Global Value Chains and Industrial Policy

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Coming Clean

- I was asked to speak about **industrial policy (IP)**
- It is not entirely obvious to me whether I have done any research on the topic!
  - It depends on how one defines industrial policy
- I have some views, partly based on research I have conducted
- But **John Vickers** and **Réka Juhász** know much more than I do about IP!

Road Map

- What is Industrial Policy? Some Definitions
- Basics of Industrial Policy in open economies (what I teach undergraduates)
- A modern view of the world economy: Global Value Chains
- Implications for Industrial Policy

Definitions

Industrial Policy: A Broad Definition

- A **broad** definition (Juhász, Lane and Rodrik, ARE, 2024)

  "Government policies that explicitly target the transformation of the structure of economic activity in pursuit of some public goal"

- Would seem to include higher education, broad R&D policies, active labor market policies, competition policies

- A bit like motherhood or apple pie

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  "Government policies that explicitly target the transformation of the structure of economic activity in pursuit of some public goal"

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- A bit like motherhood or apple pie: how could you be against it in a world with externalities and public goods?

Industrial Policy: A Narrow Definition

- A **narrower** definition (from ChatGPT)

  "Government policies aimed at influencing the structure and performance of a country's economy by supporting, guiding, or shaping **specific industries or sectors**"

- A little more controversial:
  - Not easy to pick winners
  - Potentially perverse effects on incentives
  - Political capture

Industrial Policy in Open Economies

(what I teach undergraduates)

Industrial Policy in Open Economies

- Traditionally, two types of industrial policy

1. Import substitution
2. Export promotion

- Typically defended invoking Hamilton and List's infant industry argument
- But also defended in terms of the strategic value of some sectors or their economic importance (regardless of the "youth" of a sector)

The Infant Industry Argument: An Illustration

- This does not seem fair!



The Infant Industry Argument: An Illustration

- This does not seem fair!

"In the present conditions of the world a new unprotected manufacturing power cannot possibly be raised up under free competition with a power which has long since grown in strength and is protected on its own territory."



Friedrich List in *Das Nationale System der Politischen Oekonomie (1841)*



Import Substitution

- Now that's a more even fight!



Import Substitution

- Aims to encourage domestic industries by limiting competing imports
- Combination of import restrictions (tariffs, quotas) and subsidies and other forms of support



TABLE 11-2	Effective Protection of Manufacturing in Some Developing Countries (percent)
Mexico (1960)	26
Philippines (1965)	61
Brazil (1966)	113
Chile (1961)	182
Pakistan (1963)	271

Source: Bela Balassa, *The Structure of Protection in Developing Countries* (Baltimore: Johns Hopkins Press, 1971), p. 82.

Export Promotion

- That's also a more even fight… but a bit scary for the grown-up boxer



Export Promotion

- Policies designed to **encourage industries to produce goods for export** rather than just supplying the domestic market
- More emphasis on export subsidies than on import restrictions
- Coupled with a variety of other policies (exchange rate policies, Special Economic Zones, etc)



What Worked and What Didn't?

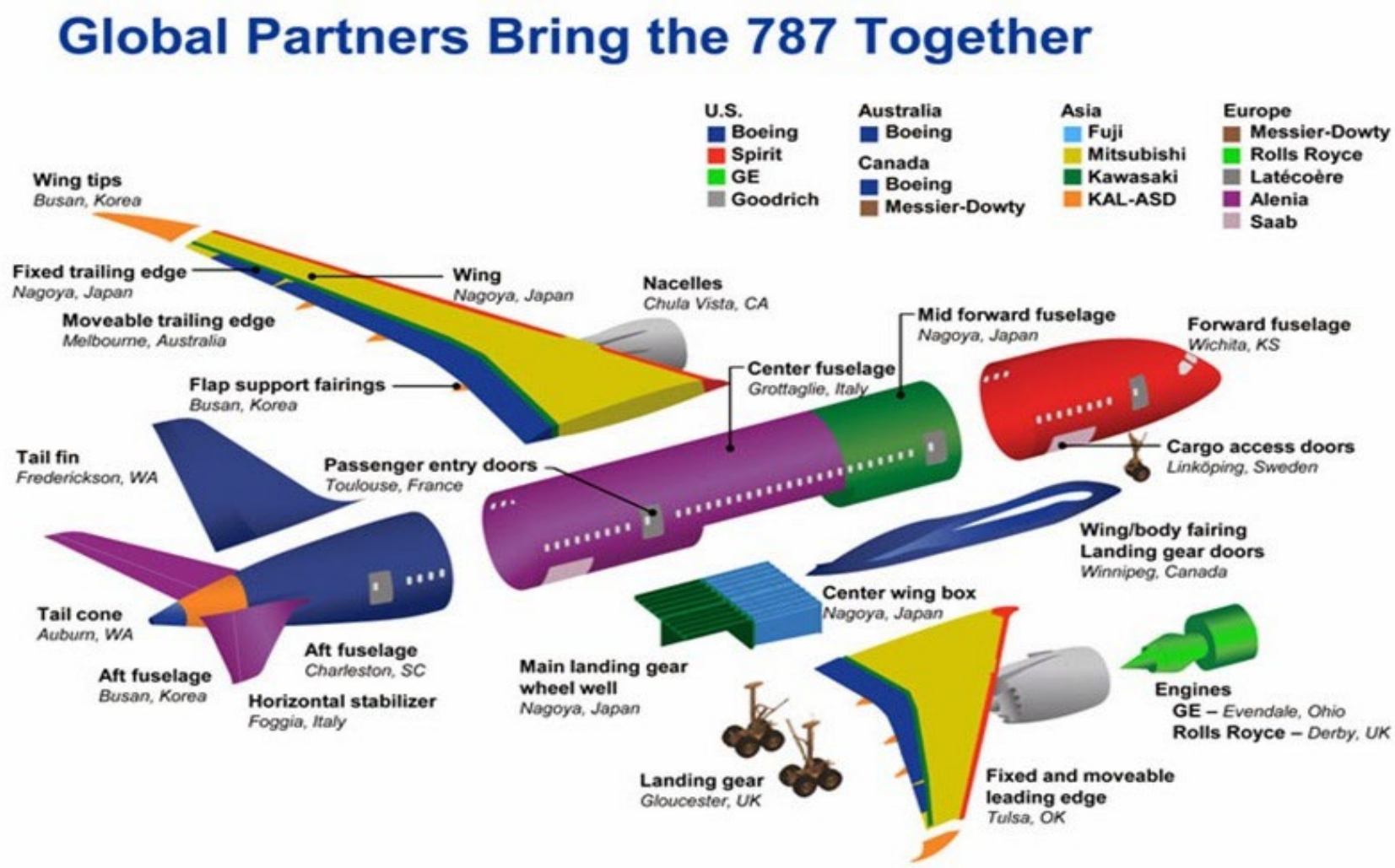
- **Politically charged** debate, even among academics
- Generally, countries following export promotion policies have **fared better** than those following import substitution policies
  - But lots of heterogeneity and of confounding factors
- I very much welcome the revival of empirical work assessing past industrial policies (of which Réka Juhász has been a pioneer)

A Modern View of the World Economy: Global Value Chains

Background

- Much current thinking on industrial policy (at least in its narrow sense) appears based on an outdated view of the world economy
- Countries are no longer exchanging "wine for cloth" (Ricardo, 1817)
- Since (roughly) the early 1980s, a combination of forces led to a fast **fragmentation of production processes across borders**
  - more and more, what we observe in Customs forms are slices of global value chains
- What **is** a sector or an industry?

An Example of a GVC: A Spider

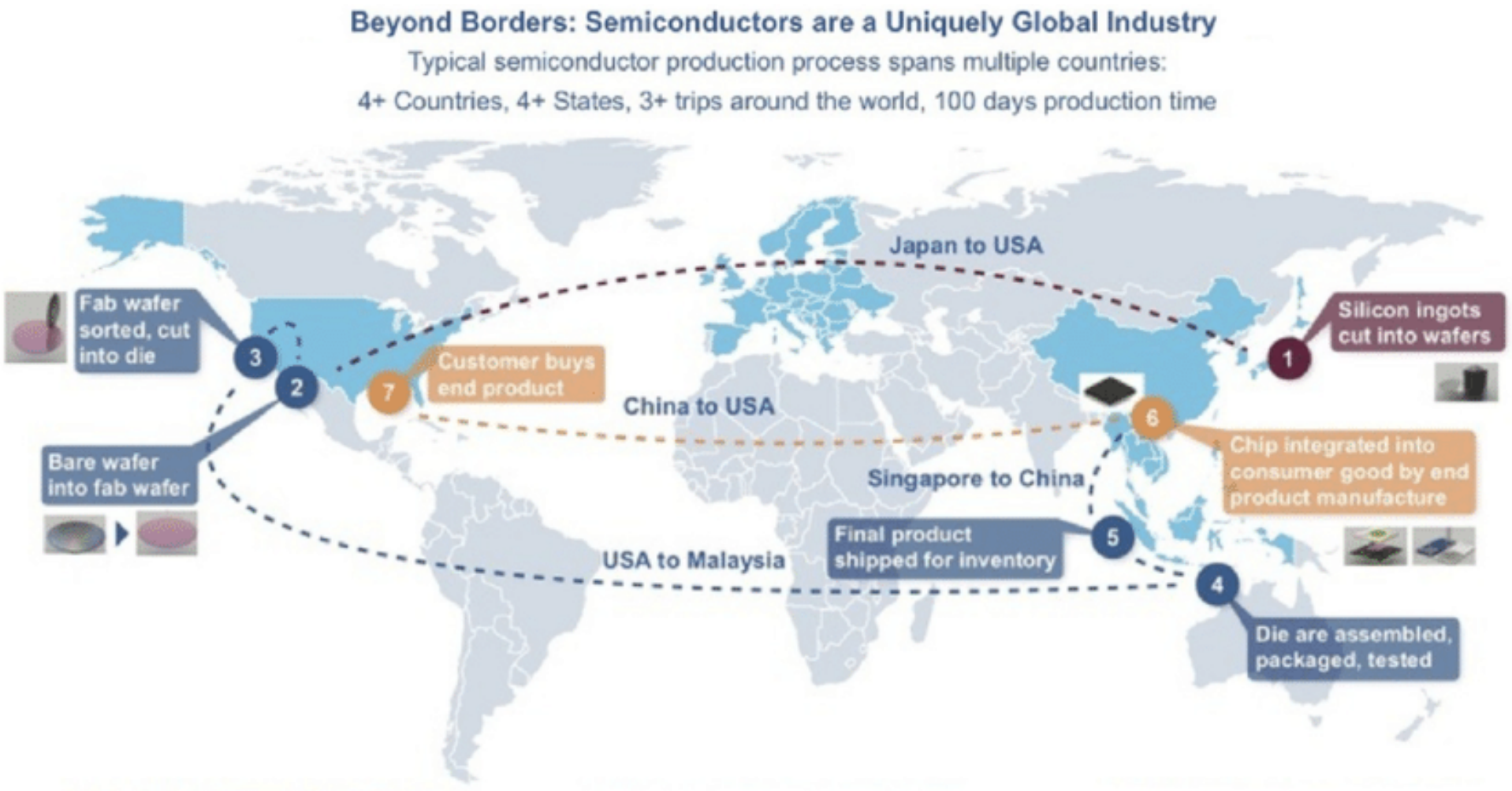


Another Example: A Web of Spiders



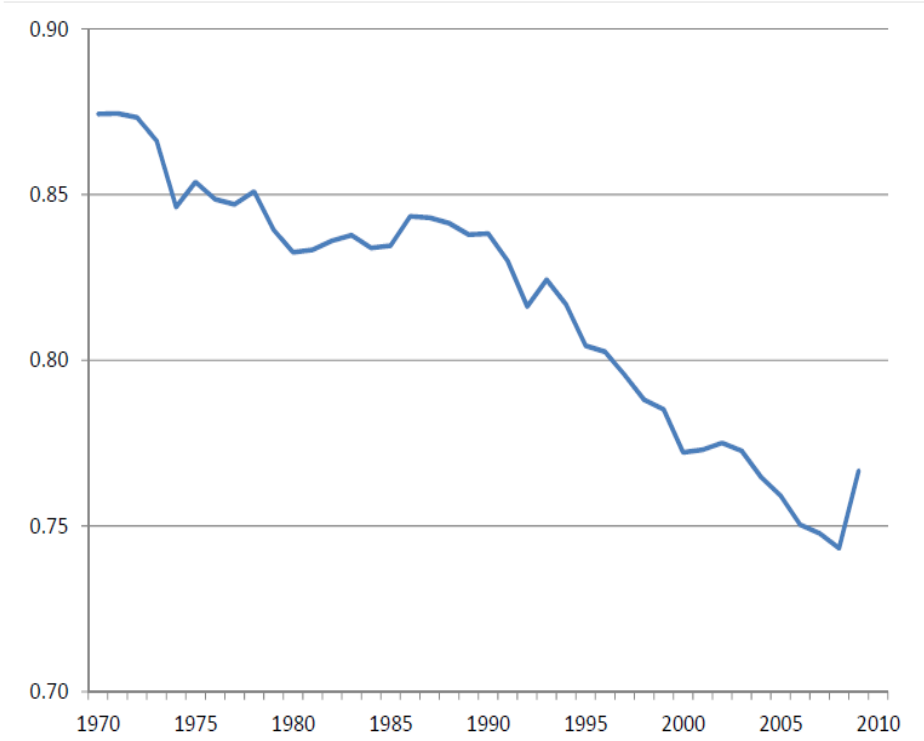
- Only about 55% of the value of F-150s is US value added
- Only about 40% of Ford vehicles are assembled in the US

Another Example: A Snake



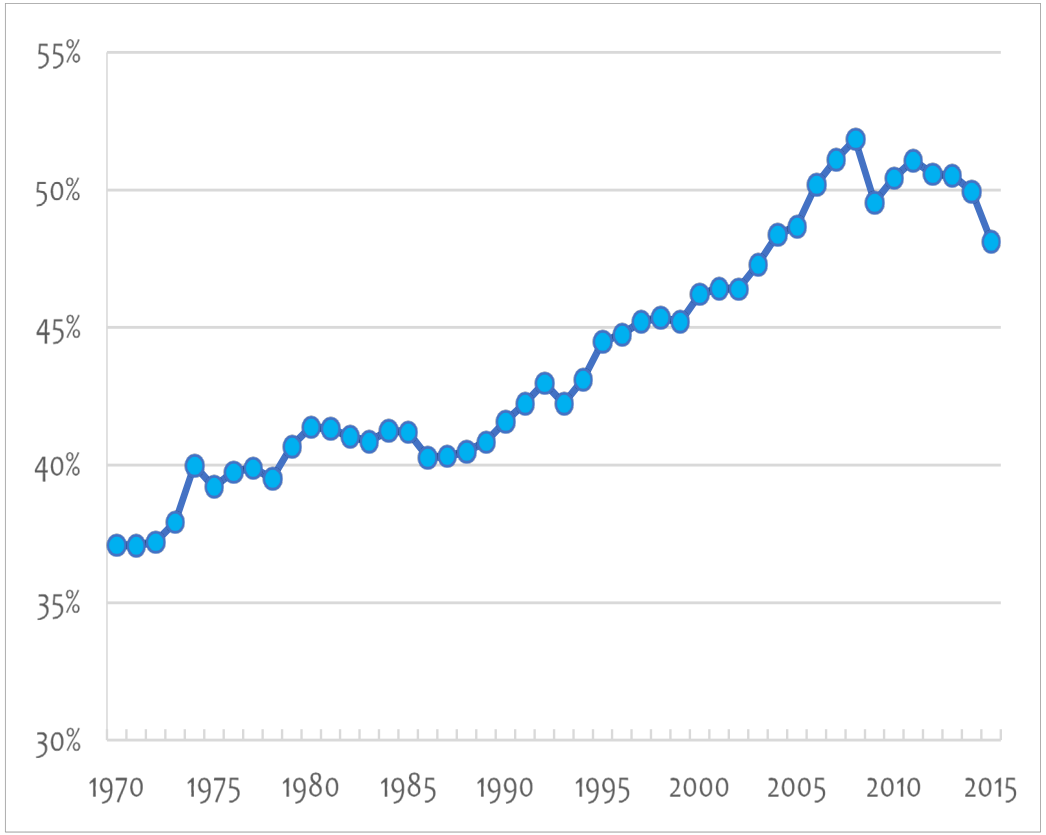
Not Just A Few Examples

- Declining valued-added share in exports demonstrates rise of GVCs



Source: Johnson and Noguera (2012b)

Chart 2. GVC Trade as Percentage of World Trade



Source: Borin and Mancini (2019), as reported in World Development Report (2020)

Dominance of MNEs in US Manufacturing

Firm Type	Number of Firms	Employment (% Total)	Sales (% Total)	US Imports (% Total)	US Exports (% Total)
Non-MNE Manufacturing	242,000	10%	9%	9%	12%
US Affiliates of Foreign-based Manuf. MNEs	2,200	3%	10%	26%	21%
US-based Manuf. MNEs	1,550	10%	19%	32%	46%
MNEs / Total Manufacturing (%)	**1.5%**	**57%**	**76%**	**87%**	**85%**

Source: Antràs, Fadeev, Fort and Tintelnot (2024)

Importance of Intrafirm Trade



Source: U.S. Census

Aggregate Share of Intrafirm Trade: 48.57%

GVCs and Economic Theory

Technical Hurdles for Economic Theorists

- Modeling GVCs is **not** easy
- Firms face complicated **combinatorial optimization problems** (due to trade costs + scale economies)
- Complex **market structures** (due to market power)
- Internalization decision requires incorporating **contract-theoretical** considerations

Some Insights: Complementarity

- Models of GVCs feature several types of **interdependencies** in the location decisions of the various slices of GVCs
- Empirically, it seems like **complementarities** are a dominant feature of these decisions (despite some cannibalization effects)
  - See Antràs, Fort and Tintelnot (2017), Antràs, Fadeev, Fort and Tintelnot (2024)
  - Complementarities due to input complementarity but also due to scale economies
- These complementarities can explain the rise of superstar MNEs
- Response to import competition shocks (China Shock) quite different than traditional models

De-Risking or Increased Resilience are Costly

- Firms are **not diversifying** for a reason: it is very costly to do so
  - Significant **fixed costs** of fragmentation explain muted initial reaction to US-China trade war

Table 1. Number of Source Countries Per Imported Product by US Firms

	Firm Level		
	Mean	Median	Max
Mean	1.11	1.03	1.78
Median	1.00	1.00	1.00
95th percentile	1.61	1.00	4.00

Source: Antràs, Fort and Tintelnot (2017). Table reports statistics on the number of countries from which a firm imports the same HS10 product for the year 2007.

Implications for Industrial Policy

Implications for Industrial Policy

- GVCs and Industrialization
- GVCs and Industrial Policy
- MNEs and the Political Economy of Industrial Policy
- GVCs and Resilience
- GVCs and Security

GVCs and Industrialization

- Often-heard argument: GVCs facilitate industrialization by reducing the range of required "capabilities"
  - Example: you don't need to develop a complete auto sector
- But stages in GVCs are associated with very different value-added levels (e.g., engines vs. tires)
- So, maybe simpler to "industrialize", but the returns might not be as high as in the past
  - Effect might be compounded by automation
- Also: need for cross-country **coordination** (more on next slide)

GVCs and Industrial Policy

- GVCs create **complementarities** in industrial policy across countries
- Without coordination, hard to have socially efficient IP
- You can of course give up on GVCs, but that is likely to be socially costly
- Another factor: **geopolitical concerns**
  - Specialization and need for coordination exposes countries to pressures from other countries

An Example: The EV Market

- 🔋 Batteries: China, Korea, Japan
- ⛏️ Minerals: Chile, Congo, Indonesia
- 💻 Semiconductors: Taiwan, Korea
- 🚗 Assembly: US, EU, China, Mexico

- Some Tradeoffs:
  - USA: IP + No coordination → less GVC integration (use subsidies to foster domestic battery and EV assembly; wield geopolitical power to secure minerals)
  - EU: IP + GVCs → pooled sovereignty (at least regarding IP)

MNEs and the Political Economy of IP

- MNEs are key players in GVCs; key for success of industrial policy
  - MNEs control technology, standards, and supply chain linkages, making their investment decisions central
- Technology and Knowledge Transfer
  - Success of IP depends on MNEs' willingness to share know-how, locate R&D, and build local capacity
- Lobbying and Policy Influence
  - MNEs actively shape regulations, subsidies, etc. through lobbying
  - MNEs exploit competition between states to their own advantage

An Example: Intel

- Intel **lobbied** for US subsidies on chips
  - CHIPS Act: $52B to expand U.S. chipmaking
  - Intel received up to $7.9B of those subsidies
  - Another $3.2B from 2nd Trump administration



- At the same time, Intel has recently received funding (or commitments) from **other countries**:
  - Germany: $11B billion for Magdeburg complex
  - Israel: $3.2B government grant
  - Poland: US$1.9 billion



- Most recently, US government took 10% stake of Intel!

GVCs and Resilience

- I have argued before that diversification is privately costly
- A different question is: do firms make **socially optimal** diversification decisions? Are GVCs sufficiently resilient?
- Active literature on this topic: Grossman, Helpman and L'Huillier, Grossman (2023, JPE), Grossman, Helpman and Sabal (2024, QJE)
  - Emphasizes economic forces, not geopolitical ones
- **Bottomline:** easy to find environments in which firms engage in socially inefficient levels of resiliency, but less easy to conclude that resilience is always suboptimal

GVCs and Security

- **Security as a Core Rationale for Industrial Policy**
- Historically, IP often justified by national defense needs (e.g. steel, shipbuilding, or aerospace for war-making capacity)
- Today, "security" extends beyond military to include economic security, technological sovereignty, and resilience of critical supply chains
- Governments increasingly view industrial capacity not just as an economic asset, but as a **strategic capability** in an uncertain world

GVCs and Security: Key Dimensions

Critical Materials & Supply Chains

EV batteries, semiconductors, rare earths, pharma
Tools: stockpiling, reshoring, friend-shoring, subsidies

Dual-Use Technologies

Semiconductors, AI, quantum, aerospace, biotech
Mix of R&D support + export controls

Cyber & Digital Security

Secure 5G/6G, cloud, cybersecurity industries
Examples: U.S. ban on Huawei, EU cyber sovereignty

Resilience vs. Efficiency

Redundancy over cost-minimization
E.g. multiple chip fabs in allied countries

Conclusions

Conclusions

- Very **exciting** recent research developments in industrial policy
- Lots of policies being implemented; fertile ground for future work
- I believe GVCs may call for new conceptualizations of the tradeoffs countries face when implementing industrial policy
- Need more work on key industries with a global value chain structure, with information on IP implemented in various countries
- Geopolitical and national security concerns will continue to shape industrial policy in the next few years

Vielen Dank!