VULNERABILITIES IN THE SEMICONDUCTOR VALUE CHAIN

CBS World Café

14 November 2022

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OECD
BETTER POLICIES FOR BETTER LIVES

China lockdowns create latest supply chain shock to global tech

Foxconn warns of revenue contraction, while tech company says transport between Hong Kong and mainland in 'semi-meltdown'

Handelsblatt

BRANCHENAUSBLICK AUTO

Chipmangel und E-Auto-Boom: Diese Herausforderungen müssen die deutschen Autohersteller 2022 meistern

Der Mangel an Halbleitern wird der Branche auch im kommenden Jahr erhalten bleiben. Zugleich prognostizieren Experten erneute Rekordverkäufe bei Elektroautos.

Opinion Supply chains

How war is changing business

Ukraine is just the latest tailwind for decentralisation, localisation and supply chain redundancy

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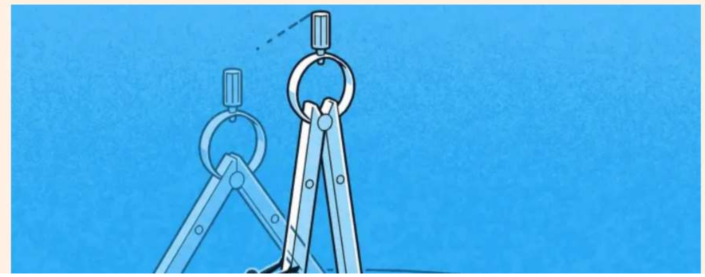

China

Explainer

What do US curbs on selling microchips to China mean for the global economy?

Washington's ban on hi-tech exports to China marks a huge gambit for economic supremacy for the next decades

Virginia Harrison and Martin Farrer

Wed 19 Oct 2022 03.00 BST

The New York Times

The Semiconductor Problem

The military relies on advanced semiconductors. The U.S. doesn't make any.

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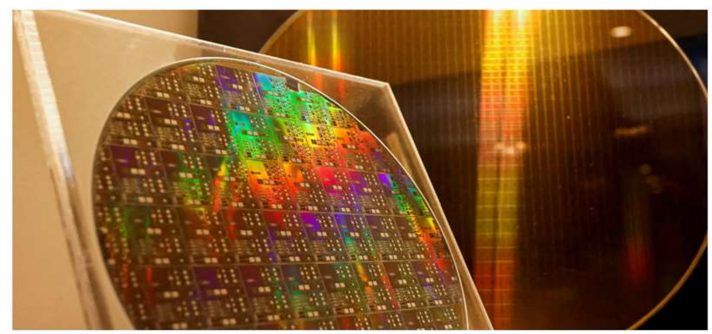
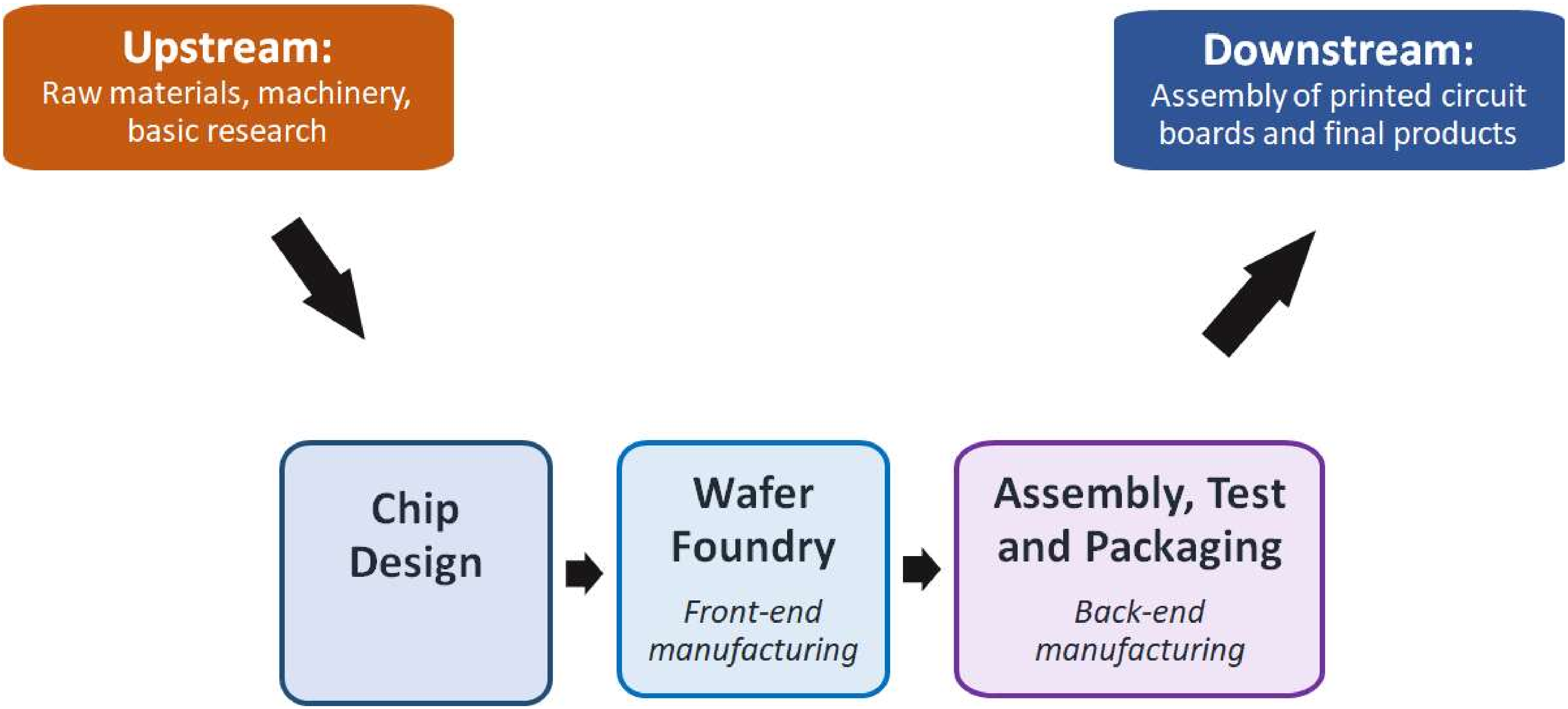


Fragmentation of semiconductor production



Source: Adapted from McKinsey and Company (2022) and BCG and SIA (2021) .

DATA

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Inter-Country Input-Output (ICIO) Data

Basic ICIO tables

- 66 countries
- 46 industries

Split out semiconductors

- Broad ICT industry
- vs. detailed info in some countries.

Combine with trade data

- Highly disaggregated
- Bilateral

Pros

- Inter-country and inter-industry dependencies
- Direct and indirect exposures

Cons

- Level of aggregation
- Dependencies on machinery

SUPPLY-SIDE DEPENDENCIES

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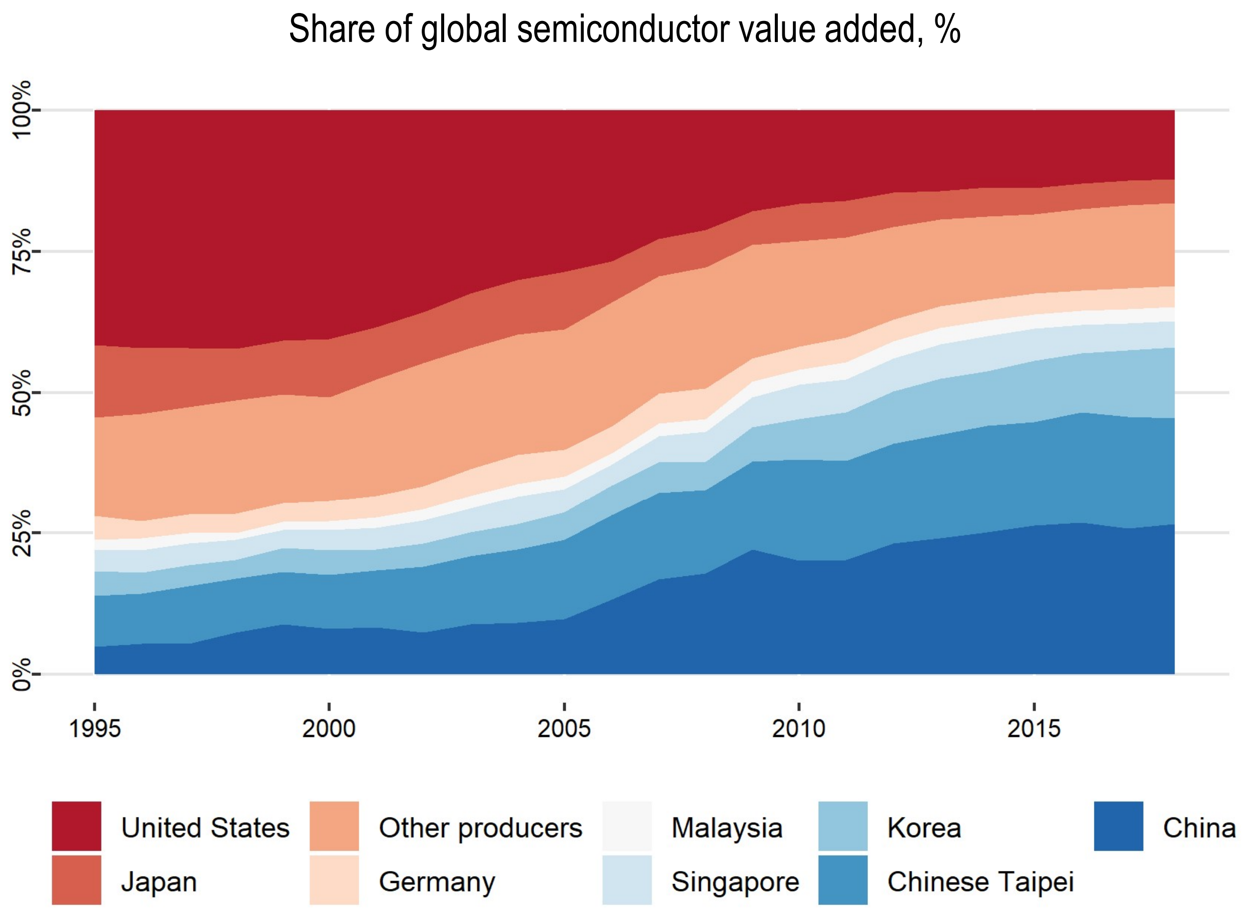
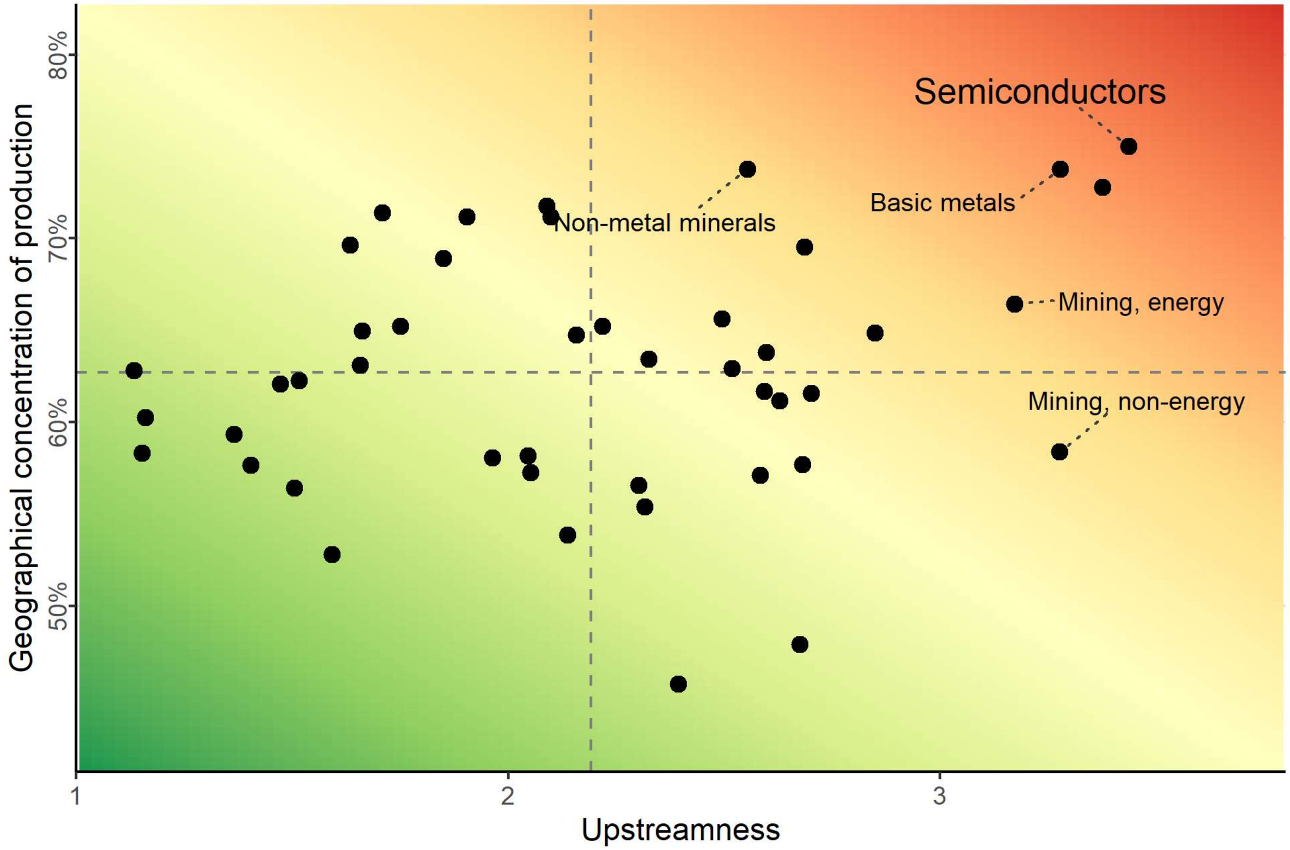
Semiconductor production has gravitated towards Asia



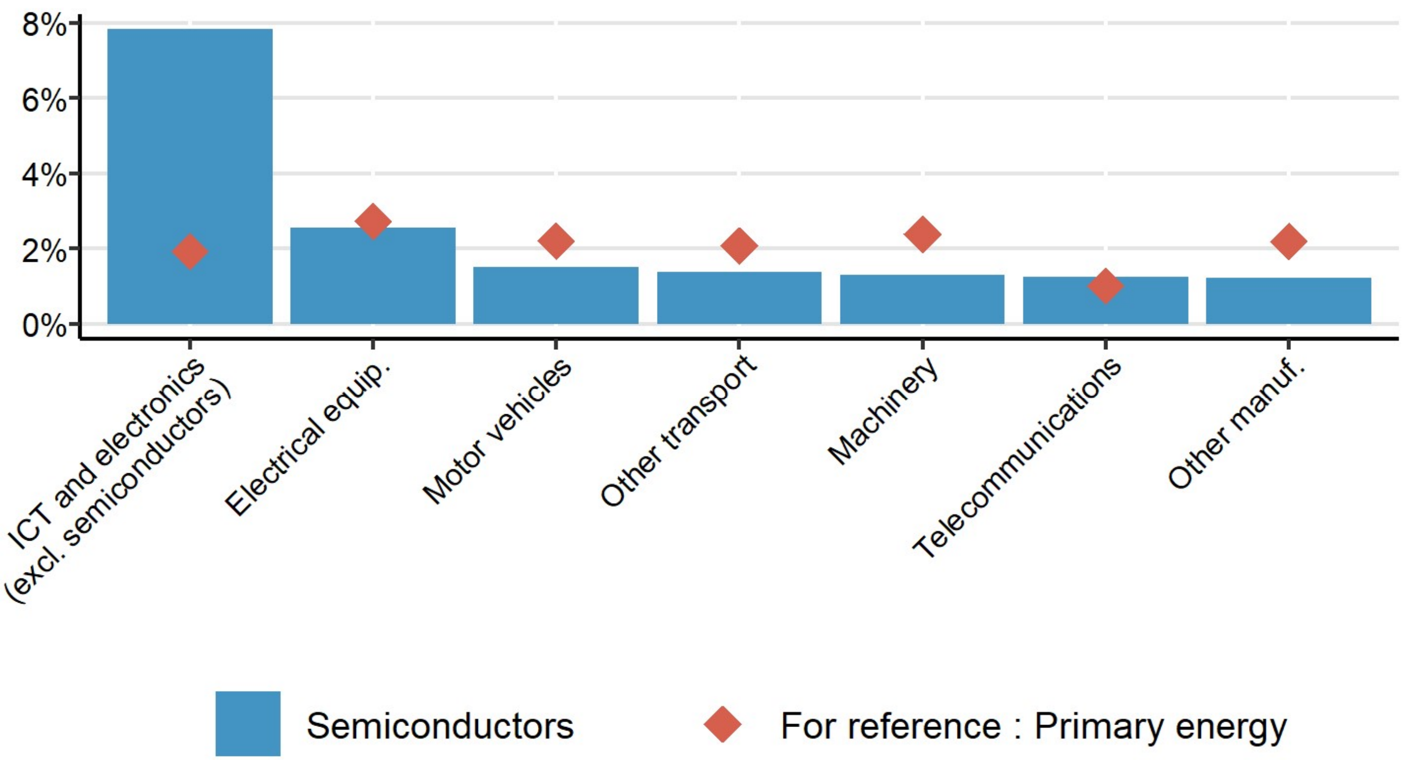
Semiconductor production is highly geographically concentrated and highly upstream



Note: Geographical concentration of production is measured as the share of the top 5 economies in global value added of an industry. Upstreamness of an industry is measured as the distance to final demand (Antràs et al., 2012).

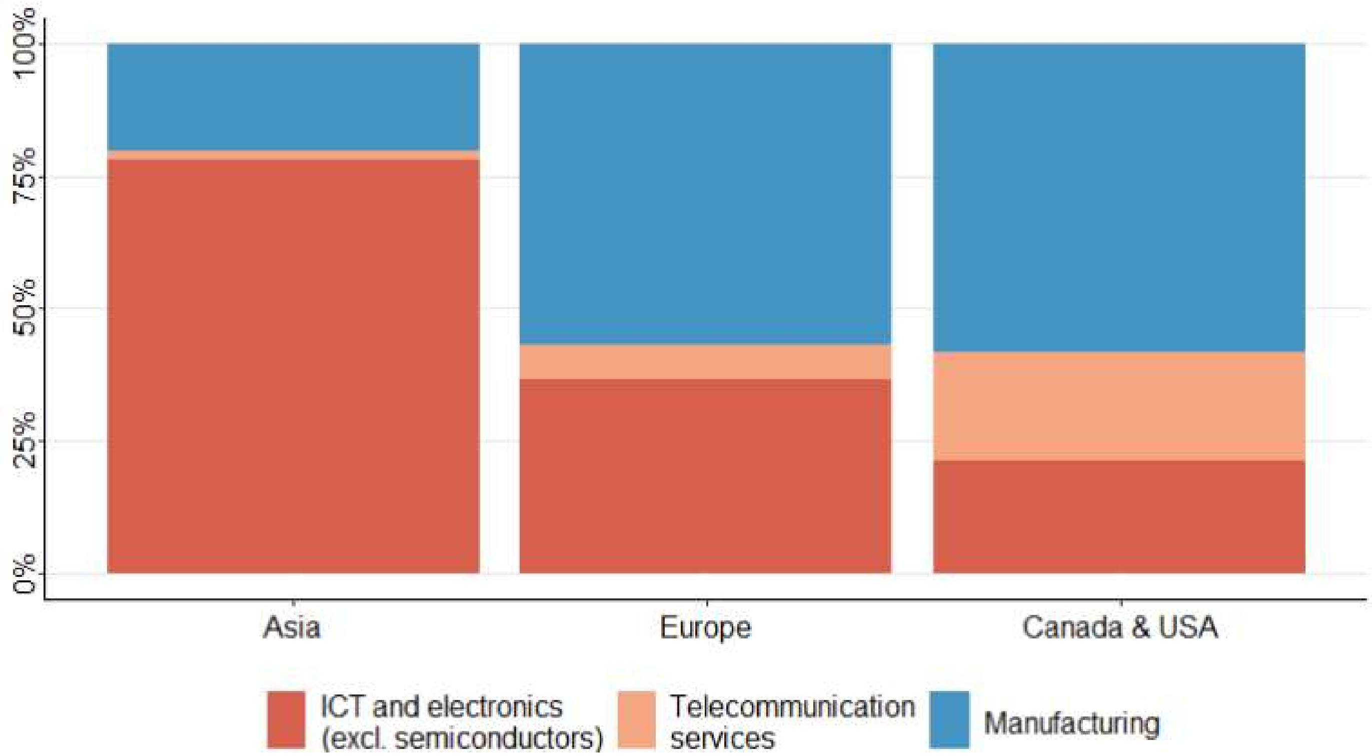
Semiconductors are a crucial input into a range of industries

Semiconductor value added in final demand, 2018



Industry dependencies differ across countries

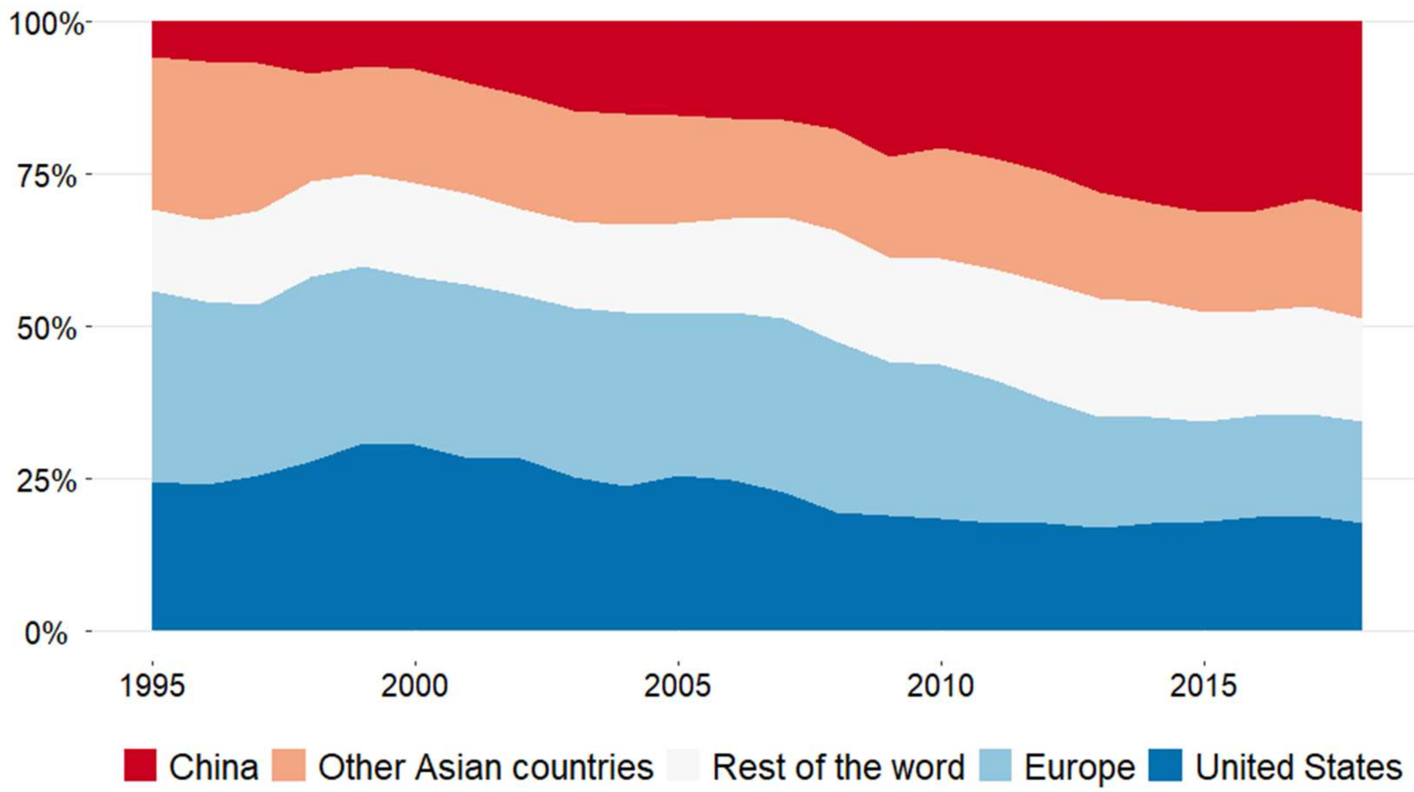
Share of purchasing industry in overall reliance on foreign semiconductors, %, 2018



Note: Main purchasing economies of semiconductors in each area (Asia: China, Korea, Malaysia, Chinese Taipei; Europe: France, Germany, Netherlands and United Kingdom).

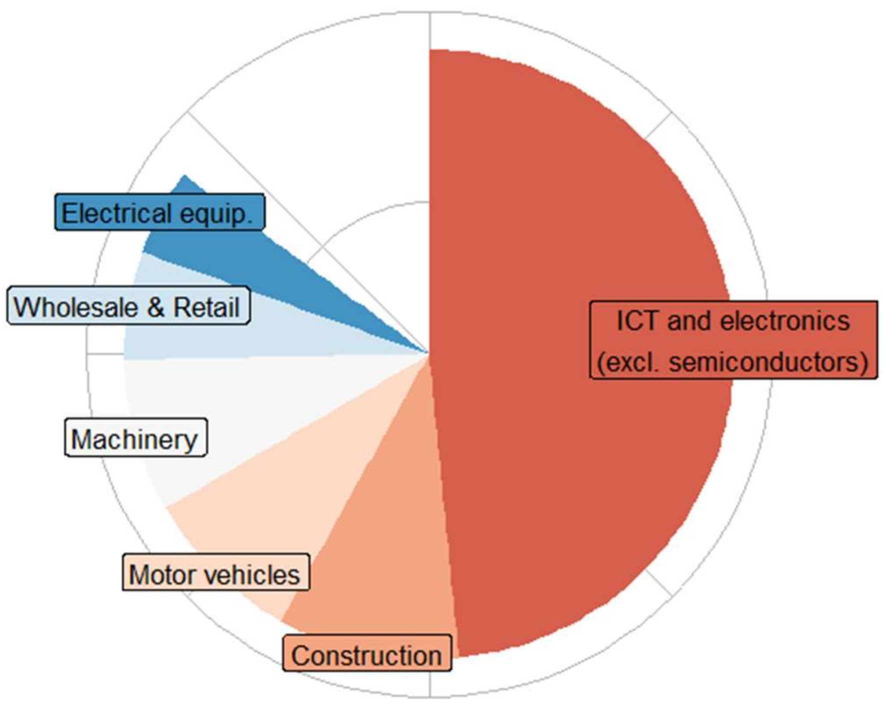
DEMAND-SIDE DEPENDENCIES

Final demand for semiconductors has gravitated towards China



The ICT & electronics industry is the largest buyer of semiconductors

Final demand for semiconductors by industry, 2018



WRAP-UP

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Key takeaways

Production highly geographically concentrated

- Dominant role of China and Chinese Taipei

Production highly upstream

- In Europe, many manufacturing industries highly dependent

Demand concentrated in China, Europe and US

- Demand fluctuations can have global ripple effects

Thank you!

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