

However, before production takes place, an international dispute arises with probability λ_{ni}, in which case either government of the country-pair n and i can choose to incur a fixed cost κ and engage in bilateral negotiation. Either country ("coercer") can threaten to impose sanctions and restrict either the imports to or exports from the counterparty ("target") in a sector, and the target can retaliate also by sanctioning.

Welfare losses from sanctions Sanctions cause economic damages by disrupting consumption and production plans. Suppose that under sanctions, country n no longer has access to good k from country i. The import processor can no longer produce the consumption good c_{ni}^k. The ex-ante trade orders in all other sectors and country-pairs that are not affected by the sanctions must be fulfilled as they were planned. Let variables with tilde denote the prices and quantities after sanctions are imposed.

The consumption under sanctions is

$$\widetilde{c}_{nj}^{k'} = \begin{cases} 0 & j = i, k = k', \\ c_{nj}^{k} & \text{otherwise.} \end{cases}$$

Producer of good k in country i hires inputs according to

$$\widetilde{x}_i^k = \alpha \left(\frac{\widetilde{q}_i^k}{a_i^k} \right)^{1/\alpha} \left(\frac{\mu_i^k}{1-\alpha} \right)^{\frac{\alpha-1}{\alpha}}, \qquad \widetilde{q}_i^k = \sum_m \widetilde{q}_{mi}^k.$$

There are three potential sources of welfare changes. First, there is a loss of consumer surplus in country n due to losing access to the consumption good k produced by country i. Second, the import processor in country n for that good has made sunk investments ex-ante, in expectation of earning quasi-rents ex-post. The loss of these quasi-rents under sanctions is equal to $(1-\omega)\, p_{ni}^k c_{ni}^k = (1-\omega)\, s_{ni}^k$. Third, the producer in country i also experiences a loss of quasi-rents ex-post.

The change in country n's welfare due to losing access to good k from country i is

$$\begin{aligned} \delta_{ni}^k \equiv & \sum_{k'} \beta_n^{k'} \frac{\sigma^{k'}}{\sigma^{k'}-1} \ln \left(\sum_j \left(\widetilde{c}_{nj}^{k'} \right)^{\frac{\sigma^{k'}-1}{\sigma^{k'}}} \right) - \omega \sum_{k'} \sum_j p_{nj}^{k'} \widetilde{c}_{nj}^{k'} \\ & - \left[\sum_{k'} \beta_n^{k'} \frac{\sigma^{k'}}{\sigma^{k'}-1} \ln \left(\sum_j \left(c_{nj}^{k'} \right)^{\frac{\sigma^{k'}-1}{\sigma^{k'}}} \right) - \omega \sum_{k'} \sum_j p_{nj}^{k'} c_{nj}^{k'} \right] \\ = & \frac{\sigma^k}{\sigma^k - 1} \beta_n^k \ln \left(1 - \frac{\left(p_{ni}^k \right)^{1-\sigma_k}}{\sum_j \left(p_{nj}^k \right)^{1-\sigma_k}} \right) + \omega s_{ni}^k \\ \approx & - \left(\frac{1}{\theta^k} + 1 - \omega \right) s_{ni}^k \end{aligned}$$

The last line is derived using the first-order approximation $\ln(1-x) \approx -x$ and then substituting the trade elasticity $\theta^k \equiv \sigma^k - 1$, with the approximation error being second-order in the expenditure share within good k by n on imports from i. There is a greater welfare loss when the trade elasticity is smaller.

The loss of quasi-rents for country i's producer of good k is:

$$\left(p_i^k \widetilde{q}_i^k - \widetilde{x}_i^k \right) - \left(p_i^k q_i^k - x_i^k \right). \tag{13}$$

Let $\gamma_{ni}^k \equiv q_{ni}^k / q_i^k$ denote the fraction of country i's output in good k that is sold to country n; we have that $\widetilde{q}_i^k = \left(1 - \gamma_{ni}^k\right) q_i^k$. Using cost-minimization (10) we can write the ex-ante investment μ_i^k as a function of the ex-ante expected output q_i; we can then use (12) to write $\widetilde{x}_i$ and x_i as functions of output $\widetilde{q}_i$ and q_i, respectively. The loss of producer quasi-rent is thus

$$
\begin{aligned}
& p_i^k\left[\left(\tilde{q}_i^k-\alpha\left(\tilde{q}_i^k\right)^{1/\alpha}\left(q_i^k\right)^{\frac{\alpha-1}{\alpha}}\right)-(1-\alpha)\,q_i^k\right] \\
= \;& p_i^k q_i^k\left[\left(1-\gamma_{ni}^k\right)-\alpha\left(1-\gamma_{ni}^k\right)^{1/\alpha}-(1-\alpha)\right]\approx 0
\end{aligned}
$$

where the approximation follows from $\left(1-\gamma_{ni}^k\right)^{1/\alpha}\approx 1-\gamma_{ni}^k/\alpha$, with the approximation error being second-order in γ_{ni}^k, the fraction of country i's output in good k that is sold to country n.

The preceding analysis implies that the change in importer's welfare due to losing access to a good is first-order in the expenditure share on that good, whereas the change in exporter's welfare due to losing producer access to a market is only second-order in the share of output sold to the market. Intuitively, the producer loss is only second-order because producers are competitive and make no pure rents, and the loss of *ex-post* quasi-rents is equal to the cost of over-investment ex-ante given the effective smaller market size ex-post. Because producers engage in cost minimization, the envelope theorem implies that ex-ante over-investments only result in second-order losses.

We note that the asymmetric impact of import and export sanctions hinges on the assumption of quasi-linear utility, which implies that industrial policy does not affect relative factor prices; specifically, the marginal cost of production input is held fixed despite sanctions. In a more general environment with endogenous factor prices, import bans may have first order effects through the impact on relative factor prices and the terms of trade. Nevertheless, the preceding analysis may be useful in highlighting that, even in that more general case, if decentralized agents are competitive, welfare losses arise from losing access to an imported good (coercer bans exports to target) or declining purchasing power (coercer bans imports from target, thereby affecting terms of trade and the target's purchasing power) can be first-order, yet the losses in producer surplus may be only second-order. We later empirically construct both measures of import dependence and export penetration, and we demonstrate that, as the model predicts, bilateral asymmetry in import dependence is a stronger predictor of bilateral political engagement.

Recognizing that import bans have only second-order impact on a target's welfare, we specify that coercers threat to impose export bans when engaging in international negotiations. Moreover, we assume given an export ban of good k from coercer i, the target country n's utility loss has an idiosyncratic component:

$$L_{ni}^k \equiv \delta_{ni}^k - \epsilon_{ni}^k, \tag{14}$$

where we interpret the ϵ_{ni}^k as some shock to the ease with which one country can levy a sanction on another (via some mechanism other than trade shares s^k_{ni}). For example, a country may face internal pressures from lobbying groups or public opinion which make it more or less difficult to credibly threaten an export ban of some good, but state actors may be uncertain of the degree of backlash that will actually materialize.

Nash bargaining In equilibrium, countries engage in Nash bargaining over bilateral transfers, and sanctions never materialize. The threat of sanctions and the associated deadweight losses enable the coercer to extract concessions from the target in the form of a bilateral transfer. To extract the maximal concession, the coercer i's government chooses a sector k which leads to the greatest welfare loss, $k = \arg\min L^k_{ni}$. The target n can retaliate by also threatening to sanction the coercer. The pair of countries negotiate over bilateral threats, and the equilibrium transfer F_{ni} is determined by Nash bargaining.

Formally, country n's payoff under sanctions (i.e., the "outside option") is $u_n + \min_k L^k_{ni}$. Nash bargaining implies that the two countries negotiate to avert sanctions, and use the transfers to split the welfare gains from averting sanctions equally relative to each country's outside option.

For notational simplicity, in what follows we let $\hat{\theta}^k \equiv \left(\frac{1}{\theta^k} + 1 - \omega\right)^{-1}$. Country n's welfare under Nash bargaining is

$$\begin{aligned}\hat{u}_n &= \underbrace{\left(u_n + \min_k L^k_{ni}\right)}_{\text{outside option}} \underbrace{-\frac{1}{2}\left(\min_k L^k_{ni} + \min_k L^{k'}_{in}\right)}_{\text{split the gains relative to outside option}} \\ &= u_n - \underbrace{\frac{1}{2}\left[\max_k\left(\frac{1}{\hat{\theta}^k}s^k_{ni} + \epsilon^k_{ni}\right) - \max_{k'}\left(\frac{1}{\hat{\theta}^{k'}}s^{k'}_{in} + \epsilon^{k'}_{in}\right)\right]}_{\text{ex-post transfer from } n \text{ to } i} \end{aligned} \tag{15}$$

We assume that ϵ^k_{ni} follows i.i.d. Gumbel distribution. Under the distribution assumption, the ex-ante expected value of transfers from n to i is

$$\mathbb{E}_\epsilon\left[F_{ni}\right] \equiv \frac{1}{2}\mathbb{E}_\epsilon\left[\max_k\left(\frac{1}{\hat{\theta}^k}s^k_{ni} + \epsilon^k_{ni}\right) - \max_{k'}\left(\frac{1}{\hat{\theta}^{k'}}s^{k'}_{in} + \epsilon^{k'}_{in}\right)\right] \approx \frac{1}{2K}\sum_k \frac{1}{\hat{\theta}^k}\left(s^k_{ni} - s^k_{in}\right) \tag{16}$$

where the approximation is again derived by taking a first-order approximation around $s^k_{ni} = 0$ (so that the approximation error is second-order in s^k_{ni}).

Definition 1 *(**International Power**) We define $\Delta_{ni} \equiv \mathbb{E}_\epsilon\left[F_{ni}\right] = \frac{1}{2K}\sum_k \frac{1}{\hat{\theta}^k}\left(s^k_{ni} - s^k_{in}\right)$ as the power that country i has over country n.*

We make a few observations. First, note that $F_{ni} + F_{in} = \Delta_{ni} + \Delta_{in} = 0$. For expositional convenience, we refer to the two countries as coercer and target based on the order of the subscripts: Δ_{ni} is the power of coercer i over target n, and Δ_{in} is the power of coercer n on target i. Note that power (Δ_{ni}) is an ex-ante measure: it is defined based on trade flows, and it captures expected transfers before the idiosyncratic shocks ϵ^k_{ni} are drawn. After the idiosyncratic shocks are realized, either country n could become the coercer so long as the idiosyncratic costs of sanctions are favorable.

Second and more importantly, a coercer i has a greater power over target n if the target's import dependence on the coercer exceeds the coercer's import dependence on the target ($s^k_{ni} > s^k_{in}$), especially in sectors with low trade elasticity (low θ^k).

Cost of negotiation When an international dispute arises (which happens with probability λ_{ni}) between countries n and i, one country must incur a fixed cost κ to start a bilateral negotiation, before drawing the idiosyncratic costs (ϵ^k_{ni}). If neither country pays the fixed cost, the dispute resolves without any transfers. This implies that, when a dispute arises, country i's government incurs the fixed cost against country n iff $\Delta_{ni} \geq \kappa$. We denote $\Lambda_{ni} \equiv \lambda_{ni} \cdot \mathbf{1}_{|\Delta_{ni}| \geq \kappa}$ as the probability of negotiation between countries n and i. Unlike most other bilateral variables which are directional, λ_{ni} and Λ_{ni} are undirected: they capture the likelihood that international disputes and negotiations arise *between* the country-pair n and i. To first-order, the expected payoff to country n due to international disputes is

$$-\sum_i \Lambda_{ni} \left(\Delta_{ni} + \kappa \mathbf{1}_{\Delta_{in} \geq \kappa} \right). \tag{17}$$

We note that equation (17) can be written as two sums, one over the set of countries i for which n has greater power ($\Delta_{in} > 0$) in which n receives an expected gain $\Delta_{in} - \kappa$ for each i, and another sum (over the countries j for which j has greater power) in which n faces an expected loss of $-\Delta_{jn}$ against each j. Each term in the above sum is non-zero if and only if $\Lambda_{ni} \neq 0$; this naturally implies three cases. In the first case, the expected transfer is sufficiently high to justify the incursion of cost κ, but disputes never happen ($\lambda_{ni} \approx 0$) ; country pairs for which this characterization holds are allies. In the second case, although countries' relations may be contentious, they are "evenly matched", meaning that neither expects to gain much from an attempted extraction of rent ($|\Delta_{ni}| < \kappa$). The opportunity for coercion arises in the third case, namely country pairs whose relations are adversarial *and* one country is sufficiently stronger than the other; in this case, one would expect $\Lambda_{ni} > 0$ and thus non-zero terms in the above sum.

Welfare Taking into account international disputes, the *ex-ante* expected welfare is:

$$\mathcal{W}_n \equiv \sum_k \frac{\beta_n^k \sigma^k}{\sigma^k - 1} \ln \left(\sum_i \left(\left(\frac{q_{ni}^k / \tau_{ni}^k}{\omega} \right)^{\omega} \left(\frac{z_{ni}^k}{1-\omega} \right)^{1-\omega} \right)^{\frac{\sigma^k - 1}{\sigma^k}} \right)$$

$$- \sum_k \sum_i \left(p_i^k q_{ni}^k + z_{ni}^k \right) + \sum_k \left(p_n^k q_n^k - \mu_n^k - x_n^k \right) - \sum_i \Lambda_{ni} \left(\Delta_{ni} + \kappa \mathbf{1}_{\Delta_{in} \geq \kappa} \right). \quad (18)$$

The first line captures utility from consumption. The first term on the second line captures the cost of imports and import processing capacities. The second term on the second line captures the producer revenue net of production costs. The third term on the second line captures the expected payoff associated with international disputes, as in (17).

Let $\bar{\Lambda}_n^k \equiv \sum_i \Lambda_{ni} \frac{q_{in}^k}{q_n^k}$ denote the average probability of negotiations against all trade partners, weighted by the domestic export of good k to each trade partner. Substitute Δ_{ni} using (16) and noting that $s_{ni}^k = p_i^k q_{ni}^k + z_{ni}^k$, we have

$$- \sum_i \Lambda_{ni} \Delta_{ni} = \sum_k \frac{1}{2K\hat{\theta}^k} \left(p_n^k q_n^k \bar{\Lambda}_n^k + \sum_i \Lambda_{ni} z_{in}^k - \sum_i \Lambda_{ni} \left(p_i^k q_{ni}^k + z_{ni}^k \right) \right).$$

The ex-ante welfare can be rewritten as

$$\mathcal{W}_n \equiv \sum_k \frac{\beta_n^k \sigma^k}{\sigma^k - 1} \ln \left(\sum_i \left(\left(\frac{q_{ni}^k / \tau_{ni}^k}{\omega} \right)^{\omega} \left(\frac{z_{ni}^k}{1-\omega} \right)^{1-\omega} \right)^{\frac{\sigma^k - 1}{\sigma^k}} \right) \quad (19)$$

$$- \sum_k \sum_i \left(1 + \frac{\Lambda_{ni}}{2K\hat{\theta}^k} \right) \left(p_i^k q_{ni}^k + z_{ni}^k \right) + \sum_k \left(\left(1 + \frac{\bar{\Lambda}_n^k}{2K\hat{\theta}^k} \right) p_n^k q_n^k - \mu_n^k - x_n^k \right) \quad (20)$$

$$- \sum_i \Lambda_{ni} \left(\kappa \mathbf{1}_{\Delta_{in} \geq \kappa} - z_{in}^k \right). \quad (21)$$

When the government is a price-taker, it has no incentives to implement industrial policy absent international disputes. That is, when $\lambda_{ni} = 0$ for all i, the allocations maximizing $\mathcal{W}_n$ holding prices as given would coincide with the allocations chosen by the decentralized agents. When $\lambda_{ni} > 0$, however, the welfare function features a wedge $\left(1 + \frac{\Lambda_{ni}}{2K\hat{\theta}^k}\right)$ on the marginal social cost of consuming goods produced by adversaries (relative to the cost perceived by the decentralized agents) and a wedge $\left(1 + \frac{\bar{\Lambda}_n^k}{2K\hat{\theta}^k}\right)$ on the marginal social value of production revenue.

2.4 Implications

Given the prospect of international disputes, the government has an incentive to impose industrial policy to reduce import dependence on adversaries and promote export penetration to adversaries, in order to accumulate international power Δ_{in} and extract more transfers. Specifically, setting a subsidy $t_n^k = \frac{\bar{\Lambda}_n^k}{2K\hat{\theta}^k}$ to intermediate good investment aligns the private value of the investment with the social value, and setting $\eta_{ni}^k = \frac{\Lambda_{ni}}{2K\hat{\theta}^k}$ aligns the private cost of final good investment with the social cost. This implies that shocks to international relations (λ_{ni}) affect bilateral trade flows; a worsening relation between country pairs causes a decline in trade flows in both directions. Intuitively, the prospect of disputes gives rise to the strategic importance of international power. Export penetration to foreign economies raises international power of country n and, conversely, import dependence on a foreign country lowers international power. When the asymmetry in the international power exceeds the fixed cost of negotiation ($|\Delta_{ni}| \geq \kappa$), the government has an incentive to subsidize production and tax imports, especially those from adversarial trade partners (high λ_{ni}). Decentralized agents do not take into account international power when making production and consumption decisions; hence, they overvalue imports and undervalues exports against adversarial partners.

The model also implies that an increase in power asymmetry ($|\Delta_{ni}|$) due to preference or technological shocks (e.g., changes in β_n^k or a_i^k) raises the probability $\mathbf{\Lambda}_{ni} \equiv \lambda_{ni} \times \mathbf{1}_{|\Delta_{ni}| \geq \kappa}$ of international engagement and negotiation.

We make a few observations on interpreting the model.

First , we have written payoffs using the first-order approximation in foreign expenditure shares s_{ni}^k. In the data, foreign import penetration in any sector is quite low even at disaggregated sector levels; hence, the simplification does not materially alter the model's predictions. Likewise, foreign export shares γ_{ni}^k are missing from the government's objective function because they are only second-order. We have also assumed that the planner takes the probability of negotiation as given; this is also consistent with our approach of capturing the first-order impact of trade flow on welfare, as marginal changes in the probability of negotiation only has second-order impacts on welfare.

Second, in our baseline model, all countries have the same total expenditure on tradables, $\sum_i \sum_k p_{ni}^k q_{ni}^k = 1$. In Appendix D.2, we discuss an extension where countries differ in size and thus their total tradable expenditures. In that case, the power measure should continue to be based on import expenditure in *shares* if the marginal cost of concessions also scales with country size, and the power measure should instead be based on import expenditure in *levels* if the marginal cost of concessions does not scale with size. We think both specifications could be appropriate in different scenarios. For instance, it may be more costly for the US than for a smaller country to concede to certain foreign demands and give up intellectual properties; in this case, the marginal cost of concessions should scale with size. In other contexts, especially when the concessions represent actual payments, the marginal cost should be invariant to size. Empirically, we construct our measure of power using imports in both shares and levels.

3 Measuring international power

Following the model, we now develop a measure on international power, which we describe in Section 3.1. We describe the data source in Section 3.2, and present a set of descriptive patterns of the measured international power in Section 3.3.

3.1 Towards a measurement

Our main measure aims to capture asymmetric export power (i.e., import dependence) between country pairs. Specifically, exporter i's power over importer n at year t is characterized as the importer's dependence on exporter during year:

$$s_{niKt} = \frac{V_{niKt}}{\sum_{i' \in World} V_{ni'Kt}}, \tag{22}$$

where V_{niKt} denotes the trade volume from i to n in K at year t, and K denotes a set of sectors considered to measure power. Note that in the model we have assumed countries can threaten to ban trade in any sector against one another, but there may be practical constraints over the subset of sectors for which threats are feasible. When constructing empirical measures of power we consider different sets of potential sectors as discussed below.

We develop two specifications of import dependence: *(i)* "all sectors," where $\mathbb{K}$ is all HS-section level sectors traded across countries;[4] and *(ii)* "maximum sector," where $K^*(ni)$ is defined as the set of sectors that have the highest import levels from country i to country n, calculated annually. If, across various years, different sectors emerge as having the maximum import levels, $K^*(ni)$ consolidates all these sectors into one comprehensive set.[5] One can consider import dependence based on all sectors reflects a potential threat to impose complete export embargo, and that based on the maximum sector reflects threat to impose export embargo on only one sector where the sector would induce the largest disruption to total trade volume.

4. For specific country pairs in, they may not be engaging in trade activities in all sectors; in a robustness exercise, we alternatively define "all sectors" as those traded between country pairs of in, denoted as $\mathbb{K}_{\{in\}}$.

5. The HS-section, defined by the Harmonized Commodity Description and Coding System (HS), represents the broadest classification of goods, encompassing distinct, non-overlapping HS-2 sectors. Moreover, We revised the "minerals" and "base metals" sections, as 'minerals' mainly consist of petroleum products, and 'base metals' of metals and minerals. Specifically, we transferred sectors 25 (Salt, sulphur, lime, cement) and 26 (Ores, slag, ash) from "minerals" to "base metals."

Following Equation (16) in the conceptual framework, we define power (Δnit) as the (directed) difference between n's dependence on i and i's dependence on n:

$$Power_{i \to n,t} = s_{nit} - s_{int}. \tag{23}$$

This captures the credibility of an export disruption threat that i can impose on n, anticipating the potential retaliation. Note that this implicitly restricts the relative action to be in the same domain, namely, countries react to trade partners' export ban by inflicting an export ban as well. Moreover, in a number of the empirical analyses where we cannot readily separate the direction of key outcomes of interest, we use the notion of (undirected) asymmetry ($\Delta pair, t$) when we do not distinguish between the $i \to n$ and $n \to i$ direction:

$$Power_{\{in\},t} = |s_{nit} - s_{int}|. \tag{24}$$

Notably different from Equation (16), we do not specify the trade elasticities θ^k when constructing these empirical measures of power because they are not directly observable in the data. A key exercise in this paper is to relate pairwise trends of power to bilateral engagement. As a validation exercise, we also conduct this analysis with empirical measures of power derived from each sector (HS-section) separately. Given that we omit the trade elasticities in our empirical definition, the model implies that our estimated coefficients (which relate engagement to power) should be larger for sectors with lower trade elasticities, which is indeed what we find when comparing our sector-level power coefficients to measures of trade elasticities from the literature.

3.2 Data source: trade flow

Bilateral trade flow is the only empirical data needed in order to operationalize the power measures described above. We use 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.[6] The BACI database corrects for reporting inconsistencies between importers and exporters, and classifies products at the 6-digit HS code level. Our baseline analyses focus on HS-section level aggregation.[7] The data covers the period from 1995 to 2021, though we focus on data from 2000 onwards as the trade volume coverage is left-censored prior to 2000.

Our analyses throughout the paper draw a number of auxiliary data sources. We use country-level yearly GDP in current US dollars from the World Bank to control for

6. See Gaulier and Zignago (2014) for details of the BACI database.

7. We adjust the standard HS-section classification by reassigning sectors 25 (Salt, sulphur, lime, cement) and 26 (Ores, slag, ash) from minerals to base metals. We replace general trade data on arms and ammunition with the specialized SIPRI arms trade data, as the latter is much more comprehensive in its coverage.

GDP differences within country pairs. Some goods are considered critical in supply chain procurement. To classify critical goods, we use the draft list of critical supply chains compiled by the Department of Commerce's International Trade Administration (ITA) The list is compiled through public submission and contains 2409 products at 8- or 10- digit HS code classified into public health, ICT, energy, and critical minerals sectors. The products are also classified into the stages of production such as input, output, or capital. Furthermore, we compare sector-specific impact with the sector's elasticity of substitution across countries exporting the same products. We use the HS 8-digit level elasticity of substitution estimated by Broda and Weinstein (2006). To obtain the sector level elasticities, we first aggregate up to HS 6-digit codes by taking simple averages and take the weighted sum up to the HS-section level weighted by the global trade volume of the 6-digit goods in 2015.

3.3 Descriptive patterns

We next provide some stylized descriptive patterns based on the international power measure in order to provide a sense of what is incorporated. We focus many of such patterns on China to fix ideas, although we note that the power measure covers all country-pairs around the world.

International power measures correlated with alternative measures of international interdependence The international power measure that we develop reflects international interdependence measures in the literature. One such measure is the Formal Bilateral Influence Capacity (FBIC) index, a bilateral measure on country's overall influence on one another.[8] Specifically, we focus on the components of the FBIC index that is not directly a measure of bilateral trade exposure: *political bandwidth*. This quantity expresses the volume of interaction between two countries, as measured by: *(i)* the level of diplomatic representation between two countries (e.g., dedicated ambassador vs. interest desk serving multiple countries); and *(ii)* the number of intergovernmental organizations in which both countries are members.

We examine, in Appendix Table A.1, the correlation between the international power measure that we develop and the FBIC political bandwidth index during the same time period. One observes that on average, there is a strong correlation between the two measures. In other words, while our international power measure is derived entirely out of economic activities, it reveals broad bilateral dependence as conceptualized by scholars

8. See https://korbel.du.edu/fbic for details.

in international relations studies. Importantly, the correlation between our international power measure and the FBIC index substantially reduces when we control for country-pair fixed effects. This is because the international power measure that we develop captures richer over-time variation (in addition to the cross-sectional variation as reflected in the FBIC index), and the nature of the FBIC measures such as diplomatic representation change much more slowly over time.

International power varies across countries and over time The international power measure captures rich variation across countries and over time. Take the United States as an example. Figure 1, Panel A(a), plots the average power that US exerts toward other countries during the 2000 to 2021 period. One observes that US holds disproportionately larger power over countries in the North and South America relative to countries in other continents such as Europe and Africa. US's power toward countries in the Asian Pacific region is unevenly distributed: its power towards allies such as Japan and Australia is large, while it holds limited power towards China despite the extraordinarily high trade volumes between the two countries. Panel A(b) plots the changes in US power over the rest of the world over time. US's power over Japan, Australia and Taiwan mildly fluctuates but remains largely table during the two decades since 2000. However, its power noticeably declined toward China, and the decline was especially overt during 2000 to 2005.

We present the equivalent plots for China in Panel B. China exhibits power that are geographically distributed in very different ways that the US does. For instance, China holds substantial power over many of its neighboring countries such as India and Vietnam, as well as countries in East Africa and South America. While US does not hold much power over China, China in return exhibits considerable power towards the US, reflecting the trade asymmetry between the two countries. Interestingly, the global distribution of power exposed to China is negatively associated with that of the US, in other words, countries that are more exposed to import dependence from China tend to be less exposed to import dependence from the US. Regressing China's power over country i on the USA's power over the same country country i yields a coefficient of roughly -0.14 (p-value < 0.001). Furthermore, in contrast with the US, we observe China's power rising against most countries between 2000 and 2021, presumably a result of China's trade expansion by joining WTO and its domestic economic growth. We investigate these forces next.

Power stemmed from China's trade expansion and sector-specific exposure A plausible reason for China's rising power toward other nations since 2000 is its rapid rise as a global export hub after China joined the WTO in 2001.

To examine this possibility, we measure importing countries' exposure to China's export as the weighted sum of China's global market share for each sector. Specifically, we define $ChinaExposure_{\{CHN \to n\},t} = \sum_{k \in K} CGMS_{k,t} \times w_{nk\tau}$, where $CGMS_{kt}$ = China's global market share of k (HS-section) in t, and $w_{nk\tau}$ = the share of k in n's aggregate import in pre-period τ (1995-1999). In other words, $ChinaExposure_{\{CHN \to n\},t}$ captures the combination of China's overall export growth and importing countries' differential exposure to such growth as a result of pre-existing differences in their sectoral composition of imports.

We then examine whether China's (export) power towards other countries is associated with their exposure to China's trade expansion. In particular, we estimate the following regression specification:

$$\text{Power}_{\text{CHN}\to n,t} = \beta_1 \text{China Exposure}_{\text{CHN}\to n,t} + X'\gamma + \epsilon_{\text{CHN}\to n,t}. \tag{25}$$

Appendix Table A.2 presents the results. One indeed observes that China's rising power over other countries can be explained (at least in part) by its trade expansion and importing countries' differential exposure to such expansion.

Power stemmed from China's industrial policy An important component of the conceptual framework is the role of industrial policies (broadly defined) that may shape countries' international power. We demonstrate such a role of industrial policies focusing on China's 10th Five Year Plan as a case study.

The Five-Year Plans (FYP) are a series of social and economic development initiatives issued by Chinese Communist Party. The 10th FYP spanned the period 2001-2005. It contained fewer specific quantitative growth targets and more tentative structural reform goals than previous iterations. Focuses included growing the secondary and tertiary sectors as well as spurring R&D. Notable sectors explicitly stimulated by the 10th FYP include industrial machinery such as nuclear reactors, furnaces and boilers. Less advanced manufacturing sectors such as apparels also continued to be targeted.

We examine whether exposure to the 10th FYP increases China's power in corresponding sectors. Specifically, we estimate the following regression specification:

$$Y_{nk} = \beta_0 + \beta_1 \sum_{k \in \mathcal{K}} \mathbb{1}[k \in FYP] \times w_{nk}^{\mathcal{K}} + \alpha_n + \epsilon_{nk}, \tag{26}$$

where Y_{nk} is either China's export volume or power associated with sector k, and $w_{nk}^{\mathcal{K}} =$

$\frac{V_{nk}}{V_{n\mathcal{K}}}$, namely, importer's import in an hs4 sector k out of its aggregate import of sector $\mathcal{K}$ at the HS-section level.

To construct our exposure measure, we first construct weights of each HS4 on the sector-level measure constructed from an earlier period (1995 to 2000). For the exporter power case, it is the importer's import in an hs4 sector k out of its aggregate import of sector $\mathcal{K}$. For the purposes of our analysis, we define the pre-period as the first two years of the 10th FYP (2001-2002) and the post-period as the last year of the FYP and the subsequent year (2005-2006). The changes are defined as the change in the mean values from the pre-period to the post-period. The treated sectors are those that were included in the FYP *starting* in the 10th FYP.

Appendix Table A.3 reports the estimates, where columns 1-2 focus on export volumes as outcomes of interest, and columns 3-4 focus on sector-specific power that China possesses. At the average rate of HS-section exposure, one observes that the sectors targeted by the 10th FYP experienced a substantial increase in export, by 25.7% relative to pre-FYP level. Accordingly, the (export) power that China exhibits in these FYP-targeted sectors sharply rose during this period as well—on average, China's power rose by 32.1% among sectors targeted by the FYP.

4 Power induces more bilateral engagement?

As we describe in Section 2, shocks to international power would affect diplomatic engagement, a primary consequence of international power as a credible threat. In this section, we investigate whether this is indeed the case.

4.1 Data source: bilateral engagement

In order to examine the consequence of international power on diplomatic engagement, we first need to measure diplomatic engagement. We use the Integrated Crisis Early Warning System (ICEWS) dataset to record bilateral engagement events such as countries' expressing intent to meet or negotiate with one another, appealing for economic aid from others, etc.

The ICEWS dataset is constructed by automatically scanning newspaper articles around the world and categorizing stories into different event types. We primarily focus on bilateral events for this project, where such event has date, the country-pairs involved in the event, event category, and associated intensity between -10 and 10 where the magnitude indicates extremity.

While the events are bilateral in nature, it is often difficult to distinguish "direction" of the initiator: for example, an event indicative of two countries meet to negotiate would reflect mutual agreement to enter such negotiation, regardless of whether one side of the country pair was recorded to meet with the other country. Thus, we treat all bilateral events as undirectional for the baseline analyses.

Overall, we observe $6,733,036$ bilateral events across $23,516$ country pairs around the world, from 2001 to 2021. On average, about 14 bilateral engagement events occur between a specific country pair, although many do not engage with one another (42.96%), and country pairs in the top decile engage on average 145 times annually.[9] We provide a full list of bilateral event categories, ranked by intensity, in Appendix Table A.4. In the baseline analyses, we focus on engagement events that are not violent or involve military forces, i.e., within the intensity range of $[-7, 8)$. These non-violent engagement events represents 92% of all bilateral engagement.

We aggregate all events in a specific category between country pair in a given year. One may be concerned that the basic level of events occurrence recorded by the ICEWS may reflect observation biases due to factors such as differential access to media resources. Thus, we standardize the event count for each event category at the undirected country pair level, and we use the pair-wise z-score across the event categories as the primary outcome of interest.

4.2 Empirical strategy: within country-pair changes

Before examining the relationship between international power and bilateral engagement and negotiation more formally, we first provide a few descriptive examples to demonstrate the underlying pattern.

In Appendix Figure A.2, Panel A, we zoom into the country pair of the USA and Saudi Arabia, where we plot over the period of 2001 to 2021 their pairwise power (in orange) and diplomatic engagement (in blue). One notices the co-movement between these two series, that is, as the power asymmetry between the USA and Saudi Arabia falls, their diplomatic engagement decreases as well. Panel B plots the similar series but for Russia and India: again one observes a co-movement between power and diplomatic engagement. Moreover, the evolution of power and diplomatic engagement between Russia and India follows very different trend as compared to their bilateral trade flow and the difference in total GDP sizes.

9. Appendix Figure A.1 plots a histogram on the average annual engagement events across country pairs with engagement levels that fall in the top decile.

Motivated to by these examples, we proceed to our empirical investigation, where we examine the relationship between international power between country pairs and the subsequent bilateral engagement and negotiations between them. Specifically, we estimate the following specification:

$$\text{Engagement}_{\{in\},t} = \beta_1 \text{Power}_{\{in\},t-1} + \beta_2 \text{GDP difference}_{\{in\},t-1} + \beta_3 \text{Total trade}_{\{in\},t-1} + \gamma_t + \alpha_{\{in\}} + \epsilon_{\{in\},t} \tag{27}$$

where the subscripts $\{in\}$ indicate that these variables are undirected and correspond to the pair containing countries i and n. Thus, *power* and *GDP difference* measure the absolute difference between the two countries' values, and *total trade* records the volume of bilateral trade within that pair-year. Further, we standardize all covariates and *engagement* on the pair level, meaning that we compare deviations from the mean of power within pair over time to the evolution of bilateral engagement also within pair and over time. As a result, all pairs have mean-zero values of *trade*, *GDP difference*, and *power*. Importantly, we control for country pair fixed effects in order to account for time-invariant differences in engagement levels between specific pairs of countries. Finally, we include year fixed effects to account for the fact that variables like *total trade* or *engagement* are, on average, increasing over time. Standard errors are clustered at the country pair level.

Table 1 presents the results, where columns 1-3 focus on power derived from all sectors of trade, and columns 4-6 focus on that from the sectors that maximize bilateral trade volume. One observes across both measures, an increased power (asymmetry) between the two countries is associated with a substantial and statistically significant increase in their bilateral engagement and negotiation incidences. As we control for country pair fixed effects and year fixed effects throughout, this association that we estimate is driven by changes in power dynamics and economic associations between countries: on average, a one standard deviation increase in power asymmetry between a pair of countries stimulate a 0.24 standard deviation increase in bilateral engagement (or, 9.6% increase relative to the mean). Importantly, this relationship stands as we control for bilateral trade flows (in columns 2 and 5) and in addition GDP size differences (in columns 3 and 6), suggesting that it is not a mere reflection of the overall aggregate economic activities and sizes between the two countries.

We plot, in Figure 2, the relationship between power asymmetry (on x-axis) and bilateral engagement (on y-axis), controlling for pair and year fixed effects following the baseline specification described above. The pattern exhibits a remarkable degree of linearity.[10] Note that left tail of the power distribution deviates from such linear relationship.

10. We formally test for concavity or convexity of the relationship between power and bilateral engage-

This is likely driven by countries with close alliance ties and trade disproportionally and asymmetrically large quantity (e.g., between the US and Canada); see Appendix Figure A.4 for the corresponding figures plotted separately for trading with allies and non-allies.

As a placebo exercise, we examine whether power asymmetry across countries are associated with events occurred domestically. Specifically, we focus on domestic socioeconomic events that might be related to general economic conditions and trade activities, but unrelated to explicit bilateral, diplomatic relationships. We standardize the count of domestic events for countries in a given year in a specific event category, and we create an z-score index summarizing the events across all event categories within each country, and then sum said z-scores across both countries in the corresponding country pair. We then estimate the baseline specification, replacing the bilateral engagement with the sum of domestic events z-scores as the outcome of interest. Appendix Table A.6 presents the results: one observes that in contrast with the increased association between power and bilateral engagement, power does *not* predict the fluctuation in occurrence of domestic events (above and beyond what is captured by aggregate economic activities and economic size). This suggests that the measure of power asymmetry indeed captures forces that specifically shape countries' outward projection toward one another.

4.2.1 Robustness

We demonstrate in Appendix Table A.8 that the aforementioned results (shown in Table 1) are robust to a variety of changes to the specification and sample.

Alternative sample An immediate concern when studying the relationship of power derived from trade and political interaction is that this relationship only exists at the 'top' of global politics, i.e., China or the USA. More precisely, one may suspect that the relationship between trade asymmetry and engagement is only relevant in the context of great power competition, but that this is not relevant for less powerful countries. So, we reconduct the regression specified in Equation 27 but exclude all pairs that include China, USA, or Russia; in Panel B.1 we demonstrate that the coefficients are extremely similar as in the full-sample result and retain significance at the 1% level. In addition, we restrict our main analysis to trade and engagement data from the years 2001-2021 because of changes

ment in Appendix Table A.5, and we find a weak, often statistically indistinguishable from zero, quadratic term. We in addition plot the relationship using non-standardized power and engagement measures, in Appendix Figure A.3; one observes patterns of moderate concavity in the non-standardized measures. This could be a result of the HS-2 aggregation—the very high degree of concentration in specific sectors rarely emerge at HS-2 level, but could be present at HS-4 or HS-6 level and thus may entering the non-linear range of the relationship between power and engagement.

in trade data procedures in the BACI dataset that occurred in 2000.[11] However, we show in Panel B.2 that including the years 1995-2000 decreases the size of the coefficient on *Power* but it remains significant at the 1% level. This change is unsurprising, given that the explanatory power of trade asymmetry for bilateral engagement would naturally decrease if there is an apparent increase in trade asymmetry that is completely unrelated to engagement, as is true as a result of the procedural shift. Our main results also feature undirected pairs, and treat trade asymmetry as a measure of the gap in relative power, without assigning a more or less powerful country within the pair. However, we also estimate the regression while restricting to a sample for which each country within every pair is always the more/less powerful country in that pair, and find equally significant and slightly larger coefficients in Panel B.3.

Alternative controls and clustering Our main specification features pair and year fixed effects, so as to isolate within-pair over-time variation in the relationship of trade asymmetry to engagement. However, it is possible that the relevant unit for fixed effects should be countries, rather than country pairs. So, we implement fixed effects on the country, rather than country-pair, level, and find in Panel C.2 virtually no difference in comparison to our main results. In addition, Panel C.1 demonstrates the results of employing two-way clustering of standard errors on pair and year (rather than just pair, as in our main results) and again find little difference with our main result.

Alternative engagement definitions Whereas our main result features a pair-level z-score of each unit category of events within the ICEWS database, we also vary this definition for robustness in two ways. Our main specification features events in the intensity interval $[-7, 8)$, which includes events that are reasonably close to the notion of diplomatic engagement, like reducing economic assistance or providing aid. However, it is possible that trade asymmetry could be related to more intense events, such as providing military aid or signing a formal agreement. Thus, we demonstrate the results of our regression when we do not restrict to the aforementioned interval of events and instead include all events in the pairwise z-score. In Panel D.2, the results of this modification demonstrate a small increase in coefficient size and no change in significance. Finally, we return to the main result's category of events but standardize the outcome differently. Instead of using a z-score (which is the sum of standard deviations of each unit event interval within a pair-year), we instead standardize the sum of events within a pair. This

11. Specifically, the threshold of trade between two countries in a given sector for which BACI records a positive trade flow was lowered in 2000, leading to a large jump in trade and power for many countries that is not representative of true changes, but rather procedural evolution within BACI.

serves as an important check because although *Power* is a unit standardized variable for all pairs, the z-score of events is not; each individual unit category of events is itself standardized, but the sum of those standard deviations can vary across country pairs. In other words, the variance of the z-score is not uniform across country pairs, unlike the variance of power, which is always one. Using this alternative standardization, Panel D.1 shows that we again find coefficients significant at the 1% level.

4.3 Empirical strategy: instrumental variable on sector-specific trade exposure

To further establish the causal relationship between power asymmetry and bilateral engagement, we now develop an instrumental variable approach.

We follow the intuition of the descriptive pattern that we document in Section 3.3, where we show that countries' power toward one another could be a result of the combination of trade expansion and differential sector-level exposure of such expansion.

Specifically, we re-write the export power (import dependence) measure we describe in Section 3.1 as a weighted sum of sectors $k \in K$:

$$s_{nit} = \sum_{k \in K} \frac{V_{nikt}}{\sum_{i' \in World} V_{ni'kt}} * \frac{\sum_{i' \in World} V_{ni'kt}}{\sum_{i' \in World} V_{ni'Kt}} = \sum_{k \in K} s_{nikt} * w_{nkt}, \tag{28}$$

where s_{nikt} is n's import dependence on i for the sector k, and w_{nkt} is the share of k in n's aggregate import.

This expression of export power yields a shift-share instrument $b_{nit} = \sum_{k \in K} s_{ikt} * w_{nk\tau}$. The "shift" component arises from decomposition of s_{nikt} into $s_{nikt} = s_{ikt} + \widetilde{s}_{nikt}$. Thus, $s_{ikt} = \frac{V_{ikt}}{\sum_{i' \in World} V_{i'kt}}$, representing country i's global market share of sector k; $\widetilde{s}_{nikt}$ is the idiosyncratic differences for each importer n. The share component the pooled pre-period import share from 1995 to 1999.

In instrumenting for $Power_{\{in\},t} = |s_{nit} - s_{int}|$, we address the directional complexities of our instrument by limiting the samples to country pairs where $s_{nit} \geq s_{int}$ consistently over time. Consequently, the undirected $Power_{\{in\},t}$ in this case is equivalent to a directed power measure, $Power_{i \to n,t}$, and we use $b_{nit} - b_{int}$ as the instrument to maintain directional consistency. Keeping the direction across sample period serves two purposes. First, it ensures that the direction of the sector-level shock origin and destination countries is fixed, which is important for the validation of the exogeneity. Secondly, it removes the ordering issue that arises when applying absolute value to the instrument, such as the case where $s_{nit} > s_{int}$ but $b_{nit} < b_{int}$.

We thus estimate the following two-stage-least square specification:

$$\begin{aligned}\text{Power}_{\{in\},t} =& \beta_1[b_{nit} - b_{int}] + \beta_2\text{GDP difference}_{\{in\},t} + \beta_3\text{Total trade}_{\{in\},t} \\ &+ \gamma_t + \alpha_{\{in\}} + e_{\{in\},t} \end{aligned} \tag{29}$$

$$\begin{aligned}\text{Engagement}_{\{in\},t} =& \beta_1\widehat{\text{Power}}_{\{in\},t-1} + \beta_2\text{GDP difference}_{\{in\},t-1} + \beta_3\text{Total trade}_{\{in\},t-1} \\ &+ \gamma_t + \alpha_{\{in\}} + \epsilon_{\{in\},t} \end{aligned} \tag{30}$$

This approach incorporates common shifts affecting all trading partners, based on their global market share, thus mitigates endogeneity concerns stemming from a specific country's strategic manipulation of market power against specific trading partners for political purposes in a given year. Akin to the approach of Goldsmith-Pinkham, Sorkin, and Swift (2020), we utilize an IV based on differential exposure to a common shock.

This relies on the assumption that the variation in exposure, determined by the share component, is exogenous. Thus, the validity of our IV hinges on the exogeneity of the exposure share. In particular, countries with high exposure to trade in certain industries may possess socioeconomic and geopolitical factors that shape the changes in bilateral engagement through channels other than power and credible threats, thus violating the exogeneity condition of the share component of the instrument.

Following Goldsmith-Pinkham, Sorkin, and Swift (2020), we proceed with a set of balance tests to check whether the importer n's industry shares in terms of trade exposure in prominent sectors are associated with observable changes in socioeconomic conditions. We compute the Rotemberg weight of each HS-section (corresponding to the level of aggregation in our baseline power measure) in order to focus on the sectors that have the largest contribution to empirical identification. Appendix Table A.7 presents the list of sectors with the highest Rotemberg weights.

To implement balance test, we use various country-level socioeconomic indicators from the World Bank's World Development Indicators (WDI) and Databank International's Cross-National Time-Series Data (CNTS). For each socioeconomic variable defined at importer n, we estimate $w_{nk\tau} = \beta_0 + \beta_1 \Delta X + \epsilon_{nk}$ for each sector k where ΔX is defined as the difference between the mean of 1995 to 1999 and the mean of 2017 to 2021 of the within-country standardized values of X. Appendix Table A.9 presents the estimated correlation between trade exposure and the bilateral differences in domestic economic conditions (e.g., GDP size), international economic activities (e.g., foreign direct investment), military conditions (e.g., armed forces personnel), and domestic political conditions (e.g., number of anti-government demonstrations). We observe some moderate degree of associations (though in distinct directions depending on the variables) in the top 5 sectors according to their Rotemberg weights, and more muted association for other sectors. As a robustness exercise, we develop an alternative specification of the instrument excluding the top 5 sectors and show that the baseline results are unaffected.

1st stage results Table 2, Panel A, presents the 1st stage estimates. Column 1 shows the baseline specification; column 2 corresponds to an alternative specification where we drop the top 5 sectors based on their Rotemberg weights; and finally, column 3 shows another specification using leave-one-out share following Autor, Dorn, and Hanson (2013).[12] The first-stage estimates are positive as expected and statistically strong. Statistically power decreases by construction for the specification where we drop sectors with highest Rotemberg weights, but only slightly so.

IV estimates Table 2, Panel B, presents the 2nd stage estimates. Across specifications, we find a consistent pattern that increase in power (as a result of sector-specific exposure to trade expansion or contraction) stimulates subsequent bilateral engagement and negotiation. In other words, to the extent that our identification assumption is satisfied, power asymmetry across countries generates a causal impact on shifting their tendency to enter negotiation and diplomatic engagement more generally.

4.3.1 Robustness

We demonstrate in Appendix Table A.10 that the aforementioned results (shown in Table 2 are robust to a variety of changes to the specification and sample. In addition to the alternative specifications described in Section 4.2.1, we examine the following perturbation of the baseline specification.

Alternative sample The baseline IV specification in Panel A uses the country pairs with $s_{nit} \geq s_{int}$ throughout the sample period. In Panel B.1, we replicate our analysis with all undirected pairs, which is the sample used in Table 1.

Alternative configuration of the instrument In Panel E.1, we use an alternative IV that takes the form of the absolute value of the difference, $|b_{nit} - b_{int}|$, while using all undirected pairs as samples. Note that this affects country pairs that share similar power such that the relationship between s_{nit} and s_{int} or b_{nit} and b_{int} often reverses over time. In Panel E.2, we estimate a version where all regressors, including the IV, are not standardized within the pair. In Panel E.3, we again do not standardize regressors and use only

12. In particular, instead of considering the global market share of country i as the shifter, we consider country i's market share excluding the target country n in the corresponding country-pair ni; namely, $b'_{nit} = \sum_{k \in \mathcal{K}} c_{(-n)ikt} * w_{nik\tau}$.

one side of b_{nit} instead of taking a difference between the two directions to instrument power. This is a slightly weaker IV since we only exploit the variation from the more powerful country.[13]

4.4 Export power vs. import power

An important insight from the conceptual framework, as outlined in Section 2, is that the threats to impose damage as a result of (unilateral) export disruptions are more substantial than that of import disruptions, even holding fixed the level of measured import and export dependence. Export disruptions generate first order costs to importers, while import disruptions generate only second order costs to exporters on the margin as the exporters can adjust production accordingly and do not need to incur costs on the full value of the lost trade volume.

This implies that, to the extent that bilateral engagement and negotiations are responding to underlying threats arisen from (trade) power that existed between two countries, export power should generate bigger impact than import power.

We empirically examine this. We begin by reconstructing our baseline export power asymmetry measure, but replacing import dependence with export dependence in order to capture import power. Specifically, importer n's power over exporter i at year t is characterized as the exporter's dependence on importer during year:

$$s_{niKt} = \frac{V_{niKt}}{\sum_{n' \in World} V_{n'iKt}}.$$

All other aspects remain identical with the baseline export power measure. We note that while export power and import power between specific pairs of countries are positively correlated, they by no means perfectly align (see Appendix Figure A.5 for a scattered plot of average pairwise export power and import power against the 45-degree line).

We then re-estimate the baseline specification described in Section 4.2, replacing export power with import power measures. The results are presented in Appendix Table A.11. Across the two different import power measurements and regression specifications with various combinations of bilateral economic size and trade flow controls (columns

13. However, this specification is used to compute the Rotemberg weight as recommended by Goldsmith-Pinkham, Sorkin, and Swift (2020). Finite sample decomposition of the linear overidentified GMM estimator as in Goldsmith-Pinkham, Sorkin, and Swift (2020) requires that the instrument can be written as a linear combination of the shift (s_{ik}) and the share (w_{nk}). In baseline, we take a difference of two separate shift-share instruments and standardize within pair, which both cause issues. When we take a difference, we have two separate shift-share instruments within the IV term, which makes it difficult to write the GMM estimator as in Goldsmith-Pinkham, Sorkin, and Swift (2020). When we standardize, the shift component is taken differently by all importers because the relative magnitude of the shift is different across importers. To simplify our approach, we compute Rotemberg weight in the simpler setup as in Panel E.3.

1-3 and 5-7), we observe a positive association—but in significantly smaller magnitude—between import power and the corresponding bilateral engagement and negotiations. Alternatively, we estimate the relationship between bilateral engagement and the pairwise import and export power simultaneously (columns 4 and 8). We again observe a consistent pattern of a strong positive relationship between export power and bilateral engagement, and smaller coefficients on import power (approximately half the size as compared to export power).

One important aspect where the empirical findings deviate from the predictions of the conceptual framework is that we find evidence of positive association of import power and bilateral engagement, rather than the zero impact that the conceptual framework entails. This could be a result of a range of factors. First, threats on trade disruption may not be marginal in terms of quantity, but can be inframarginal. Second, indirect influence and complex supply chain, which we abstract away from in this study, could mean that one country's import is another country's export either through the influence network or supply chain. Both of these mechanisms could generate positive coefficients of import power on bilateral engagement, although the magnitude should always be smaller than that of export power.

4.5 Sector-specific power

Up until this point, we have been focusing on one country's power over one another as a whole—either through the entire trade activities or by allowing countries to threat trade disruptions in sectors that maximize the bilateral trade flows. In this section, we examine whether certain trade in certain sectors differentially derive greater power in terms of stimulating bilateral engagement.

We use two strategies to gauge the contribution of each sector to the international power. First, we take each of the HS-section as the universe of trade activities, and recalculate the baseline export power asymmetry (for the "all sector" specification).[14] This then provide the sector-specific (export) power of the corresponding sector that we focus on. Second, we exclude each of the HS-section from trade activities, one at a time, and recalculated the baseline export power stemmed from the rest of the global economy. The sector whose exclusion that generates the largest drop in estimated stimulation of bilateral engagement would imply a higher degree of contribution of this sector. We re-estimate the baseline specification described in Section 4.2, replacing export power with the sector-

14. For the HS-section of "arms and amulations," we supplement the BACI data with the time series compiled by Stockholm International Peace Research Institute (SIPRI), as the standard trade volume reported by COMTRADE is highly incomplete.

specific measures described above. Appendix Figure A.6 presents the results. Panel A uses the power measure that exclusively focuses on the specific sector of interest, ranking the sectors in descending order of the estimated coefficients (since larger coefficient estimates are consistent with higher contribution of the sector to international power). Panel B uses the power measure that excludes the specific sector of interest, ranking the sectors in ascending order of the estimated coefficients (since smaller coefficient estimates are consistent with higher contribution of the sector to international power). Both measures yield a similar pattern: power derived from sectors such as chemical products, optical medical instruments, and machinery/electrical equipment stimulates bilateral engagement at a much higher degree than sectors such as apparel and footwear.[15]

What predicts sector-specific power? We focus on two aspects, both reflecting important implication of the conceptual framework, reflecting the insights from Hirschman (1945)—sectors with larger adjustment costs would impose larger, more credible threats to the countries that may face the disruption.[16]

First, we examine sectors' trade elasticities. We follow Broda and Weinstein (2006) to obtain such estimates of trade elasticities the HTS level, and we match them to the corresponding sectors of our analyses.[17] Figure 3, Panel A, presents the ranking (in ascending order)of the sector-specific power's impact on stimulating bilateral engagement (y-axis) and the sectors' trade elasticities (see Appendix Table A.12 for estimates in regression forms). Consistent with the role that adjustment cost plays in international power, it indeed appears to be the case that the impact of sector-specific (export) power between two nations on their negotiating and engagement is strongly, negatively associated with the underlying trade elasticities of the sector.

Second, we examine sectors' share of critical goods designated by the International Trade Administration (ITA). We link ITA's categorization to the more detailed sectors defined at the HS-section level; overall, 35% of global trade was in critical goods in 2015.[18] Figure 3, Panel B, presents the relationship between sector-specific power's impact on

15. When we estimate the SIPRI power and Arms from BACI power measure using each measures' samples (30k for SIPRI and 100k+ for BACI), Arms is shown to have bigger power. However, when use the same sample (on the SIPRI's 30k sample), SIPRI is much larger, and larger than other sectors. Note that power in sectors such as minerals and base metals do not exhibit particularly strong impact on stimulating engagement; we think this is in part due to the aggregation at HS-section level where the impact of highly critical minerals such as rare earth is diluted with other less critical ones that belong to the same HS-section.

16. There are of course more dimensions in which these sectors might differ than the sectors (at least at HS-section level) themselves, and hence making precise identification of the sources of such heterogeneity challenging.

17. Specifically, we convert HTS level estimates to HS-section level by taking weighted average using 2015 global trade volume.

18. Appendix Figure A.7 plots the share of critical goods in each HS-section. See Appendix A for details of the procedure to distinguish critical vs. non-critical goods and sectors.

stimulating bilateral engagement and the sectors' share of critical goods. Again, consistent with the adjustment cost, sectors that have more critical goods exhibit greater effective power as those goods are likely more difficult to be substituted by other goods or other suppliers.

5 Adversarial relationships and power build-up?

In the previous section, we show that power asymmetry can affect diplomatic engagement and negotiation. A natural question to ask next is whether countries strategically increase power with one another, anticipating future changes in bilateral relationships and need for increased negotiations. As outlined in the conceptual framework in Section 2, a central prediction is that shocks to geopolitical alignment (such as rising bilateral tension) would affect power build-up, and this would be achieved via domestic industrial policies through the lens of the model.

In this section, we examine this prediction empirically. We begin by developing a measurement of geopolitical alignment in Section 5.1; we then describe our empirical strategy of using domestic electoral turnovers as unanticipated shocks to geopolitical alignment in Section 5.2; and finally in Section 5.3 we present the results.

5.1 Measuring geopolitical alignment

An important building block of the empirical investigation of strategic power build-up is to develop a measure of bilateral geopolitical alignment that is time-varying.

There are two challenges of developing such measure: first, the measure should capture meaningful variation both cross-sectionally and over time, and much of the existing measures only capture variation in one aspect; and second, the measure ideally covers all bilateral country pairs around the world, while most direct alignment measures only observe a set of key geopolitical players.

We overcome these challenges by combining two empirical proxies for geopolitical alignment and using a statistical model of political proximity to estimate bilateral alignment for all country pairs. Specifically, for each country i, we observe two types of annual empirical geopolitical distance: *(i)* differences in Polity scores—such distance exists between country i and nearly every other country in the world. However, there exists little time-series variation in such distance: Polity score captures political institutions and the distance measures broad alignment based on institutional similarity (e.g., democracy-to-democracy and autocracy-to-autocracy), but as institutions do not change frequently, such distance remain relatively stable over time. And *(ii)* approval ratings toward the US, Russia, and China, based on annual Gallup World Poll since 2006.[19] Such rating is high-frequency by design and able to capture high-frequency fluctuations in alignment, but it is only available between i and three other countries. We thus combine these two measures: we use the Polity score distance to anchor cross-sectional distance in alignment, and we use the Gallup ratings to capture annual fluctuations in alignment. We equally weigh these two measures in the baseline specification, but the results are robust to alternative weighting schemes.

In order to construct alignment measures for all bilateral country pairs, we develop a statistical model of political proximity that places countries in a two-dimensional space. We assume that the observed distance from each country i to USA, Russia, and China is noisy, that is (for r denoting either of the three *r*eference countries) $\hat{d}_{ir} = d_{ir} + \eta$ for some mean-zero noise η. We choose (x_i^*, y_i^*) via least-squares to minimize difference between observed distances and implied (by (x_i^*, y_i^*)) distance for every country i; this returns an estimated matrix of coordinates for all countries, and therefore a matrix of distances $\mathcal{D}_t$ between all country pairs for each year. We conduct this procedure for $\hat{d}$ from Gallup and polity scores separately. And finally, we define bilateral alignment between countries i and j during year t as:

$$\text{Alignment}_{ijt} = 1 - \left[\alpha d_{ijt}^{\text{Gallup}} + (1-\alpha) d_{ijt}^{\text{Polity}}\right], \tag{31}$$

where $\alpha = 0.5$ and the distances d_{ijt}^{Gallup} and d_{ijt}^{Polity} are the distances between countries i and j that result from their respective optimal coordinates in year t. Appendix Figure A.8 illustrates the estimation procedure visually, and Appendix B provides additional details on the estimation of the statistical model of political proximity.

This measure of $Alignment_{ijt}$ yields rich and intuitive cross-sectional and over-time variation. For example, Appendix Figure A.9 plots the geopolitical alignment with Ukraine between 2006 and 2022 among several states that belonged to the former Soviet Union (e.g., Armenia, Azerbaijan, Belarus, etc.). One observes a sharp drop in alignment with Ukraine following the 2014 Russian Annexation of the Crimea, and again in 2022 following its invasion of Ukraine more broadly. Note that Ukraine's alignment with these states are *not* directly observed, but rather inferred through the proximity model. Despite this, the bilateral alignment appears to reflect expected changes in geopolitical alignment.

19. Gallup World Poll covers roughly 1,000 representative respondents from each country-year, totalling 164 countries over the entire panel; see https://news.gallup.com/poll/105226/world-poll-methodology.aspx for details for the Gallup Poll questions and its sampling. We note that some Gallup data from USA respondents is missing in 2008 and 2012, and so we perform imputation using predictions that rely on a similar survey from the Pew Global Attitudes Database.

Geopolitical alignment reflects UN vote agreement Yet another way to validate the alignment measure is to examine whether it can predict agreement in United Nations General Assembly voting (see, among others, Bailey, Strezhnev, and Voeten 2017). Appendix Table A.13 presents the estimated correlation between $Alignment_{ijt}$ and corresponding UN vote agreement, where we gradually add controls for country pair fixed effects and year fixed effects. Reassuringly, $Alignment_{ijt}$ strongly predicts UN vote agreement.

Geopolitical alignment explains over-time variation in trade volume Next, we examine whether, as suggested by the conceptual framework, geopolitical (mis)alignment can be considered a source of trade costs and thus explain *over-time* variation in trade volume (namely, costs that are not typically captured by fixed cross-country trade costs such as transportation).

Following the empirical trade literature we estimate a gravity model of trade but add a novel notion of proximity, i.e. political alignment. The traditional gravity model is specified according to the following equation (see Anderson and Wincoop 2004):

$$\ln \text{Export volume}_{i \to j,t} = \beta_1 \gamma_{it} + \beta_2 \gamma_{jt} + \beta_3 z_{ij} + \epsilon_{ij,t} \tag{32}$$

Where γ_{it} is an exporter-year vector of controls, such as the log of exporter GDP, γ_{jt} is a vector of controls for the importer-year, and z_{ij} is a vector of bilateral controls that are related to bilateral trade barriers, such as the log of geographical distance. Instead of directly specifying the covariate vectors γ_{it}, γ_{jt}, and z_{ij}, we instead run a more demanding regression which uses fixed effects for the importer-year, exporter-year, and pair. Importer-year and exporter-year fixed effects ensure that any trade impacts stemming from multilateral resistance, i.e. ease of market access for an importer or exporter in a given year, are absorbed. The effects could come from differential import/export investment by the government, differences in infrastructure for various methods of transporting goods, etc. Pair fixed effects ensure that any time-invariant pair-level effects are absorbed. A sizeable share of the traditional approach to proxying for these bilateral trade costs is to use variables representing historical or geographical ties between countries, meaning the use of covariates for geographical distance, contiguous borders, common language, etc. (see Yotov et al. 2017); we are more stringent and instead absorb all pairwise variation with pair fixed effects. As a result, the regression we run is of the following form:

$$\begin{aligned} \ln \text{Export volume}_{i \to j,t} = \beta_1 \text{Alignment}_{\{ij\},t-1} + \beta_2 \text{Alignment}^2_{\{ij\},t-1} + \\ \gamma_{i,t} + \gamma_{j,t} + \alpha_{\{ij\}} + \epsilon_{ij,t} \end{aligned} \tag{33}$$

Where $\gamma_{i,t}$ is an exporter-year fixed effect, $\gamma_{j,t}$ is an importer-year fixed effect, $\alpha_{\{ij\}}$ is an (unordered) pair fixed effect. Further, our regression includes linear and quadratic terms for lagged political alignment. We make use of lagged political alignment as one would expect that countries' trade may take some time to react to political forces, and we include a quadratic term as it is reasonable to expect that countries' political proximity may have a diminishing marginal impact on trade. Despite how conservative the regression in Equation 33 is, the results in Table A.14 demonstrate that over-time variation in political alignment is significantly and positively associated with directed trade flow. The coefficients imply that if a pair's alignment increases from .1 to .2, there is an associated increase in directed trade flow of approximately 5%. In addition, the significance and negative sign of the quadratic alignment term suggests that indeed the relationship of political alignment to trade is concave. Countries who move from being contentious to somewhat friendly would likely have larger changes in trade than countries who go from being close allies to very close allies.

Robustness and comparison to other measures of political alignment We compare the results of the above regression to a similar specification that instead uses a well-known measure of UN vote similarity to measure political proximity (see Bailey, Strezhnev, and Voeten 2017). Although we demonstrated earlier in this section that UN vote similarity and our measure of alignment are robustly positively correlated, the findings in columns 1 and 2 of Table A.15 demonstrate that these two measures capture different sources of variation when related to trade. More concretely—we find that UN vote similarity is not significantly associated with over-time changes in trade. The conceptual difference between a measure that uses something like UN vote records and our alignment measure whose over-time variation results mostly from Gallup approval data is that the former detects changes in formal political behavior, whereas Gallup approval data can measure changes in attitudes between countries that may not be reflected in official political actions like UN voting. One of the complexities of studying the relation of trade to politics is the subtlety of political alliance, which is why using a more attitudinal, sensitive measure of political proximity like Gallup approval may be a useful tool in studying the relation of trade and political alignment. We finally note that Table A.15 also features robustness checks that show that the relationship of alignment and trade holds even when using different outcomes that measure trade, such as the log of trade shares (commonly known as the *Head-Ries Index*, see Head and Mayer 2014 or Anderson and Wincoop 2004), which we calculate using two different approaches (see table notes for more).

It is well known in the trade literature that geographical distance is important in explaining cross-sectional differences in trade volume, and these results demonstrate that *political* distance is relevant to explaining over-time differences in trade volume.

5.2 Empirical strategy: electoral turnover and bilateral alignment

In order to causally estimate the relationship between changes in geopolitical alignment and bilateral power build-up, one would need to isolate shifts in geopolitical alignment that are independent of the subsequent changes in bilateral trade patterns and power, or any other socioeconomic factors at the bilateral level that would jointly determine bilateral alignment and power.

To do so, we rely on close domestic presidential elections that generate electoral turnover to identify the impact of changes in bilateral alignment that is plausibly outside of the control of the country facing others' electoral changes. For example, the bilateral relationship between France and the US took a very sharp turn in 2016 as a result of the (largely unanticipated) electoral turnover in the US as Trump (and the Republican Party) took over the presidency. The shifts in bilateral alignment as a result of the US electoral turnover is arguably exogenous to France, although France can subsequently change its trade activities with the US strategically in order to build up power in responding to a decline in bilateral alignment and in anticipation of future, more hostile geopolitical engagement.

Appendix Figure A.10 shows changes in geopolitical alignment with the US among a range of countries. Around 2008, 2016, and 2020 when the US experienced presidential electoral turnovers, one observes that the alignment trends towards the US shifted across many countries; and no such trend shift occurred in 2012 when the election did not result in party turnover.

We measure electoral turnover following Girardi (2020), and we define close election as those with winning margin smaller than 5%. Since we focus on countries' responses to changes in bilateral alignment due to others' domestic electoral turnover, we exclude country-pairs that have both countries experiencing close elections within a 4-year span of each other (this amounts to 891 country-pairs out of 22,423 in total). Overall, 13,240 country pairs do not experience a close election on either side; 8,907 country-pairs experienced a close election on one side of the pair; and 276 country-pairs experienced close elections on both sides and the elections are more than 4 years apart.[20]

Whereas our analyses in Section 4 have focused on undirected variables, we focus here on *directed* pairs as we are interested in how countries may change their power s over another country that has recently experienced a domestic political shift. Thus, for

20. For country pairs where both countries have close elections, we make use of only the first election within the relevant panel. Results look similar with or without pairs for which there is an election on both sides (where the first and second election are at least four years apart).

the following analysis we denote the country that has possibly experienced an election as country A, and the country that may be responding to possible changes in alignment is denoted country B. For example, in 2016, USA is country A and China would be country B.

Having fixed an order for each pair then means that we can estimate the following 1st stage regression, where we predict trend-break in bilateral alignment due to electoral turnover from a close election in one country of the country-pair:

$$\begin{aligned}&\text{Avg. alignment level}_{\{AB\},t+1,t+k} = \beta_1 \text{Alignment}_{\{AB\},t-1} + \beta_2 \mathbb{1}\{\text{Turnover}\}_{A,t} + \\ &\beta_3 \text{Alignment}_{\{AB\},t-1} \times \mathbb{1}\{\text{Turnover}\}_{A,t} + \beta_4 \mathbb{1}\{\text{No turnover}\}_{A,t} + \\ &\beta_5 \text{Alignment}_{\{AB\},t-1} \times \mathbb{1}\{\text{No turnover}\}_{\{A\},t} + \beta_6 \text{GDP difference}_{B\to A,t-1} + \\ &\beta_7 \text{Total trade}_{\{AB\},t-1} + \beta_8 \text{Power}_{B\to A,t-1} + \alpha_{\{AB\}} + \gamma_t + \epsilon_{\{AB\},t}\end{aligned} \tag{34}$$

where the notation $B \to A$ denotes that the variable consists of country B's quantity minus country A's quantity (e.g. $GDP_B - GDP_A$), and $\{AB\}$ denotes that the variable is undirected. Our choice of ordering is straightforward – variables that could possibly have order, like power or GDP difference, go from B to A. Variables that could not sensibly be directional, like alignment or total trade, are not directed. We allow for flexibility in the number of future periods that are considered after the possible electoral turnover and so we consider specifications with $k \in \{1, 2\}$ as this can capture changes in alignment levels that are sufficiently close to the year of the election so that we may consider those changes as related to the election. Finally, we note the timing of the covariates and the outcome variable: the average alignment levels begin after the election year t and all covariates (besides those relating to the election itself) are the year before the election. We implement this specification because a given election in year t may happen before or after the data used to construct the alignment measure for year t is collected; as a result, we ensure that the alignment measure (and all other covariates) accurately reflect changes in response to an election by not using data from the election year itself.

Table 3, Panel A, presents the 1st stage estimates. One observes that past alignment positively predicts future alignment when there is no electoral turnover among countries in the corresponding country pair, suggesting a substantial degree of path-dependence in bilateral alignment when domestic political conditions remain relatively stable. However, when electoral turnover occurs, past alignment becomes negatively associated with future alignment, indicating a reversal of trend. Note that reversal of trend does not necessarily mean a decrease in bilateral alignment as it hinges on the pre-election status quo: if countries are hostile (friendly), then electoral turnover is associated with movement towards a relatively more friendly (hostile) bilateral relationship. Appendix Figure A.11

illustrates the 1st stage visually, where we show that electoral turnover is associated with larger deviations from past alignment trends than are elections without turnover.

The first stage result suggests that close elections are unanticipated because of the significance and magnitude of the coefficients on electoral turnover. If the result of an upcoming election were already clear to another country, then that knowledge should already be reflected in the linear term $\text{Alignment}_{\{AB\},t-1}$.

To gauge whether the electoral turnover is indeed unanticipated by other countries in the bilateral relationship, we examine whether such turnover is associated with both the socioeconomic and political conditions in the countries not experiencing electoral turnover, and whether it is associated with contemporaneous bilateral socioeconomic and geopolitical factors. Appendix Table A.16 presents the results of the tests: reassuringly, we do not observe overt pattern that electoral turnover is systematically associated with either country-level or bilateral socioeconomic conditions that may be correlated with subsequent power build-up.

5.3 Results

Having demonstrated a strong 1st stage where bilateral alignment changes can be predicted by unanticipated electoral turnover in one country within the country pair, we now proceed to investigate whether and how do the other country facing such changes in bilateral alignment changes respond in terms of changing power.

We estimate the following regression specification:

$$\text{Average power}_{B\to A,t+1,t+\ell} = \beta_1 \text{Avg. } \widehat{\text{alignment}} \text{ level}_{\{AB\},t+1,t+k} +$$
$$\beta_2 \text{Alignment}_{\{AB\},t-1} + \beta_3 \text{GDP difference}_{B\to A,t-1} + \beta_4 \text{Total trade}_{\{AB\},t-1} + \quad (35)$$
$$\beta_5 \text{Power}_{B\to A,t-1} + \alpha_{\{AB\}} + \gamma_t + \epsilon_{\{AB\},t} \quad (36)$$

where predicted alignment level corresponds to the average alignment level in the years after the election (in our baseline specification, $k = 1$, so the level and average level are the same); the key outcome of interest is *directed* export power that country B holds toward country A that has experienced electoral change. The GDP difference, total trade, alignment, and power variables are all the same as in the first stage.

We focus on the directed export power for two reasons. From the identification perspective, we can only cleanly identify what happens to target as the assumption that external shocks due to others' elections are outside of target's control is more plausible. The countries experiencing turnover will likely also change trade policies, etc, but that's going to be endogenous to the election and hence we don't want to build identification around that. From a more substance perspective, if one country experiences an electoral turnover, and aims to subsequently changes alignment toward many countries, it would have to change trade policies such that it simultaneously affected all its partners (likely in different directions) so that the power respond accordingly. This would be much harder to achieve, than the country not experiencing electoral turnover among the country pair re-adjusting its trade policy towards the country in order to react to diplomatic policies changes due to domestic political turnover.

Table 3, Panel B, presents the 2nd stage results. We find a negative, statistically significant coefficient on predicted alignment change, indicating that countries (not experiencing the electoral turnover themselves) are responding to a reduction in bilateral alignment by increasing the export power they hold against the partners. To gauge the magnitude, a one standard deviation decrease in alignment would trigger a 0.18 standard deviation increase in export power build-up, or, 33.9% of the pre-election average level of power.

Robustness Our main specification features an asynchronous timing of $k = 1$ and $\ell = 3$, meaning that we look at how the alignment in the period after the election relates to a three year average of post-election power. We demonstrate the robustness of our findings by showing that the results hold for a variety of timing choices, i.e. any combination of $k \in \{1, 2\}$ or $\ell \in \{1, 2, 3, 4\}$. These results are shown in Appendix Table A.17. We find that in all cases, the coefficients look similar in size and are significant. This indicates the robustness of the relationship between changes in alignment generated after a close election and future levels of power.

6 Conclusion

In this paper, we study geopolitical power acquired through trade activities across countries. We show that it is a distinct element that's related to but by no means simply mirroring overall differences in economic size and trade volumes. Such international power affects engagement and negotiation. Moreover, power may be accumulated strategically in response to changes in alignment (and future negotiations).

More generally, our findings highlight the trade-off between economic efficiency and security. Trade according to countries' comparative advantage may expose countries to coercive power of their trade partners. Neither would efficiency-maximizing trade patterns necessarily be power-maximizing strategy. This is particularly true as we show that power consideration in trade is negative sum, in contrast with the positive sum nature of the efficiency enhancing trade incentives through the logic of comparative advantage. As the world grows into a connected one after decades expansion of globalization, and security and power considerations begin to generate backlash on globalization, it is of vital importance to further understand the sources and implications of a global trade landscape when power becomes (perhaps an increasingly) salient component of countries' objectives.

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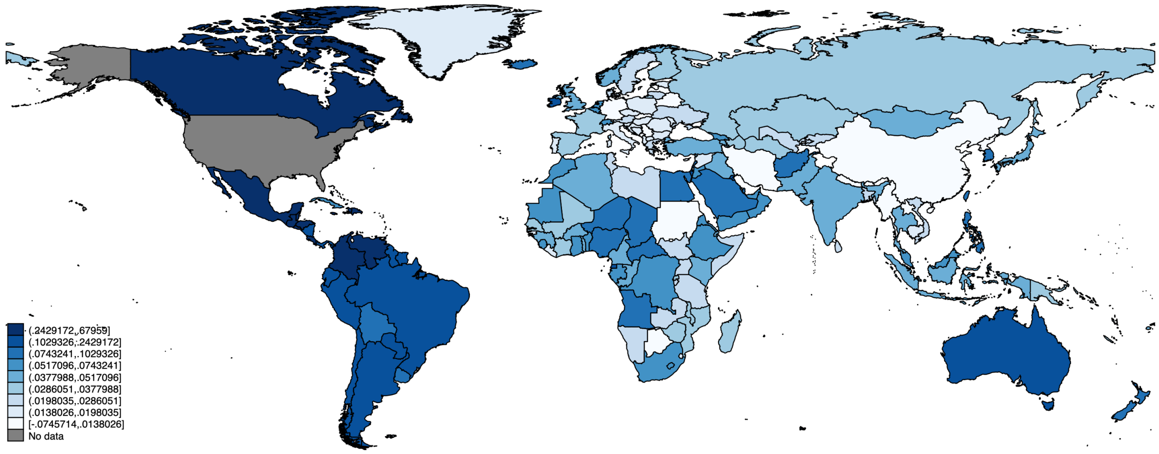
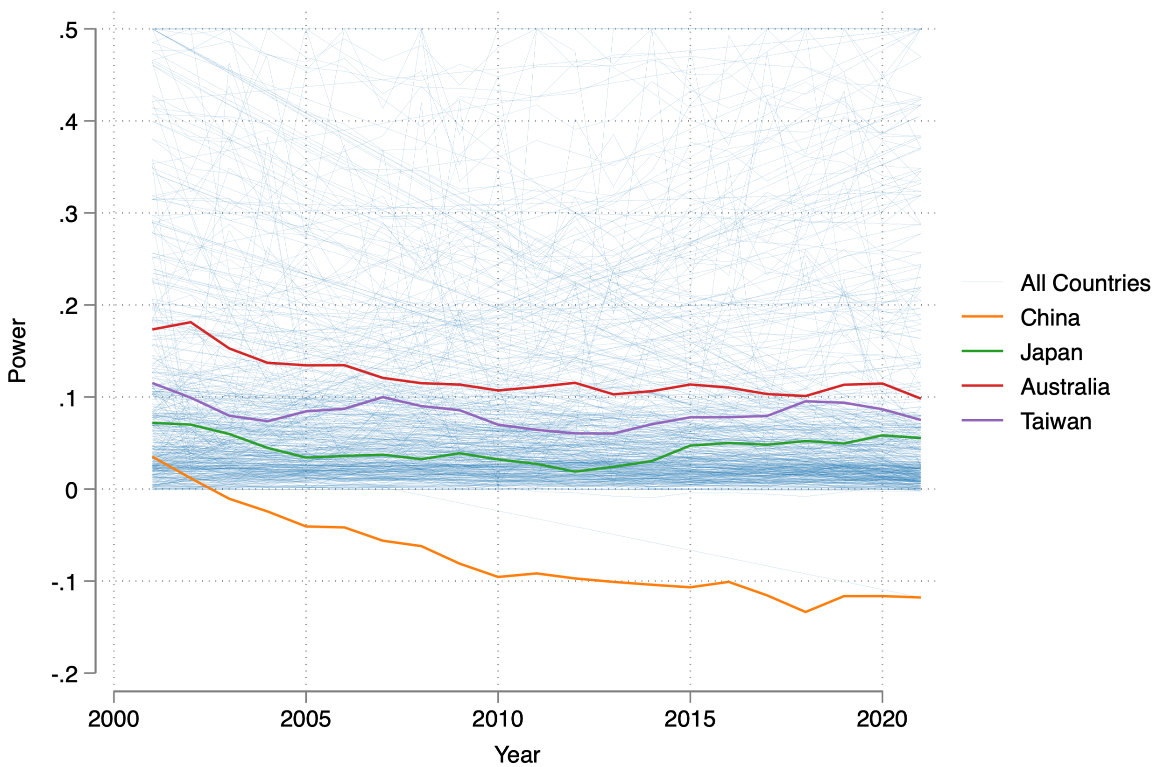
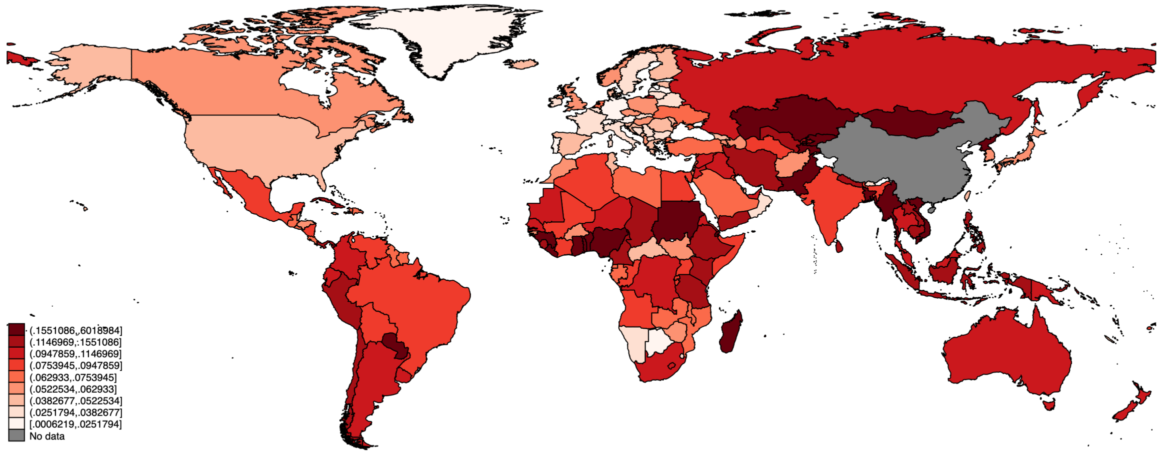
Figures



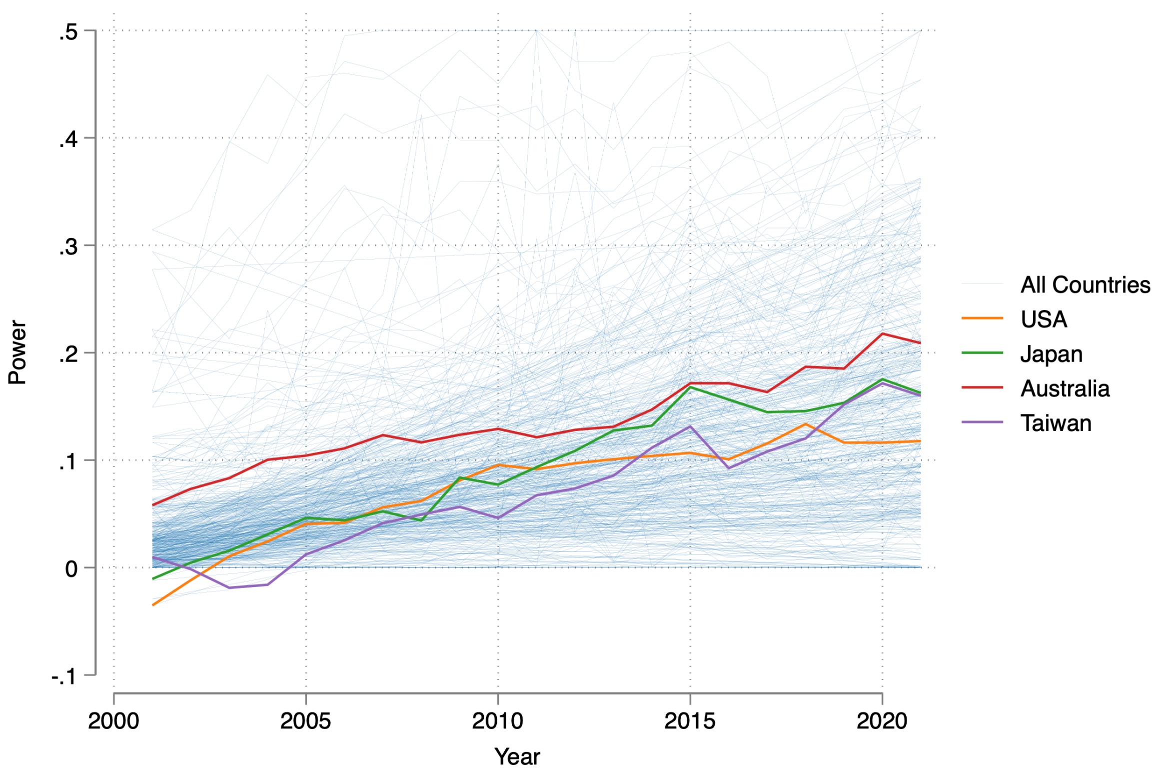
Panel A(a): USA's average power over other countries. For a given pair made up of the USA and another country i, this plot represents the USA's directed average power (in all sectors) over all other countries i in the time period 2001-2021. Directed power ranges from $[-1, 1]$.



Panel A(b): USA's power over other countries over time. For a given country i, this figure plots the directed power (in all sectors) between the USA and country i for each year. Directed power ranges from $[-1, 1]$.



Panel B(a): China's average power over other countries. China's average power over other countries. For a given pair made up of the China and another country i, this plot represents the China's directed average power (in all sectors) over all other countries i in the time period 2001-2021. Directed power ranges from $[-1, 1]$.



Panel B(b): China's power over other countries over time. For a given country i, this figure plots the directed power (in all sectors) between the China and country i for each year. directed power ranges from $[-1, 1]$.

Figure 1: USA and China's power over time, 2001-2021

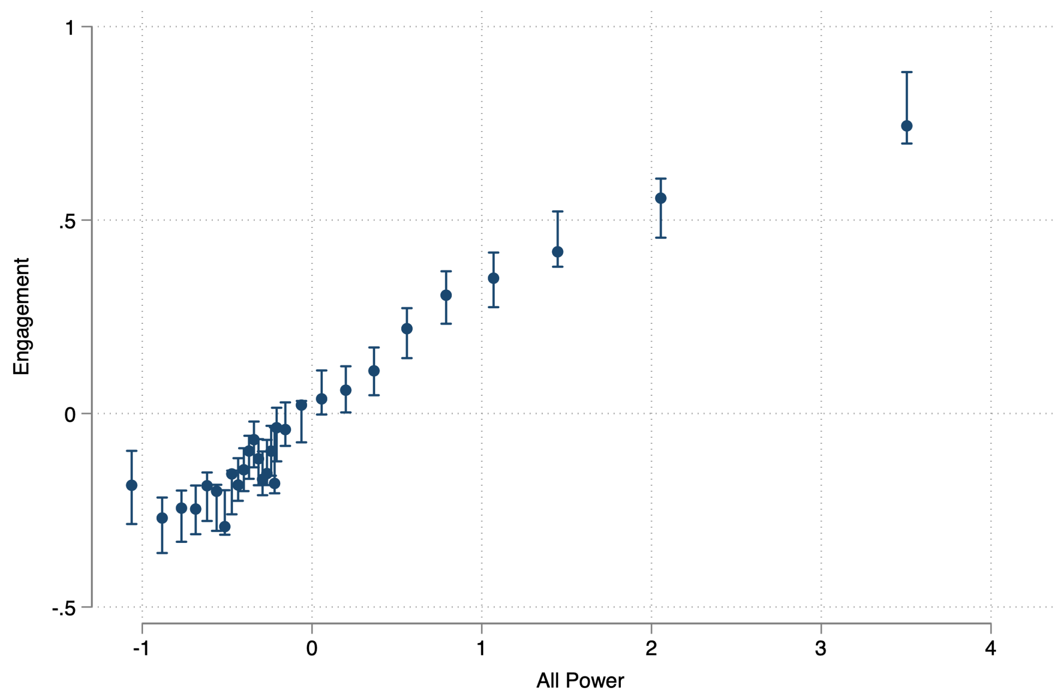
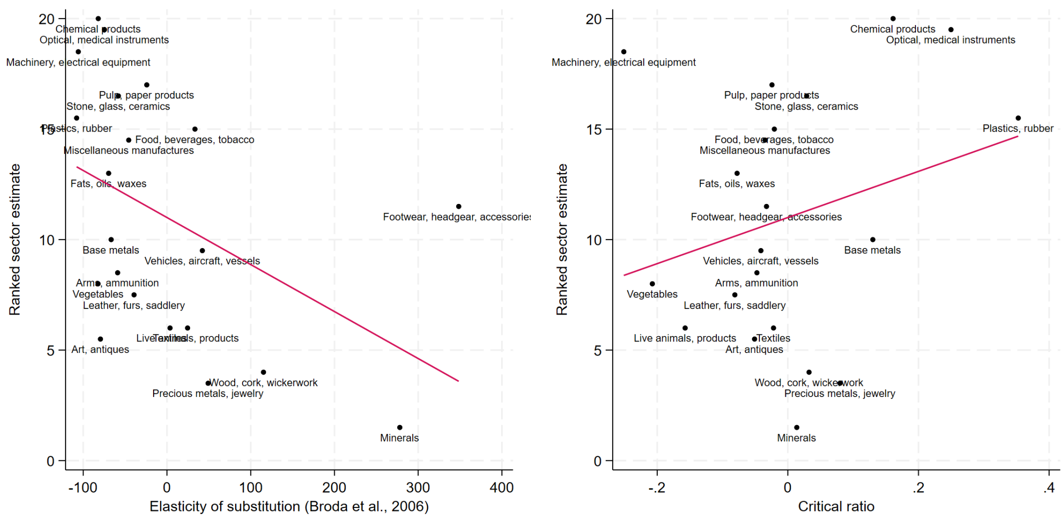


Figure 2: Power and engagement. This figure displays a binned scatterplot of the regression in Table 1; that is, it relates the pairwise z-score of engagment to the pairwise standardization of power (from all sectors), while controlling for GDP difference and total trade, as well as employing pair and year fixed effects. This is created using the stata package 'binsreg'.



Panel A Panel B

Figure 3: Correlates of sector level estimates. For the Y-axis, we combine two sector-level estimates (sector-only and sector-excluding) by residualizing the sector's global trade volume in 2015 and averaging their rankings. The X-axis represents the sector's elasticity of substitution and critical ratio, residualized by sector trade volume. We adjust the standard HS-section classification by reassigning sectors 25 (Salt, sulphur, lime, cement) and 26 (Ores, slag, ash) from minerals to base metals. We use product level elasticity of substitution from Broda and Weinstein (2006) aggregate into sector level elasticity of substitution by taking a global trade volume weighted average. Critical ratio is defined as the ratio of sectors' global trade volume that is critical by the ITA's draft list of critical supply chains.

Tables

Table 1: Power and engagement - within country-pair changes

	Bilateral engagement$_{\{in\},t}$					
	All sectors			Max sectors		
	(1)	(2)	(3)	(4)	(5)	(6)
Power$_{\{in\},t-1}$	0.074***	0.074***	0.243***	0.045***	0.045***	0.144***
	(0.008)	(0.008)	(0.014)	(0.008)	(0.008)	(0.011)
GDP difference$_{\{in\},t-1}$		0.075***	0.079***		0.076***	0.080***
		(0.013)	(0.012)		(0.013)	(0.013)
Total trade$_{\{in\},t-1}$			-0.261***			-0.174***
			(0.014)			(0.011)
N	384,815	384,815	384,815	384,815	384,815	384,815
Year FE:	Y	Y	Y	Y	Y	Y
Pair FE:	Y	Y	Y	Y	Y	Y

Note: This table shows the results of the regression specified in Equation 27. Bilateral engagement is the z-score of each unit interval of events in the ICEWS dataset within the range $[-7, 8)$, where each unit interval's values are the sum of both directions of country i and n's events with each other. The first three columns use the power measure derived from all sectors, whereas the second three columns use power derived from only the max sectors. Power, GDP difference, and total bilateral trade are all undirected variables and are standardized on the pair level. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table 2: Power and engagement - instrumental variable

Panel A: first stage			
	Power$_{\{in\},t-1}$		
	(1)	(2)	(3)
IV$_{\{in\},t-1}$	0.215***		
	(0.005)		
Drop top sector IV$_{\{in\},t-1}$		0.196***	
		(0.005)	
Leave one out IV$_{\{in\},t-1}$			0.212***
			(0.005)
GDP difference$_{\{in\},t-1}$	-0.011*	0.017**	-0.010*
	(0.006)	(0.006)	(0.006)
Total trade$_{\{in\},t-1}$	0.640***	0.638***	0.641***
	(0.005)	(0.005)	(0.005)
F-stat	2171.0	1805.3	2105.3
Panel B: second stage			
	Bilateral Engagement$_{\{in\},t}$		
Power$_{\{in\},t-1}$	0.560***	0.522***	0.558***
	(0.083)	(0.093)	(0.085)
GDP difference$_{\{in\},t-1}$	0.078***	0.088***	0.078***
	(0.026)	(0.028)	(0.026)
Total trade$_{\{in\},t-1}$	-0.479***	-0.450***	-0.478***
	(0.058)	(0.064)	(0.059)
N	145507	141683	145487
Year FE	Y	Y	Y
Pair FE	Y	Y	Y

Note: This table shows the results of the regression specified in Equations 29 and 30. Observations are country pairs where $s_{nit} \geq s_{int}$ always hold throughout the sample period. All variables are standardized within the country pair. Column 1: baseline IV. Column 2: excludes 5 sectors with high Rotemberg weights, such as *machinery, electrical equipment* (sector 16), to mitigate endogeneity risks highlighted by their correlation with trends in socioeconomic variables. Column 3: leave-one-out IV, following Autor, Dorn, and Hanson (2013); here, the IV is the exporter's global market share, excluding the specific importer in each case to prevent a direct correlation between the shifter and the importing country (e.g., if China is the exporter and the USA is the importer, we calculate China's global market share without the USA). Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table 3: Geopolitical alignment and power build-up

Panel A: first stage

	Alignment level$_{\{AB\},t+1}$			
	All sectors		Max sectors	
	(1)	(2)	(3)	(4)
Alignment$_{\{AB\},t-1}$	0.161***	0.161***	0.161***	0.161***
	(0.00449)	(0.00449)	(0.00449)	(0.00449)
$\mathbb{1}\{\text{Turnover}\}_{A,t}$	0.141***	0.141***	0.141***	0.141***
	(0.0400)	(0.0401)	(0.0400)	(0.0401)
Alignment$_{\{AB\},t-1} \times \mathbb{1}\{\text{Turnover}\}_{A,t}$	-0.0966***	-0.0966***	-0.0966***	-0.0965***
	(0.0327)	(0.0327)	(0.0327)	(0.0327)
$\mathbb{1}\{\text{No turnover}\}_{A,t}$	0.0790***	0.0788***	0.0790***	0.0788***
	(0.0273)	(0.0273)	(0.0273)	(0.0273)
Alignment$_{\{AB\},t-1} \times \mathbb{1}\{\text{No turnover}\}_{\{A\},t}$	0.0802***	0.0802***	0.0802***	0.0802***
	(0.0304)	(0.0304)	(0.0304)	(0.0304)
Power$_{B\rightarrow A,t-1}$		-0.00380		-0.00346
		(0.00472)		(0.00466)

Panel B: second stage

	Average power$_{B\rightarrow A,t+1,t+3}$			
	All sectors		Max sectors	
	(1)	(2)	(3)	(4)
$\widehat{\text{Alignment}}$ level$_{\{AB\},t+1}$	-0.238**	-0.244**	-0.292***	-0.290***
	(0.112)	(0.112)	(0.112)	(0.112)
Alignment$_{\{AB\},t-1}$	0.0402**	0.0413**	0.0543***	0.0540***
	(0.0186)	(0.0186)	(0.0185)	(0.0186)
GDP difference$_{B\rightarrow A,t-1}$	-0.0199***	-0.0212***	-0.0200***	-0.0209***
	(0.00599)	(0.00594)	(0.00602)	(0.00597)
Total trade$_{\{AB\},t-1}$	0.00737*	0.00729*	0.00454	0.00465
	(0.00396)	(0.00403)	(0.00404)	(0.00407)
Power$_{B\rightarrow A,t-1}$		0.0384***		0.0282***
		(0.00392)		(0.00388)
N	59375	59375	59375	59375
Year FE	Y	Y	Y	Y
Pair FE	Y	Y	Y	Y

Note: Panel A contains the first stage of the IV that relates power and alignment levels as specified in Equation 34. Alignment level is the alignment in period $t+1$, i.e. the period after the election. $\mathbb{1}\{\text{Turnover}\}_{A,t}$ is one if the country A had an election and that election resulted in the ideology of the party in power in $t-1$ being different than the ideology of the party that won the election in t; it is zero otherwise. $\mathbb{1}\{\text{No turnover}\}_{A,t}$ is one if country A had an election and the ideology of the party in $t-1$ is the same as that of the party that won the election in period t; it is zero otherwise. Panel B shows the second stage of the IV that relates trade levels and alignment levels as specified in Equation 36. Alignment and total trade are undirected and standardized within pair, and GDP difference and power are directed and standardized within pair. Predicted alignment levels is the result of the first stage and is predicted for the period after the election. The outcome variable is the average directed power (from $B \rightarrow A$) in in the following $\ell = 3$ periods after the election in year t. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Online Appendix

Appendix A Distinguishing critical and non-critical goods

This section describes the procedure to distinguish between critical and non-critical goods.

Appendix A.1 Data source

We use the Draft List of Critical Supply Chains published by the U.S. Department of Commerce, International Trade Administration (ITA). The list was compiled following the Executive Order 14017 of February 24, 2021, "Executive Order on America's Supply Chains" by taking public submissions as input. It comprehensively catalogs goods and materials that are deemed critical in strengthening supply chain resistance. The list contains 2409 products, categorized in 4 broad sectors–public health and biological preparedness, information and communications technology (ICT), energy, and critical minerals– and further divided into 22 subsectors, detailed in Appendix Table **??**.

Appendix A.2 Matching with HS categorization

Products in the critical supply chain list are classified at 8- and 10-digit tariff lines of the Harmonized Tariff Schedule of the United States (HTSUS). The HTSUS code is an extension of the Harmonized Systems (HS) and preserves the HS 6-digit code in the beginning 6 digits. Since the 6 digit code is the most detailed classification of product in the BACI international trade data, we define a 6 digit product as critical if there is any product within the 6 digit product that is coded as critical by the critical supply chains list.

For example, HTSUS product 85419000 is *parts of diodes, transistors and similar semiconductor devices*. The corresponding 6 digit product 854190, taking the beginning six digits of the HTSUS code, is defined by HS as *parts of semiconductor devices*.

This paper uses HS-sections as the primary definition of economic sectors. HS-section is simply a broader categorization of goods in the Harmonized System. We can map 6-digit products that are critical to HS-sections. In Appendix Figure A.7, we show each sector's global aggregate trade volume and the contribution of critical and non-critical goods for each sector. We see that *machineary, electrical equipment (15)*, *minerals (5)*, and *chemical products (6)* have the biggest critical trade volume.

Appendix B Statistical model of political proximity

In this section, we describe the procedure used to build the statistical model that results in the measurement of political alignment between countries. We use a simple, traditional technique from the position location literature, which usually deals with how to properly estimate the location of an object whose location is imperfectly measured; our main reference is Chapter 3 of Rodríguez et al. (2009).

Appendix B.1 Data

The statistical model is created using two datasets: 1. Polity scores and 2. Gallup Global Leadership Approval data (from the Gallup World Poll).

Polity scores come from the Polity Project, which quantifies the institutional characteristics of all countries and places them on a scale from $[-10, 10]$, where lower scores indicate more authoritarian regimes, and higher scores indicate more democratic regimes. We make use of the polity scores from 2006-2021, and each of these scores is a coordinate on a one-dimensional interval; for example, in 2018, the USA is listed as 8 and China as -7.

The Gallup Global Leadership Approval data features averages of national sentiment about leadership from the USA, Russia, and China. Each country's values are derived from a nationally representative sample of roughly 1000 individuals, and each year features national averages of approval, disapproval, or uncertainty of the leadership of the USA, Russia, and China. We make use of disapproval ratings, as higher disapproval is sensibly linked to higher political distance; results look similar if we use the inverse of approval.

Whereas the polity scores place all countries on a single scale, Gallup disapproval rates feature data from all countries about only three other countries – USA, Russia, and China – meaning that, for example, the Gallup polls do not provide information about Thailand's approval of Malaysia. They only provide information about Thailand and Malaysia's approval of USA, Russia, and China. To make the data structures of the polity scores and the Gallup disapproval rates cohere, we transform the polity scores from a country's coordinate in a given year to a country's distance from the USA, Russia, and China's coordinates. Thus, in the same way that disapproval rates from Gallup give 'distance' from China, Russia, and China, we use the polity scores to calculate each country's distance from those three countries on the polity score scale.

The polity score data spans multiple centuries (up to 2018), whereas the Gallup data stretches from 2006 to 2021. To construct a sample spanning 2006-2021, we extend the polity scores from 2018 to 2021 by repeating 2018's values to 2019,2020, and 2021. Then, we have a dataset where each country has two measures of distance – one in polity scores, one in gallup disapproval – from USA, Russia, and China for the years 2006-2021.

Appendix B.2 Estimation procedure

Appendix B.2.1 Overview of procedure

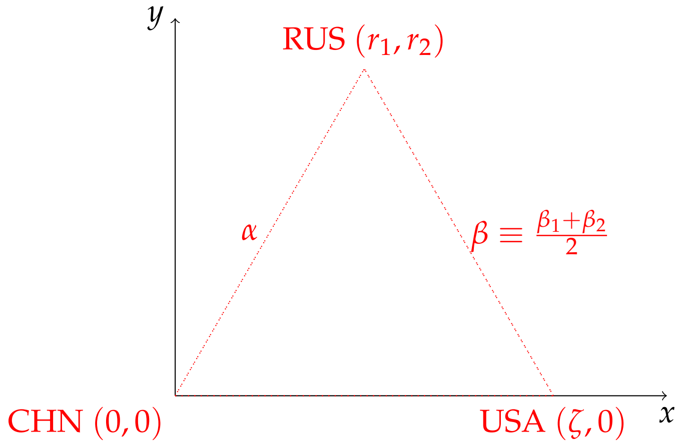
We begin with two datasets: one about X countries' Gallup disapproval rates of the United States, China, and Russia, and another containing differences in polity scores between all countries. The goal is to take the Gallup data from X countries' 'political distance' (as represented by Gallup disapproval rates) of USA, China, and Russia to arrive at estimates of distance between *all* countries in our dataset. Whereas we begin with (for example), Germany's distance from the USA, China, and Russia as well as France's distance from the USA, China, and Russia, our goal is to optimally estimate a distance between Germany and France themselves. For the rest of this section, we will use 'observed distance' to mean 'Gallup disapproval' as found in our data. The overview of the problem is as follows:

1. For each year t, define coordinates for USA, Russia, and China using data about Gallup disapproval of each other. Call these points the *reference points*.
2. Collect the reported distances of all non-reference countries (i.e. not USA, Russia, or China) and optimally calculate their coordinates so as to minimize the difference in the *observed* distances from each reference point and the distances implied by the choice of coordinates
3. Given a set of coordinates for every country-year, calculate distances between every country, so as to arrive at a measure of political distance between *every* country pair; transform this and call the new variable *political alignment*.

We follow a traditional least-squares multilateration set-up (see Rodríguez et al. 2009 3.3.1 for more) in which we define *reference points* for each year, and then for all other countries choose the coordinates that minimize minimizes the 'error', which is the absolute difference between the observed distance and the distance implied by the choice of coordinates.

Appendix B.2.2 Reference points

We make the simplifying assumption that we noiselessly observe the distance between the three countries for which we have the most Gallup approval data: China, USA, and Russia. Because we do not observe Gallup approval data from China, we fix China to be at the origin of our two-dimensional space. Then, we place the USA on the positive part of the x-axis, with distance from China equal to its Gallup disapproval of China in each year; we denote USA's reported distance from China as ζ. We then define the distance between Russia and China to be Russia's reported disapproval of China (recall that we don't have China's disapproval of Russia/USA), denoted α, and finally the distance between Russia and the USA to be the average of their two disapproval levels, β. So, for a given year t, the reference countries will form a triangle looking like the following:



Given that we observe the distances α, β, and ζ, it is possible to recover the coordinates of Russia, denoted (r_1, r_2), as we assume (without loss of generality) that Russia's coordinates are in the positive quadrant.[1] Our problem can be written as a system of two equations in two unknowns, where we use the Pythagorean theorem:

$$r_1^2 + r_2^2 = \alpha^2 \tag{37}$$

$$(\zeta - r_1)^2 + r_2^2 = \beta^2 \tag{38}$$

Which yields the following solutions to r_1 and r_2 (where we choose the positive coordinate for r_2 WLOG):

$$r_1 = \frac{\alpha^2 + \zeta^2 - \beta^2}{2\zeta} \tag{39}$$

$$r_2 = \sqrt{\alpha^2 - r_1^2} \tag{40}$$

These solutions are valid if the triangle inequality holds for the observed distances (i.e., sides of the triangle) between Russia, China, and the USA; we show in the replication package that the data for Russia, China, and USA distances do not violate the triangle inequality. One may view this as further evidence that the noise in the measurements of distance between the three reference countries is not large enough to meaningfully distort the true distances; with the other countries, we do not have the same situation.

Given that we have a different set of distances for USA, China, and Russia in each year, this yields a different 3×2 matrix of reference points $\mathcal{R}_t$ for each year t. Thus, this procedure yields a sequence $\{\mathcal{R}_t\}_{t=2006}^{2023}$, whose elements for a given year t are of the form:

$$\mathcal{R}_t \equiv \begin{pmatrix} \boldsymbol{q}_{\text{USA}} \\ \boldsymbol{q}_{\text{China}} \\ \boldsymbol{q}_{\text{Russia}} \end{pmatrix} = \begin{pmatrix} x_{\text{USA}} & y_{\text{USA}} \\ x_{\text{China}} & y_{\text{China}} \\ x_{\text{Russia}} & y_{\text{Russia}} \end{pmatrix} = \begin{pmatrix} \zeta & 0 \\ 0 & 0 \\ \frac{\alpha^2+\zeta^2-\beta^2}{2\zeta} & \sqrt{\alpha^2 - r_1^2} \end{pmatrix} \tag{41}$$

These coordinates form the *reference points* for each year t from which we will optimally place the other countries to best match the distances observed in the data.

1. Note that this set-up of the reference points is invariant to rotations; Russia could be in the fourth quadrant and it would not make a difference for the results, given that the output of this procedure is distances, not coordinates.

Appendix B.2.3 Optimal coordinates

For each non-reference country (i.e. all countries in Gallup dataset that are not USA, Russia, or China), we want to find the set of coordinates that will minimize the distance between *observed* distances (Gallup disapproval rates) and the *implied* distances that follow from said choice of coordinates. In the following discussion, we suppress the subscript for year t for clarity, but it is essential that this estimation is done separately for each year; coordinates of both the reference countries and the non-reference countries are expected to change over time, just as political alignment does.

Denote the matrix of observed distances of country i from USA, China, and Russia in year t as $\hat{\mathcal{G}}_t$, where $\hat{\mathcal{G}}_t$ is a 143×3 matrix of the form:

$$\hat{\mathcal{G}}_t \equiv \begin{pmatrix} \hat{d}_{1,\text{USA}} & \hat{d}_{1,\text{CHN}} & \hat{d}_{1,\text{RUS}} \\ \hat{d}_{2,\text{USA}} & \hat{d}_{2,\text{CHN}} & \hat{d}_{2,\text{RUS}} \\ & \vdots & \end{pmatrix} \tag{42}$$

Recall that the ultimate goal of this exercise is to calculate pairwise distances between all country pairs, and as a result, one can imagine that the optimal coordinates for two different countries may place them at a distance of more than one from each other. For example, imagine that there is a country that is very politically aligned with Russia but extremely far from China or the USA, so much so that its optimal coordinate in a given year is above the point (r_1, r_2) (as in the figure above). Then, if another country is extremely close with the USA but very far from Russia and China, that country could be placed at some point to the right or below the USA such that this second country's distance from the first country is greater than one. In order to deal with situations like this, we transform the matrix of observed distances $\hat{\mathcal{G}}_t$ before estimating the optimal coordinates. We define a transformation $\tau : \hat{\mathcal{G}} \to \hat{\mathcal{G}}'$ as:

$$\tau(\hat{d}, \epsilon) = \frac{\hat{d}}{1 - \hat{d} + \epsilon} \tag{43}$$

For some fixed ϵ, whose value we discuss soon. In the new matrix of transformed observed distances $\hat{\mathcal{G}}'$, the observed distances to each reference country are no longer bound between zero and one; instead, they can range from zero to $1/\epsilon$.

Next, for each non-reference country we estimate the coordinates that minimize the 'error' between their observed distance and the implied distance (measured by the ℓ^2 norm) for each year t. We do this for each reference country $c \in \mathcal{C}$ where $\boldsymbol{q}_{ct} \in \mathcal{R}_t$ and $\boldsymbol{q}_{it} \in \hat{\mathcal{G}}'_t$. Then, for each non-reference country i and year t, we can define the optimal coordinates $\boldsymbol{q}_i^*$ as:

$$\begin{aligned} \boldsymbol{q}_i^* &= \arg\min_{x_i, y_i} \sum_{c \in \mathcal{C}} (\hat{d}_{ic} - d_{ic})^2 && (44) \\ &= \arg\min_{x_i, y_i} \sum_{c \in \mathcal{C}} (\hat{d}_{ic} - \|\boldsymbol{q}_i - \boldsymbol{q}_c\|)^2 && (45) \end{aligned}$$

Therefore minimizing the 'error' resulting from the choice of coordinates for a country i for each year t will result in a 143×2 matrix of optimal coordinates, denoted $\mathcal{Q}_t$, which is of the form:

$$\mathcal{Q}_t \equiv \begin{pmatrix} \boldsymbol{q}_1^* \\ \boldsymbol{q}_2^* \\ \vdots \end{pmatrix} = \begin{pmatrix} x_1^* & y_1^* \\ x_2^* & y_2^* \\ \vdots & \vdots \end{pmatrix} \tag{46}$$

Now for each year t we have a matrix of optimal coordinates for each country i.

Appendix B.2.4 Constructing pairwise Gallup distance measure

Given the matrix of optimal coordinates for each year $\mathcal{Q}_t$, we want to find the pairwise distances between all countries i and $j \neq i$. We use the Euclidean norm $\|\cdot\|$ to measure the difference between all country pairs, such that $\|\cdot\| : \mathcal{Q}_t \times \mathcal{Q}_t \to \mathcal{D}'_t$, where the resulting matrix $\mathcal{D}'_t$ is a 143×143 symmetric matrix of the form:

$$\mathcal{D}'_t \equiv \begin{pmatrix} 0 & d'_{12} & d'_{13} & \dots \\ d'_{21} & 0 & d'_{23} & \dots \\ & \vdots & & \end{pmatrix} \tag{47}$$

Recall however that it is possible that $d_{ij} > 1$, and so we need to use the inverse distance transformation to such that all distances are bounded between zero and one. Recalling the definition in Equation 43, the inverse is:

$$\tau^{-1}(d'_{ij}, \epsilon) = \frac{(1+\epsilon)d'_{ij}}{1+d'_{ij}} \tag{48}$$

And this inverse transformation of the distance (where this distance resulted from the optimal choice of coordinates) has the desirable property that

$$\tau^{-1}(d'_{ij}, \epsilon) \leq 1 \iff \epsilon \leq \frac{1}{d'_{ij}} \tag{49}$$

And so for a set of distances resulting from optimal coordinates calculated using transformed distance, we can simply choose $\epsilon \leq 1/d'^*_{ij}$ for $d'^*_{ij} = \max\left\{d'_{ij} | d'_{ij} \in \cup_t \mathcal{D}'_t\right\}$. Then, for each year t we will map back to distances bound between 0 and 1:

$$\tau^{-1}(d_{ij}, \epsilon) : \mathcal{D}'_t \to \mathcal{D}_t \tag{50}$$

Where all elements in $d_{ij} \in \mathcal{D}_t$ are in the unit interval. Thus for every year t we have a symmetric pairwise distance matrix which estimates the political distance between two countries as a function of their estimated optimal coordinates.

Appendix B.3 Combining with polity score difference

The Polity score data is already constructed on a scale, and so estimating coordinates for each country is not necessary as the coordinates are already given; however, repeating the above procedure using each country's distance from USA, China, and Russia simply returns the original coordinates from which these distances were calculated. From these one-dimensional coordinates, we estimate pairwise distances between all countries, which returns a symmetric distance matrix. Call this matrix $\mathcal{D}^P_t$ and call each element of this matrix d_{ij}^{P}. Then, we simply calculate the combined distance measure as a convex combination of the Gallup distances d_{ij}^{G} and the Polity score distances d_{ij}^{P} where we define:

$$\overline{d}(d_{ij}^{P}, d_{ij}^{G}, \alpha) = \alpha d_{ij}^{P} + (1-\alpha) d_{ij}^{G} \tag{51}$$

Now calling this matrix for each year t $\overline{\mathcal{D}}_t$, we can finally define simply the *alignment* measure's matrix, which for each year t is a 143×143 matrix:

$$\mathcal{A}_t \equiv \mathbf{1} - \overline{\mathcal{D}}_t \tag{52}$$

The values in $\mathcal{A}_t$ depend on the weight α, which determines the weight given to the polity score distance; we use .5 for the results in this paper, but results are similar (albeit scaled up or down) for different values of α.

Appendix C Additional figures and tables

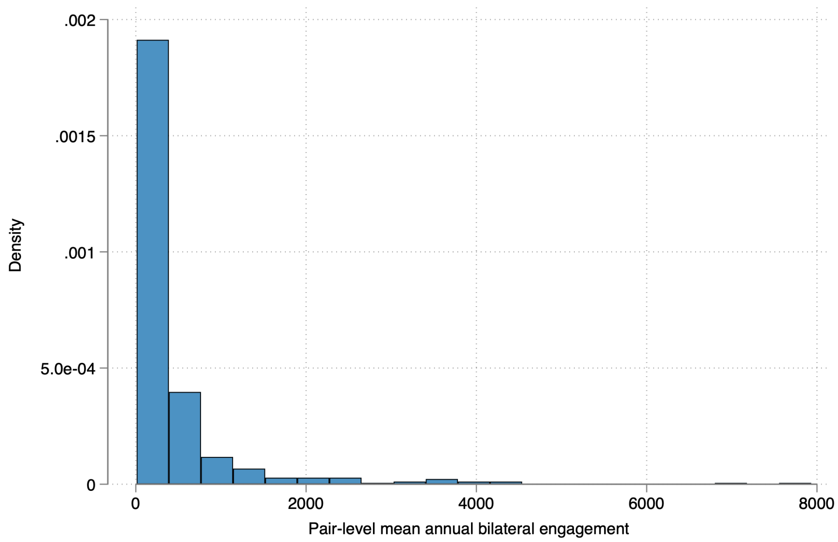
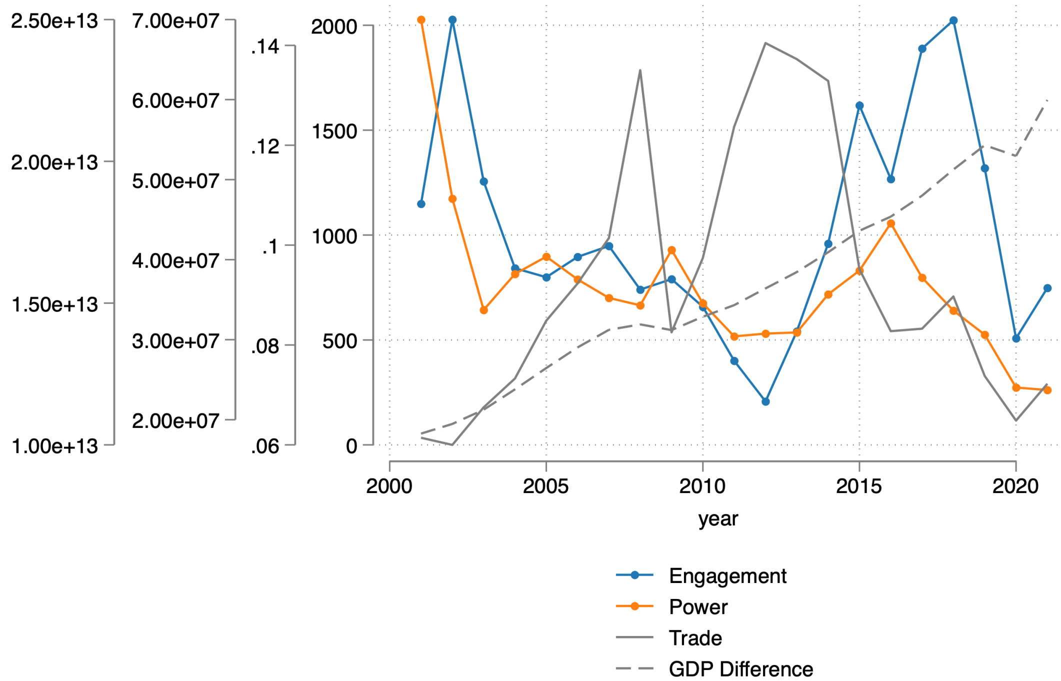
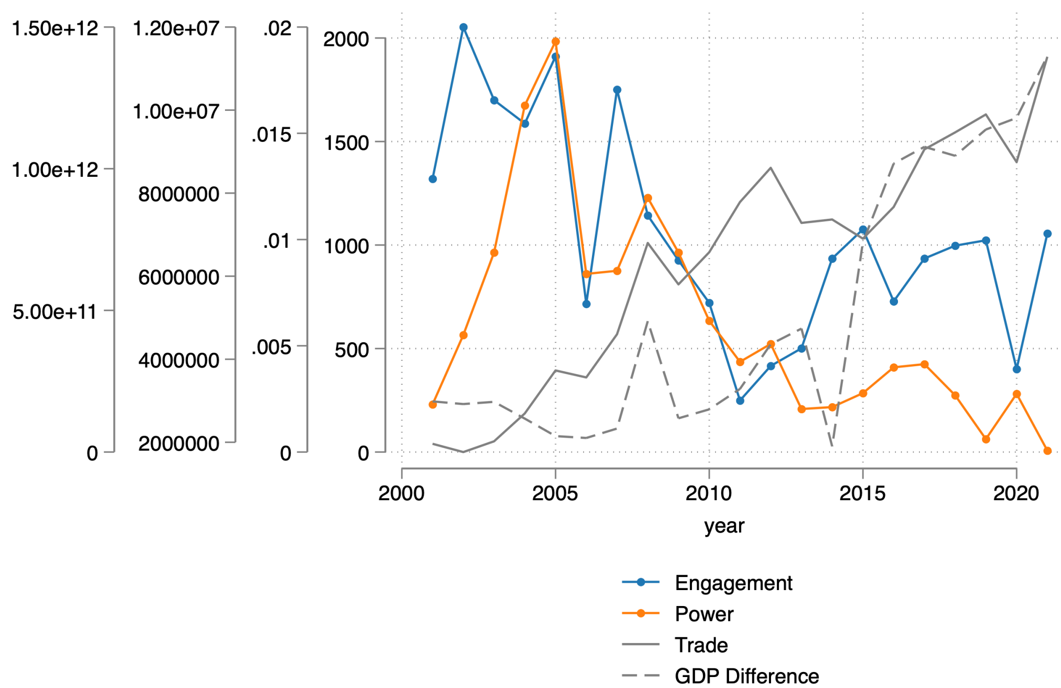


Figure A.1: Histogram of pair-level mean annual bilateral engagement, pairs with mean > 150. This figure is constructed by calculating the mean annual number of events in the range $[-7, 8)$ within each pair, and then plotting the histogram of those pair-level means. We restrict to values greater than 150 because many pairs on average have very little engagement, and so the figure's long right tail is difficult to observe without the aforementioned restriction. This figures uses events from the ICEWS dataset in the time period 2001-2021.



Panel A: USA and Saudi Arabia power and engagement over time



Panel B: Russia and India power and engagement over time

Figure A.2: Examples of power and engagement over time. This figure plots the non-standardized values of engagement (count of events in $[-7, 8)$), power (undirected version), total bilateral trade, and GDP difference (undirected version). The rightmost axis corresponds to engagement, the second to right axis corresponds to power, the third to right corresponds to total bilateral trade and the leftmost axis corresponds to GDP difference.

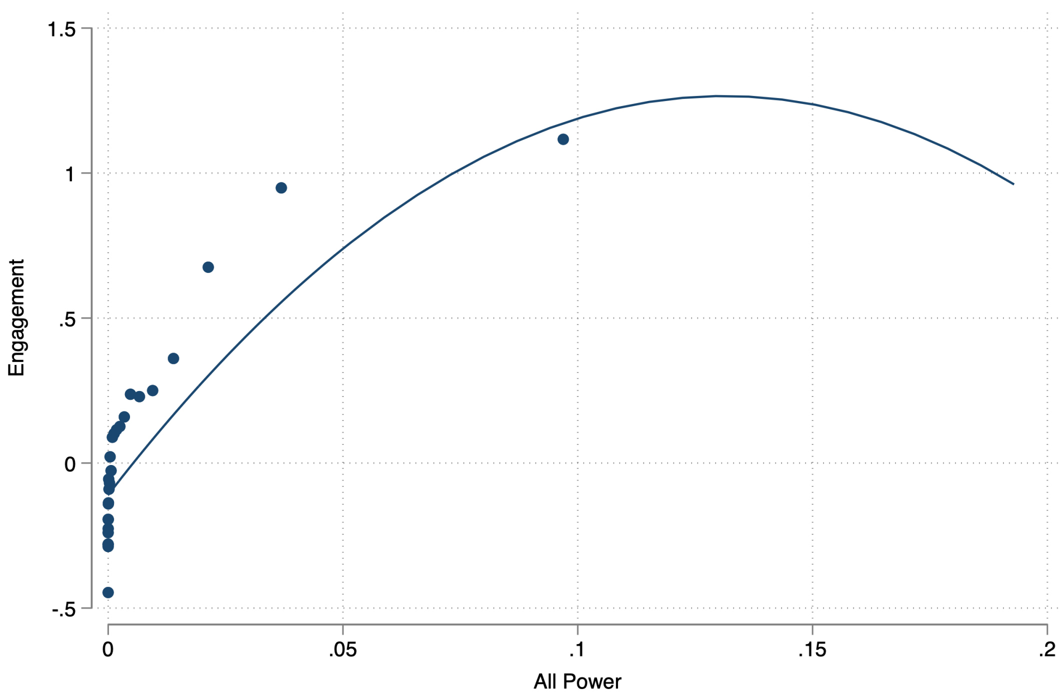
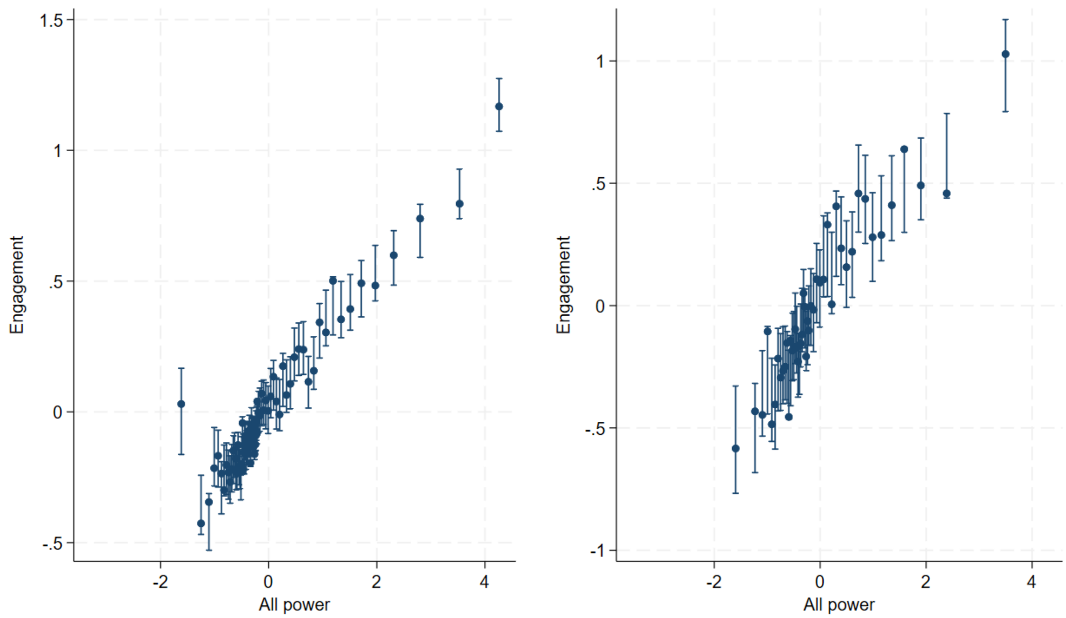


Figure A.3: Power and engagement. This figure displays a binned scatterplot of the regression in Table 1 except that power is *not* standardized. That is, it relates the pairwise z-score of engagment to the pairwise non-standardized version of power (from all sectors), while controlling for pair-level standardized values of GDP difference and total trade, as well as employing pair and year fixed effects. This is created using the stata package 'binsreg'.



Panel A: allies

Panel B: non-allies

Figure A.4: Power and engagement for allies and non-allies. This figure displays a binned scatterplot of the regression in Table 1, dividing observations into allies and non-allies. We define allies by calculating each country pair's mean alignment (described in Appendix B) over the time period 2006-2021. Then, we categorize a pair as allies if their mean alignment is higher than the average of mean alignment and non-allies otherwise. This figure is created using the stata package 'binsreg'.

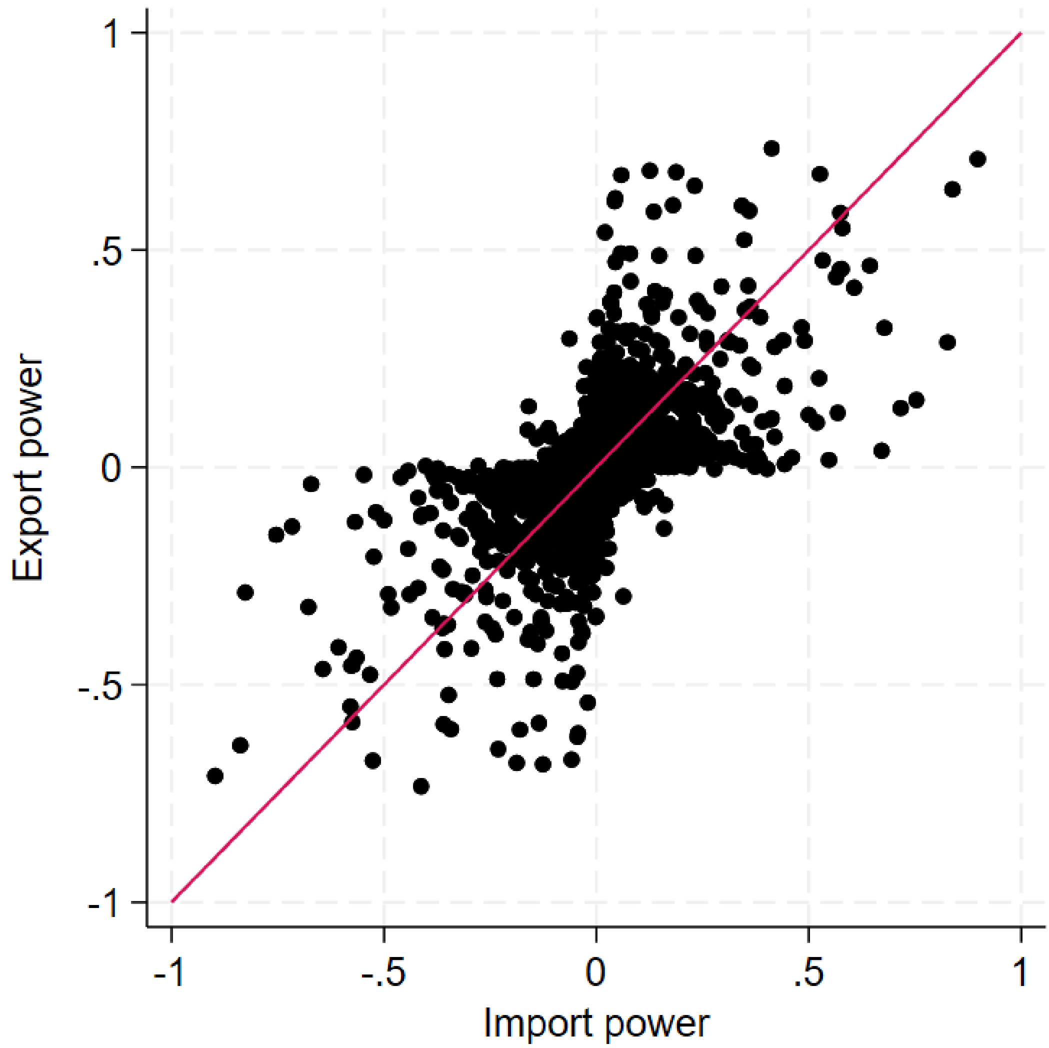
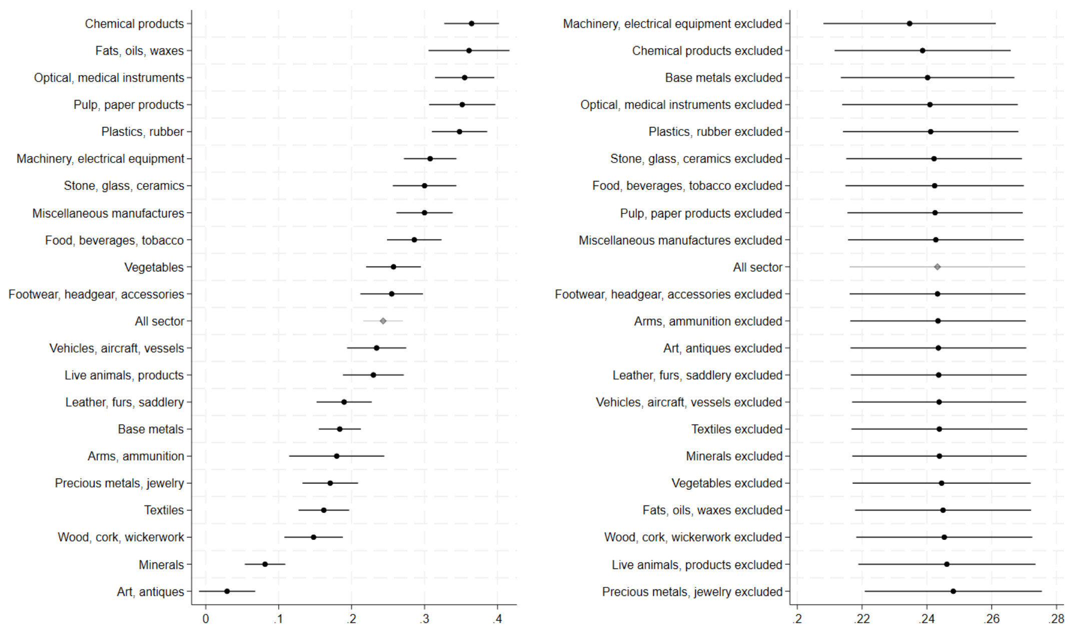


Figure A.5: Import power and export power. This figure displays a scatter plot of directed country pairs' export power and import power averaged across the sample periods. The red line is the 45-degree line.



Panel A: sector only
Panel B: sector excluding

Figure A.6: Sector-Level power and engagement. This figure presents the estimated coefficients of sector-level power measures. Instead of controlling for total trade between the country pair, we control for trade within the sector in Panel A and trade excluding the sector in Panel B. We adjust the standard HS-section classification by reassigning sectors 25 (Salt, sulphur, lime, cement) and 26 (Ores, slag, ash) from minerals to base metals. Our findings show limited effects in the arms and ammunition sector using general trade data. Yet, using specialized SIPRI arms trade data, we observe a significant impact of arms trade

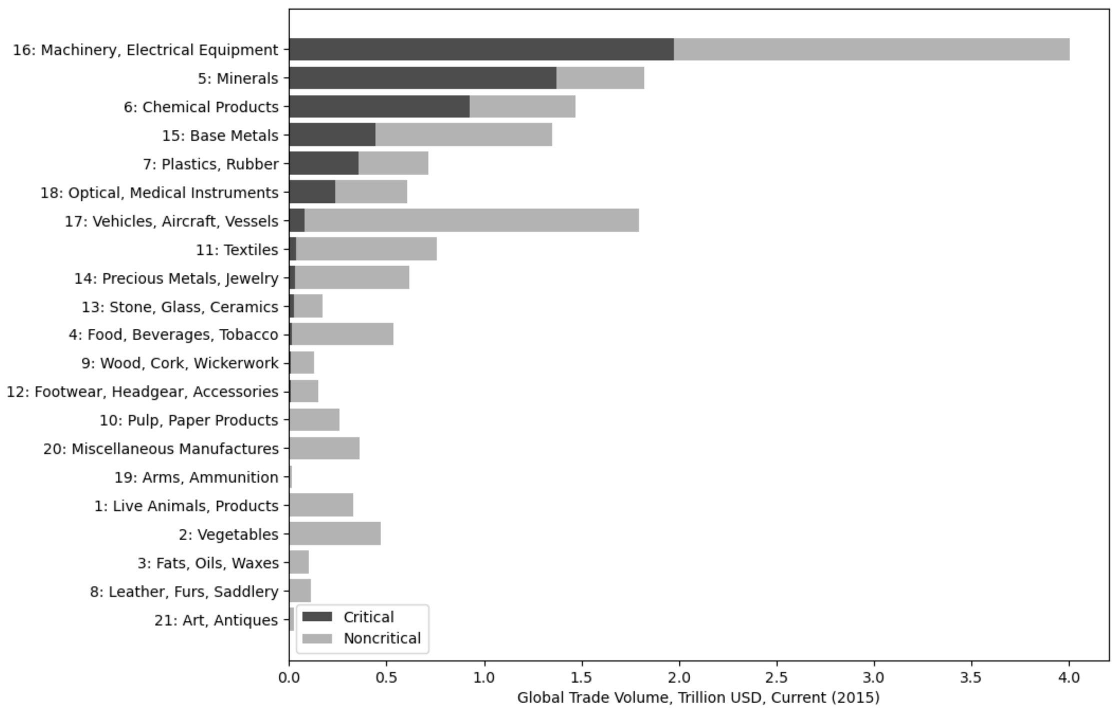


Figure A.7: Critical trade. This figure displays the global trade volume in 2015 for each HS-section. Critical trade volume is shaded in darker gray, and non-critical trade volume is shaded in lighter gray. We adjust the standard HS-section classification by reassigning sectors 25 (Salt, sulphur, lime, cement) and 26 (Ores, slag, ash) from minerals to base metals.

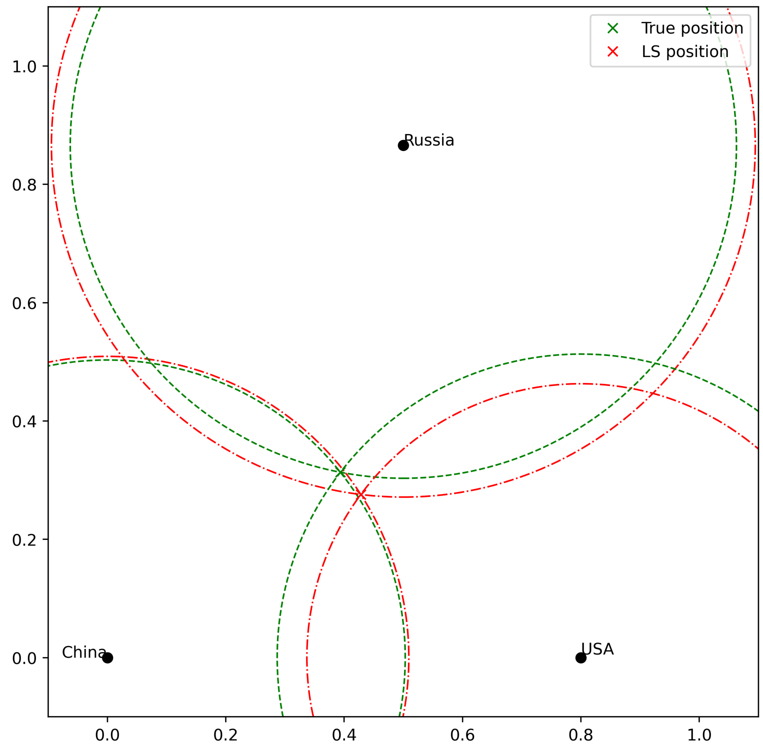


Figure A.8: Visualization of noisy distance and coordinate estimation. Suppose that the green lines are the true distances of each reference country (USA, Russia, and China) from some country *i*. With perfect observation of said distances, country *i*'s coordinates would be placed at the intersection of the three green circles. Given that the distances are imperfectly observed – as represented by the red lines – the least-squares (LS) position is given by the intersection of the three red circles.

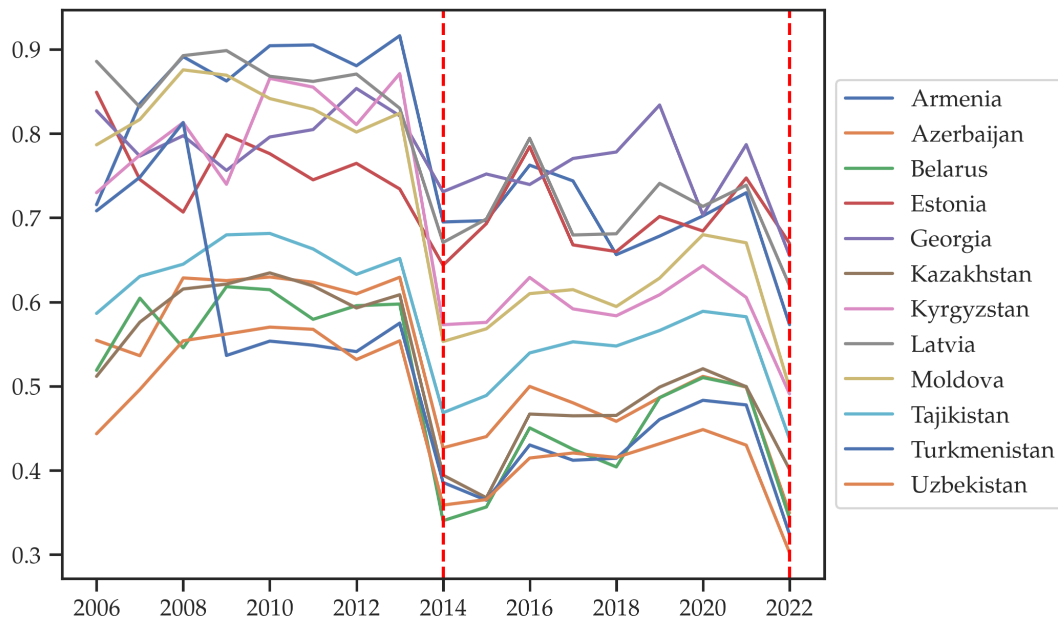


Figure A.9: Former Soviet states' alignment with Ukraine over time. This figures plots the values of alignment (estimation described in Appendix B) between Ukraine and a set of former Soviet states on the y-axis over the time period 2006-2022 (x-axis). The dotted red lines indicate the two invasions of Ukraine by Russia in the relevant time period, and the precipitous decline in alignment with Ukraine of all listed countries exemplifies the variation that the statistical model contains.

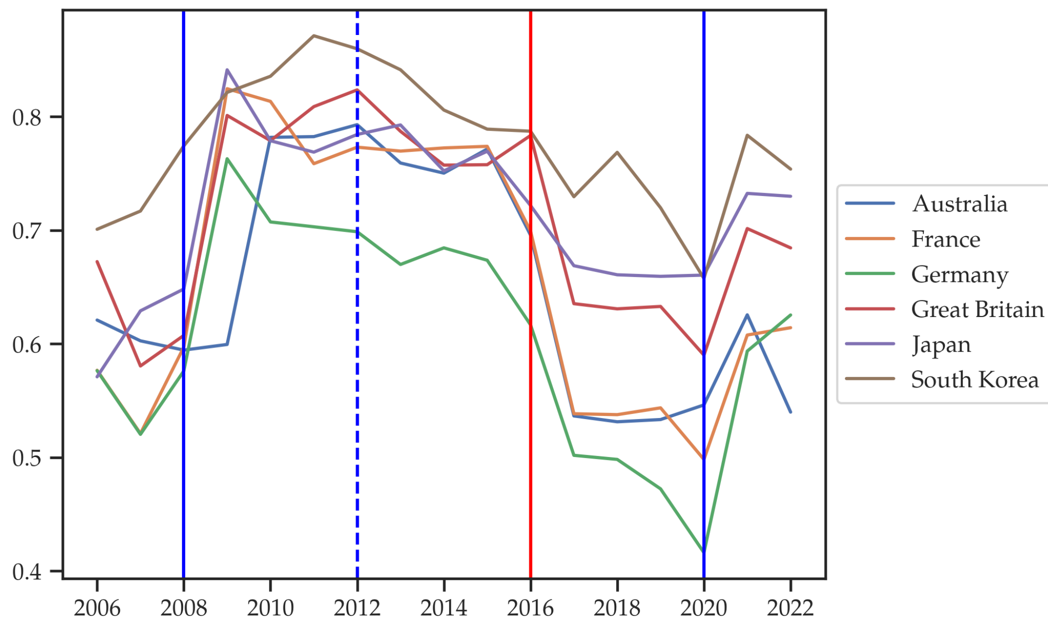


Figure A.10: Alignment with USA over time. This figures plots the values of alignment (estimation described in Appendix B) between USA and a sample of European and Asian countries over the time period 2006-2022 (x-axis). The USA had presidential elections in 2008, 2012, 2016, and 2020. The elections in 2008, 2012, and 2020 were won by Democrats, and the election in 2016 was won by a Republican. The elections in 2008, 2016, and 2020 are represented with solid lines, which indicate that these elections resulted in turnover. The election in 2012 – which shows relatively little changes in alignment – is represented with a dotted line, indicating that it was an election with no turnover.

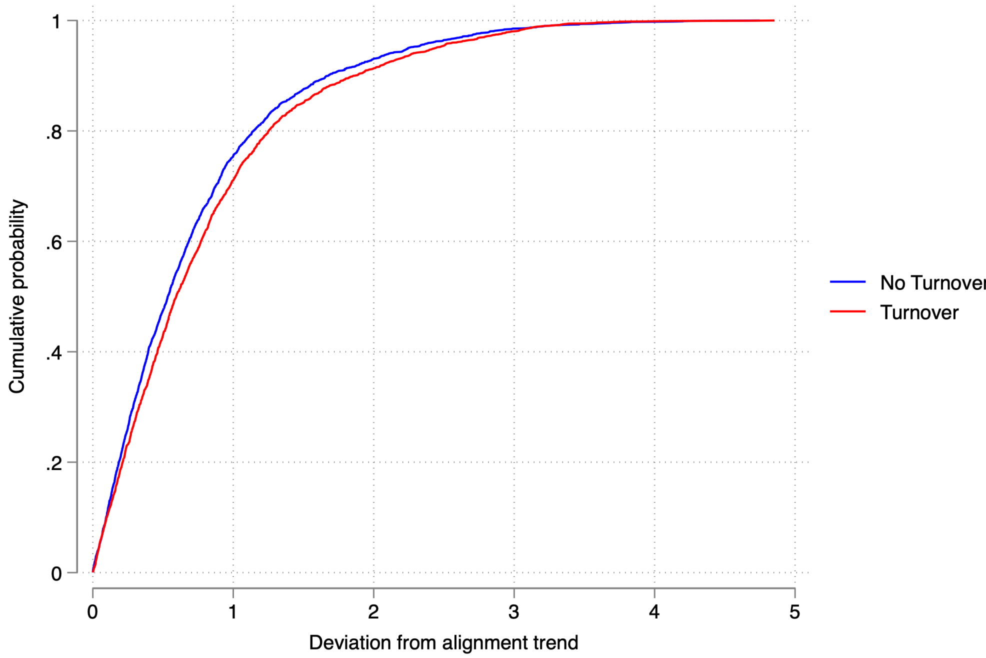


Figure A.11: Empirical CDF of deviations from alignment trend by election result. For a pair and election in year t, we define the alignment trend as the average of the changes in alignment in the years $t-1$, $t-2$, and $t-3$, where the change in alignment for a given year τ is the difference in alignment in years $\tau+1$ and τ. We then measure a deviation in said trend as the absolute difference between the change in alignment *after* the election and the alignment trend before the election. We then plot the deviations in trend for when the election at year t featured no turnover (blue) and when the election resulted in turnover (red). The figure shows that the deviation from alignment trends is larger when the election features turnover.

Table A.1: Political bandwidth and power

	Political bandwidth$_{\{in\},t}$			
	(1)	(2)	(3)	(4)
Power$_{\{in\},t-1}$	0.422***	0.422***	0.018***	0.019***
	(0.025)	(0.025)	(0.005)	(0.004)
N	331,147	331,147	331,147	331,147
Year FE	N	Y	N	Y
Pair FE	N	N	Y	Y

Note: This table demonstrates the results of the regression of political bandwidth (from the FBIC measure) on power, where neither political bandwidth nor power are standardized; note that both variables are undirected variables. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.2: Power and China's trade expansion

	$\text{Power}_{\text{CHN}\to n,t}$
China exposure$_{\text{CHN}\to n,t}$	0.708***
	(0.268)
GDP difference$_{\text{CHN}\to n,t}$	0.129
	(0.223)
Total trade$_{\text{CHN}\to n,t}$	0.593***
	(0.055)
N	3,911
Year FE	Y
Country n FE	Y

Note: This table demonstrates China's expansion affecting China's power against other countries specified in Equation 25. The regression is at the country X year level. China exposure is defined by the weighted average of China's sector-level global market share, weighted by each sector's ratio in each country's aggregate import. GDP difference is directed (with $\text{GDP}_{\text{CHN}} - \text{GDP}_n$). All variables are standardized within pair. Standard errors are clustered at country n level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.3: Impact of Chinese industrial policy

	ΔExport volume$_{CHN \to n}$		ΔPower$_{CHN \to n}$(sector-level)	
	(1)	**(2)**	**(3)**	**(4)**
FYP exposure$_{CHN \to n}$	46656.036***	58425.529***	0.080***	0.091***
	(9242.313)	(9452.263)	(0.011)	(0.010)
N	118,791	118,791	118,791	118,791
Country n FE:	N	Y	N	Y

Note: This table shows the estimated coefficients from the regression specified in Equation 26. The regression is at the country X HS-section level. The changes, denoted Δ, are defined as the change in the mean values from the pre-period (defined as the first two years of the FYP) to the post-period (defined as the last year of the FYP and one year following the end). The treated sectors are those that were included in the FYP starting in the 10th FYP. FYP exposure is defined as the proportion of country n's sector import that is included in the FYP. Standard errors are heteroskedasticity-robust. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.4: ICEWS event categories and intensities

Event Text	Intensity
Carry out car bombing	-10
Assassinate	-10
Use chemical, biological, or radiological weapons	-10
Engage in ethnic cleansing	-10
Engage in mass killings	-10
Conduct suicide, car, or other non-military bombing	-10
fight with small arms and light weapons	-10
Carry out suicide bombing	-10
Detonate nuclear weapons	-10
Use weapons of mass destruction	-10
Employ aerial weapons	-10
Carry out roadside bombing	-10
Kill by physical assault	-10
Use conventional military force	-10
fight with artillery and tanks	-10
Impose blockade, restrict movement	-9.5
Violate ceasefire	-9.5
Occupy territory	-9.5
Physically assault	-9.5
Engage in mass expulsion	-9.5
Seize or damage property	-9.2
Confiscate property	-9.2
Destroy property	-9.2
Use unconventional violence	-9
Abduct, hijack, or take hostage	-9
Use tactics of violent repression	-9
Sexually assault	-9
Torture	-9
Impose embargo, boycott, or sanctions	-8
Use as human shield	-8
Attempt to assassinate	-8
Engage in violent protest for policy change	-7.5
Engage in violent protest for rights	-7.5
Engage in violent protest for leadership change	-7.5
Obstruct passage to demand policy change	-7.5
Obstruct passage, block	-7.5
Obstruct passage to demand leadership change	-7.5
Protest violently, riot	-7.5
Mobilize or increase armed forces	-7.2
Increase police alert status	-7.2
Mobilize or increase police power	-7.2

Continued on next page

Table A.4 – *Continued from previous page*

Event Text	Intensity
Increase military alert status	-7.2
Demonstrate military or police power	-7.2
Expel or withdraw peacekeepers	-7
Expel or withdraw	-7
Threaten with repression	-7
Coerce	-7
Give ultimatum	-7
Threaten to halt international involvement (non-mediation)	-7
Halt mediation	-7
Threaten with military force	-7
Conduct strike or boycott	-6.5
Demonstrate for change in institutions, regime	-6.5
Demonstrate for rights	-6.5
Engage in political dissent	-6.5
Conduct hunger strike	-6.5
Demonstrate for leadership change	-6.5
Conduct strike or boycott for policy change	-6.5
Conduct strike or boycott for leadership change	-6.5
Conduct hunger strike for leadership change	-6.5
Demonstrate or rally	-6.5
Demonstrate for policy change	-6.5
Conduct hunger strike for policy change	-6.5
Halt negotiations	-6.5
Threaten to ban political parties or politicians	-5.8
Threaten to reduce or break relations	-5.8
Threaten with sanctions, boycott, embargo	-5.8
Threaten non-force	-5.8
Threaten to impose state of emergency or martial law	-5.8
Threaten to halt negotiations	-5.8
Threaten with restrictions on political freedoms	-5.8
Threaten with administrative sanctions	-5.8
Threaten to reduce or stop aid	-5.8
Threaten with political dissent, protest	-5.8
Threaten to halt mediation	-5.8
Threaten to impose curfew	-5.8
Reduce or stop material aid	-5.6
Reduce or stop economic assistance	-5.6
Reduce or stop military assistance	-5.6
Reduce or stop humanitarian assistance	-5.6
Demand	-5
Demand economic cooperation	-5
Demand easing of administrative sanctions	-5

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Table A.4 – *Continued from previous page*

Event Text	**Intensity**
Demand change in leadership	-5
Impose administrative sanctions	-5
Demand de-escalation of military engagement	-5
Demand military aid	-5
Demand military cooperation	-5
Demand release of persons or property	-5
Impose state of emergency or martial law	-5
Ban political parties or politicians	-5
Demand rights	-5
Demand that target yields	-5
Demand mediation	-5
Demand humanitarian aid	-5
Demand easing of economic sanctions, boycott, or embargo	-5
Reject mediation	-5
Demand settling of dispute	-5
Defy norms, law	-5
Demand material cooperation	-5
Demand military protection or peacekeeping	-5
Demand change in institutions, regime	-5
Reject plan, agreement to settle dispute	-5
Demand meeting, negotiation	-5
Demand political reform	-5
Impose restrictions on political freedoms	-5
Veto	-5
Demand intelligence cooperation	-5
Demand that target allows international involvement (non-mediation)	-5
Demand material aid	-5
Demand economic aid	-5
Deny responsibility	-5
Reject proposal to meet, discuss, or negotiate	-5
Expel or deport individuals	-5
Arrest, detain, or charge with legal action	-5
Impose curfew	-5
Demand judicial cooperation	-5
Demand diplomatic cooperation (such as policy support)	-5
Demand policy change	-5
Demand easing of political dissent	-5
Threaten	-4.4
Reject request for change in institutions, regime	-4
Reject request for change in leadership	-4
Reduce relations	-4
Reject request for military aid	-4

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Table A.4 – *Continued from previous page*

Event Text	Intensity
Refuse to ease popular dissent	-4
Reject request for military protection or peacekeeping	-4
Reject economic cooperation	-4
Reject request for policy change	-4
Refuse to ease administrative sanctions	-4
Reject judicial cooperation	-4
Reject	-4
Reject military cooperation	-4
Refuse to allow international involvement (non mediation)	-4
Refuse to yield	-4
Reduce or break diplomatic relations	-4
Reject request for economic aid	-4
Refuse to release persons or property	-4
Reject request or demand for material aid	-4
Refuse to ease economic sanctions, boycott, or embargo	-4
Reject material cooperation	-4
Reject request for rights	-4
Reject request or demand for political reform	-4
Reject request for humanitarian aid	-4
Refuse to de-escalate military engagement	-4
Accuse of war crimes	-2
Criticize or denounce	-2
Accuse of espionage, treason	-2
Investigate crime, corruption	-2
Investigate military action	-2
Investigate	-2
Investigate war crimes	-2
Rally opposition against	-2
Complain officially	-2
Accuse of crime, corruption	-2
Accuse	-2
Investigate human rights abuses	-2
find guilty or liable (legally)	-2
Accuse of human rights abuses	-2
Bring lawsuit against	-2
Accuse of aggression	-2
Make pessimistic comment	-0.4
Appeal for rights	-0.3
Appeal for change in leadership	-0.3
Appeal for political reform	-0.3
Appeal for policy change	-0.3
Appeal for easing of administrative sanctions	-0.3

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Table A.4 – *Continued from previous page*

Event Text	Intensity
Appeal for de-escalation of military engagement	-0.3
Appeal to yield	-0.3
Appeal for change in institutions, regime	-0.3
Appeal for target to allow international involvement (non-mediation)	-0.3
Appeal for easing of economic sanctions, boycott, or embargo	-0.3
Appeal for easing of political dissent	-0.3
Appeal for release of persons or property	-0.3
Decline comment	-0.1
Consider policy option	0
Make statement	0
Acknowledge or claim responsibility	0
Engage in symbolic act	0
Make optimistic comment	0.4
Discuss by telephone	1
Consult	1
Make a visit	1.9
Meet at a 'third' location	2.5
Host a visit	2.8
Make an appeal or request	3
Appeal for military cooperation	3.4
Appeal for judicial cooperation	3.4
Appeal for material cooperation	3.4
Make empathetic comment	3.4
Appeal for military protection or peacekeeping	3.4
Appeal for military aid	3.4
Appeal for diplomatic cooperation (such as policy support)	3.4
Appeal for economic cooperation	3.4
Express accord	3.4
Appeal for aid	3.4
Praise or endorse	3.4
Appeal for humanitarian aid	3.4
Appeal for economic aid	3.4
Appeal for intelligence	3.4
Engage in diplomatic cooperation	3.5
Defend verbally	3.5
Rally support on behalf of	3.8
Express intent to cooperate	4
Appeal to others to settle dispute	4
Appeal to others to meet or negotiate	4
Appeal to engage in or accept mediation	4
Express intent to meet or negotiate	4
Express intent to engage in diplomatic cooperation (such as policy support)	4.5

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Table A.4 – *Continued from previous page*

Event Text	Intensity
Ease ban on political parties or politicians	5
Ease administrative sanctions	5
Express intent to mediate	5
Ease political dissent	5
Accede to demands for change in institutions, regime	5
Accede to demands for change in leadership	5
Ease curfew	5
Mediate	5
Express intent to settle dispute	5
Yield	5
Accede to demands for change in policy	5
Ease restrictions on political freedoms	5
Accede to demands for rights	5
Ease state of emergency or martial law	5
Accede to requests or demands for political reform	5
Express intent to provide economic aid	5.2
Express intent to engage in material cooperation	5.2
Express intent to provide material aid	5.2
Express intent to cooperate militarily	5.2
Express intent to provide military aid	5.2
Express intent to cooperate economically	5.2
Express intent to cooperate on intelligence	5.2
Express intent to provide humanitarian aid	5.2
Express intent to cooperate on judicial matters	5.2
Express intent to provide military protection or peacekeeping	6
Engage in material cooperation	6
Grant diplomatic recognition	6
Cooperate economically	6.4
Express intent to ease administrative sanctions	7
Express intent to provide rights	7
Return, release person(s)	7
Express intent to release persons or property	7
Grant asylum	7
Provide aid	7
Share intelligence or information	7
Express intent to ease popular dissent	7
Express intent to change institutions, regime	7
Engage in negotiation	7
Express intent to allow international involvement (non-mediation)	7
Express intent to change leadership	7
Express intent to change policy	7
Express intent to ease economic sanctions, boycott, or embargo	7

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Table A.4 – *Continued from previous page*

Event Text	Intensity
Return, release property	7
Express intent to de-escalate military engagement	7
Apologize	7
Express intent to accept mediation	7
Forgive	7
Express intent to institute political reform	7
Express intent to yield	7
Ease economic sanctions, boycott, embargo	7
Cooperate militarily	7.4
Provide economic aid	7.4
Engage in judicial cooperation	7.4
Provide humanitarian aid	7.4
Sign formal agreement	8
Provide military aid	8.3
Provide military protection or peacekeeping	8.5
Allow humanitarian access	9
Receive inspectors	9
Ease military blockade	9
Receive deployment of peacekeepers	9
Demobilize armed forces	9
Declare truce, ceasefire	9
Retreat or surrender militarily	10

Table A.5: Engagement and power with quadratic term

	Bilateral engagement$_{\{in\},t}$					
	All sectors			Max sectors		
	(1)	(2)	(3)	(4)	(5)	(6)
Power$_{\{in\},t-1}$	0.109***	0.108***	0.237***	0.036***	0.035***	0.106***
	(0.015)	(0.015)	(0.018)	(0.011)	(0.011)	(0.012)
Power$^2_{\{in\},t-1}$	-0.018***	-0.018***	0.004	0.006*	0.006*	0.037***
	(0.005)	(0.005)	(0.005)	(0.003)	(0.003)	(0.004)
GDP difference$_{\{in\},t-1}$		0.074***	0.079***		0.076***	0.081***
		(0.013)	(0.012)		(0.013)	(0.013)
Total trade$_{\{in\},t-1}$			-0.263***			-0.212***
			(0.014)			(0.013)
N	384,815	384,815	384,815	384,815	384,815	384,815
Year FE:	Y	Y	Y	Y	Y	Y
Pair FE:	Y	Y	Y	Y	Y	Y

Note: This table features the same regression as in Table 1 but with the additional inclusion of a quadratic power term. Bilateral engagement, power, GDP difference, and total bilateral trade are all undirected and are standardized within pair. Power^2 is the squared value of power, where power is itself standardized within pair. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.6: Domestic events and power

	Domestic events$_{\{in\},t}$					
	All sectors			Max sectors		
	(1)	(2)	(3)	(4)	(5)	(6)
Power$_{\{in\},t-1}$	0.009	0.012	0.016	-0.045	-0.043	-0.039
	(0.030)	(0.029)	(0.029)	(0.029)	(0.029)	(0.029)
GDP difference$_{\{in\},t-1}$		-0.247***	-0.202***		-0.246***	-0.203***
		(0.058)	(0.061)		(0.058)	(0.061)
Global trade$_{\{in\},t-1}$			-0.197***			-0.190**
			(0.076)			(0.076)
N	351,102	351,102	351,102	351,102	351,102	351,102
Year FE:	Y	Y	Y	Y	Y	Y
Pair FE:	Y	Y	Y	Y	Y	Y

Note: The outcome, domestic events, is the sum of within-country z-scores of *internal* (not international) events in the interval $[-7, 8)$; the z-scores are on the country-year level, given that the relevant events are domestic, but the outcome variable is a sum on the pair-year level. Power and GDP difference are standardized within pair and are undirected. Global trade is the pair-level standard deviation of the sum of each country's (within the pair) trade with *all* countries in a given year, e.g. for the country pair consisting of China and France, global trade is the pair-level standard deviation of the sum of China's trade with all countries in year t and France's trade with all countries in that same year. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.7: Rotemberg weight

Sector	Rotemberg weight
16: Machinery, Electrical Equipment	0.245241
4: Food, Beverages, Tobacco	0.120561
15: Base Metals	0.103838
11: Textiles	0.081930
6: Chemical Products	0.071501
2: Vegetables	0.059270
5: Minerals	0.055420
17: Vehicles, Aircraft, Vessels	0.045250
14: Precious Metals, Jewelry	0.032481
7: Plastics, Rubber	0.029116
18: Optical, Medical Instruments	0.025882
20: Miscellaneous Manufactures	0.024956
1: Live Animals, Products	0.024571
13: Stone, Glass, Ceramics	0.018944
12: Footwear, Headgear, Accessories	0.018024

Note: The table shows the Rotemberg weights of each sectors (HS-sections). The Rotemberg weight is computed by taking the average of 10 different sub-sample calculations. Each iteration used 30 randomly selected importers and all exporters trading with those importers. Estimates across these sub-sample calculations do not differ much.

Table A.8: Robustness: engagement and power

	Bilateral engagement$_{\{in\},t}$		
	(1)	(2)	(3)
Panel A: Baseline			
Power$_{\{in\},t-1}$	0.074***	0.074***	0.243***
	(0.008)	(0.008)	(0.014)
Panel B.1: Alternative sample, excluding USA, Russia, and China			
Power$_{\{in\},t-1}$	0.072***	0.071***	0.227***
	(0.007)	(0.007)	(0.013)
Panel B.2: Alternative sample, including years 1995-2000			
Power$_{\{in\},t-1}$	0.020***	0.019***	0.044***
	(0.007)	(0.007)	(0.012)
Panel B.3: Alternative sample, fixing pair order			
Power$_{\{in\},t-1}$	0.109***	0.109***	0.296***
	(0.013)	(0.013)	(0.021)
Panel C.1: Two way clustering on year and pair			
Power$_{\{in\},t-1}$	0.074***	0.074***	0.243***
	(0.014)	(0.014)	(0.039)
Panel C.2: Individual country fixed effects			
Power$_{\{in\},t-1}$	0.075***	0.074***	0.243***
	(0.008)	(0.008)	(0.014)
Panel D.1: Alternative standardization of bilateral engagement			
Power$_{\{in\},t-1}$	0.016***	0.015***	0.037***
	(0.002)	(0.002)	(0.003)
Panel D.2: Alternative definition of bilateral engagement: all events			
Power$_{\{in\},t-1}$	0.083***	0.082***	0.277***
	(0.009)	(0.009)	(0.016)
GDP difference$_{\{in\},t-1}$ Control	N	Y	Y
Total Trade$_{\{in\},t-1}$ Control	N	N	Y
Year FE	Y	Y	Y
Pair FE	Y	Y	Y

Note: This table shows robustness checks for the results demonstrated in Table 1. Power, GDP difference, and total bilateral trade are all undirected variables and are standardized on the pair level. Bilateral engagement is the z-score of each unit interval of events in the ICEWS dataset, where each unit interval's values are the sum of both directions of country i and n's events with each other. Panel A repeats the result shown in Table 1. Panel B.1 excludes USA, Russia, and China; Panel B.2 includes USA, Russia, and China but also includes years 1995-2000. Panel B.3 uses only the pairs for which an ordering would be feasible, i.e. pairs for which one country is always more powerful. Panel C.1 and C.2 are the same as the baseline but change clustering (year and pair separately in C.1) and controls (individual country FE rather than pair FEs in C.2). Panel D.1 uses the standard deviation of the sum of all pairwise events as the outcome variable, and Panel D.2 uses the z-score of each unit interval of events, but extends the set of events from those of intensity $[-7, 8)$ to all events (i.e. $[-10, 10]$). Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.9: Balance test

	Sector16	Sector4	Sector15	Sector11	Sector6	Sector2	Sector5	Sector17
Panel A: domestic economy								
Agriculture, forestry, and fishing, value added (current US$)	-0.0026	-0.0038	0.0010	0.0075*	0.0019	0.0064**	-0.0103	0.0024
	(0.0079)	(0.0069)	(0.0029)	(0.0035)	(0.0024)	(0.0021)	(0.0064)	(0.0122)
Industry (including construction), value added (current US$)	-0.0027	-0.0050	-0.0056	0.0102	0.0038	-0.0076	0.0091	0.0140
	(0.0068)	(0.0049)	(0.0035)	(0.0052)	(0.0035)	(0.0047)	(0.0080)	(0.0087)
Internet users 100**	0.0208	-0.0111	-0.0086*	-0.0030	-0.0103	-0.0300***	-0.0020	0.0289
	(0.0196)	(0.0092)	(0.0041)	(0.0073)	(0.0061)	(0.0063)	(0.0121)	(0.0347)
Labor force with advanced education (% of total working-age population with adva	-0.0164*	0.0054	-0.0002	0.0033	-0.0002	-0.0015	0.0052	0.0140
	(0.0066)	(0.0042)	(0.0039)	(0.0032)	(0.0033)	(0.0011)	(0.0055)	(0.0179)
Labor force, total	0.0113***	-0.0060*	0.0023*	0.0011	0.0010	0.0018	-0.0231***	0.0142***
	(0.0026)	(0.0028)	(0.0012)	(0.0026)	(0.0011)	(0.0027)	(0.0052)	(0.0029)
Machinery and transport equipment (% of value added in manufacturing)	-0.0003	-0.0027	0.0040*	0.0038	-0.0021	-0.0062	0.0046	-0.0061
	(0.0059)	(0.0021)	(0.0016)	(0.0038)	(0.0021)	(0.0032)	(0.0036)	(0.0057)
Manufacturing, value added (current US$)	0.0045	-0.0071	0.0032	-0.0061	0.0072**	0.0038	0.0042	0.0027
	(0.0084)	(0.0053)	(0.0020)	(0.0132)	(0.0028)	(0.0031)	(0.0066)	(0.0069)
Scientific and technical journal articles	0.0140	-0.0186*	-0.0003	0.0136**	0.0092*	-0.0023	-0.0069	-0.0146
	(0.0113)	(0.0076)	(0.0034)	(0.0042)	(0.0044)	(0.0036)	(0.0095)	(0.0202)
Services, value added (current US$)	-0.0152	0.0038	-0.0140**	0.0056	-0.0101	-0.0123	0.0133	0.0316
	(0.0110)	(0.0080)	(0.0043)	(0.0091)	(0.0064)	(0.0076)	(0.0113)	(0.0221)
Stocks traded, total value (current US$)	0.0235*	-0.0087**	-0.0013	0.0076	-0.0016	-0.0014	0.0006	-0.0188*
	(0.0096)	(0.0027)	(0.0033)	(0.0055)	(0.0031)	(0.0024)	(0.0059)	(0.0071)
Taxes on goods and services (% value added of industry and services)	-0.0227***	0.0040*	-0.0028*	0.0046	0.0028	0.0041**	0.0093*	0.0011
	(0.0054)	(0.0018)	(0.0013)	(0.0037)	(0.0021)	(0.0015)	(0.0038)	(0.0049)
Technicians in R&D (per million people)	0.0162**	-0.0031	0.0023	-0.0056	-0.0002	-0.0017	-0.0100*	0.0070*
	(0.0054)	(0.0029)	(0.0013)	(0.0040)	(0.0017)	(0.0009)	(0.0044)	(0.0030)
Unemployment with advanced education (% of total labor force with advanced educa	0.0024	-0.0024	-0.0013	0.0052	-0.0029	-0.0012	-0.0010	0.0053
	(0.0069)	(0.0024)	(0.0013)	(0.0051)	(0.0019)	(0.0014)	(0.0037)	(0.0047)
Unemployment, total (% of total labor force) (national estimate)	0.0014	-0.0008	0.0020	0.0001	-0.0010	0.0034	-0.0056	0.0021
	(0.0051)	(0.0021)	(0.0011)	(0.0040)	(0.0015)	(0.0020)	(0.0037)	(0.0031)
Z-score domestic	0.0151**	-0.0076**	0.0021	0.0000	0.0035	0.0013	-0.0027	-0.0108
	(0.0049)	(0.0023)	(0.0014)	(0.0030)	(0.0018)	(0.0018)	(0.0033)	(0.0059)
Panel B: international economy								
Air transport, passengers carried	0.0196***	-0.0054*	0.0036*	0.0016	-0.0010	-0.0053*	-0.0042	-0.0089
	(0.0046)	(0.0026)	(0.0015)	(0.0030)	(0.0023)	(0.0024)	(0.0041)	(0.0107)
Foreign direct investment, net (BoP, current US$)	0.0173**	-0.0048	0.0055**	-0.0155***	-0.0010	-0.0057**	-0.0054	0.0042
	(0.0056)	(0.0034)	(0.0017)	(0.0037)	(0.0019)	(0.0020)	(0.0046)	(0.0048)
Foreign direct investment, net inflows (BoP, current US$)	-0.0048	0.0013	-0.0015	0.0164***	0.0009	0.0008	0.0089	-0.0185**
	(0.0068)	(0.0044)	(0.0020)	(0.0038)	(0.0026)	(0.0042)	(0.0048)	(0.0069)
Foreign direct investment, net outflows (BoP, current US$)	0.0126	-0.0065	0.0027	0.0059	-0.0028	-0.0059*	0.0175*	-0.0196
	(0.0082)	(0.0047)	(0.0020)	(0.0045)	(0.0024)	(0.0027)	(0.0084)	(0.0104)
Net official development assistance and official aid received (current US$)	-0.0195***	0.0048	-0.0046*	0.0087*	0.0016	0.0054	0.0062	-0.0001
	(0.0057)	(0.0042)	(0.0018)	(0.0039)	(0.0023)	(0.0031)	(0.0041)	(0.0046)
Taxes on international trade (% of revenue)	0.0128*	0.0022	-0.0008	-0.0041	-0.0028	-0.0015	-0.0062	0.0020
	(0.0062)	(0.0027)	(0.0016)	(0.0056)	(0.0024)	(0.0025)	(0.0053)	(0.0051)
Technical cooperation grants (BoP, current US$)	-0.0138**	0.0027	-0.0000	0.0011	0.0002	0.0039	0.0106**	-0.0031
	(0.0050)	(0.0027)	(0.0016)	(0.0036)	(0.0021)	(0.0023)	(0.0040)	(0.0071)
Trade (% of GDP)	0.0051	-0.0025	0.0020	-0.0026	0.0009	-0.0008	0.0036	-0.0098
	(0.0042)	(0.0025)	(0.0012)	(0.0032)	(0.0018)	(0.0016)	(0.0031)	(0.0059)
Z-score international	-0.0009	-0.0015	0.0013	0.0037	0.0007	0.0024	0.0093*	-0.0129
	(0.0047)	(0.0026)	(0.0013)	(0.0035)	(0.0018)	(0.0020)	(0.0042)	(0.0071)
Panel C: military								
Armed forces personnel, total	-0.0027	-0.0017	-0.0006	0.0056*	0.0014	0.0028	0.0011	-0.0025
	(0.0033)	(0.0017)	(0.0010)	(0.0025)	(0.0012)	(0.0015)	(0.0027)	(0.0041)
Arms exports (SIPRI trend indicator values)	0.0106	-0.0091*	0.0026	-0.0031	0.0047*	-0.0017	-0.0180	0.0031
	(0.0093)	(0.0044)	(0.0024)	(0.0039)	(0.0023)	(0.0032)	(0.0115)	(0.0059)
Arms imports (SIPRI trend indicator values)	-0.0085	0.0081	-0.0000	-0.0009	-0.0011	0.0058	0.0019	-0.0039
	(0.0070)	(0.0048)	(0.0018)	(0.0035)	(0.0023)	(0.0038)	(0.0044)	(0.0044)
Military expenditure (current USD)	0.0017	0.0008	-0.0002	0.0119*	0.0001	0.0038	0.0098	-0.0310
	(0.0090)	(0.0036)	(0.0036)	(0.0046)	(0.0033)	(0.0030)	(0.0068)	(0.0186)
Z-score military	0.0064	-0.0043	0.0007	-0.0007	-0.0055*	-0.0010	-0.0015	0.0025
	(0.0067)	(0.0049)	(0.0019)	(0.0044)	(0.0023)	(0.0039)	(0.0046)	(0.0061)
Panel D: political								
Anti-government demonstrations	0.0104	-0.0061	-0.0012	0.0082*	0.0068*	-0.0021	0.0032	-0.0150
	(0.0075)	(0.0038)	(0.0020)	(0.0040)	(0.0033)	(0.0044)	(0.0061)	(0.0093)
Assassinations	0.0073	0.0011	0.0048	-0.0114	0.0021	0.0010	0.0100	-0.0131
	(0.0103)	(0.0070)	(0.0033)	(0.0073)	(0.0036)	(0.0062)	(0.0090)	(0.0123)
General strikes	0.0145*	-0.0078*	0.0029	0.0008	0.0054	-0.0013	-0.0072	-0.0115
	(0.0065)	(0.0034)	(0.0023)	(0.0053)	(0.0033)	(0.0037)	(0.0070)	(0.0141)
Government crises	0.0158	-0.0067	0.0007	0.0045	-0.0010	-0.0023	-0.0052	-0.0035
	(0.0094)	(0.0062)	(0.0027)	(0.0055)	(0.0038)	(0.0038)	(0.0077)	(0.0107)
Purges	0.0036	-0.0079	0.0054	-0.0136	0.0070	-0.0065	0.0196*	-0.0051
	(0.0134)	(0.0072)	(0.0036)	(0.0077)	(0.0057)	(0.0080)	(0.0091)	(0.0067)
Revolutions	0.0057	-0.0098	0.0072*	0.0168*	-0.0001	-0.0096*	0.0029	-0.0145
	(0.0087)	(0.0052)	(0.0033)	(0.0073)	(0.0056)	(0.0046)	(0.0071)	(0.0173)
Riots	-0.0094	-0.0021	-0.0036	0.0026	0.0129***	0.0089*	0.0018	-0.0083
	(0.0090)	(0.0047)	(0.0026)	(0.0064)	(0.0029)	(0.0040)	(0.0053)	(0.0115)
Terrorism/guerrilla warfare	0.0068	-0.0028	0.0010	-0.0085	0.0109**	0.0114	-0.0062	-0.0176
	(0.0100)	(0.0071)	(0.0029)	(0.0047)	(0.0033)	(0.0059)	(0.0056)	(0.0150)
Z-score political	0.0114	-0.0125***	0.0023	0.0016	0.0080**	-0.0025	-0.0021	-0.0118
	(0.0059)	(0.0034)	(0.0018)	(0.0035)	(0.0024)	(0.0028)	(0.0048)	(0.0089)

Note: This table demonstrates the balance test of the potential correlates of the importer's industry share in pre-period ($w_{nk\tau}$). The variables in the left columns come from the World Bank's World Development Indicators (WDI) and Databank International's Cross-National Time-Series Data (CNTS). For each socioeconomic variable defined at importer n, this table shows $w_{nk\tau} = \beta_0 + \beta_1 \Delta X + \epsilon_n k$ for each sector k where ΔX is defined as the difference between the mean of 1995 to 1999 and the mean of 2017 to 2021 of the within-country standardized value of X. In this table, I display the top 8 sectors by Rotemberg weight since they contribute most to the identification of the IV regression in Table 2. Standard errors are heteroscedasticity robust. * $p < 0.05$, ** $p < .01$, *** $p < 0.001$

Table A.10: Robustness: engagement and power IV

	Bilateral Engagement		
	(1) IV	(2) Drop top sector IV	(3) Leave one out IV
Panel A: Baseline			
$\text{Power}_{\{in\},t-1}$	0.545***	0.514***	0.544***
	(0.083)	(0.093)	(0.084)
Panel B.1: Alternative sample, all undirected pair			
$\text{Power}_{\{in\},t-1}$	0.417***	0.386***	0.415***
	(0.060)	(0.072)	(0.060)
Panel B.2: Alternative sample, excluding USA, Russia, and China			
$\text{Power}_{\{in\},t-1}$	0.598***	0.592***	0.598***
	(0.086)	(0.097)	(0.088)
Panel B.3: Alternative sample, including years 1995-2000			
$\text{Power}_{\{in\},t-1}$	0.163***	0.202***	0.160***
	(0.060)	(0.067)	(0.060)
Panel C.1: Two way clustering on year and pair			
$\text{Power}_{\{in\},t-1}$	0.545***	0.514***	0.544***
	(0.147)	(0.174)	(0.148)
Panel C.2: Individual country fixed effects			
$\text{Power}_{i\to n,t-1}$	0.543***	0.513***	0.541***
	(0.083)	(0.093)	(0.084)
Panel D.1: Alternative standardization of bilateral engagement			
$\text{Power}_{\{in\},t-1}$	0.092***	0.084***	0.092***
	(0.016)	(0.018)	(0.016)
Panel D.2: Alternative definition of bilateral engagement: all events			
$\text{Power}_{\{in\},t-1}$	0.616***	0.561***	0.613***
	(0.096)	(0.108)	(0.098)
Panel E.1: Alternative IV, absolute value, all undirected pairs			
$\text{Power}_{\{in\},t-1}$	0.642***	0.558***	0.648***
	(0.071)	(0.087)	(0.072)
Panel E.2: Alternative IV, non-standardized			
$\text{Power}_{\{in\},t-1}$	45.322***	40.508***	45.596***
	(5.798)	(6.216)	(5.836)
Panel E.3: Alternative IV, non-standardized one side (Rotemberg)			
$\text{Power}_{\{in\},t-1}$	42.225***	37.657***	42.489***
	(5.785)	(6.051)	(5.835)
$\text{GDP difference}_{\{in\},t-1}$ Control	Y	Y	Y
$\text{Total Trade}_{\{in\},t-1}$ Control	Y	Y	Y
Year FE	Y	Y	Y
Pair FE	Y	Y	Y

Note: This table shows the robustness of alternative sample, clustering, fixed effects, standardization, outcome variable, and IV. Each specification deviates from the baseline in Panel A. Panel A repeats the baseline result shown in Table 2. In baseline, Power, IV, GDP difference, and total bilateral trade are all standardized on the undirected pair level. Bilateral engagement is the z-score of each unit interval of events in the ICEWS dataset, where each unit interval's values are the sum of both directions of country i and n's events with each other. The sample is country pairs where $s_{nit} \geq s_{int}$ always hold throughout the sample period. IV follows the direction of the power measure (i.e. if power measure is $s_{nit} - s_{int}$ then IV is $b_{nit} - b_{int}$. Panel B.1 uses all undirected country pairs, while IV follows the direction of the power measure. Panel B.2 excludes USA, Russia, and China; Panel B.3 includes USA, Russia, and China but also includes years 1995-2000. Panel C.1 and C.2 are the same as the baseline but change clustering (year and pair separately in C.1) and controls (individual country FE rather than pair FEs in C.2). Panel D.1 uses the standard deviation of the sum of all pairwise events as the outcome variable, and Panel D.2 uses the z-score of each unit interval of events, but extends the set of events from those of intensity $[-7, 8)$ to all events (i.e. $[-10, 10]$). Panel E.1 uses $|b_{nit} - b_{int}|$ as IV for all undirected pairs. Panel E.2 uses non-standardized IV with non-standardized power and controls. Panel E.3 only uses only one side b_{nit} and keeps power, IV, and controls non-standardized. Panel E.3 is the version mirroring the Rotemberg weights computation. Year and pair fixed effect are applied except for Panel C.2. Standard errors are clustered at the pair level except for Panel C.1. Column 1: baseline IV. Column 2: excludes 5 sectors with high Rotemberg weights, such as *machinery, electrical equipment* (sector 16), to mitigate endogeneity risks highlighted by their correlation with trends in socioeconomic varibles. Column 3: leave-one-out IV, following Autor, Dorn, and Hanson (2013); here, the IV is the exporter's global market share, excluding the specific importer in each case to prevent a direct correlation between the shifter and the importing country (e.g., if China is the exporter and the USA is the importer, we calculate China's global market share without the USA). * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.11: Engagement: import and export power

	Bilateral engagement$_{\{in\},t}$							
	All sectors				Max sectors			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Import power$_{\{in\},t-1}$	0.037***	0.035***	0.134***	0.141***	0.031***	0.029***	0.080***	0.072***
	(0.008)	(0.008)	(0.012)	(0.012)	(0.007)	(0.007)	(0.009)	(0.009)
GDP difference$_{\{in\},t-1}$		0.075***	0.076***	0.075***		0.075***	0.077***	0.078***
		(0.013)	(0.013)	(0.012)		(0.013)	(0.013)	(0.013)
Total trade$_{\{in\},t-1}$			-0.169***	-0.357***			-0.120***	-0.206***
			(0.012)	(0.018)			(0.009)	(0.012)
Export power$_{\{in\},t-1}$				0.248***				0.139***
				(0.014)				(0.011)
N	384,815	384,815	384,815	384,815	384,815	384,815	384,815	384,815
Year FE:	Y	Y	Y	Y	Y	Y	Y	Y
Pair FE:	Y	Y	Y	Y	Y	Y	Y	Y

Note: This table shows the same regression as in Equation 27 and the results in Table 1 but replaces export power with import power. Further, the 4th and 8th columns include both import and export power. Import and export power, GDP difference, and total bilateral trade are all undirected and are standardized on the pair level. Bilateral engagement is the z-score of each unit interval of events in the ICEWS dataset, where each unit interval's values are the sum of both directions of country i and n's events with each other. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.12: Correlates of sector level estimate

	Sector only		Sector excluding	
	(1)	(2)	(3)	(4)
Panel A: raw estimate				
Elsaticity of substitution	-0.000254		-0.00000310*	
	(0.000163)		(0.00000160)	
Critical ratio		0.0559		0.00650**
		(0.117)		(0.00241)
Panel B: rank of estimate				
Elsaticity of substitution	-0.0176*		-0.0112	
	(0.00888)		(0.00669)	
Critical ratio		5.145		13.64**
		(7.393)		(5.964)
Panel C: raw estimate, trade volume control				
Elsaticity of substitution	-0.000288		-0.00000850	
	(0.000199)		(0.00000585)	
Critical ratio		0.142		0.00192
		(0.127)		(0.00400)
Panel D: rank of estimate, trade volume control				
Elsaticity of substitution	-0.0214		-0.0192	
	(0.0128)		(0.0140)	
Critical ratio		8.879		15.90*
		(8.334)		(8.038)
Observations	21	21	21	21

Note: The table presents the relationship between the sector-level coefficient of power and engagement and the elasticity of substitution and critical ratio of the sector. Columns 1-2 use the estimated coefficient from the sector-only regression. Columns 3-4 use the negative value of the estimated coefficients from sector-excluding regression. Panel A uses the coefficients from the sector-level estimates. Panel B uses the rank of the sector-level estimates, where 1 indicates the smallest estimate. Panels C and D follow the variable for Panels A and B and include the global trade volume of the sector in 2015 as a control. We use product level elasticity of substitution from Broda and Weinstein (2006) aggregate into sector level elasticity of substitution by taking a global trade volume weighted average. Critical ratio is defined as the ratio of sectors' global trade volume that is critical by the ITA's draft list of critical supply chains. Standard errors are heteroskedasticity-robust * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.13: Alignment and UN vote similarity

	Alignment$_{\{in\},t}$			
	(1)	(2)	(3)	(4)
UN vote similarity$_{\{in\},t}$	0.0721***	0.0724***	0.0164***	0.0176***
	(0.00187)	(0.00188)	(0.00217)	(0.00199)
N	96,269	96,269	96,269	96,269
Year FE	N	Y	N	Y
Pair FE	N	N	Y	Y

Note: This table shows the result of regression alignment on a measure of UN vote similarity (taken from Bailey, Strezhnev, and Voeten 2017). Neither variable is standardized, both are undirected, and the time period is 2006-2021. Standard errors are clustered at the pair level. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.14: Trade flow and alignment

	$\ln \text{Export volume}_{i \to j,t}$
$\text{Alignment}_{\{AB\},t-1}$	0.591**
	(0.286)
$\text{Alignment}^2_{\{AB\},t-1}$	-0.508**
	(0.209)
N	166257
Importer-year	Y
Exporter-year	Y
Pair FE	Y

Note: This table shows the coefficient on lagged alignment in the regression specified in Equation 33. No variables involved in the estimation of this table are standardized; the outcome variable is directed, and the alignment variable is undirected. Standard errors are clustered at the pair level.* $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.15: Trade flow and alignment

	$\ln \text{Export volume}_{i \to j,t}$		$\ln\left(\frac{s_{\{ni\},t}s_{\{in\},t}}{s_{\{nn\},t}s_{\{ii\},t}}\right)$		$\ln\left(s_{\{ni\},t}s_{\{in\},t}\right)$	
	(1)	(2)	(3)	(4)	(5)	(6)
$\text{Alignment}_{\{AB\},t-1}$	0.591**		0.915*		1.201**	
	(0.286)		(0.540)		(0.552)	
$\text{Alignment}^2_{\{AB\},t-1}$	-0.508**		-0.793**		-0.984**	
	(0.209)		(0.394)		(0.400)	
$\text{UN vote similarity}_{\{AB\},t-1}$		0.0383		0.904		0.515
		(0.931)		(1.805)		(1.845)
$\text{UN vote similarity}^2_{\{AB\},t-1}$		-0.0672		-0.676		-0.502
		(0.539)		(1.040)		(1.060)
N	166257	163372	156004	153146	157592	154716
Importer-year	Y	Y	Y	Y	Y	Y
Exporter-year	Y	Y	Y	Y	Y	Y
Pair FE	Y	Y	Y	Y	Y	Y

Note: This table shows the coefficient on lagged alignment and lagged UN vote similarity in the regression specified in Equation 33 but also employing different outcome variables. No variables involved in the estimation of this table are standardized; $\ln \text{Export volume}_{i \to j,t}$ is directed, whereas the log trade shares in columns 3 through 6 are undirected. The alignment and UN vote similarity variables are undirected. We proxy for own expenditure shares (for all i) as $s_{\{ii\},t} = 2.2 \times \text{GDP}_{it} - \text{total exports}_{it}$. The results in columns 3 through 6 would be identical given that the importer-year and exporter-year fixed effects absorb the denominator in columns 3 and 4; however, missing data/negative values of own expenditure make it such that the samples in columns 3 and 4 are different than the samples in columns 5 and 6 (these issues are well known and are discussed in Head and Mayer 2014); we demonstrate that when including more data (columns 5 and 6), our results are stronger. Standard errors are clustered at the pair level.* $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.16: Robustness check: pair-level differences and election outcomes

	Election outcome$_A$
Panel A: domestic economy	
Agriculture, forestry, and fishing, value added (current US$)	0.0000
	(0.0000)
Labor force with advanced education (% of total working-age population with advanced education)	0.0011**
	(0.0004)
Machinery and transport equipment (% of value added in manufacturing)	0.0005
	(0.0004)
Industry (including construction), value added (current US$)	0.0000
	(0.0000)
Internet users 100	0.0000
	(0.0000)
Scientific and technical journal articles	0.0000
	(0.0000)
Manufacturing, value added (current US$)	0.0000
	(0.0000)
Technicians in R&D (per million people)	-0.0000
	(0.0000)
Stocks traded, total value (current US$)	-0.0000
	(0.0000)
Unemployment with advanced education (% of total labor force with advanced education)	-0.0008
	(0.0006)
Internet hosts	0.0000
	(0.0000)
Unemployment, total (% of total labor force) (national estimate)	0.0008
	(0.0006)
Services, value added (current US$)	0.0000
	(0.0000)
Labor force, total	0.0000
	(0.0000)
Human capital index (HCI) (scale 0-1)	0.0000
	(0.0000)
Taxes on goods and services (% value added of industry and services)	-0.0015**
	(0.0008)
Panel B: international economy	
High-technology exports (current US$)	0.0000
	(0.0000)
Foreign direct investment, net (BoP, current US$)	-0.0000***
	(0.0000)
Net official development assistance and official aid received (current US$)	-0.0000
	(0.0000)
Taxes on international trade (% of revenue)	0.0009*
	(0.0005)
Foreign direct investment, net inflows (BoP, current US$)	-0.0000*
	(0.0000)
Technical cooperation grants (BoP, current US$)	-0.0000***
	(0.0000)
Net official flows from UN agencies, UNAIDS (current US$)	-0.0000
	(0.0000)
Air transport, passengers carried	0.0000
	(0.0000)
Foreign direct investment, net outflows (BoP, current US$)	-0.0000***
	(0.0000)
Trade (% of GDP)	-0.0001*
	(0.0001)
Panel C: military	
Military expenditure (current USD)	-0.0000
	(0.0000)
Arms exports (SIPRI trend indicator values)	0.0000
	(0.0000)
Armed forces personnel, total	0.0000
	(0.0000)
Arms imports (SIPRI trend indicator values)	-0.0000***
	(0.0000)
Panel D: political	
Government crises	-0.0768***
	(0.0076)
Riots	0.0099***
	(0.0012)
General strikes	0.0086***
	(0.0025)
Anti-government demonstrations	0.0007**
	(0.0004)
Purges	-0.0357***
	(0.0056)
Assassinations	0.0033
	(0.0038)
Revolutions	-0.0097
	(0.0095)
Terrorism/guerrilla warfare	-0.0000
	(0.0002)
Country *A* FE	Y

Note: This table shows the coefficients resulting from a regression that relates the outcome of an election (turnover, no turnover) in country A in year t to the pairwise differences (between country A and country B) in each listed variable in the year $t-1$. No variables are standardized, and differences are directed, meaning they are defined $A \to B$, where country A is the one with an election; this sample includes the 276 pairs with elections on both sides. Standard errors are heteroskedasticity-robust. * $p < 0.1$, ** $p < .05$, *** $p < 0.01$.

Table A.17: Robustness: alignment and power

	Average power$_{B\to A,t+\ell}$							
	$\ell=1$		$\ell=2$		$\ell=3$		$\ell=4$	
	All	Max	All	Max	All	Max	All	Max
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Panel A: Excluding pairs with elections on both sides								
Panel A.1: $k=1$								
$\widehat{\text{Alignment level}}_{\{AB\},t+k}$	-0.336**	-0.300*	-0.342***	-0.335**	-0.244**	-0.290***	-0.194**	-0.257***
	(0.165)	(0.167)	(0.131)	(0.130)	(0.112)	(0.112)	(0.0977)	(0.0981)
Alignment$_{\{AB\},t-1}$	0.0545**	0.0572**	0.0564***	0.0628***	0.0413**	0.0540***	0.0327**	0.0470***
	(0.0271)	(0.0274)	(0.0217)	(0.0215)	(0.0186)	(0.0186)	(0.0162)	(0.0163)
GDP difference$_{B\to A,t-1}$	-0.0197***	-0.0189***	-0.0240***	-0.0222***	-0.0212***	-0.0209***	-0.0157***	-0.0166***
	(0.00704)	(0.00694)	(0.00651)	(0.00643)	(0.00594)	(0.00597)	(0.00551)	(0.00556)
Total trade$_{\{AB\},t-1}$	0.00898*	0.00781	0.00970**	0.00783*	0.00729*	0.00465	0.00650*	0.00332
	(0.00506)	(0.00505)	(0.00451)	(0.00450)	(0.00403)	(0.00407)	(0.00365)	(0.00371)
Power$_{B\to A,t-1}$	0.0834***	0.0737***	0.0568***	0.0453***	0.0384***	0.0282***	0.0259***	0.0171***
	(0.00502)	(0.00489)	(0.00442)	(0.00429)	(0.00392)	(0.00388)	(0.00359)	(0.00355)
N	59375	59375	59375	59375	59375	59375	59375	59375
Panel A.2: $k=2$								
Avg. $\widehat{\text{alignment}}$ level$_{\{AB\},t+1,t+k}$	-0.283*	-0.339**	-0.296**	-0.372***	-0.177*	-0.284***	-0.166*	-0.238***
	(0.147)	(0.152)	(0.120)	(0.124)	(0.103)	(0.105)	(0.0891)	(0.0909)
Alignment$_{\{AB\},t-1}$	0.0258*	0.0383***	0.0272**	0.0405***	0.0171*	0.0313***	0.0153*	0.0249***
	(0.0143)	(0.0147)	(0.0118)	(0.0121)	(0.0102)	(0.0104)	(0.00883)	(0.00901)
GDP difference$_{B\to A,t-1}$	-0.0176***	-0.0181***	-0.0210***	-0.0191***	-0.0182***	-0.0162***	-0.0135***	-0.0122**
	(0.00607)	(0.00616)	(0.00576)	(0.00586)	(0.00534)	(0.00544)	(0.00509)	(0.00513)
Total trade$_{\{AB\},t-1}$	0.0117**	0.00981**	0.0115***	0.00968**	0.00918**	0.00667*	0.00854**	0.00534
	(0.00469)	(0.00481)	(0.00420)	(0.00431)	(0.00379)	(0.00388)	(0.00351)	(0.00355)
Power$_{B\to A,t-1}$	0.103***	0.0913***	0.0710***	0.0579***	0.0506***	0.0392***	0.0354***	0.0259***
	(0.00478)	(0.00472)	(0.00422)	(0.00419)	(0.00376)	(0.00373)	(0.00349)	(0.00341)
N	66255	66255	66255	66255	66255	66255	66255	66255
Year FE	Y	Y	Y	Y	Y	Y	Y	Y
Pair FE	Y	Y	Y	Y	Y	Y	Y	Y

Note: This table shows results for the second stage of the IV that relates trade levels and alignment levels as specified in Equation 36 and Table but with varying values of ℓ and k. $\widehat{\text{Alignment level}}_{\{AB\},t+k}$ is the result of the first stage; in panel A.1, because $k=1$, the average alignment level and the alignment level in period $t+1$ are the same, but in A.2 we use $k=2$, and so the predicted value is called the average alignment level (since it uses data from both years $t+1$ and $t+2$). The outcome variable is directed power (from $B\to A$) in in the following ℓ periods after the election in year t, where 'All' indicates the power is calculated using all sectors, whereas 'Max' indicates the power is calculated using the maximal sectors only. Within each alphabetical panel, we vary the timing in the first stage (i.e. vary the values of k, which indicates the size of the window for alignment change post-election) and within a given column keep the timing in the second stage (i.e. value of ℓ, which indicates the size of the window for trade levels post-election) fixed. The main results featured in columns 2 and 4 of Table 3 Panel B are found in columns 5 and 6 of Panel A.1. Elections are recorded in this sample if the margin is 'close', i.e. if the vote share margin is less than or equal to five percent. Standard errors are clustered at the pair level. * $p<0.1$, ** $p<.05$, *** $p<0.01$.

Appendix D Model appendix

Appendix D.1 Microfoundation of quasi-linear preferences

In the main text, consumer preference (1) is quasi-linear in payments and transfers. In this appendix we provide a microfoundation using a homogeneous outside good.

Consumers live for two periods. In the first period, each consumer in country n consumes differentiated goods c_{ni}^k produced by different countries i in each sector k. In the second period, consumption involves a homogeneous good C_n that is freely tradable across countries. The utility function is

$$u\left(\left\{c_{ni}^k\right\}, C_n, \ell_n\right) = \sum_k \beta_n^k \ln\left(\sum_i \left(c_{ni}^k\right)^{\frac{\sigma^k-1}{\sigma^k}}\right)^{\frac{\sigma^k}{\sigma^k-1}} + C_n - \ell_n$$

where ℓ_n is the total labor supplied in both periods by consumer n. We normalize the wage rate to one. Moreover, we assume the homogeneous good is produced competitively one-for-one from labor. The consumer budget constraint is

$$\sum_k \sum_i p_{ni}^k c_{ni}^k + C_n = \ell_n + \Pi_n + T_n \tag{53}$$

The Lagrangian of the consumer problem is

$$\mathcal{L}_n \equiv \sum_k \beta_n^k \ln \left(\sum_i \left(c_{ni}^k \right)^{\frac{\sigma^k - 1}{\sigma^k}} \right)^{\frac{\sigma^k}{\sigma^k - 1}} + C_n - \ell_n + \lambda \left(- \sum_k \sum_i p_{ni}^k c_{ni}^k - C_n + \ell_n + \Pi_n + T_n \right)$$

Recognizing that the Lagrange multiplier must equal to one ($\lambda = 1$), we have

$$\mathcal{L}_n \equiv \sum_k \beta_n^k \ln \left(\sum_i \left(c_{ni}^k \right)^{\frac{\sigma^k - 1}{\sigma^k}} \right)^{\frac{\sigma^k}{\sigma^k - 1}} - \sum_k \sum_i p_{ni}^k c_{ni}^k + \Pi_n + T_n,$$

which coincides with the consumer preferences specified in (1).

Note that trade over differentiated goods may be imbalanced. The preferences (1) in the main text specifies that consumers have quasi-linear utility over trade surplus. In the microfoundation of this appendix, the homogeneous good in the second period is used to settle trade imbalance in the first period. Specifically, the right-hand side of the budget constraint (53) is the total income in country n (net of international transfers), which is equal to the total expenditure on the left-hand side across both periods.

Appendix D.2 Country size heterogeneity

In the model of the main text, all countries have the same population size equal to one and thus the same total expenditure on tradables, $\sum_i \sum_k p_{ni}^k q_{ni}^k = 1$. In this appendix we discuss the measure of international power when countries have heterogeneous sizes. Suppose country n has population μ_n, and the total consumer expenditure on good k variety i is $\mu_n s_{ni}^k$. Following the same derivation as in the main text, the welfare loss associated with losing access this good is, to first-order, proportional to n's expenditure on that good:

$$\delta_{ni}^k \approx -\frac{1}{\hat{\theta}^k} \mu_n s_{ni}^k.$$

We now consider two cases of international concessions. In the second case, the marginal cost of concessions scales with a country's size, and a transfer from n to i that costs F_{ni} in the target (country n)'s per-capita terms benefits the coercer (country i) F_{ni} in per-capita terms. In this case, Nash bargaining in per-capita terms implies the exact same outcome as analyzed in the main text, with the power measure defined based on the import expenditure in shares ($s_{ni}^k - s_{in}^k$).

In the second case, the marginal cost of concession does not scale with a country's size. Specifically, a transfer from n to i that costs F_{ni} in the target (country n)'s per-capita terms benefits the coercer (country i) $\mu_n F_{ni} / \mu_i$ in per-capita terms. In this case, Nash bargaining in per-capita terms implies that the total expected value of transfers from n to i is

$$\frac{1}{2} \mathbb{E}_\epsilon \left[\max_k \left(\frac{1}{\hat{\theta}^k} \mu_n s_{ni}^k + \epsilon_{ni}^k \right) - \max_{k'} \left(\frac{1}{\hat{\theta}^{k'}} \mu_i s_{in}^{k'} + \epsilon_{in}^{k'} \right) \right] \approx \frac{1}{2K} \sum_k \frac{1}{\hat{\theta}^k} \left(\mu_n s_{ni}^k - \mu_i s_{in}^k \right)$$

The power measure should accordingly be defined based on the import expenditure in levels ($\mu_n s^k_{ni} - \mu_i s^k_{in}$) instead.