

A world map with a dark blue background. Overlaid on the map are thin, light blue lines representing global connections or trade routes. Several country codes are labeled in white: USA, CBR, EMI, RUS, CHN, IND, PAN, and ZAF. The title 'Geeconomics' is centered in a large, white, sans-serif font.

Geeconomics

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THE GLOBAL CAPITAL
ALLOCATION PROJECT

What is Geoeconomics?

- ▶ **Geoeconomics:** Hegemonic countries use their economic strength from existing financial and trade relationships to achieve geopolitical and economic goals
- ▶ Fundamental questions:
 - ▶ Is geoeconomic power effective? In which dimensions?
 - ▶ What are the origins of this power and how is it wielded?
 - ▶ Is it zero-sum or positive sum globally?
 - ▶ Which sectors are strategic? What is a national security externality?
 - ▶ How should countries protect themselves from hegemonic influence?
 - ▶ Trade off between economic security and gains from trade?
 - ▶ How do we measure all this and inform policy?

Concepts of Power in Economics and Political Science

- ▶ In modern economics power is too often reduced to only mean “market power.” But a sovereign or large firm is powerful in a broader sense
- ▶ Some important concepts of power in Political Science:
 - ▶ *“A has power over B to the extent that he can get B to do something that B would not otherwise do”* (Dahl 1957)
 - ▶ **Relational Power:** an actor, like a government, influences another actor to take a desired action
 - ▶ **Structural Power:** an actor influences an entire economic environment, e.g. setting the rules of the game or coordinating (Strange 1988)
 - ▶ Topic is “one of the most troublesome in the field of international relations.” Only point of agreement is “unsatisfactory state of knowledge” (Gilpin 81, Baldwin 13)

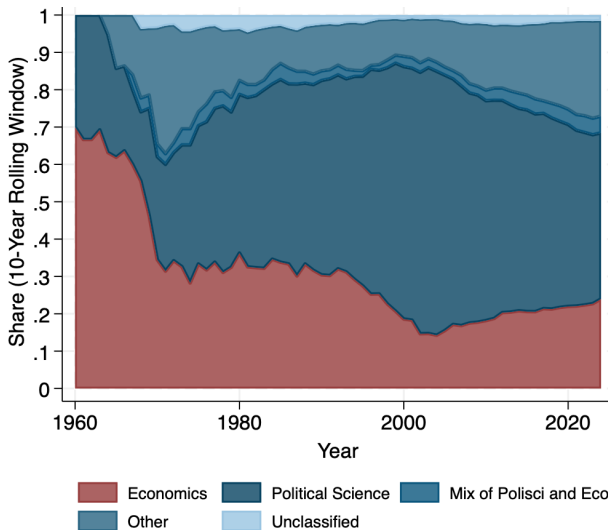
Hirschman: National Power and the Structure of Foreign Trade

Largely and unjustly forgotten history of this topic in economics

Hirschman (1945): *National Power and the Structure of Foreign Trade*

- ▶ Distaste for mercantilism: exertion of power in zero-sum game over fixed resources
- ▶ In the debate of “plenty vs power” (Viner 1948) does not support the laissez faire view that plenty is always best achieved by ignoring power
- ▶ Theory of power imbalances and how they arise from different trade patterns
- ▶ Measurement of power imbalances: the Hirschman-Herfindahl concentration index

Hirschman: National Power and the Structure of Foreign Trade



- ▶ Limited impact among economists
- ▶ By 1970s, foundational text of International Political Economy
- ▶ In economics, HH-index widely used to measure firms' market power; lost its connection to the power of countries

Preview of Core Modeling Blocks of the Framework

1. Participation Constraint: hegemon's power as the gap between inside and outside options of targeted entities
2. Wedges in FOCs: power wielding as demands for costly actions
3. Externalities and price vectors to capture hegemon manipulation of the equilibrium in its favor

Our Research Agenda on Geoeconomics

www.globalcapitalallocation.com

Clayton Maggiori Schreger, A Framework for Geoeconomics, Econometrica 2026

Clayton Maggiori Schreger, A Theory of Economic Coercion and Fragmentation, RR JPE 2024

Clayton Maggiori Schreger, Putting Economics Back Into Geoeconomics, MacroAnnual 2025

Clayton Coppola Maggiori Schreger, Geoeconomic Pressure, 2025

Clayton Maggiori Schreger, The Great Game: A Model of Geoeconomic Competition, 2026

► Reading List



Power as Slack in a Participation Constraint

$$V(x^*, z, \cdot, \cdot)$$

- ▶ Entity's privately optimal actions: $x^* = x(z, \cdot, \cdot)$
- ▶ Takes as given a set of aggregate variables z

US Suppliers



**Chinese Customers
(e.g. SMIC)**

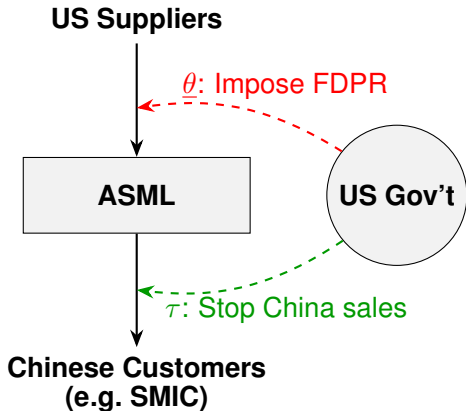
Power as Slack in a Participation Constraint

$$V(x^*, z, \underline{\theta}, 0)$$

$$V(x^*, z, 0, \tau)$$

$$V(x^*, z, 0, 0)$$

- ▶ Entity's privately optimal actions:
 $x^* = x(z, \theta, \tau)$
- ▶ Takes as given a set of aggregate variables z
- ▶ Hegemon threatens $\underline{\theta}$ if demands not accepted
- ▶ Demands that entity undertake costly actions τ



Power as Slack in a Participation Constraint

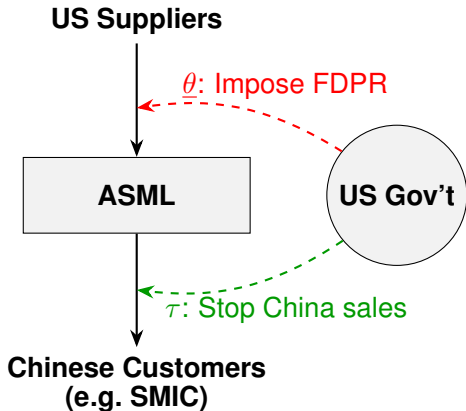
$$V(x^*, z, \underline{\theta}, 0)$$

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$$V(x^*, z, 0, 0)$$

- ▶ Entity's privately optimal actions:
 $x^* = x(z, \theta, \tau)$
- ▶ Takes as given a set of aggregate variables z
- ▶ Hegemon threatens $\underline{\theta}$ if demands not accepted
- ▶ Demands that entity undertake costly actions τ
- ▶ **Participation constraint:**

$$V(x^*, z, 0, \tau) \geq V(x^*, z, \underline{\theta}, 0)$$



Micro and Macro Power: Strategic Sectors

- ▶ **Micro Power:** $V(x^*, Z, 0, 0) - V(x^*, z, \underline{\theta}, 0)$
 - ▶ The maximal value of costly actions that the hegemon can demand out of the target before contract is rejected
 - ▶ Sector is **strategic** if it lets the hegemon form valuable threats on other sectors
- ▶ **Macro-Power:** Hegemon exploits difference between private cost of actions to targeted entities and the social benefit to itself via manipulating the equilibrium
 - ▶ Sector is **strategic** if it lets the hegemon manipulate aggregate quantities and prices
 - ▶ Some strategic sectors have high indirect influence in the Leontief inverse sense, summarized as Lagrange multiplier on PC constraint

A Simple Model

- ▶ N countries, a set $\mathcal{I}$ of productive sectors, a set $\mathcal{F}$ of local factors
- ▶ Each sector and factor are located in one country:
 - ▶ $\mathcal{I}_n$ is the set of sectors in country n
 - ▶ $\mathcal{F}_n$ is the set of local factors of country n
- ▶ Unit mass of firms in sector i produces a differentiated good y_i using:
 - ▶ Intermediate goods x_{ij} , where j is the source sector
 - ▶ Local factors of production ℓ_{if} , where f indexes factor
 - ▶ Production function $f_i(x_i, \ell_i, z)$
- ▶ Vector z of aggregate quantities, e.g. external economies of scale
- ▶ Each country n has a representative consumer and government

Representative Consumer of Country n

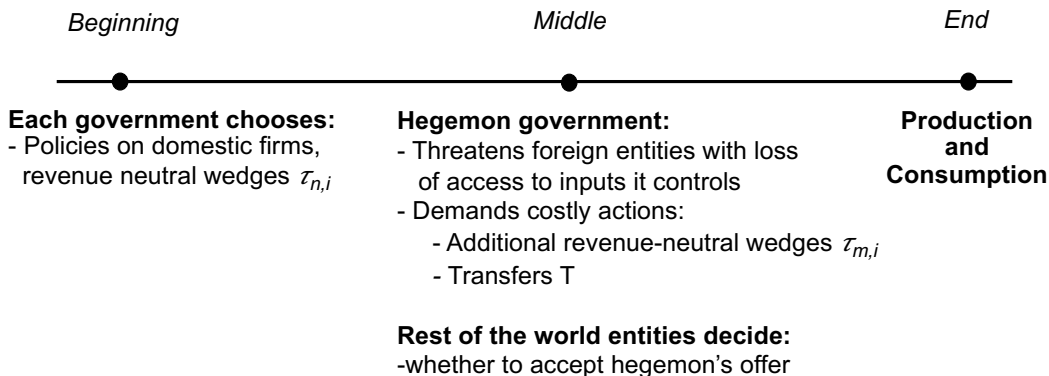
- ▶ Utility function: $U(C_n) + u_n(z)$, where C_n vector over each good C_{ni}
Simplifying assumption: U is identical across countries, homothetic
- ▶ Consumer owns domestic sectors and factor endowments $\bar{\ell}_f$ in their country
- ▶ Budget constraint:

$$\sum_{i \in \mathcal{I}} p_i C_{ni} \leq \sum_{i \in \mathcal{I}_n} \Pi_i + \sum_{f \in \mathcal{F}_n} p_f^\ell \bar{\ell}_f$$

Sector i profits Π_i , good price p_i , factor price p_f^ℓ

- ▶ Marshallian demand $C(p, w_n)$; Indirect utility $W(p, w_n) = U(C(p, w_n))$
- ▶ Market clearing: $\sum_{n=1}^N C_{nj} + \sum_{i \in \mathcal{I}} x_{ij} = y_j$; $\sum_{i \in \mathcal{I}_n} \ell_{if} = \bar{\ell}_f$

Timeline and Government Policy Tools



Firm Participation Constraint

- ▶ **Participation constraint:** $V_i(\tau_{m,i}, \mathcal{J}_i) - T_i \geq V_i^o(\mathcal{J}_i^o)$
 - ▶ $\mathcal{J}_i$: all inputs; $\mathcal{J}_i^o$: inputs excluding those from the hegemon

- ▶ Firm i value if accept contract (excluding transfer):

$$V_i(\tau_{m,i}, \mathcal{J}_i)$$

- ▶ Firm i value if reject contract:

$$V_i^o(\mathcal{J}_i^o)$$

- ▶ **Hegemonic Power:** power to demand costly actions to foreign entities by threatening suspension of economic relationship with the hegemon

Firm Participation Constraint

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 - ▶ $\mathcal{J}_i$: all inputs; $\mathcal{J}_i^o$: inputs excluding those from the hegemon

- ▶ Firm i value if accept contract (excluding transfer):

$$V_i(\tau_{m,i}, \mathcal{J}_i) = \max_{x_i, \ell_i} \Pi_i(x_i, \ell_i, \mathcal{J}_i) - \sum_{j \in \mathcal{J}_i} (\tau_{m,ij} + \tau_{n,ij})(x_{ij} - x_{ij}^*) - \sum_{f \in \mathcal{F}_n} (\tau_{m,if}^{\ell} + \tau_{n,if}^{\ell})(\ell_{if} - \ell_{if}^*)$$

- ▶ Firm i value if reject contract:

$$V_i^o(\mathcal{J}_i^o) = \max_{x_i^o, \ell_i^o} \Pi_i(x_i^o, \ell_i^o, \mathcal{J}_i^o) - \sum_{j \in \mathcal{J}_i} \tau_{n,ij}(x_{ij}^o - x_{ij}^{o*}) - \sum_{f \in \mathcal{F}_n} \tau_{n,if}^{\ell}(\ell_{if}^o - \ell_{if}^{o*})$$

- ▶ **Hegemonic Power:** power to demand costly actions to foreign entities by threatening suspension of economic relationship with the hegemon

Hegemon and Country n Maximization

Hegemon: offers feasible contract $\Gamma_i = \{\tau_{m,i}, T_i, \mathcal{J}_i^o\}$ to maximize consumer welfare,

$$\mathcal{U}_m = W(p, w_m) + u_m(z), \quad w_m = \sum_{i \in \mathcal{I}_m} \Pi_i + \sum_{f \in \mathcal{F}_m} p_f^\ell \bar{\ell}_f + \sum_{i \in \mathcal{C}_m} T_i$$

subject to firms' participation constraints

Country n : Sets wedges τ_n to maximize consumer welfare,

$$\mathcal{U}_n = W(p, w_n) + u_n(z), \quad w_n = \sum_{i \in \mathcal{I}_n \setminus \mathcal{C}_m} \Pi_i + \sum_{i \in \mathcal{I}_n \cap \mathcal{C}_m} \left[V_i(\tau_m, \mathcal{J}_i) - T_i \right] + \sum_{f \in \mathcal{F}_m} p_f^\ell \bar{\ell}_f,$$

internalizing how hegemon's contract is affected by wedges chosen

Simplified Environment

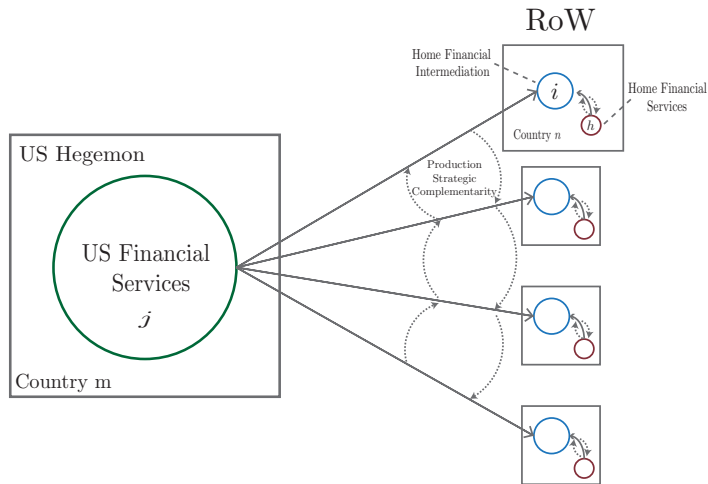
In slides today:

- ▶ Constant prices (consumers have linear utility)
- ▶ No direct geopolitical preferences in government objective function ($u_n(z) = 0$)

More in the paper:

- ▶ Endogenous Prices $\Rightarrow$ ToT manipulation incentive
- ▶ Direct geopolitical preferences in government objective function ($u_n(z)$)

Application: Financial System as a Tool of Coercion



Production, Financial Services, and Strategic Complementarities

- ▶ Hegemon m (US) has financial service sector (Hegemon System): $f_j(\ell_{jm}) = \ell_{jm}$
- ▶ Each foreign country has a Home Alternative: $f_h(\ell_{hn}) = \ell_{hn}$
- ▶ Each foreign country has a financial intermediation sector with CES production:

$$f_i(x_{ijn}, x_{ihn}, z) = \left(\textcolor{red}{A}_j(z) x_{ijn}^\sigma + \textcolor{blue}{A}_{ihn}(z) x_{ihn}^\sigma \right)^{\beta/\sigma}$$

- ▶ Global strategic complementarity in Hegemon System: $\textcolor{red}{A}_j(z) = \frac{1}{N} \sum_{n=1}^N \bar{A}_j z_{ijn}^{\xi_j \sigma}$
- ▶ Local strategic complementarity in Home Alternative: $\textcolor{blue}{A}_{ihn}(z) = \bar{A}_h z_{ihn}^{\xi_h \sigma}$
- ▶ Hegemon System and Home Alternative are substitutes: $0 < \beta < \sigma$
- ▶ Cross-Country use of Hegemon System are complements: $(1 + \xi_j)(1 - \frac{\beta}{\sigma}) \leq 1$

Policy Benchmark: A Global Planner

- ▶ Standard Efficiency Benchmark: global planner directly chooses all allocations
 - ▶ Uninternalized production externalities offer a role for intervention
- ▶ Global planner maximizes sum of welfare,

$$w_m + \sum_n w_n = \sum_n \Pi_{i_n} + \sum_n p_n^\ell \bar{\ell}_n + \Pi_j + p_m^\ell \bar{\ell}_m$$

Last three terms are constant due to constant prices, so maximizing sum of intermediary profits

- ▶ Approach: solve the problem, then decentralize it

Solving the Global Planner's Problem

- ▶ Countries are symmetric $\Rightarrow$ global planner's optimum has symmetric allocations
- ▶ Global planner solves

$$\max_{x_{ij}, x_{ih}} \sum_n \Pi_{in} = N \left(p_i \left(A_j(x_{ij}) x_{ij}^\sigma + A_{ih}(x_{ih}) x_{ih}^\sigma \right)^{\beta/\sigma} - p_j x_{ij} - p_h x_{ih} \right)$$

- ▶ Global planner's FOC for j :

$$p_i \frac{\partial g_i}{\partial [A_j x_{ij}^\sigma]} A_j x_{ij}^{\sigma-1} \sigma \left(1 + \underbrace{\frac{1}{\sigma} \frac{x_{ij}}{A_j} \frac{\partial A_j}{\partial x_{ij}}}_{\text{Production Externality}} \right) = p_j$$

- ▶ Analogous FOC for h . Exercise: Solve given functional forms

Decentralizing the Global Planner's Optimum

- ▶ Policy instruments: wedges (taxes) $\tau_{ij}^{GP}, \tau_{ih}^{GP}$ on intermediaries' purchases
- ▶ Wedges in decision problems mean intermediaries solve

$$\max_{x_{ij}, x_{ih}} p_i \left(A_j x_{ij}^\sigma + A_{ih} x_{ih}^\sigma \right)^{\beta/\sigma} - (p_j + \tau_{ij})(x_{ij} - x_{ij}^*) - (p_h + \tau_{ih})(x_{ih} - x_{ih}^*)$$

- ▶ Intermediaries' FOC for j

$$p_i \frac{\partial g_i}{\partial [A_j x_{ij}^\sigma]} A_j x_{ij}^{\sigma-1} \sigma = p_j + \tau_{ij}$$

- ▶ Intermediaries' FOC for h

$$p_i \frac{\partial g_i}{\partial [A_{ih} x_{ih}^\sigma]} A_{ih} x_{ih}^{\sigma-1} \sigma = p_h + \tau_{ih}$$

- ▶ **Goal:** set the wedges τ_{ij}, τ_{ih} so that the intermediary FOCs are satisfied at the global planner's allocation

Decentralizing the Global Planner's Optimum

- ▶ Global planner's FOC for j

$$p_i \frac{\partial g_i}{\partial [A_j x_{ij}^\sigma]} A_j x_{ij}^{\sigma-1} \sigma \left(1 + \underbrace{\frac{1}{\sigma} \frac{x_{ij}}{A_j} \frac{\partial A_j}{\partial x_{ij}}}_{\text{Production Externality}} \right) = p_j$$

- ▶ Intermediaries' FOC for j

$$p_i \frac{\partial g_i}{\partial [A_j x_{ij}^\sigma]} A_j x_{ij}^{\sigma-1} \sigma = p_j + \tau_{ij}$$

- ▶ Wedge aligns intermediaries' FOC for j with global planner's:

$$\tau_{ij}^{GP} = - \underbrace{p_i \frac{\partial g_i}{\partial [A_j x_{ij}^\sigma]} A_j x_{ij}^{\sigma-1} \sigma}_{=p_j + \tau_{ij}^{GP}} \underbrace{\frac{1}{\sigma} \frac{x_{ij}}{A_j} \frac{\partial A_j}{\partial x_{ij}}}_{=\xi_j} = - \frac{\xi_j}{1 + \xi_j} p_j$$

Global Planner: Optimal Policy

- ▶ Analogous derivations for h yield the global planner's policy:

$$\tau_{GP, inj} = -\frac{\xi_j}{1 + \xi_j} p_j; \quad \tau_{GP, inh} = -\frac{\xi_h}{1 + \xi_h} p_h$$

- ▶ Global planner subsidizes both home and U.S. financial services in proportion to strength of externality, ξ

A primal approach to the global planner's solution

- ▶ We employed a primal approach: rather than solving in the space of instruments τ_{ij}, τ_{ih} , we solved in the space of *allocations* x_{ij}, x_{ih}
- ▶ Decentralization: find the values of the wedges that set the intermediaries' first order conditions to zero at the global planner's optimal allocations
- ▶ This primal approach can be employed more generally! It relies on:
 - ▶ Convex Optimization: The optimization problem of intermediaries is convex and so admits a unique solution
 - ▶ Complete Instruments: The policymaker has a complete set of policy instruments, one for each allocation
- ▶ This primal approach is a powerful tool for solving optimal policy problems

Comparing Different Global Structures

	Hegemon Finance	Home Alternative
	τ_{inj}	τ_{inh}
Global Planner	$-\frac{\xi_j}{1 + \xi_j} p_j$	$-\frac{\xi_h}{1 + \xi_h} p_h$
Nash		
Anti-Coercion		

Noncooperative Nash without Hegemonic Coercion

- ▶ Another standard environment is the noncooperative Nash equilibrium
- ▶ Suppose each government n has wedges on its own intermediaries
 - ▶ $\tau_{n,ijn}$: a tax/subsidy on buying from the hegemon
 - ▶ $\tau_{n,ihn}$: a tax/subsidy on buying domestic
- ▶ Nash equilibrium: each country n chooses τ_n , taking as given wedges τ_{-n} of other countries
- ▶ To simplify the exposition, we take the large $N \rightarrow \infty$ limit, so that every country n is a small open economy that takes the productivity A_j of j as given

Noncooperative Nash without Hegemonic Coercion

- ▶ The welfare function of country n is (up to a constant)

$$\Pi_{i_n} = p_i \left(A_j x_{i_n j}^\sigma + A_{i_n h} (x_{i_n h}) x_{i_n h}^\sigma \right)^{\beta/\sigma} - p_j x_{i_n j} - p_h x_{i_n h}$$

- ▶ Key: we can apply the primal approach to solve for $(x_{i_n h}, x_{i_n j})$ directly! Why?
 - ▶ Country n government has a complete set of instruments on its own intermediaries
 - ▶ Country n is a SOE, takes the global equilibrium A_j as given
- ▶ Same derivations as for global planner yield $\tau_{n, i_n h} = -\frac{\xi_h}{1+\xi_h} p_h$
- ▶ What about for j ? Country n government's FOC is

$$p_i \frac{\partial g_i}{\partial [A_j x_{i_n j}^\sigma]} A_j x_{i_n j}^{\sigma-1} \sigma = p_j$$

which is the same as the intermediaries' FOC $\Rightarrow \tau_{n, i_n j} = 0$

Inefficiency of Noncooperative Nash Policy

- ▶ Country n places same subsidy on home alternative as planner
- ▶ However, country n gov't does not internalize global strategic complementarity of hegemon's input and so places no tax or subsidy
- ▶ Noncooperative outcome features relatively too little use of hegemon's services
- ▶ Efficient subsidization of local externality, under-subsidization of global externality

Comparing Different Global Structures

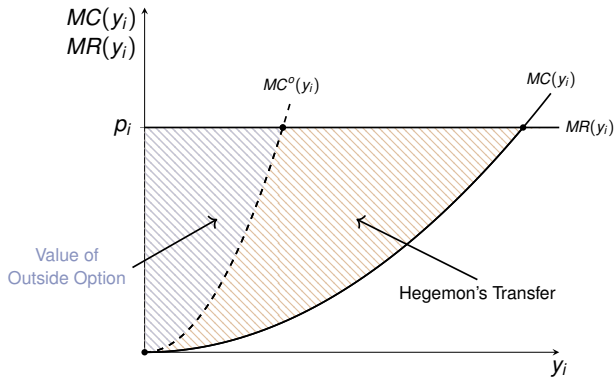
	Hegemon Finance	Home Alternative
	τ_{inj}	τ_{inh}
Global Planner	$-\frac{\xi_j}{1 + \xi_j} p_j$	$-\frac{\xi_h}{1 + \xi_h} p_h$
Nash	0	$-\frac{\xi_h}{1 + \xi_h} p_h$
Anti-Coercion		

Comparing Different Global Structures

	Hegemon Finance	Home Alternative
	τ_{inj}	τ_{inh}
Global Planner	$-\frac{\xi_j}{1 + \xi_j} p_j$	$-\frac{\xi_h}{1 + \xi_h} p_h$
Nash	0	$-\frac{\xi_h}{1 + \xi_h} p_h$
Anti-Coercion		

Hegemon's Power-Building Motives

$$\text{Participation Constraint : } V_{i_n}(\tau_{m,i_n}) - T_{i_n} \geq V_{i_n}^o$$



- ▶ Hegemon cares about difference in value between inside and outside option
- ▶ Hegemon builds power by manipulating the equilibrium

Wedges as Costly Actions: Leveraging the Primal Approach

- ▶ Key: hegemon has complete (demanded) wedges $\tau_{m,ijn}, \tau_{m,inh}$ over intermediary i_n
- ▶ Primal approach: hegemon chooses allocations, then back out wedges
- ▶ Rewrite the inside option under the primal approach in the space of allocations

$$V_{i_n}(\tau_{m,i_n}) = \max_{x_{ijn}, x_{inh}} \Pi_{i_n}(x_{ijn}, x_{inh}) - (\tau_{m,ijn} + \tau_{n,ijn})(x_{ijn} - x_{ijn}^*) - (\tau_{m,inh} + \tau_{n,inh})(x_{inh} - x_{inh}^*)$$

$$\Rightarrow V_{i_n}(x_i) = \Pi_{i_n}(x_{ijn}, x_{inh}) - \tau_{n,ijn}x_{ijn} - \tau_{m,inh}x_{inh} + r_{i_n}^*$$

- ▶ Revenue-neutral edges of hegemon m drop out. Just implement the allocation
- ▶ Caution: **cannot** apply primal to outside option allocations! At the outside option, don't have any control the decisions of the intermediary

Deriving the Hegemon's Optimum

$$\max_{\{x_{inj}, x_{inh}, T_{in}\}} \sum_{n=1}^N T_{in} \quad \overbrace{+ \Pi_j + p_m^\ell \bar{\ell}_m}^{\text{Constant (Constant Prices)}}$$

subject to intermediaries' participation constraints

$$\begin{aligned} & p_i g_i \left(A_j(x_{ij}, \dots, x_{iNj}) x_{inj}^\sigma, A_{inh}(x_{inh}) x_{inh}^\sigma \right) - (p_j + \tau_{n, inj}) x_{inj} - (p_h + \tau_{n, inh}) x_{inh} + r_{in}^* - T_{in} \\ & \geq \max_{x_{inh}^o} \left\{ p_i g_i \left(0, A_{inh}(x_{inh}) x_{inh}^{o\sigma} \right) - (p_j + \tau_{n, inh}) x_{inh}^o + r_{in}^{o*} \right\} \end{aligned}$$

Hegemon's Optimal Transfers

- ▶ Transfers increase the objective, so for given allocations, always increase T_{in} to the point that the participation constraint binds
- ▶ Implication: can substitute out for transfers in the objective

$$\begin{aligned}
 & \max_{\{x_{inj}, x_{inh}\}} \sum_{n=1}^N \left\{ \overbrace{p_i g_i \left(A_j(x_{ij}, \dots, x_{iNj}) x_{inj}^\sigma, A_{inh}(x_{inh}) x_{inh}^\sigma \right) - (p_j + \tau_{n, inj}) x_{inj} - (p_h + \tau_{n, inh}) x_{inh}}^{\text{Intermediaries' Inside Options}} \right. \\
 & \quad \left. - \max_{x_{inh}^o} \left\{ \underbrace{p_i g_i \left(0, A_{inh}(x_{inh}) x_{inh}^{o\sigma} \right) - (p_h + \tau_{n, inh}) x_{inh}^o}_{\text{Intermediaries' Outside Options}} \right\} \right\}
 \end{aligned}$$

Hegemon's Optimal Use of j

$$\max_{\{x_{ijn}, x_{inh}\}} \sum_{n=1}^N \left\{ \underbrace{p_i g_i \left(A_j(x_{ij}, \dots, x_{iNj}) x_{ijn}^\sigma, A_{inh}(x_{inh}) x_{inh}^\sigma \right) - (p_j + \tau_{n,ijn}) x_{ijn} - (p_h + \tau_{n,inh}) x_{inh}}_{\text{Intermediaries' Inside Options}} \right. \\ \left. - \underbrace{\max_{x_{inh}^o} \left\{ p_i g_i \left(0, A_{inh}(x_{inh}) x_{inh}^{o\sigma} \right) - (p_h + \tau_{n,inh}) x_{inh}^o \right\}}_{\text{Intermediaries' Outside Options}} \right\}$$

- ▶ Hegemon internalizes that as $A_j(x_{ij}, \dots, x_{iNj})$ increases, inside option of intermediaries increases
- ▶ But outside option unaffected!
- ▶ Hegemon's FOC same as global planner's FOC (up to anticoercion), so wedge also the same (up to anticoercion). Hegemon as public good provider

Deriving the Hegemon's Optimum: Use of h

$$\begin{aligned}
 & \overbrace{\max_{\{x_{inj}, x_{inh}\}} \sum_{n=1}^N \left\{ p_i g_i \left(A_j(x_{ij}, \dots, x_{iNj}) x_{inj}^\sigma, A_{inh}(x_{inh}) x_{inh}^\sigma \right) - (p_j + \tau_{n, inj}) x_{inj} - (p_h + \tau_{n, inh}) x_{inh} \right.}^{\text{Intermediaries' Inside Options}} \\
 & \quad \left. - \max_{x_{inh}^o} \left\{ p_i g_i \left(0, A_{inh}(x_{inh}) x_{inh}^{o\sigma} \right) - (p_h + \tau_{n, inh}) x_{inh}^o \right\} \right\}}^{\text{Intermediaries' Outside Options}}
 \end{aligned}$$

- ▶ Hegemon internalizes that as x_{inh} rises, productivity $A_{inh}(x_{inh})$ rises
- ▶ This improves the inside option, but also the outside option!
- ▶ Hegemon shifts towards taxing use of h to worsen the outside option

Deriving Hegemon's Wedge on h

FOC in x_{inh}

$$\underbrace{\left(p_h + \tau_{n,inh} + \tau_{m,inh}\right) \left(1 + \xi_h\right)}_{= p_i \frac{\partial g_{in}^o}{\partial [A_{inh}(x_{inh}) x_{inh}^{\sigma}]} \sigma A_{inh}(x_{inh}) x_{inh}^{\sigma-1} \left(1 + \frac{1}{\sigma} \frac{x_{inh}}{A_{inh}(x_{inh})} \frac{\partial A_{inh}(x_{inh})}{\partial x_{inh}}\right)} - \underbrace{p_i \frac{\partial g_{in}^o}{\partial [A_{inh}(x_{inh}) x_{inh}^{\sigma}]} \frac{\partial A_{inh}(x_{inh})}{\partial x_{inh}} x_{inh}^{\sigma}}_{=?} = p_h + \tau_{n,inh}$$

How to interpret the outside option? Use intermediary FOC at outside option!

$$p_i \frac{\partial g_{in}^o}{\partial A_{inh} x_{inh}^{\sigma}} A_{inh} x_{inh}^{\sigma-1} \sigma = p_h + \tau_{n,inh}$$

Using this and the constant elasticity, we get to

$$\tau_{m,inh} = \left(p_h + \tau_{n,inh}\right) \frac{\xi_h}{1 + \xi_h} \left(\frac{x_{inh}^o}{x_{inh}} - 1\right)$$

Hegemon's Optimal Use of Power

- ▶ Hegemon subsidizes use of Hegemon System to make inside option better:

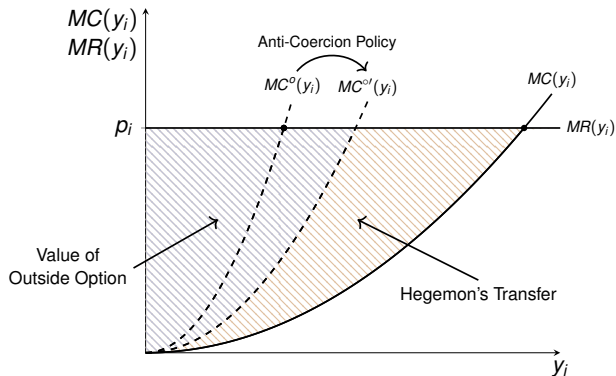
$$\tau_{m,ijn} = -\frac{\xi_j}{1 + \xi_j} \left(p_j + \tau_{n,ijn} \right)$$

- ▶ Hegemon taxes Home Alternative to make outside option worse

$$\tau_{m,inh} = \frac{\xi_h}{1 + \xi_h} \left(\frac{x_{inh}^o}{x_{inh}^*} - 1 \right) \left(p_h + \tau_{n,inh} \right)$$

- ▶ Hegemon attempts to over-globalize world economy to induce dependency

Countries' Anti-Coercion Motives



- ▶ Targeted entity cares about level of outside option
- ▶ Anti-coercion: maximize outside option, manipulate hegemon's demands

Uncoordinated Anti-Coercion and Fragmentation

- ▶ Optimal anti-coercion policy of country n

$$\tau_{n,ijn} \rightarrow \infty$$

$$\tau_{n,inh} = -\frac{\xi_h}{1 + \xi_h} p_h$$

- ▶ Country n maximizes its outside option. Here: full fragmentation
- ▶ In general: reduce reliance on sectors the hegemon controls and that are difficult to substitute away from ex-post

Deriving Optimal Anticoercion

$$\max_{\tau_{in}} \Pi_{in}^o = \max_{x_{inh}^o} p_i A_{inh}^{*\beta/\sigma} x_{inh}^{o\beta} - p_h x_{inh}^o - \tau_{n,inh} (x_{inh}^o - x_{inh}^{o*})$$

- ▶ **Key Observation:** Country n 's intermediaries' outside option *directly* depends only on productivity of the home alternative and country n 's ex-ante wedge on h
 - ▶ Country n 's objective is flat in use of j and in the ex-ante wedge on j
- ▶ **Implication:** Country n should increase its wedge $\tau_{n,inh}$ as long as that diverts expenditures away from j and towards h
- ▶ **Key step of proof:** a monotone comparative statics argument showing that hegemon's optimal allocation has x_{inh} increasing in $\tau_{n,inh}$
 - ▶ Intuitive: as j becomes more expensive, hegemon should shift towards h
- ▶ **Result is Full Fragmentation:** $\tau_{n,inh} \rightarrow \infty$

Optimal Wedge on h ?

- ▶ Once $\tau_{n,inh} \rightarrow \infty$, hegemon has no power. Nothing now to cut off!
- ▶ Country n effectively operating in autarky, avoiding coercion
- ▶ Like the noncooperative equilibrium in which $A_j = 0$
- ▶ By analogy to noncooperative equilibrium, the optimal subsidy on h is

$$\tau_{n,inh} = -\frac{\xi_h}{1 + \xi_h} p_h$$

- ▶ Given full fragmentation, optimal to scale to efficiency on the home alternative

Comparing Different Global Structures

	Hegemon Finance	Home Alternative
	τ_{i_nj}	τ_{i_nh}
Global Planner	$-\frac{\xi_j}{1+\xi_j}p_j$	$-\frac{\xi_h}{1+\xi_h}p_h$
Nash	0	$-\frac{\xi_h}{1+\xi_h}p_h$
Anti-Coercion	∞	$-\frac{\xi_h}{1+\xi_h}p_h$

A Hegemonic View of International Organizations

- ▶ **Common view** in Economics of international organizations (IMF, WTO): rules to limit individual deviations and improve coordination
 - ▶ Liberal order interpreted as the absence of geoeconomics
 - ▶ Rules improve everyone's welfare
- ▶ **Political Science view:** these organizations are an expression of the dominant powers and serve their purposes
 - ▶ Liberal order interpreted as one incarnation of geoeconomics
 - ▶ Rules largely aimed at improving hegemon's welfare
- ▶ **Our View:** hegemon might want to create the IMF and WTO as commitment devices to discourage other countries from pursuing anti-coercion policies. Hegemon is better off since each country overly relies on global rules and undercuts its own economic security

A Simple Model of International Organizations

- ▶ Hegemon commits to a simple rule limiting transfers: $T_i = \mu V_{i_n}(\tau_{m,i_n})$
 - ▶ Limits extraction to a fraction of the inside option. Like an equity stake
 - ▶ Take $N \rightarrow \infty$ for simplicity
- ▶ Show that a commitment to a sufficiently small μ is welfare-improving for the hegemon relative to no commitment
 - ▶ The resulting equilibrium allocations are same as the non-cooperative equilibrium
 - ▶ Country n anticoercion fights subsidy of hegemon system: $\tau_{n,i_{nj}} = \xi_j p_j$
- ▶ When μ too high, revert to full fragmentation

Four Lessons from Geoeconomic Theory

1. **Trade off between Gain from Trade and Economic Security:** Increasing returns to scale and specialization are source of *both* gains from trade and hegemonic power by making other technologies poor substitutes for dominant ones
2. **Krugman Meets Geoeconomics:** facing coercive global hegemons countries decide to specialize less and unwind some globalization
3. **Fragmentation doom loop:** each country fragmenting increases incentives for others to do so, kick globalization loop in reverse
4. **Hegemonic View of International Organizations:** these organizations are an expression of the hegemon that optimally commits to limit coercion to attract participation from other countries

More General Theory: The “Other” Terms

Under an optimal contract, the hegemon imposes on a foreign firm $i \in \mathcal{C}_m$, a wedge on input j given by

$$\tau_{m,ij} = - \frac{1}{1 + \frac{\partial W_m}{\partial w_m} \eta_i} \overbrace{\sum_{k \in \mathcal{C}_m} \left(1 + \frac{1}{\frac{\partial W_m}{\partial w_m}} \eta_k \right) \left[\left(\frac{\partial \Pi_k}{\partial z} - \frac{\partial \Pi_k^o}{\partial z} \right) \frac{dz}{dx_{ij}} + \left(\frac{\partial \Pi_k}{\partial P} - \frac{\partial \Pi_k^o}{\partial P} \right) \frac{dP}{dx_{ij}} \right]}^{\text{Building Power}} +$$

$$- \frac{1}{1 + \frac{1}{\frac{\partial W_m}{\partial w_m}} \eta_i} \left[\underbrace{X_m \frac{dP}{dx_{ij}}}_{\text{Terms-of-Trade}} + \underbrace{\left[\sum_{k \in \mathcal{I}_m} \frac{\partial \Pi_k}{\partial z} + \frac{1}{\frac{\partial W_m}{\partial w_m}} \frac{\partial u_m}{\partial z} \right] \frac{dz}{dx_{ij}}}_{\text{Domestic } z\text{-Externalities}} + \underbrace{\sum_{k \in \mathcal{I}_m} \tau_{m,k} \frac{d\mathbf{x}_k}{dx_{ij}}}_{\text{Private Distortion}} \right]$$

where $\mathbf{x}_i = (x_i, \ell_i)$, $\frac{d\mathbf{x}_k}{dx_{ij}} = \frac{\partial \mathbf{x}_k}{\partial z} \frac{dz}{dx_{ij}} + \frac{\partial \mathbf{x}_k}{\partial P} \frac{dP}{dx_{ij}}$, and where X_m is the vector of exports by the hegemon's country.

More General Theory: Anticoercion

The optimal wedges imposed by country n 's government on its domestic sectors satisfy

$$\tau_n \frac{d\mathbf{x}_n^o}{d\tau_n} = - \underbrace{\sum_{i \in \mathcal{I}_n} \frac{\partial \Pi_i^o}{\partial z}}_{\text{Domestic Profits}} \times \left[\underbrace{\Psi^z \frac{\partial \mathbf{x}}{\partial \tau_n}}_{\text{Standard Intervention}} + \underbrace{\Psi^z \frac{\partial \mathbf{x}}{\partial \tau_m} \frac{d\tau_m}{d\tau_n}}_{\text{Anti-Coercion}} \right]$$

Binding PC $\Rightarrow$ government values *outside option* of firms that contract with hegemon

Anti-Coercion: Maximize outside option, shift equilibrium via hegemon's policies

$\mathbf{x}_n^o$: input, factor usage at outside option

$\Psi^z = (\mathbb{I} - \frac{\partial \mathbf{x}}{\partial z})^{-1}$: Externality-based Leontief inverse

$\frac{d\mathbf{x}_n^o}{d\tau_n} = \frac{\partial \mathbf{x}_n^o}{\partial \tau_n} + \frac{\partial \mathbf{x}_n^o}{\partial z} \frac{dz}{d\tau_n}$ where $\mathbf{x}_i^o = (x_i^o, \ell_i^o)$

Measurement: A Sufficient Statistics Approach

Warm Up: Quantifying Power with a Single CES Basket

- ▶ CES producer: $f_n(x_n) = A_n X_n^\beta$ where $X_n = \left(\sum_{J \in \mathcal{J}_n} \alpha_{nJ} x_{nJ}^{\frac{\sigma-1}{\sigma}} \right)^{\frac{\sigma}{\sigma-1}}$
- ▶ CES price index: $P_n(\mathcal{J}_n) = \left(\sum_{J \in \mathcal{J}_n} \alpha_{nJ}^\sigma p_J^{1-\sigma} \right)^{\frac{1}{1-\sigma}}$
- ▶ CES expenditure share: $\Omega_{nJ} = \frac{\alpha_{nJ}^\sigma p_J^{1-\sigma}}{\sum_{J \in \mathcal{J}} \alpha_{nJ}^\sigma p_J^{1-\sigma}}$
- ▶ Log profits: $V_n(\mathcal{J}_n) = K_n - \frac{\beta}{1-\beta} \log P_n(\mathcal{J}_n)$

▶ CES Derivations

Warm Up: Quantifying Power with a Single CES Basket

- Power: percent loss from losing access to hegemon inputs (inflating price index),

$$\begin{aligned}\log V_n(\mathcal{J}_n) - \log V_n(\mathcal{J}_n^o) &= -\frac{\beta}{1-\beta} \log \frac{P_n(\mathcal{J}_n)}{P_n(\mathcal{J}_n^o)} \\ &= \frac{\beta}{1-\beta} \frac{1}{1-\sigma} \log \sum_{J \in \mathcal{J}_n^o} \frac{\alpha_{nJ}^\sigma p_J^{1-\sigma}}{\sum_{J \in \mathcal{J}_n} \alpha_{nJ}^\sigma p_J^{1-\sigma}} \\ &= \frac{\beta}{1-\beta} \frac{1}{1-\sigma} \log \left(1 - \sum_{J \notin \mathcal{J}_n^o} \Omega_{nJ} \right) \\ &= \frac{\beta}{1-\beta} \frac{1}{1-\sigma} \log \left(1 - \omega_{nJR_m} \right)\end{aligned}$$

- Two key sufficient statistics (a la ACR gains from trade)
 - Expenditure share ω_{nJR_m} on hegemon-controlled inputs
 - Elasticity of substitution σ across inputs

Quantifying Geoeconomic Power: Representative CES Firm

1. Finance and Manufacturing

$$f_n(x_n) = A_n \left(\sum_{G \in \{M, F\}} \alpha_{nG} x_{nG}^{\frac{\varrho-1}{\varrho}} \right)^{\frac{\beta \varrho}{\varrho-1}}$$

2. Industries within Finance and Manufacturing

$$x_{nG} = \left(\sum_{J \in \mathcal{J}_G} \alpha_{nJ} x_{nJ}^{\frac{\rho_G-1}{\rho_G}} \right)^{\frac{\rho_G}{\rho_G-1}}$$

3. Within an industry Domestic and Foreign variety

$$x_{nJ} = \left(\alpha_{nJn} x_{nJn}^{\frac{\varsigma_J-1}{\varsigma_J}} + \alpha_{nJR} x_{nJR}^{\frac{\varsigma_J-1}{\varsigma_J}} \right)^{\frac{\varsigma_J}{\varsigma_J-1}}$$

4. Within Foreign varieties

$$x_{nJR} = \left(\sum_{k \neq n} \alpha_{nJk} x_{nJk}^{\frac{\sigma_J-1}{\sigma_J}} \right)^{\frac{\sigma_J}{\sigma_J-1}}$$

Quantifying Geoeconomic Power

Percentage loss from losing access to Hegemon's inputs $\Delta \log V_i(\mathcal{J}_i)$:

$$\frac{\beta}{1-\beta} \frac{1}{1-\varrho} \log \left(\sum_{G \in \{M, F\}} \Omega_{nG} \left(\sum_{J \in \mathcal{J}_G} \Omega_{nGJ} \left(1 - \Omega_{nJR} + \Omega_{nJR} \left(1 - \omega_{nJR_m} \right)^{\frac{s_J-1}{\sigma_J-1}} \right)^{\frac{\rho_G-1}{s_J-1}} \right)^{\frac{\varrho-1}{\rho_G-1}} \right)$$

- ▶ Expenditures shares measured using OECD Input Output Tables, BACI, BaTIS:
 - ▶ Ω_{nG} : share on sector (Financial services (F), All other goods and services (M))
 - ▶ Ω_{nGJ} : share of sectoral spending on sub-sector J
 - ▶ Ω_{nJR} : share of sub-sector J spending on foreign inputs
 - ▶ ω_{nJR_m} : share of foreign inputs coming from Hegemon

Quantifying Geoeconomic Power

Percentage loss from losing access to Hegemon's inputs $\Delta \log V_i(\mathcal{J}_i)$:

$$\frac{\beta}{1-\beta} \sum_{G \in \{M, F\}} \Omega_{nG} \frac{1}{1-\varsigma_G} \log \left(1 - \Omega_{nGR} + \Omega_{nGR} (1 - \omega_{nGR_m})^{\frac{\varsigma_G-1}{\sigma_G-1}} \right)$$

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 - ▶ Ω_{nGR} : share of sectoral spending on foreign inputs
 - ▶ ω_{nGR_m} : share of foreign inputs within sector controlled by Hegemon
- ▶ **Baseline Calibration**: Cobb-Douglas outer nest ($\varrho = 1$), single sub-sector within Finance and goods + other services

Quantifying Geoeconomic Power

Percentage loss from losing access to Hegemon's inputs $\Delta \log V_i(\mathcal{J}_i)$:

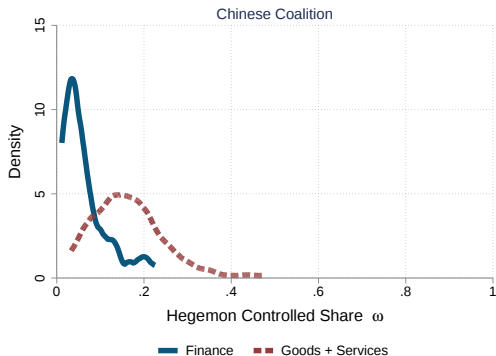
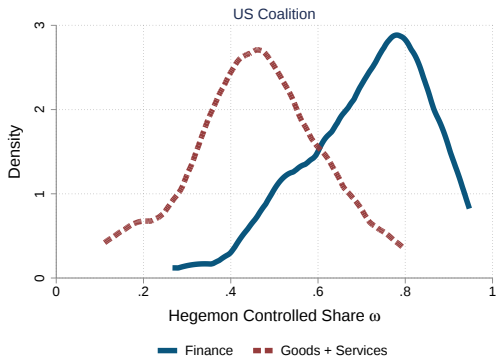
$$\frac{\beta}{1-\beta} \sum_{G \in \{M, F\}} \Omega_{nG} \frac{1}{1-\varsigma_G} \log \left(1 - \Omega_{nGR} + \Omega_{nGR} (1 - \omega_{nGR_m})^{\frac{\varsigma_G-1}{\sigma_G-1}} \right)$$

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- ▶ **Baseline Calibration**: Cobb-Douglas outer nest ($\varrho = 1$), single sub-sector within Finance and goods + other services
- ▶ **Elasticities** σ_J : Costinot and Rodriguez-Clare (2014) for $\sigma_M = 6$, OECD (2017) for financial services (1.6) and insurance (2.2), $\varsigma_G = \sigma_G/2$ (Feenstra et al 2018)

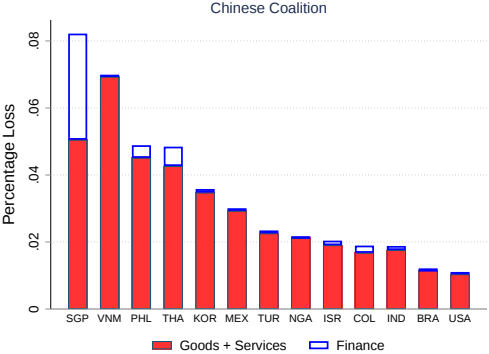
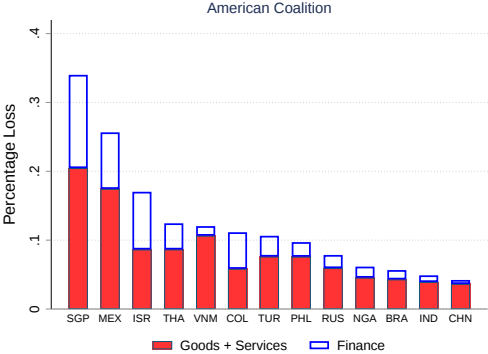
Sectoral Dominance by the American and Chinese Coalitions

Power is non-linear: strong increase when almost fully control an input

$$\left(\frac{1}{1 - \omega_{nGR_m}} \right)^{\frac{1}{\sigma_G - 1}}$$



The Sources of American and Chinese Power



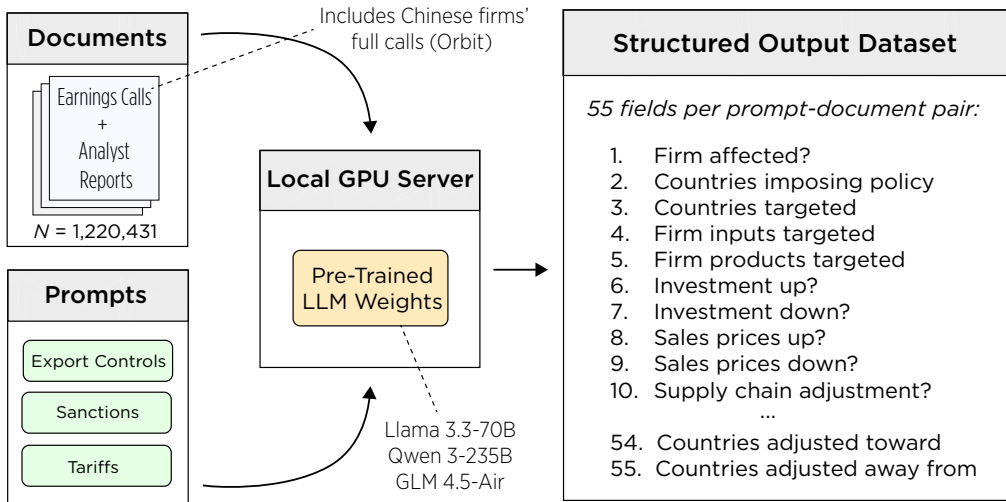
Disaggregated Sectoral Data for Measuring Power

- ▶ Aggregating non-financial sectors smooths out noisy disaggregated data, but loses ability to identify chokepoint industries
- ▶ First pass disaggregation
 - ▶ Expenditure shares: disaggregated ICIO data for imports/exports/domestic shares
 - ▶ ICIO data has 45 sectors covering manufacturing and services
 - ▶ Sectoral Elasticities: Fontange et al (2022) or Caliendo Parro (2015)
- ▶ Room to disaggregate sectors even further, to HS 6-digit codes
 - ▶ Advantage: ability to study finer chokepoints like specific semiconductor supply chains or rare-earths
 - ▶ Difficulties: (i) difficulties in finding precisely estimated elasticities, (ii) more noisy trade data, (iii) unavailability of domestic gross output for most countries at that level of disaggregation
 - ▶ For example, could disaggregate the “foreign basket” to HS 6-digit code varieties that aggregate to ICIO sector. To do, add one more inner basket for each ICIO sector

Using AI to Measure Geoeconomic Pressure

- ▶ Firm-level corporate text combined with large-scale, replicable LLM inference
- ▶ Measure in near real-time which firms are affected by various types of pressure
 - ▶ Who applies pressure to whom? Which means are used and why?
- ▶ Characterize how firms respond to each type of pressure
 - ▶ Broad range of margins: input prices, pricing, investment, R&D, supply-chains
- ▶ Quantify measurement uncertainty via prompt and model perturbations

Using LLMs to Extract Large-Scale Structured Data From Text



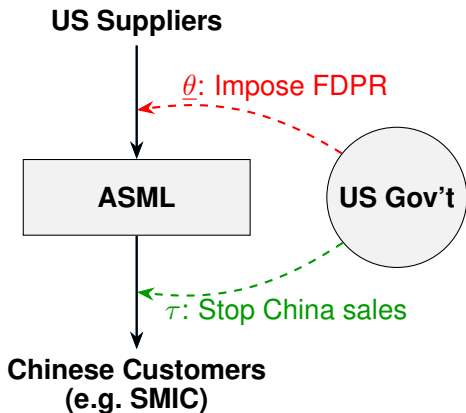
Example of LLM Inference From Textual Data

- ▶ ASML flagged as affected by export controls in multiple earnings calls and reports (2021-25)

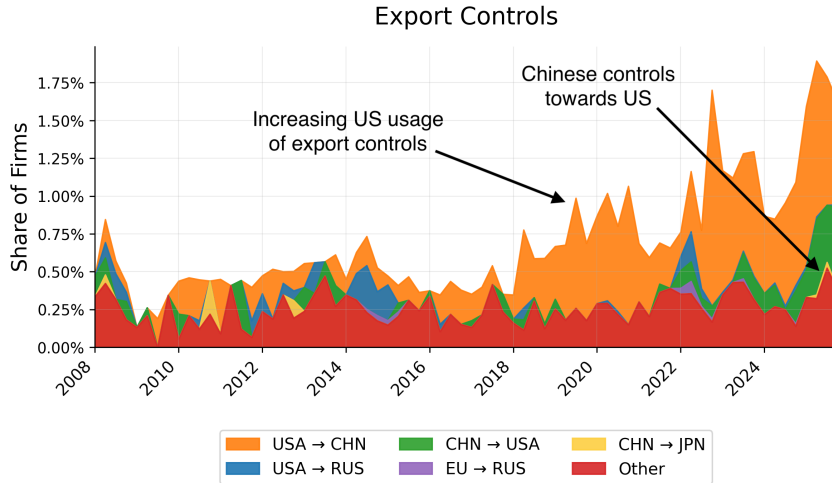
- ▶ Structured field **outputs** from LLM:

1. Countries imposing controls: **US, Netherlands**
2. Country receiving export controls: **China**
3. Firm's products targeted: **EUV and DUV systems, lithography tools**
4. Overall impact on firm: **negative**
5. Firm's responses: **lower sales**
6. Country of lower sales: **China**

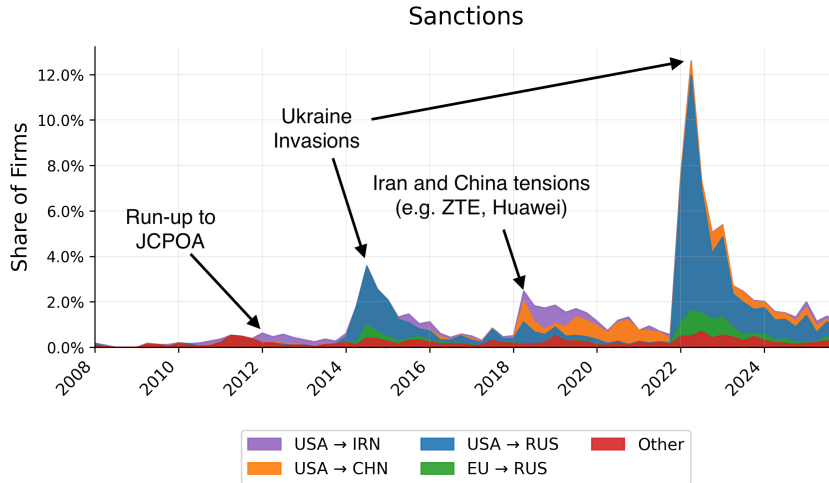
- ▶ Additionally, we also capture data from Chinese customers such as SMIC



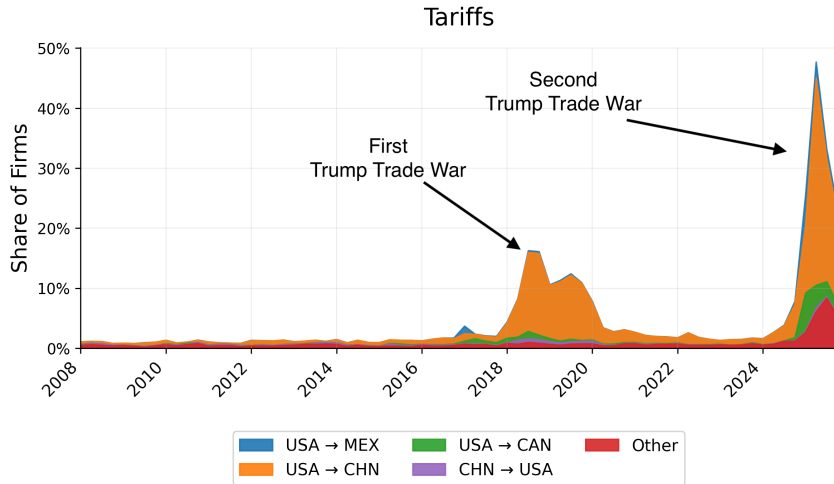
Aggregate Patterns: Who Imposes Pressure and Who Is on Receiving End?



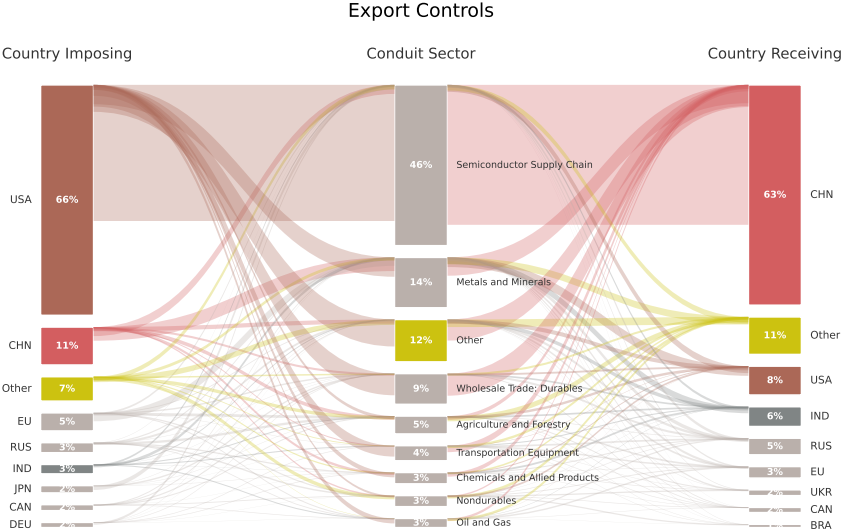
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Which Sectors Are Used as the Means of Pressure?

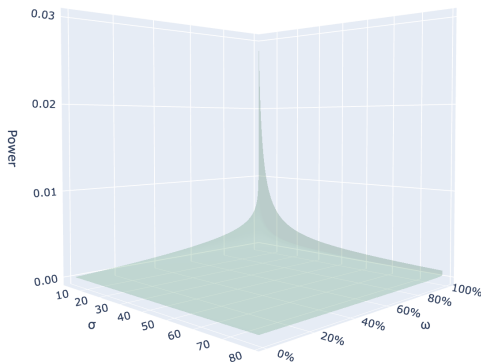


Geoeconomic Pressure: Using “Chokepoints”?

- ▶ Percentage loss to target n from losing access to hegemon’s input in sector j :

$$\text{Power}_{nj} \propto - \underbrace{\Omega_{nj}}_{\substack{\Omega_{nj}: \text{Expenditure} \\ \text{share on sector } j}} \times \underbrace{(\sigma_j - 1)^{-1}}_{\substack{\sigma_j: \text{Elasticity of} \\ \text{substitution in sector } j}} \times \underbrace{\log(1 - \omega_{nj})}_{\substack{\omega_{nj}: \text{Share of expenditures in} \\ \text{sector } j \text{ controlled by hegemon}}$$

- ▶ Simplified calibration, full formula in Clayton et al. (2024); analogy to Arkolakis et al. (2012)

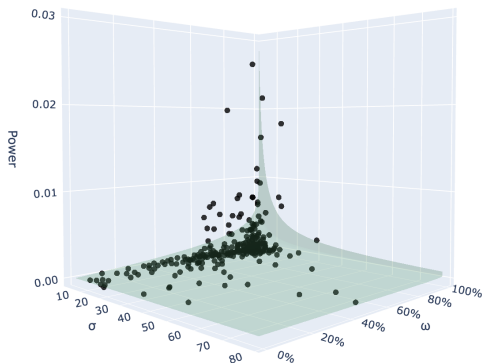


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- ▶ Measure Power_{nj} at SIC4 sectoral level using hard data (BACI, Fontagne et al. 2022)

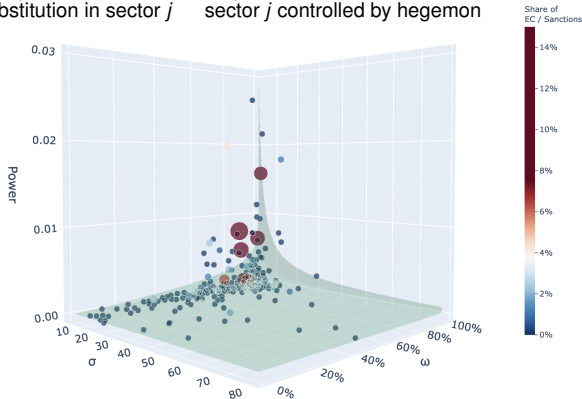


Geoeconomic Pressure: Using “Chokepoints”?

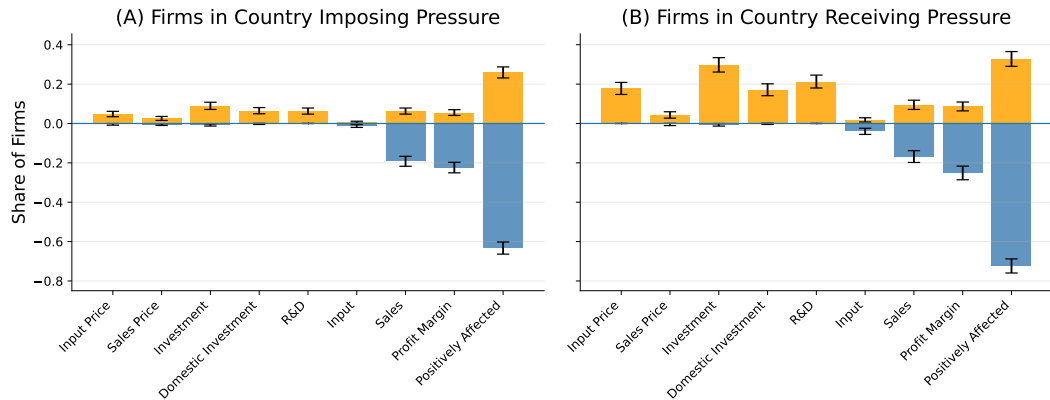
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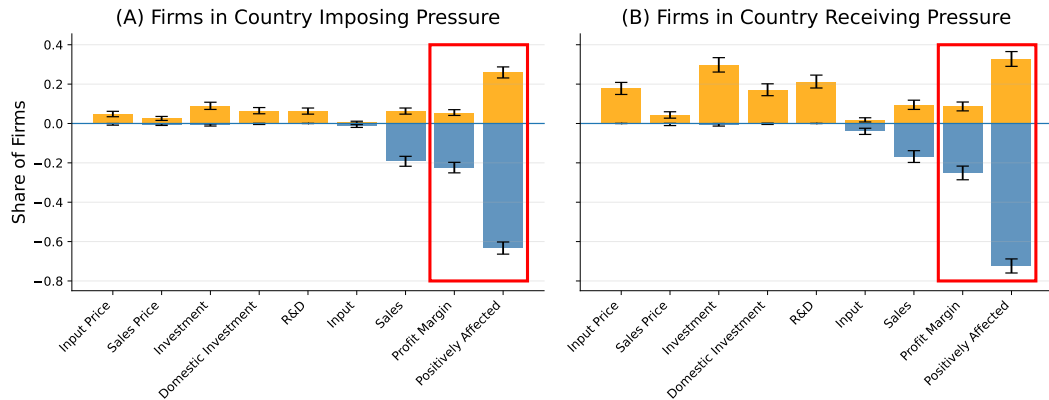
- ▶ Simplified calibration, full formula in Clayton et al. (2024); analogy to Arkolakis et al. (2012)
- ▶ Measure Power_{nj} at SIC4 sectoral level using hard data (BACI, Fontagne et al. 2022)
- ▶ Measure using LLM the intensity of sector usage by the US in sanctions/export controls toward



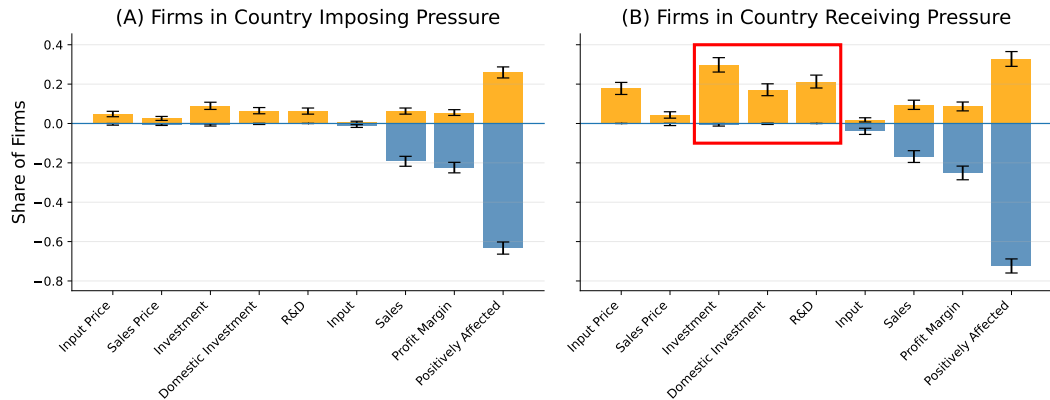
The Response to Export Controls, By Source and Destination



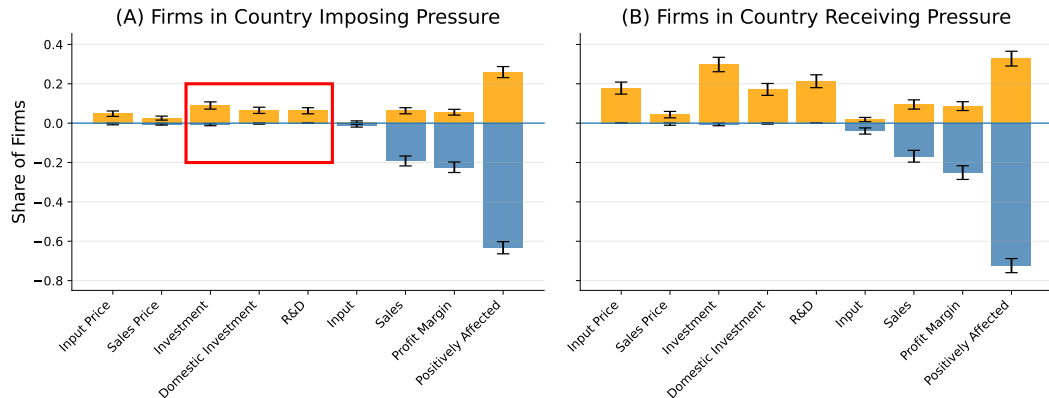
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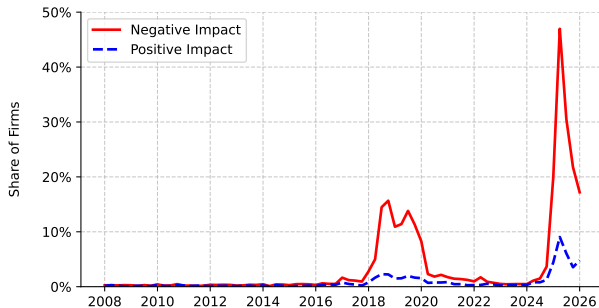


The Response to Export Controls, By Source and Destination



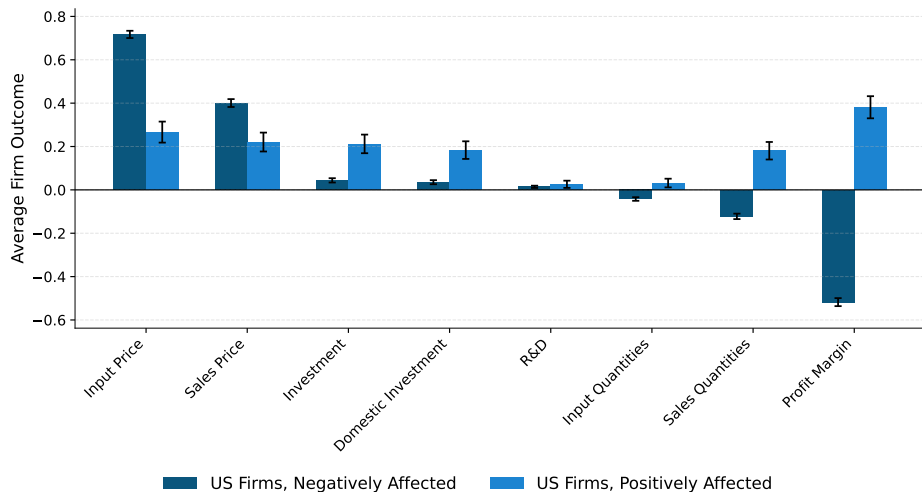
An Ongoing Look at the Trade War of 2025

- ▶ An advantage of our approach is ability of examine events in near real-time
- ▶ We track US firms reporting positive or negative impact during current trade war:

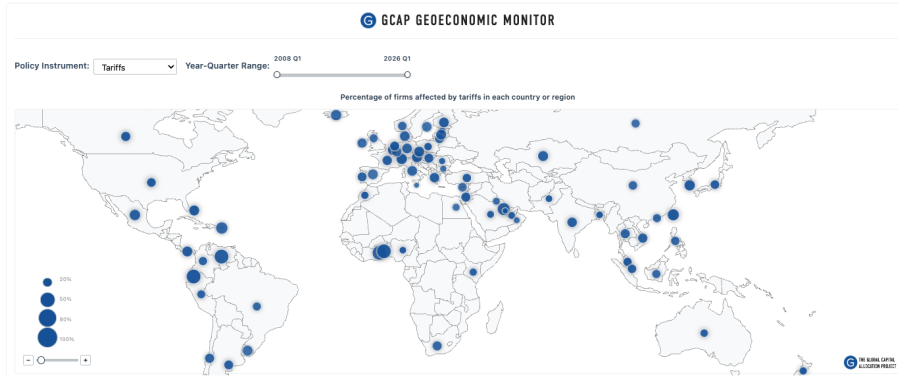


- ▶ Positive effects from lower competition, domestic producer subsidy aspect of tariffs

An Ongoing Look at the Trade War of 2025: US Firms' Adjustment



GCAP Geoeconomic Monitor



globalcapitalallocation.com/geoeconomic-monitor

Policy and Future Research

Cannot think of a more pressing global challenge that economists should be studying

Much more to do:

- ▶ More modeling: multiple hegemons, political economy, duality with military
- ▶ Large-scale data on economic interdependence and causal evidence on the effects of threats
- ▶ Quantitative models for policy counterfactuals

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