

Economics of Globalization

Sébastien Laffitte
Sciences Po Saint-Germain-en-Laye
2nd year

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 - Research on international economics, firms' taxation and firms' tax avoidance.

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 - Don't hesitate to participate ! We learn by interacting together.

Globalization news

From this summer

Trump tariffs

+ Add to myFT

US tariffs of 50% on steel and aluminium come into force

US president escalates trade war by doubling levies on all exporters except the UK

Globalization news

From last week

EU trade

+ Add to myFT

EU steelmakers plead for tariffs on cheap imports to avert collapse

Senior Thyssenkrupp executive warns industry is 'not going to survive' without emergency protection

Globalization news

From last year...

Global trade

+ Add to myFT

Justin Trudeau says Canada will impose steep tariffs on Chinese EVs and steel

Move replicates US measures and follows visit to Ottawa by top US national security official



Justin Trudeau says Canada is introducing the EV tariffs because China is 'not playing by the same rules' © Bloomberg

Globalization news

From last year...

Canada's Prime Minister Justin Trudeau said Ottawa would impose 100 per cent tariffs on imports of Chinese electric vehicles and 25 per cent levies on Chinese steel and aluminium, in a move replicating recent US measures.

Trudeau said Canada was introducing the EV tariffs because China was “not playing by the same rules”. It marks the latest example of the US and its allies taking actions to counter what they say are unfair economic practices.

“Actors like China have chosen to give themselves an unfair advantage in the global marketplace,” Trudeau said in Halifax, Nova Scotia during a cabinet retreat.

Opinion **Global trade**

We can't blame all global trade chaos on Trump

Many of the WTO's structures and procedures are broken and we should acknowledge that failure

HECTOR TORRES

+ Add to myFT

Moral Money

Carbon trading

+ Add to myFT

Talk of a global carbon pricing scheme grows louder ahead of COP30

Brazil wants to use the presidency to push for an international framework

French government collapses as PM François Bayrou loses confidence vote

President Emmanuel Macron will look for a replacement who can break the budget impasse



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- **This should not be your first econ course. Some form of Econ 101 is necessary: we are going to talk about utility, supply and demand curves, consumer and producer surplus, etc.**

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- Samuelson: “Economics is the study of how people and society choose, with or without the use of money, to employ scarce productive resources which could have alternative uses, to produce various commodities over time and distribute them for consumption now and in the future among various persons and groups of society.”

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- *Globalization refers to fundamental changes in the spatial and temporal contours of social existence [...], Stanford Encyclopedia of Philosophy*
 - Process of reconfiguration of time and space.
- Globalization is a complex phenomenon characterized by increased connectivity and interdependence among people and countries worldwide.
- It encompasses economic, social, political, cultural, and ideological processes.

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As well, most would agree that the effects of globalization – of those economic, social, political, cultural and ideological processes to which the term would allegedly refer – are ubiquitous, and that different dimensions of globalization (economic, political, cultural, etc.) are interrelated, ergo, that globalization is multidimensional. (Robinson, 2007)

What is globalization?

- Wide range of interdisciplinary theories about globalization.
- Vary in their definition of globalization.
 - Process going on since the dawn of history ($\approx$ 5000-10000 years).
 - Process linked to the rise of capitalism ($\approx$ 500 years).
 - Recent process associated to post-industrialization and the restructuring of capitalism ($\approx$ 50 years).
- Marx saw globalization as a consequence of capitalism. The search for profit of capital owners through capital accumulation is a powerful incentive to find new markets.
- World-system theory, pioneered by Wallerstein, sees globalization emerging with the spread of capitalism around 1500.
 - Historical system with a core, periphery, and semi-periphery, shaping the international division of labor.

Course organization

- 11 classes of 2 hours, tuesday 3:45-5:45, from 09/09 to 25/11
- Grading.
 - One group presentation (1/3).
 - Topics next week.
Ex: Should we sign the EU-Mercosur trade deal?
 - Final exam (2/3) during the last session: 25/11.
 - Participation (bonus).

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- **Use visual evidence.**
- If you use a LLM (I can't check anyway) but PLEASE use it wisely.

Presentation of the report

- No more than 12 minutes of presentation.
- 5-10 minutes of discussion with the class.
 - The rest of the class should have read the materials before and ask questions, participate to the debate.

Outline

- Introduction
- The State of Globalization
- Trade theory: why technology and endowment matter for trade
- Trade Policy
- Foreign Direct Investment: MNEs in today's globalization
- Globalization and inequalities
- International Taxation and Tax Havens
- Globalization and the Environment
- Geo-economy

Readings

- Textbooks (both available in French and English)
 - CORE Chapter 18
 - International Economics: Theory and Policy, Krugman, Obstfeld and Melitz, 11th edition
- Books
 - Rodrik, D., Straight Talks on Trade, Princeton University Press, 2017 (French translation: La mondialisation sur la sellette)
 - Roberts, A., Lamp, N., Six faces of globalization. Who Wins, Who Loses, and Why It Matters, Harvard University Press, 2021
 - Goldberg P., The Unequal Effects of Globalization, MIT Press, 2023 (free e-book)
 - The Deaton Review, Trade and Globalization, 4 articles:
<https://ifs.org.uk/inequality/themes/trade-and-globalisation/>
- Websites (policy notes)
 - Cepii, Bruegel Institute, Peterson Institute for International Economics
- Podcasts
 - Trade Talks
 - Conflict and Co-operation: A History of Trade (BBC)

What is specific about countries?

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- People in the same country share a lot more with their fellow countrymen than with foreign people.
- Currency, tariffs and tax system, economic policy, administrative procedures, language, social networks, etc...

⇒ National borders still have consequences for interactions.

What is specific about countries?

- Krugman (1993): What's the difference between an entrepreneur that finds a miracle way to transform wheat, lumber, and so on into cheap high-quality consumer goods vs. the same entrepreneur exporting the same wheat and lumber to Asia and buy the manufactured goods with the proceeds ?
- Both will have exactly the same impact on the economy but in case i) the entrepreneur is seen as a hero, in case ii) as someone that destroys jobs.

What is specific about countries?

- People tend to see trade as different from other types of shocks.
 - Rodrik and di Tella (2020): Survey in the U.S. Different groups are distributed a piece of news about the closure of a garment plant. The control scenario is no job losses.
 - Different scenarios: negative demand shock, labor-saving technology, management mistake, international outsourcing (trade).

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 - Trade shocks $\implies$ drastic protectionist response. The demand for trade protection also increases when jobs are outsourced to a developing country compared to a developed one.
 - Idea of fairness: developing countries might have lower standard (in terms of labor, environment, etc.), making the competition with them unfair.

What is specific about countries?

- The political philosophy point of view (Nagel, 2005)
 - Cosmopolitanism: we owe an equal concern to all human beings and state boundaries, which are accident of history, should not matter. We should aim for a common system of institutions to achieve global justice.
 - What is specific about countries? Morally, nothing!
 - Hobbes: Justice can be achieved only within a sovereign state (law + monopoly of force).

What is specific about countries?

- The political philosophy point of view (Nagel, 2005)
 - Rawls: Justice is a political demand. It does not derive from a moral system but is the result of social and political institutions i.e. of individual nation states.
 - States are accidents of history but because a state exercises sovereign power on its citizens they have a duty of justice towards each other through the legal, social and economic institutions of the sovereign.
 - We owe humanity to everybody but justice is only owed to those with which I share political institutions.
- What is specific about countries? They are political units
 - Should we aim for a civil society of nations (Kant)? An economic society of nations (Hayek)?

How economists think about globalization

- “The increasing interdependence of world economies as a result of the growing scale of cross-border trade of commodities and services, flow of international capital and wide and rapid spread of technologies.” (Shangquan, 2000)
- Major drivers:
 - Reduced communication and transport costs.
 - Reduced policy barriers to trade and investment.
- Two waves of globalization (Baldwin and Martin, 1999): 1820-1914 vs. 1960-present.
- An long-run interest in what motivates trade and globalization.
 - From Smith to the modern international economics theory.
- More recent interest in globalization's institutions and the construction of a global order (positively and normatively).

How economists think about globalization

The Gravity model

- Bilateral trade (i.e. how much is exchanged between two countries i and j) is well explained by “gravity” forces.
- Newton's Gravity: $F_{1,2} = G \frac{m_1 m_2}{r^2}$.
- Trade Gravity: $X_{ij} = \frac{Y_i Y_j}{\phi_{ij}}$ with ϕ_{ij} a function of geographical, linguistic, political, cultural distance.
- $\approx 80\%$ of trade can be explained by gravity forces.

How economists think about globalization

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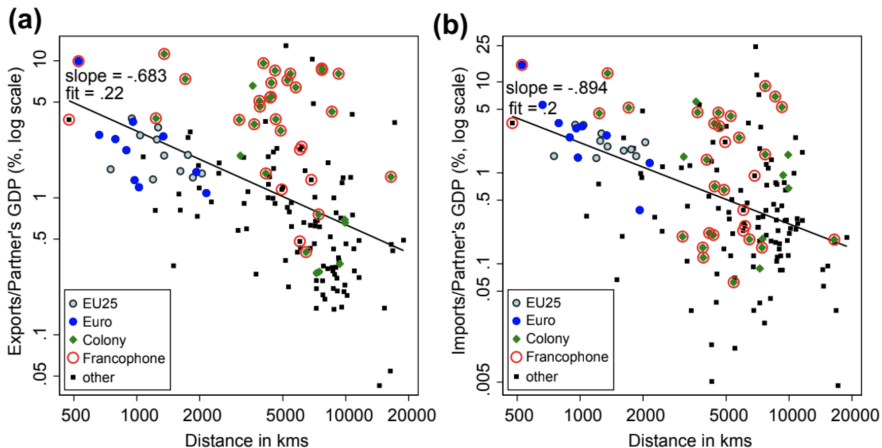


Figure 3.2 Trade is Inversely Proportional to Distance; (a) France's Exports (2006); (b) France's Imports (2006)

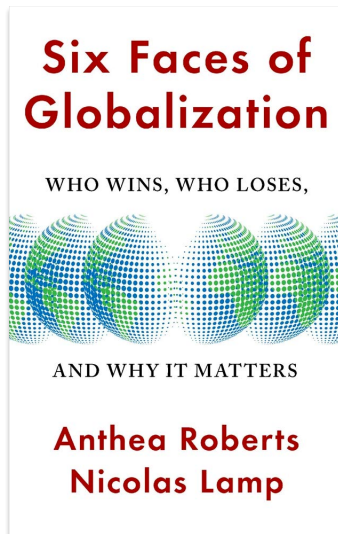
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- $\approx 80\%$ of trade can be explained by gravity forces.
- Works well for other bilateral forces: investment, trade in services, migration, diseases, etc.

What are the effects of globalization?

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 - Globalization have increased global threats (global warming, pandemics, etc.) (*global threats narrative*)
- Additional narratives exist: *neo-colonial narrative*, *rising-Asia narrative*, *Western hegemony narrative*, etc.

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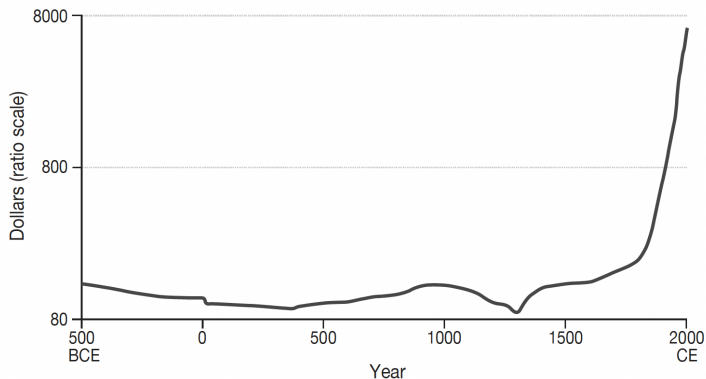


Fig. 3.1: The Hockey Stick of Human Prosperity

Note: This graph shows annual world GDP from 500 BCE to 2000 CE (in 1990 international dollars).

Credit: Reformatted from Victor V. Claar, "The Urgency of Poverty and the Hope of Genuinely Fair Trade," *Journal of Markets and Morality* 16, no. 1 (Spring 2013): 273–279, figure 1.

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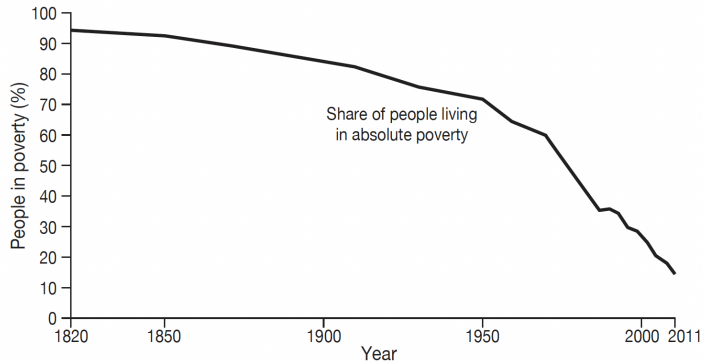


Fig. 3.2: The Declining Share of People Living in Absolute Poverty

Note: This graph shows the declining share of people living in absolute poverty from 1820 to 2011.

Narratives about globalization (Roberts and Lamp, 2021)

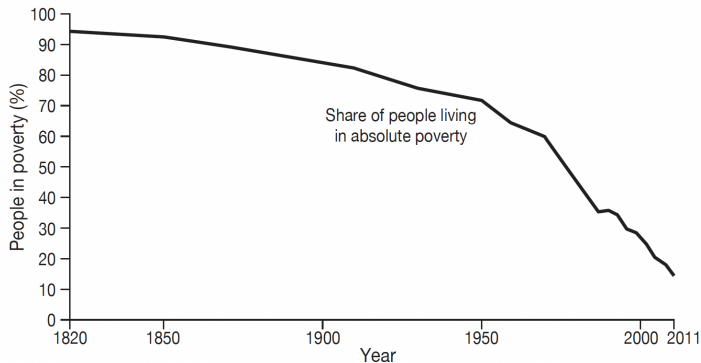
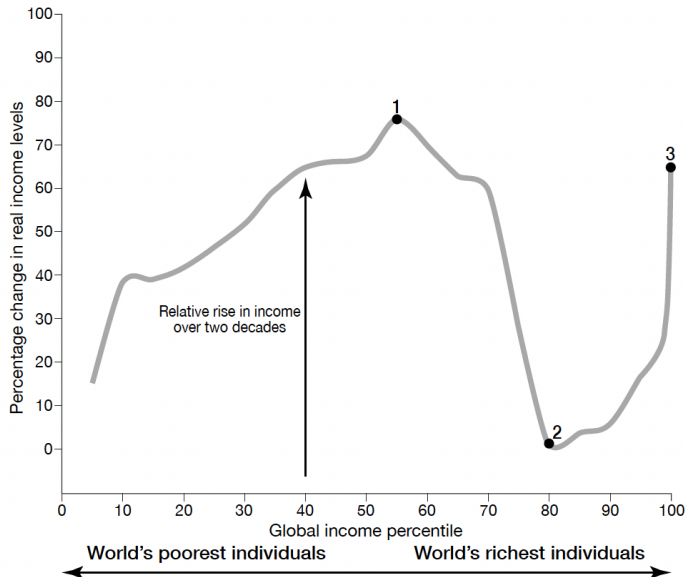


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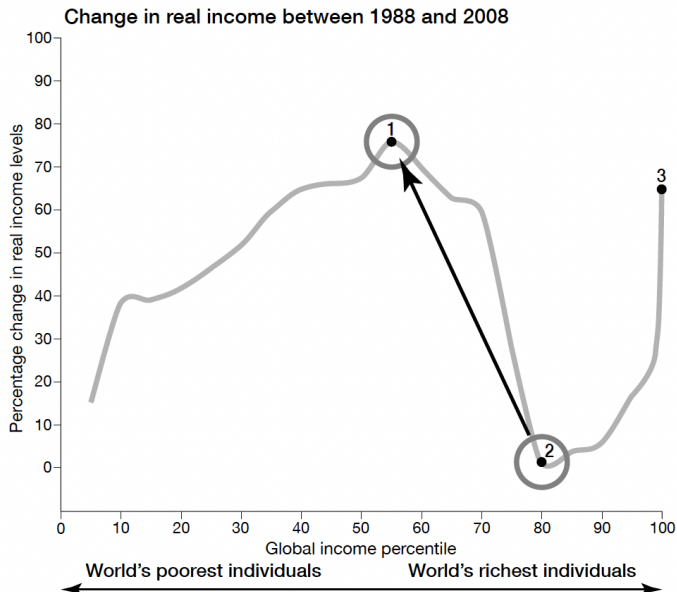
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Krugman (1999): “The raw fact is that every successful example of economic development this past century—every case of a poor nation that worked its way up to a more or less decent, or at least dramatically better, standard of living—has taken place via globalization; that is, by producing for the world market rather than trying for self-sufficiency”

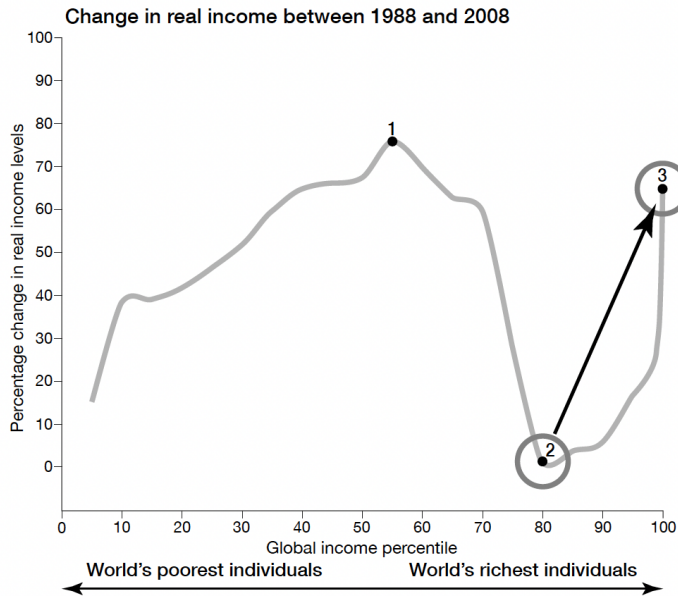
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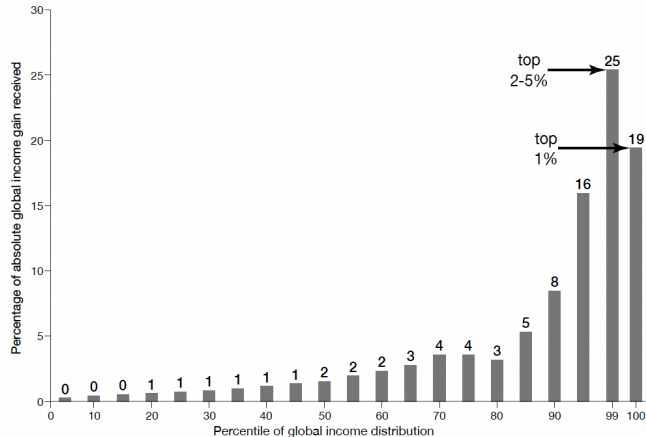


Fig. 2.4: Who Has Gained the Most in Absolute Terms?

Note: This graph shows the percentage of absolute real income gains received by individuals at different points in the global income distribution from 1988 to 2008 (the same period that is covered by the Elephant Graph).

Credit: Branko Milanovic, *Global Inequality: A New Approach for the Age of Globalization* (Cambridge, MA: The Belknap Press of Harvard University Press, 2016), figure 1.2.

Narratives about globalization

- At the end of this course you should be able to:
 - Distinguish each narrative.
 - Find the empirical evidence supporting them (or not).
 - Mobilize the economic theory to explain these narratives.
 - Make your own opinion about globalization.

Economics of Globalization

Sciences Po Saint-Germain-en-Laye

Last week

- Globalization is a multidimensional phenomenon.
- There exist different narratives about globalization.
- None of them is false *per se*: globalization has a variety of heterogeneous effects.
 - A society trades-off these effects and makes its choices according to the preferences of the population.

Trump tariffs

+ Add to myFT

US companies put brakes on hiring after Donald Trump's tariffs hit

Industries most exposed to rising costs caused by trade wars launch wave of job cuts



Policy topics

Policy topics

- Why and how to reform the institutions of globalization? **(23/09)**
- Should we sign new trade agreements? The case of EU-Mercosur **(30/09)**
- The return of Industrial Policies. Why and how to deal with them? **(07/10)**
- Should we keep going with Investor-State Dispute Settlements (ISDS) **(14/10)**
- How should we make multinational firms accountable? **(14/10)**
- The green transition in globalization rules: creating a Carbon Border Adjustment Mechanism or a Climate Club? **(04/11)**
- How to deal with the losers of globalization? **(18/11)**
- Should we tax the rich and/or provide them tax incentives? **(21/10)**
- Why and how to manage strategic dependencies? **(25/11)**
- Do trade sanctions work? Rationale and consequences of trade sanctions **(25/11)**

This week

- What is the state of globalization?
- How did we end up here?
- Who trade with whom?
- Reference for this course: [Goldberg \(2023\)](#).

This week

A lot a graphs but a few facts

- Fact 1: Globalization is an old phenomenon.
- Fact 2: It has grown rapidly in the post-WW2 era with changes in geography and in composition.
- Fact 3: ICT and transport technologies drove the rise of global integration. Trade policy also played an important role.
- Fact 4: Globalization relies on institutions.
- Fact 5: Global Value Chains (GVC) and value-added trade play a key role in today's globalization.
- Fact 6: Despite all of this, the world is not flat.

Globalization in the long run

- Globalization is a very old phenomenon.
- Humans constantly traveled and exchanged goods, ideas, knowledge, money.
- Large body of evidence about trade in ancient Mesopotamia.
 - Local trade from 5000 BC (Ubaid era) and long-distance trade from 4100 BC (Uruk era).
 - Excess supply in some goods and demand elsewhere generated these practices.
 - Ceramics, glass, grain, leather, oils, textiles, *etc.* where traded.
 - Some goods where coming from out of Mesopotamia: copper, ivory, pearls (Indus Valley), gold, silver, metals (Egypt and Minor Asia), *etc.*
 - According to some theories, trade (as well as the development of the State, of accounting, *etc.*) is associated to the birth and the diffusion of writing (see *e.g.* Schmandt-Besserat).
 - Trade is also associated with the rise of contracts (*e.g.* loans) between merchants.

Globalization in the long run

- Around 1BC, luxury goods from Asia appeared at the other end of the continent, moving through the Silk Road
- Spice trade then developed around the 7th century.
- A new era began with the when Europeans explorers reached the Americas. New goods where introduced in Europe (e.g. potatoes, tomatoes, coffee, or chocolate) and new trade, colonization, and slavery routes where set up.

Long run evidence about globalization

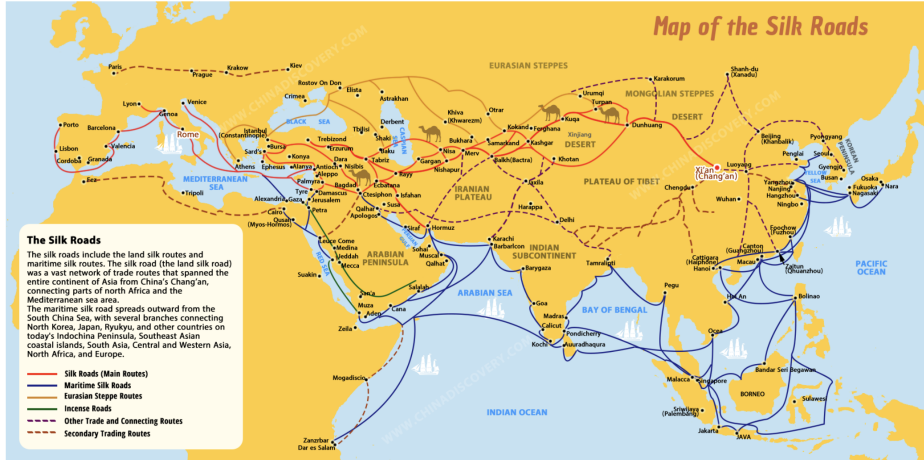


Mesopotamian Clay Tablet



Ennion Glass $\approx 0 - 50$

Silk Roads ($\approx$ 0-1500)



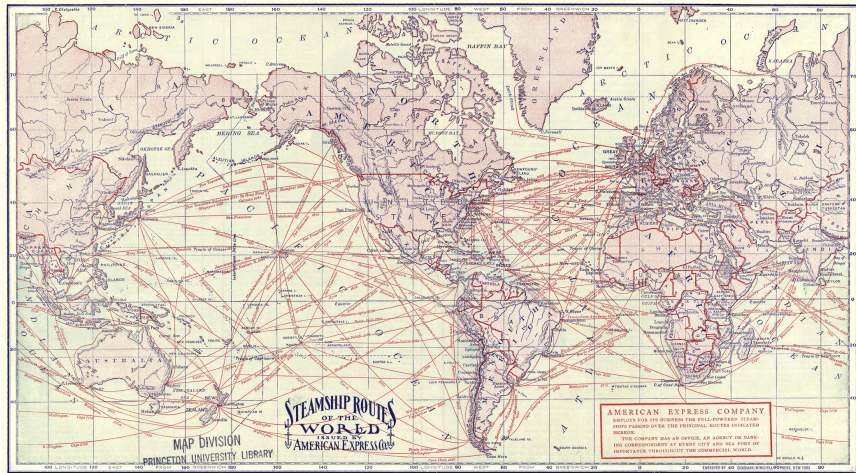
Globalization in the long run

TABLE 2.1. Interregional trade flows, ca. 1000.

To From								
	Western Europe	Eastern Europe	Islamic World	Central Asia	Sub-Saharan Africa	South Asia	Southeast Asia	East Asia
Western Europe	☒	Swords	Slaves, swords	—	—	—	—	—
Eastern Europe	Slaves, furs, silver	☒	Slaves, furs, silver	Furs, swords	—	—	—	—
Islamic World	Pepper, spices, textiles, silk, silver	Textiles, silver	☒	Textiles	Salt, textiles, manufactures, swords, horses	War horses	Gold	Spices
Central Asia	—	Silver	Paper, silver, slaves	☒	—	Silver, reexports from China and Muslim world	—	Horses
Sub-Saharan Africa	—	—	Gold, slaves, ivory, rice	—	☒	Timber, iron	—	—
South Asia	—	—	Pepper, spices, silk, teak, textiles	Pepper, textiles	Textiles	☒	Textiles, pepper	Textiles
Southeast Asia	—	—	Spices, perfumes	—	—	Silk, spices, teak, rice, rubies	☒	Perfumes, spices, sandalwood
East Asia	—	—	Silk, porcelain	Silk, tea	—	Silk, porcelain	Silk, copper, cash	☒

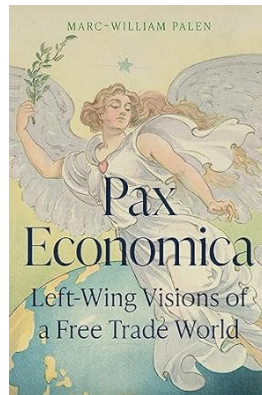
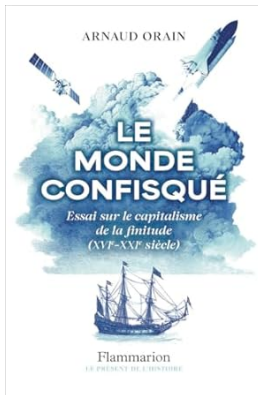
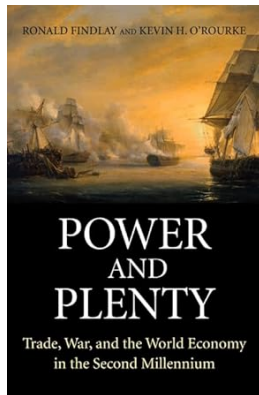
Long run evidence about globalization

Steamship Routes around 1900



Long run evidence about globalization

Three great books



Long run evidence about globalization

Orders of magnitude

- During the period 1950-2011:
 - World trade in value has been multiplied by a factor of 290.
 - World GDP has been multiplied by a factor of 8.9.
 - It corresponds to an annual growth of 11% and 3%.

Long run evidence about globalization

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Long run evidence about globalization

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 - Side question: At the country level, can $X > GDP$?
 - Yes, because GDP is a value added concept and exports are not.
 - $GDP = C + I + G + (X - M)$.
 - If I import a lot, add few value and then re-export I boost my export-to-GDP ratio.

Long run evidence about globalization

Orders of magnitude

- During the period 1950-2011:
 - World trade in value has been multiplied by a factor of 290.
 - World GDP has been multiplied by a factor of 8.9.
 - It corresponds to an annual growth of 11% and 3%.
- Over this period:
 - Change in geography.
 - Change in composition.

Long run evidence about globalization

World exports over GDP

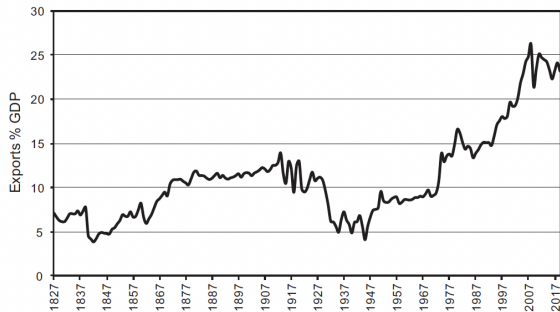


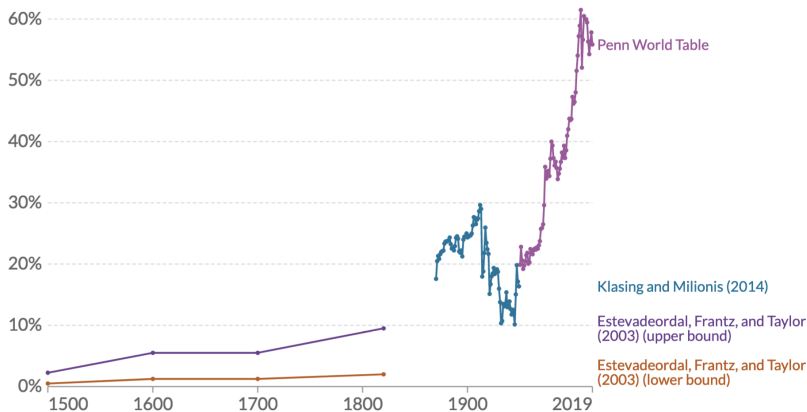
Figure 1.2

The age of globalization: World exports as percentage of GDP, 1827–2019.

Source: Data from 1827 to 2014 from Michel Fouquin and Jules Hugot, “Two Centuries of Bilateral Trade and Gravity Data: 1827–2014” (CEPII Working Paper No. 2016–14, May 2016), http://www.cepii.fr/pdf_pub/wp/2016/wp2016-14.pdf. Data from 2015 to 2019 extends Fouquin and Hugot, “Two Centuries of Bilateral Trade and Gravity Data,” using the author’s estimates derived from World Bank, “Exports of Goods and Services (% of GDP),” World Bank Group, accessed July 25, 2022, <https://data.worldbank.org/indicator/NE.EXP.GNFS.ZS>.

Long run evidence about globalization

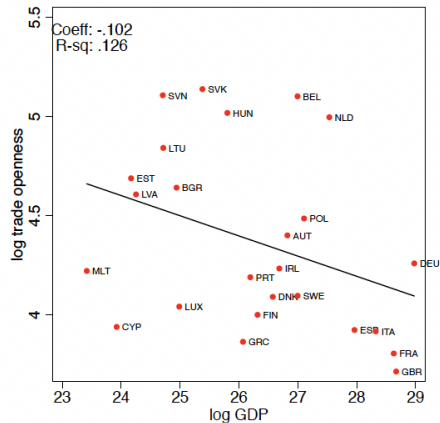
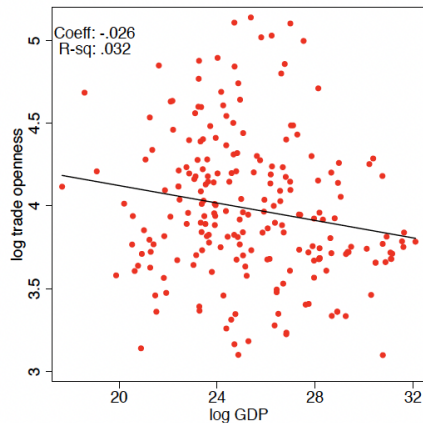
Openness rate: Exports + Imports over GDP



Source: Feenstra et al. (2015), Penn World Table (2021), Estevadeordal, Frantz, and Taylor (2003), Klasing and Milionis (2014)
OurWorldInData.org/trade-and-globalization • CC BY

Long run evidence about globalization

Globalization indexes



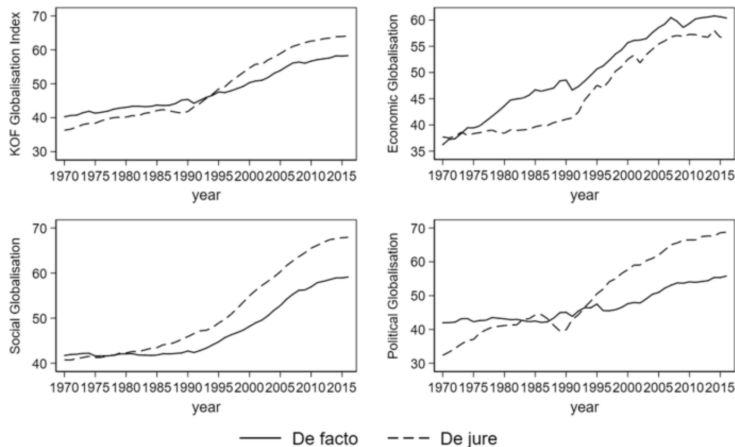
Long run evidence about globalization

Globalization: the multidimensional KOF globalization index

Globalisation Index, de facto	Weights Globalisation Index, de jure		Weights
Economic Globalisation, de facto	33.3	Economic Globalisation, de jure	33.3
Trade Globalisation, de facto	50.0	Trade Globalisation, de jure	50.0
Trade in goods	38.8	Trade regulations	26.8
Trade in services	44.7	Trade taxes	24.4
Trade partner diversity	16.5	Tariffs	25.6
		Trade agreements	23.2
Financial Globalisation, de facto	50.0	Financial Globalisation, de jure	50.0
Foreign direct investment	26.7	Investment restrictions	33.3
Portfolio investment	16.5	Capital account openness	38.5
International debt	27.6	International Investment Agreements	28.2
International reserves	2.1		
International income payments	27.1		
Social Globalisation, de facto	33.3	Social Globalisation, de jure	33.3
Interpersonal Globalisation, de facto	33.3	Interpersonal Globalisation, de jure	33.3
International voice traffic	20.8	Telephone subscriptions	39.9
Transfers	21.9	Freedom to visit	32.7
International tourism	21.0	International airports	27.4
International students	19.1		
Migration	17.2		
Informational Globalisation, de facto	33.3	Informational Globalisation, de jure	33.3
Used internet bandwidth	37.2	Television access	36.8
International patents	28.3	Internet access	42.6
High technology exports	34.5	Press freedom	20.6
Cultural Globalisation, de facto	33.3	Cultural Globalisation, de jure	33.3
Trade in cultural goods	28.1	Gender parity	24.7
Trade in personal services	24.6	Human capital	41.4
International trademarks	9.7	Civil liberties	33.9
McDonald's restaurant	21.6		
IKEA stores	16.0		
Political Globalisation, de facto	33.3	Political Globalisation, de jure	33.3
Embassies	36.5	International organisations	36.2
UN peace keeping missions	25.7	International treaties	33.4
International NGOs	37.8	Treaty partner diversity	30.4

Long run evidence about globalization

Globalization: the multidimensional **KOF globalization index**

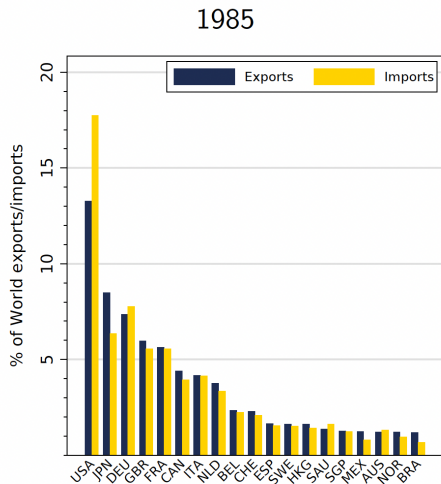
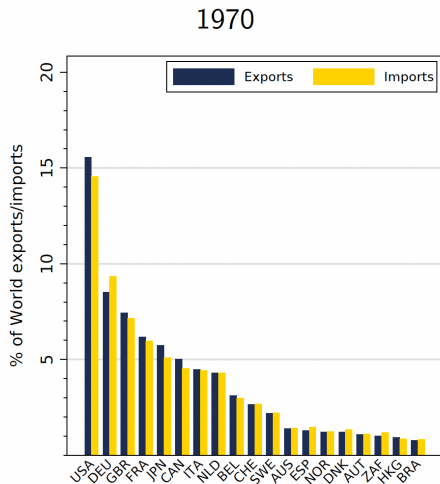


KOF Globalisation Index - de facto versus de jure globalization

Gygli et al. , 2019

Long run evidence about globalization

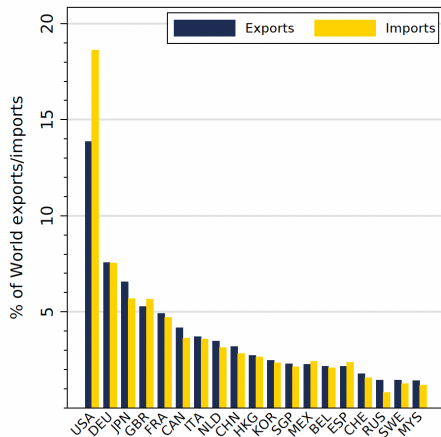
The evolving geography of trade



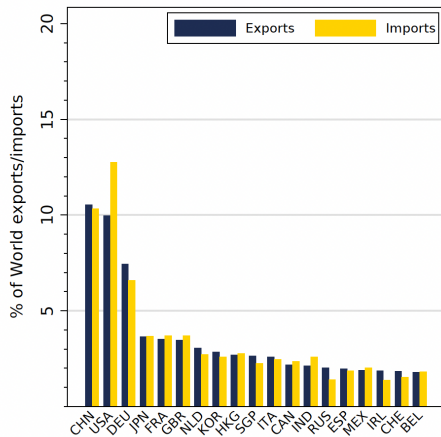
Long run evidence about globalization

The evolving geography of trade

2000



2018



Recent trends in globalization

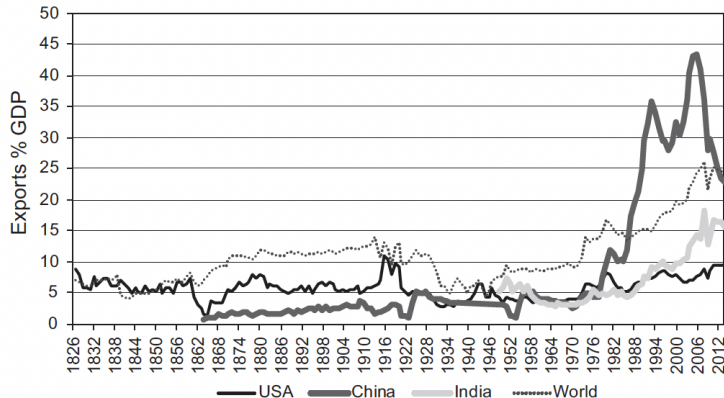


Figure 1.3

The age of globalization: Exports as percentage of GDP, 1827–2014. *Source:* Michel Fouquin and Jules Hugot, “Two Centuries of Bilateral Trade and Gravity Data: 1827–2014” (CEPII Working Paper No. 2016–14, May 2016), http://www.cepii.fr/pdf_pub/wp/2016/wp2016-14.pdf.

Recent trends in globalization

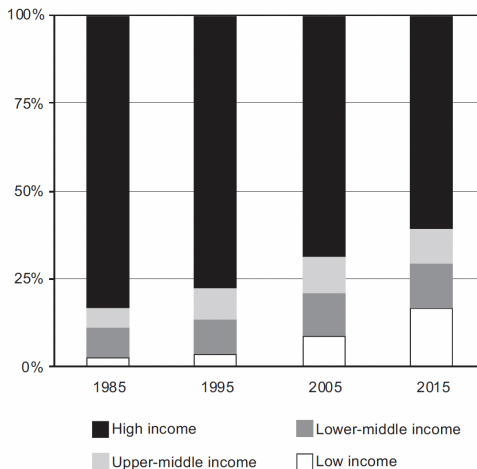
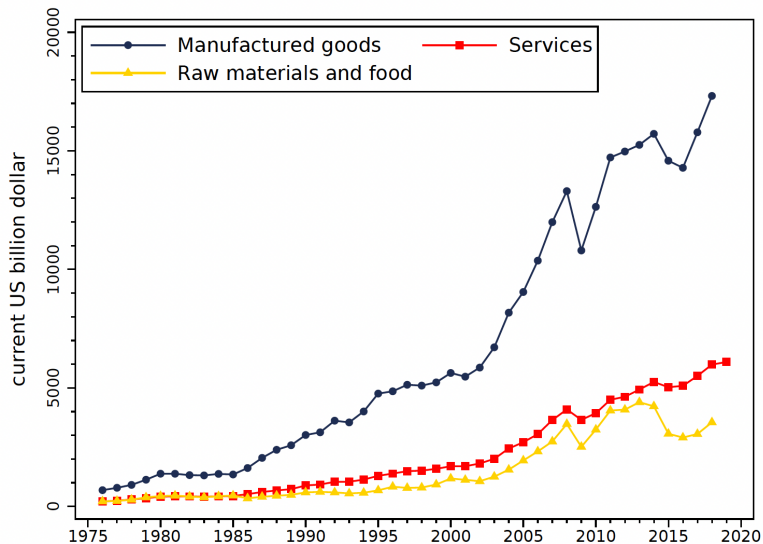


Figure 1.4

Composition of world exports by income group. *Source:* Nina Pavcnik, "The Impact of Trade on Inequality in Developing Countries," *Jackson Hole Economic Policy Symposium Proceedings* (Kansas City: Federal Reserve Bank of Kansas City, August 2017), 67.

Recent trends in globalization

What do country trade?

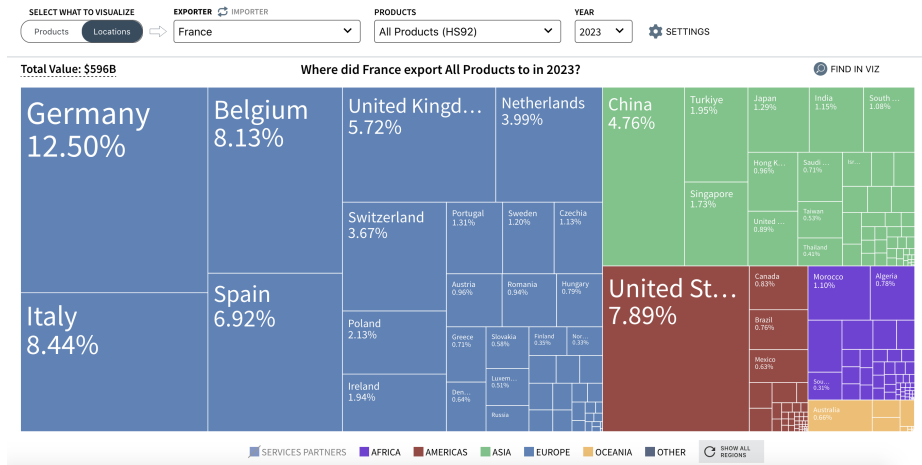


Recent trends in globalization

What do France trade, and with whom? Source: The Atlas of Economic Complexity

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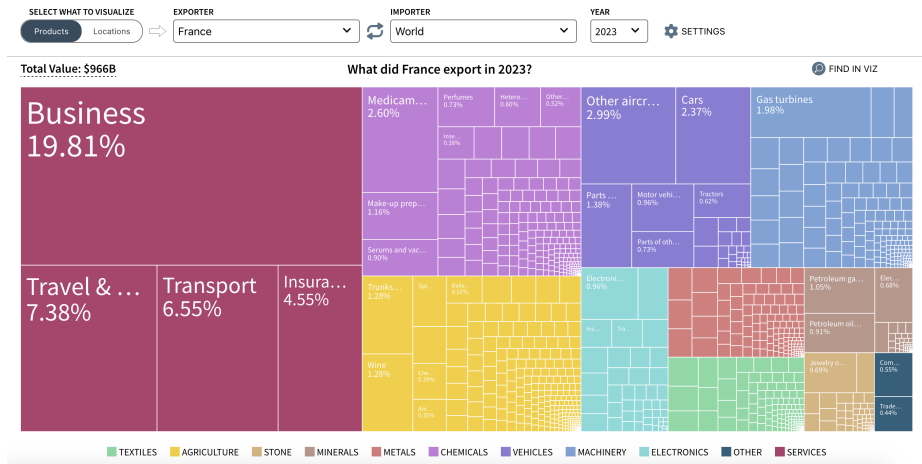


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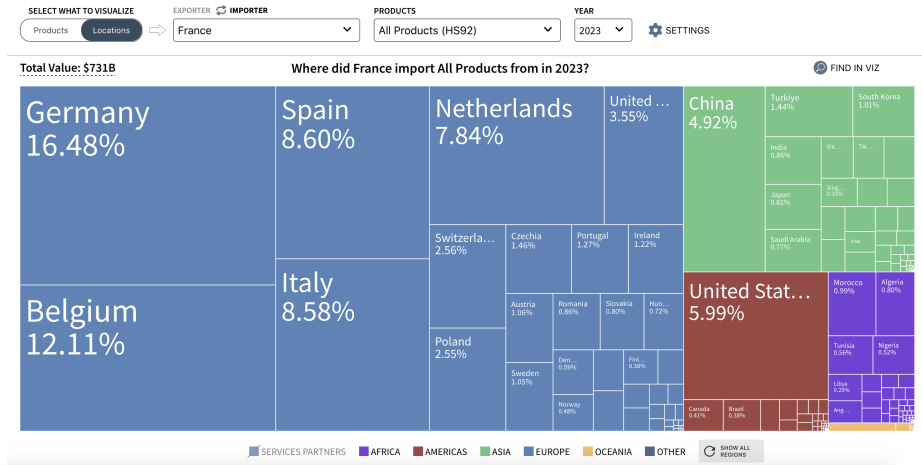
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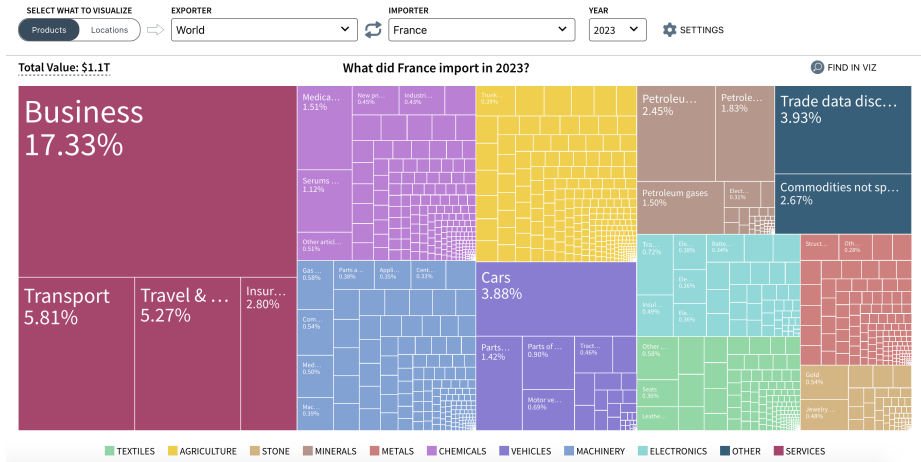
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Recent trends in globalization

The fragmentation of production processes: Global Value Chains (GVCs)

- Trade is more and more fragmented. What does it mean?

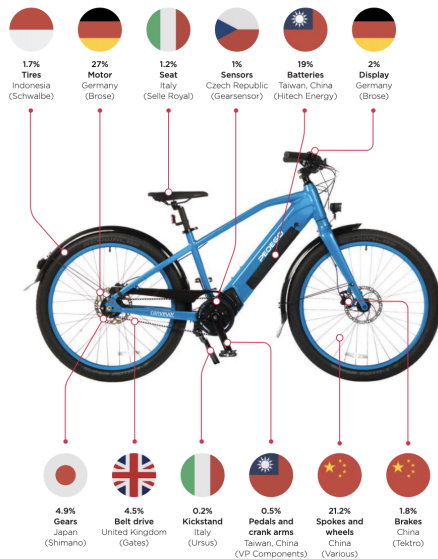
Recent trends in globalization

The fragmentation of production processes: Global Value Chains (GVCs)

- Trade is more and more fragmented. What does it mean?
- The production of a given good is more and more fragmented between firms and countries.
- Firms are looking for the best opportunities to produce: parts and components are then moving across the globe.

Recent trends in globalization

The fragmentation of production processes: Global Value Chains (GVCs)



Recent trends in globalization

Share of World Exports that flow through at least two borders

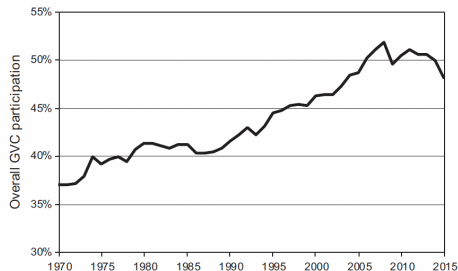


Figure 1.8

GVC trade, 1970–2015. *Note:* GVC participation measures used in this and subsequent figures throughout the monograph follow the methodology from Alessandro Borin and Michele Mancini, “Follow the Value Added: Bilateral Gross Export Accounting” (Temi di discussione [Economic Working Paper] 1026, Economic Research and International Relations Area, Bank of Italy, 2015); Alessandro Borin and Michele Mancini, “Measuring What Matters in Global Value Chains and Value-Added Trade” (Policy Research Working Paper 8804, World Bank, Washington, DC, April 2019), <https://openknowledge.worldbank.org/handle/10986/31533>. *Sources:* World Bank, *World Development Report 2020: Trading for Development in the Age of Global Value Chains* (Washington, DC: World Bank, 2019), 20 using data from Eora26 database; Borin and Mancini, “Measuring What Matters in Global Value Chains and Value-Added Trade”; Robert Johnson and Guillermo Noguera, “A Portrait of Trade in Value Added over Four Decades,” *Review of Economics and Statistics* 99, no. 5 (December 2017):

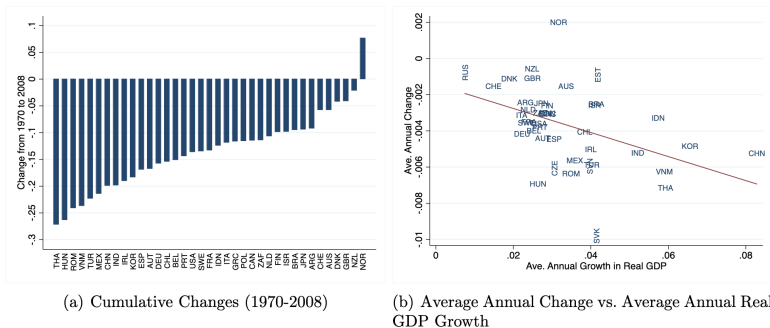
The fragmentation of production processes: Global Value Chains (GVCs)

Trade in value added

- Exports and imports do not measure the value added by the exporter.
- Studies suggest that the Chinese manufacturer of the Iphone only adds $\approx 3\%$ of the value of the factory gate price ($\approx 200\$$).
- The rest come from the value of inputs imported from other countries.
- However it still counts as 200\$ of exports from China to the U.S, increasing artificially China's trade.
- The OECD now tries to measure trade in value-added.
- Note that intermediate services add a lot a value added: distribution, transport, finance and insurance, business services, communication and information.

The fragmentation of production processes: Global Value Chains (GVCs)

Figure 3: Changes in Ratio of Value-Added to Gross Exports, by Country



Note: Real GDP data is from the UN National Accounts Database. Panel (a) includes 37 countries for which we have data back to 1970. All countries are included in Panel (b), and vertical labels denote countries with less than 40 years of data. Red line denotes least squares regression line.

Source: Johnson and Noguera, 2017

The drivers of the expansion of trade

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- Technology

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 - ICT (telegraph, phone, mobile phones, internet) ease communication around the world
 - Ease the diffusion of information.

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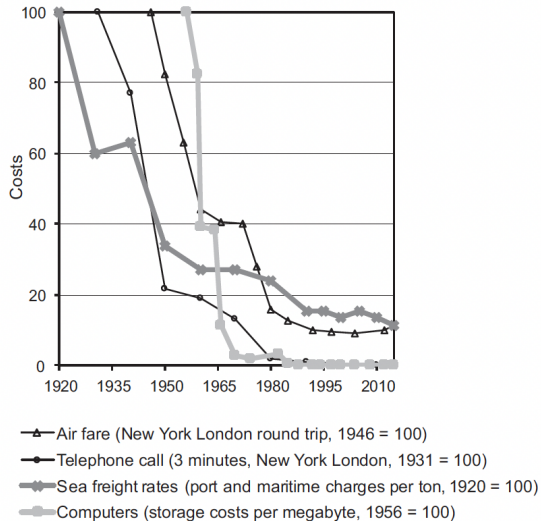
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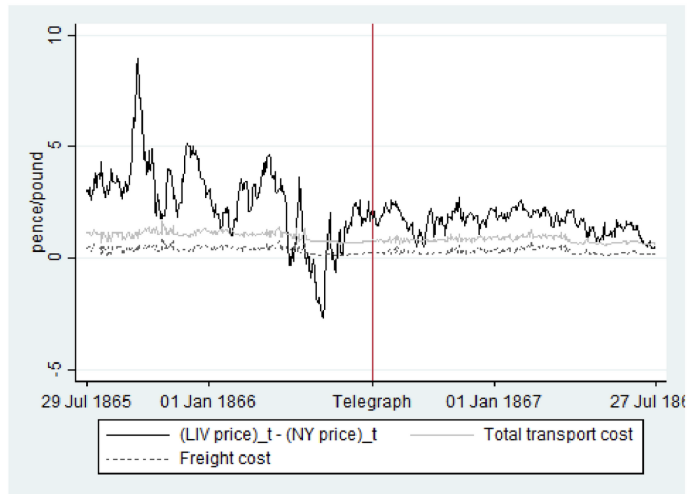
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 - Better access to trade finance, to insurance, less exchange rate volatility.
- Trade policy
 - Global organization of trade through GATT and WTO.
 - Regional integration (EU, NAFTA, Mercosur).
 - Political choices matter!

The role of technology



The role of technology

The introduction of the telegraph in the 19th century: effect on cotton prices



The role of technology: the case of transport

- Important innovations in terms of transport and transport infrastructures have always fueled trade.
 - e.g. Steamship, canals, maritime chronometer, etc.
 - Steamship reduced sailing time by one-half and might be responsible of half of the trade boom observed at the end of the 19th century.
- The invention of containers is key to understand the development of world trade.
 - Estimation of +700% of trade over 20 years (Bernhofen et al., 2016).
 - Way larger effect than trade agreements.
 - Effect on non-container goods.

The role of technology: the case of transport

Pascali, 2017

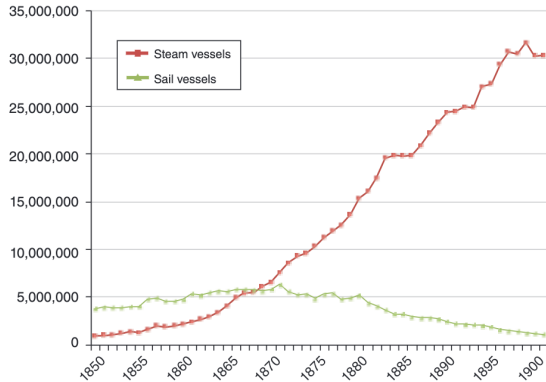


FIGURE 3. TOTAL TONNAGE OF BRITISH VESSELS ENTERED IN BRITISH PORTS FROM AND TO FOREIGN COUNTRIES AND BRITISH POSSESSIONS

Source: *Statistical Abstract* for the United Kingdom (various years from 1851 to 1901)

The role of technology: the case of transport

Containerization



Breakbulk shipping, 1950s

The role of technology: the case of transport

Containerization



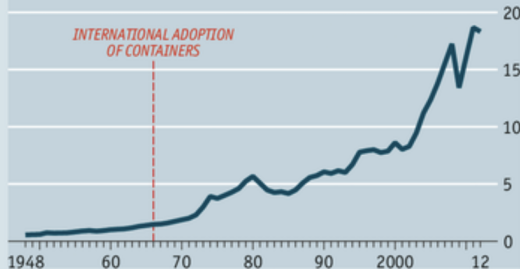
The role of technology: the case of transport

Bernhofen et al. (2016)

Thinking inside the box

World merchandise trade

2012 prices*, \$trn



Sources: World Trade Organisation; US Bureau of Labour Statistics;
Daniel Bernhofen et al; *The Economist*

Ports worldwide

	1965	1970
Port labour productivity, tonnes per hour	1.7	30.0
Average ship size, tonnes	8.4	19.7
Number of loading ports in Europe	11	3
Insurance costs [†] , £ per tonne	0.24	0.04
Value of goods in transit [‡] , £ per tonne	2	1

*Deflated by US consumer prices

[†]Australia to Europe [‡]Hamburg to Sydney

The role of trade policy

- Trade policy consists in the set of tools a government can use to open (or close) its country to trade
 - More on this in a few classes.
- After WWII, institutions have developed to coordinate trade policies: the GATT and then the WTO but also regional trade agreements such as NAFTA or the EU.
- Countries have access to a varieties of tools such as tariffs (taxes on imports), export subsidy, export taxes, non-tariff barriers (norms for instance).
- View among economist that the reduction of trade barriers cannot be the only driver of trade expansion, in particular recent ones.

The role of trade policy

Figure 2. U.S. Average Effective Tariff Rate Since 1790

Customs duty revenue as a percent of goods imports

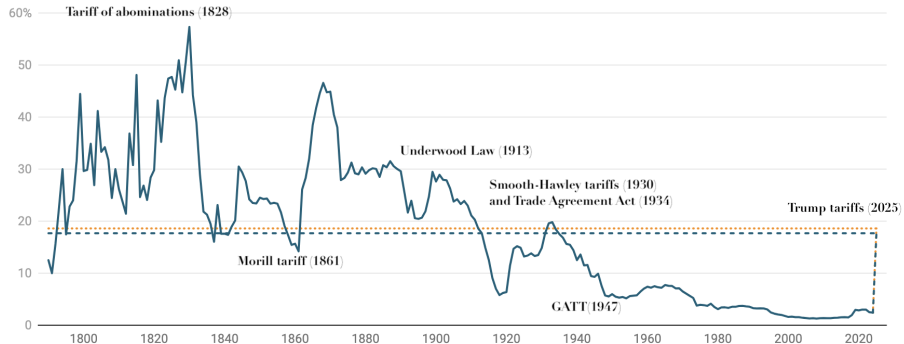
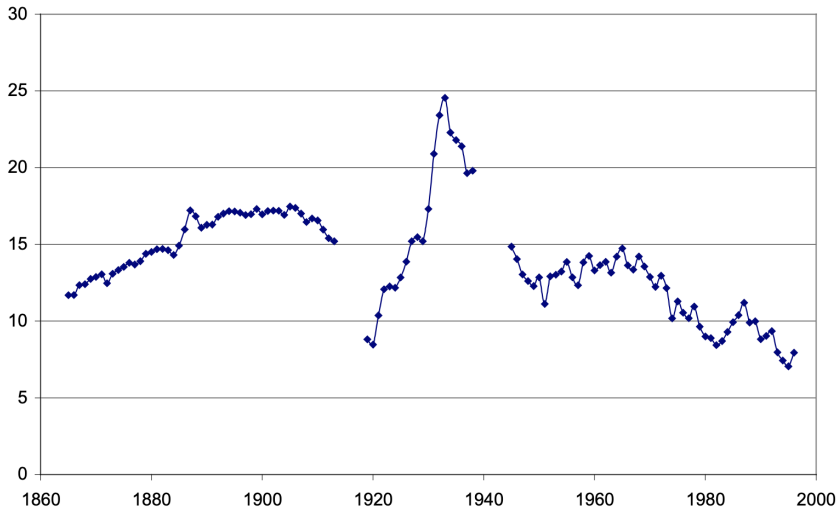


Chart: The Budget Lab • Source: Historical Statistics of the United States Ea424-434, Monthly Treasury Statement, Bureau of Economic Analysis, The Budget Lab analysis. • Created with [Datawrapper](#)

The role of trade policy

Figure 1: Unweighted World Average Own Tariff, 35 Countries, %



The role of trade policy

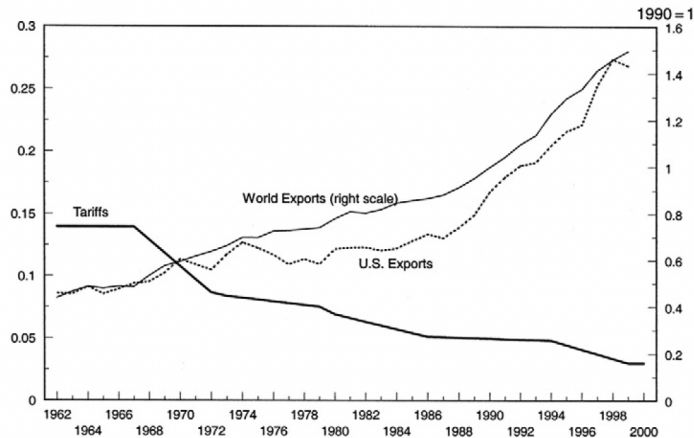


Figure 1.5

Manufacturing export share of GDP and manufacturing tariff rates.
Source: Kei-Mu Yi, "Can Vertical Specialization Explain the Growth of World Trade?," *Journal of Political Economy* 111, no. 1 (February 2003): 54.

The role of trade policy

- Goldberg (2023) argues that reducing trade barriers matter a lot to boost trade.
 - If tariffs decrease slowly in developed countries in the recent periods, the decrease is more important in developing countries.
 - Global value chains (GVCs) magnify the impact of tariffs (because many frontiers need to be passed for one good to be made). Then it should magnify the elasticity of trade to tariffs: small tariff change can have big effects.
 - Non-trade barriers decreased a lot with standardization efforts of international institutions and regional agreements.

The institutions of globalization

- Globalization calls for collective action.

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→ National policies create international externalities requiring coordination

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 - Free riding
 - Need of mutual trust

The institutions of globalization

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 - Trade, investment, health, tax, environment, etc.
- Threats to collective action
 - Beggar-thy-neighbor
 - Free riding
 - Need of mutual trust
- Institutions must balance **legal** challenges, with **political** power and **economic** incentives.

The institutions of globalization

What is Game Theory?

- Game theory is the study of strategic decision-making among rational agents whose payoffs depend on the actions of others.
 - Key elements
 - **Players:** Decision makers (countries, firms, individuals)
 - **Strategies:** Available actions for each player
 - **Payoffs:** Outcomes/utilities resulting from strategy combinations
 - **Information:** What players know about the game
- We study models: simplifications of the reality to isolate mechanisms.
- In International Economics, global coordination problems arise when countries' optimal individual choices lead to collectively suboptimal outcomes.

The institutions of globalization

Nash Equilibrium

- A Nash Equilibrium is a strategy profile where no player can unilaterally improve their payoff by changing their strategy, given the strategies of other players.
- Intuition
 - Each player's strategy is a best response to others' strategies.
 - No player has an incentive to deviate unilaterally.
 - Represents a stable outcome of strategic interaction.
- Nash equilibria predict likely outcomes of strategic interactions, but may not be socially optimal!

The institutions of globalization

How to Solve 2×2 Games

Step 1: Analyze the matrix

Player 1	Player 2	
	Strategy 1	Strategy 2
Strategy 1	(a, w)	(b, x)
Strategy 2	(c, y)	(d, z)

Step 2: Find best responses

- For each player, compare payoffs
- Mark best responses with *

Step 3: Identify equilibria

- Nash equilibrium = both players playing best responses simultaneously
- Look for cells where both payoffs are marked with *

Types of games:

- Zero equilibria (rare)
- One equilibrium
- Multiple equilibria

The institutions of globalization

Beggar-Thy-Neighbor: International Trade Wars

Context

Two major economies face recession and consider protectionist measures. Each can maintain free trade or impose tariffs to protect domestic industries at their trading partner's expense.

The institutions of globalization

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Country A	Country B	
	Free Trade	Impose Tariffs
Free Trade	(3, 3)	(0, 5)
Impose Tariffs	(5, 0)	(1, 1)

The institutions of globalization

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Country A	Country B	
	Free Trade	Impose Tariffs
Free Trade	(3, 3)	(0, 5)
Impose Tariffs	(5, 0)	(1, 1)

Analysis:

- Dominant Strategy: Each country prefers tariffs regardless of opponent's choice
- Nash Equilibrium: (Tariffs, Tariffs) with payoffs (1, 1)
- Social Optimum: (Free Trade, Free Trade) with payoffs (3, 3)

→ Need for policy coordination

The Institutions of Globalization: Historical Foundations

- **Peace Treaties:** International agreements establishing conditions for stability

The Institutions of Globalization: Historical Foundations

- **Peace Treaties:** International agreements establishing conditions for stability
 - *Example:* Congress of Vienna (1814-1815) reshaping post-Napoleonic Europe

The Institutions of Globalization: Historical Foundations

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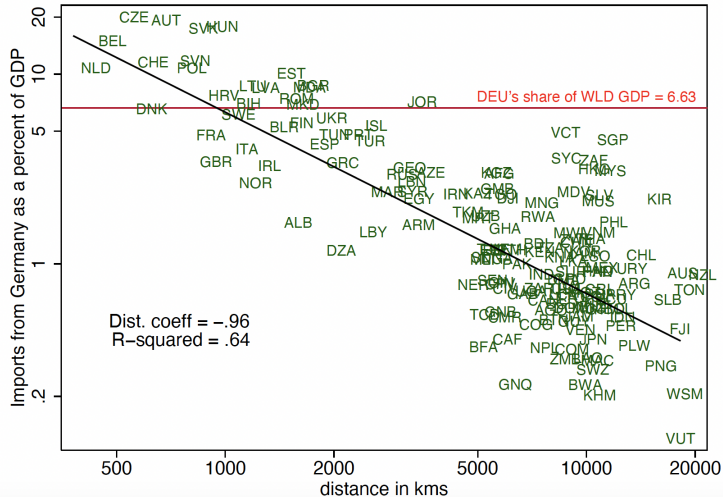
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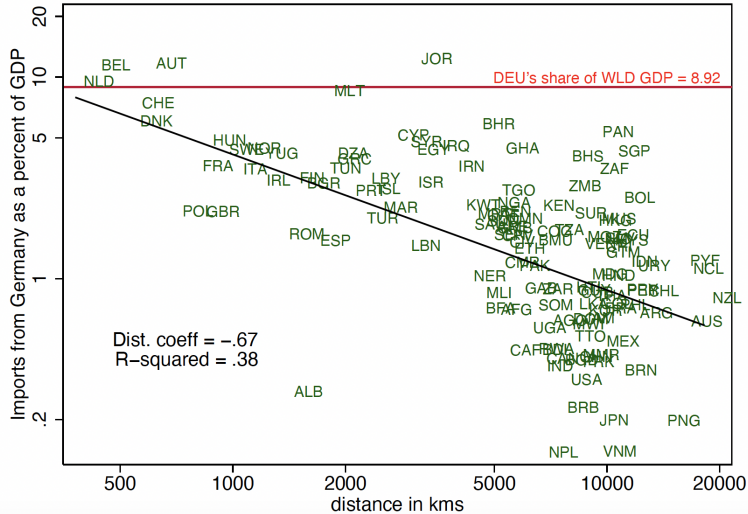
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Germany in 2006



Germany in 1976



Economics of Globalization

Sciences Po Saint-Germain-en-Laye

This week

- Why do countries trade?
- What are the theoretical gains and losses from trade?
- How all countries can gain from trade (*The establishment narrative*)?

China's industrial policy

The economist Barry Naughton, renowned guru of Chinese industrial policy, has [described China](#) as being engaged in 'the greatest single commitment of government resources to an industrial policy objective in history.' Other estimates as to the measurable cost of Chinese industrial policy have been made by [the OECD](#), [the CSIS](#), and the [Kiel Institute](#). Ballpark — these come to around 1.5-2 per cent of GDP, or 4-5 times that of large OECD countries.

But China's industrial policy only makes sense if one also acknowledges its geopolitics too. Not to mince words, China's industrial policy is a state-backed effort to knock the United States off the perch of global technological leadership. Having missed out on the mechanisation, electrification and information revolutions, as the CCP narrative has it, China — following Marxist doctrine about the role of 'productive forces' — must now try to dominate the fourth industrial revolution. And this means new technologies including AI, big data, quantum computing and biotechnology. Unlike other nations that have used industrial policy to catch their rivals, China wants to leapfrog them.

What is a model?

- A model is not the real world, it is a simplified version of it.
 - All models are wrong but some are useful.
 - It is an abstract construct that aims at understanding how things work.
 - It (generally) isolates a few mechanisms and let the other apart (given or not modeled).
- Important part of scientific reasoning: build hypothesis, study their consequences and test them empirically. Discard them if they do not work.

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- Results:
 - What quantities are traded at equilibrium? What are the prices and quantities?
 - How outcomes change when elements of the model are modified? (e.g. how trade moves when trade barriers are relaxed?).

Trade models

- Long history of trade models that target different mechanisms.
- Some of them are focused on the role of cross-country differences to explain trade:
 - **Technology** (Ricardian model): Price differences between countries come from differences in productivity.

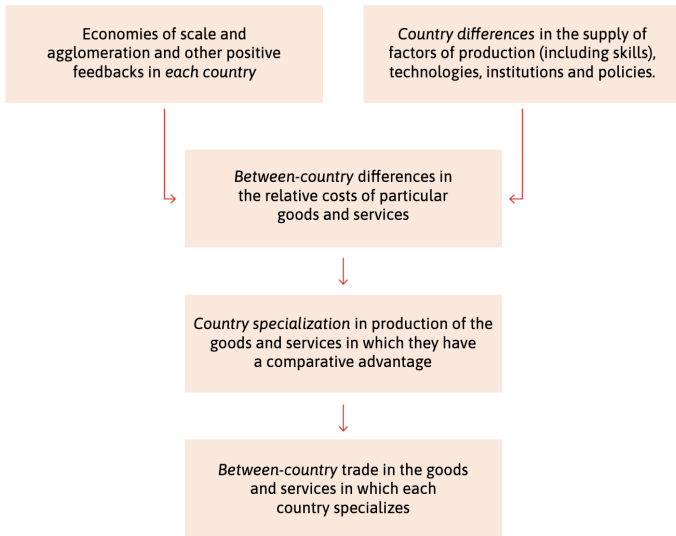
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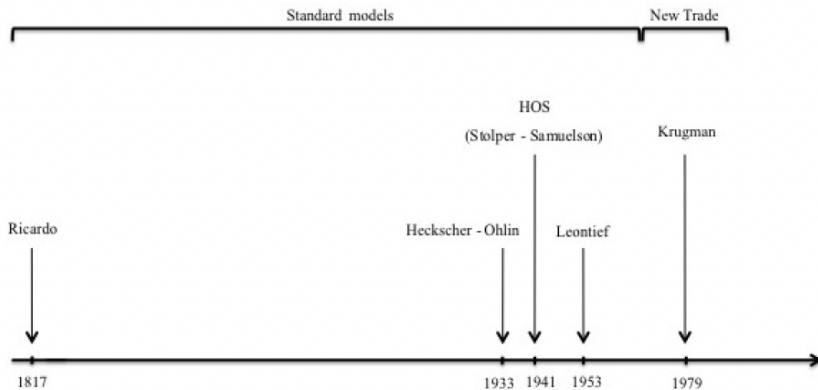
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 - **Endowments** (Heckscher-Ohlin model): Price differences between countries come from differences in factor endowments.
- Other do not need country differences to explain trade:
 - **Economies of scale** generate the international division of labor through specialization.
- These models need to be seen as complementary (not substitutable). All are useful to understand some characteristics of trade.

The Ricardian Model



Trade models



The Ricardian Model

- What is the impact of opening to trade?
 - Fear of job losses in some industries.
 - Expectations of lower prices.
 - Overall, will trade be good for an economy as a whole?
- The Ricardian model explains trade through international differences in technology.
- Because countries are not all good at producing the same thing, there can be gains if each country specializes in what it does better.

The Ricardian Model

Intuition

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- Now assume that each country fully specializes.
 - France produces 10000 cars.
 - Cambodia produces 10000 shirts.

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Intuition

- The world experiences a net gain. With the exact same workforce employed, the world produces 10000 shirts and 10000 cars.
- This is because China is relatively more productive in producing shirts.
- It is better to specialize in it and let France produce cars.
- These are **specialization** gains.
- There are also **exchange** gains coming from the fact that consumers can consume goods produced abroad.

The Ricardian Model

Definitions

- A country has an **absolute advantage** for a good if its productivity for the production of that good is higher compared to other countries (Adam Smith).
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- One day the mathematician Stanislaw Ulam asked Paul Samuelson about one idea in the social sciences that is both true and non-trivial. A few years later, Samuelson answered that the theory of comparative advantages is one of them.

The Ricardian Model

Assumptions

- There are 2 countries, 2 homogeneous goods, one factor of production (labor).
- Production technologies differ across countries. This is the only thing that differ.
- Constant return to scale.
- Perfect competition (free entry implies 0 profits).
- Identical preferences across countries.
- Workers move freely across sectors but do not move across borders.
- Full-employment.
- No transaction costs.

The Ricardian Model

Table: Number of hours necessary to produce a good

	Boats	Cars
Germany	100	50
France	125	125

- Who has an absolute advantage in the production of boats ? And cars ?

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- Who has an absolute advantage in the production of boats ? And cars ?
- Is there still room for specialization?
- Yes because the advantage is not the same in both sectors.
- German workers are much more efficient in producing cars than boats.

The Ricardian Model

- Think in terms of **opportunity costs**. What do you lose if you produce boats instead of cars?

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- It is less costly to increase the production of boats in France than in Germany.
- **Comparative advantage in a good when a country can produce it at a lower opportunity cost than another country.**
 - France has a **comparative advantage in boats**.
 - The converse is true so that Germany has a **comparative advantage in cars**.

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Assume there are 500 hours of work in each economy.

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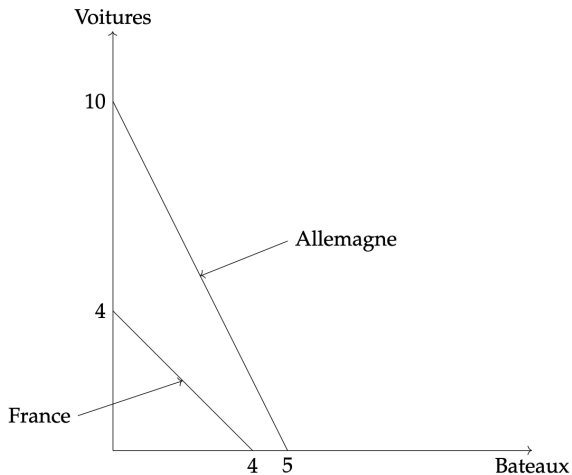


Figure: Production Possibility Frontier

The Ricardian Model

Example

- In France, 1 boat is worth 1 car. This is the relative price of a boat in France (in terms of cars): $p^{France} = \frac{p_{boat}^{France}}{p_{car}^{France}} = 1$
- In Germany, it is 2: one boat costs two cars: $p^{Germany} = \frac{p_{boat}^{Germany}}{p_{car}^{Germany}} = 2$
- If you're French and produce cars (4 a year), you'd better produce boats (4 a year), go to Germany, and sell your boats at the local price (2 cars). Why?

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- If you're German and produce boats (5 a year), you'd better produce cars (10 a year), go to France, and sell your cars at the local price (1 boat). Why?

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- **Both countries gain to trade!**

The Ricardian Model

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 - What happens if there are transaction costs?
- Let's assume that the price is between 1 and 2 once borders are opened: $p \in (1, 2)$

The Ricardian Model

- France can produce one boat or one car and can sell boats for a price larger than 1.
- It's better to produce only boats, so France will produce 4 boats.
- These boats can be exported in Germany against p cars, with $p < 2$.

The Ricardian Model

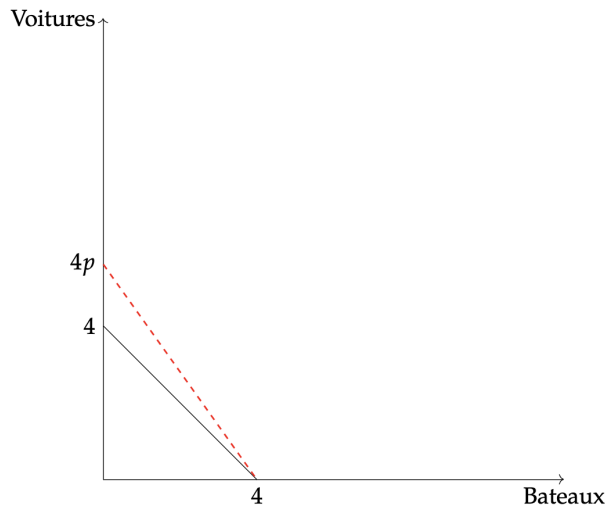


Figure: Possibility of productions frontier in France in close and open economy.

The Ricardian Model

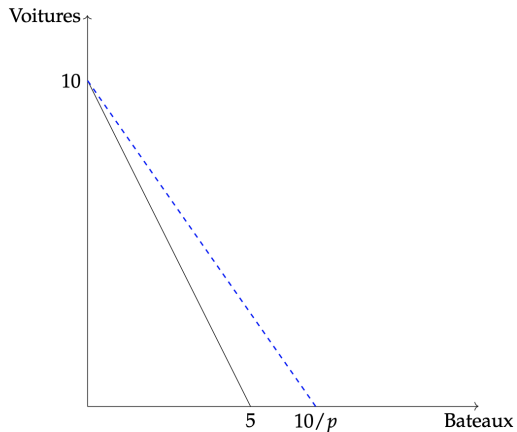


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- Same for France if $p < 1$.

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- If it is close to 2, French can buy more cars with the same number of boats.
- What happens if $p \geq 2$?
- Germany does not specialize: it becomes cheaper to produce locally than to trade.
- Same for France if $p < 1$.
- When $p \in (1, 2)$, France produces 4 boats and Germany 10 cars.
- If $p < 1$, France and Germany produce cars only: 14 cars are produced.
- If $p > 2$, France and Germany produce boats only: 9 boats are produced.

The Ricardian Model

- This determines the **supply** of the model.
- Again, we rely on relative supply: $S(p) = \frac{S_{boats}(p)}{S_{cars}(p)}$

Price	< 1	$= 1$	$p \in]1, 2[$	$= 2$	> 2
Boats produced by France	0	$\in [0, 4]$	4	4	4
Boats produced by Germany	0	0	0	$\in [0, 4]$	5
Cars produced by France	4	$\in [0, 4]$	0	0	0
Cars produced by Germany	10	10	10	$\in [0, 10]$	0
Relative supply	0	$\in [0, \frac{4}{10}]$	$\frac{4}{10}$	$\in [\frac{4}{10}, \infty]$	∞

- We also define relative demand: $D(p) = \frac{D_{boats}(p)}{D_{cars}(p)}$

The Ricardian Model

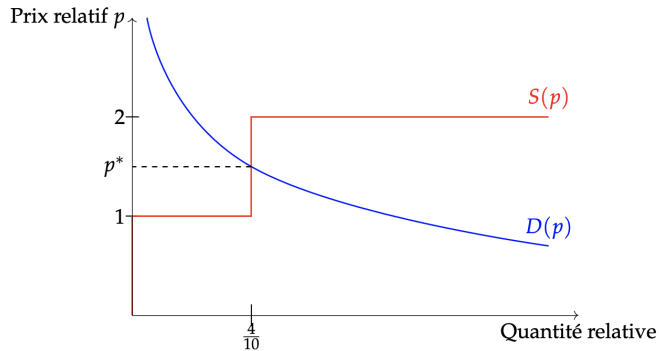


Figure: Relative supply and demand

The Ricardian Model

- You should not produce what you do better than others ... (absolute advantage)
- **But what you're relatively better at** (comparative advantage).
- If countries specialize according to their comparative advantages, the world is better off by producing more with the same amount of labor.
- All countries gain to trade thanks to the division of labor.
- Here, trade is inter-industry: it is cars vs. boats.

First conclusions

- Trade is driven by **relative** productivity differences.
- This is a model of **inter-industry trade**.
- Predicts **full specialization** of countries.
- Countries do not trade if they are equally productive.
- **Free-trade increases world output.**
- **No country loses from free-trade.**
- Trade does not impact inequalities... by definition!
 - Individuals are homogeneous here.

What can go wrong?

- Many goods

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- Trade costs
 - Some goods become non-traded goods: it is not valuable anymore to trade them, despite the price differences.
- Imperfect mobility of workers across sectors and unemployment
 - Much bigger issue.
 - In reality, changing sector can take many years: (large) transitory costs to trade.

Empirical exploration

In which goods countries have their comparative advantages?

- It would be hard to measure comparative advantages *ex-ante* but we can measure them *ex-post*.
- A country i has a revealed comparative advantage in product k if its share of exports of product k with respect to the world share of export of product k is larger than 1.
- Formally:

$$\frac{\frac{X_{ik}}{\sum_k X_{ik}}}{\frac{X_{Wk}}{\sum_k X_{Wk}}} > 1$$

Empirical exploration

Revealed Comparative Advantage (RCA)

- Measuring comparative advantage *ex-ante* (from theory) is difficult, but we can measure it *ex-post* using observed trade data.
- A country i has a **revealed comparative advantage** in product k if its share of exports of product k is larger than the world share of that product:

$$\text{RCA}_{ik} = \frac{\overbrace{\frac{X_{ik}}{\sum_k X_{ik}}}^{\text{Share of product } k \text{ in country } i\text{'s exports}}}{\underbrace{\frac{X_{Wk}}{\sum_k X_{Wk}}}_{\text{Share of product } k \text{ in world exports}}} > 1$$

- **Where:**

- X_{ik} = exports of product k by country i and $\sum_k X_{ik}$ = total exports of country i
- X_{Wk} = total world exports of product k and $\sum_k X_{Wk}$ = total world exports of all products

Empirical exploration

In which goods countries have their comparative advantages?

In which goods these countries have their RCA?

Country	Soy Exports (\$ bn)	Machinery Exports (\$ bn)	Total Exports (\$ bn)
Brazil	51	14	328
Germany	0.02	248	1600
World totals	90	2400	29000

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- Brazil in soy: $\frac{51/328}{90/29000} \approx 50$

Empirical exploration

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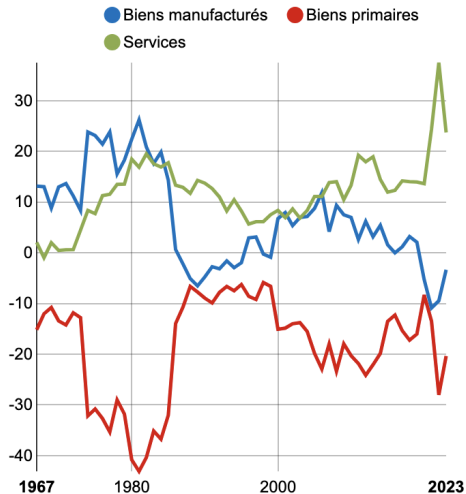
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- Germany in soy: $\frac{0.02/1600}{90/29000} \approx 0.004$

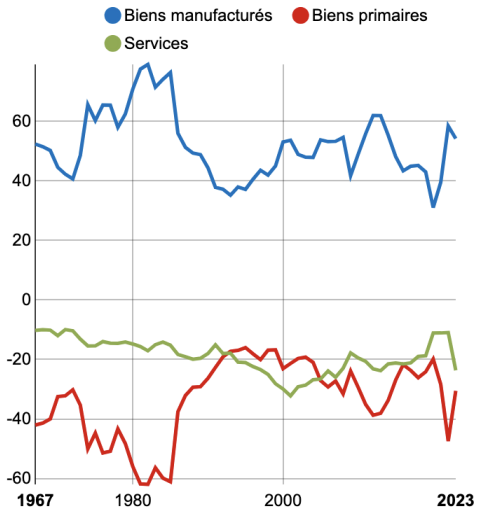
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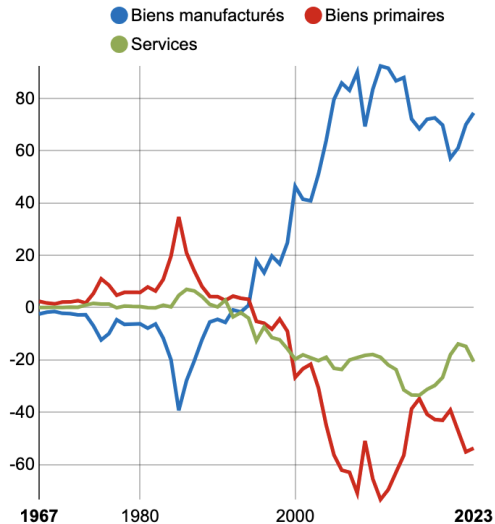
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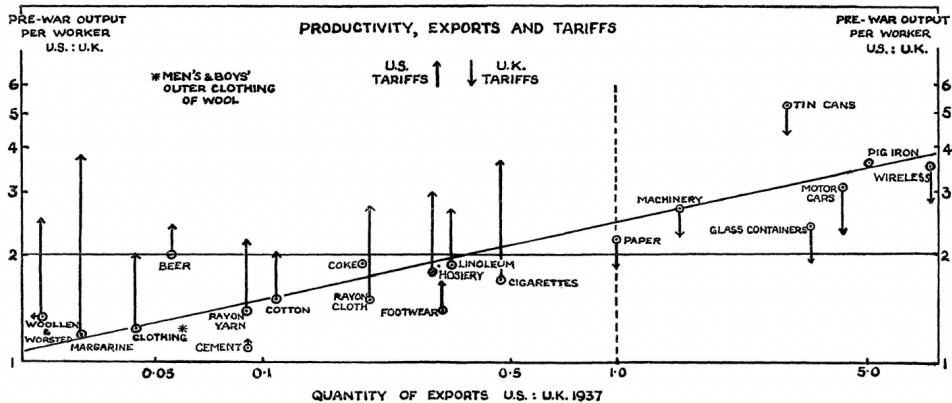
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Do pattern of trade follow comparative advantages?

- The Ricardian model suggests that a country should export the goods for which it is relatively more productive.
- First empirical tests of the Ricardian model in 1951 (MacDougall).

Empirical exploration

Do pattern of trade follow comparative advantages?



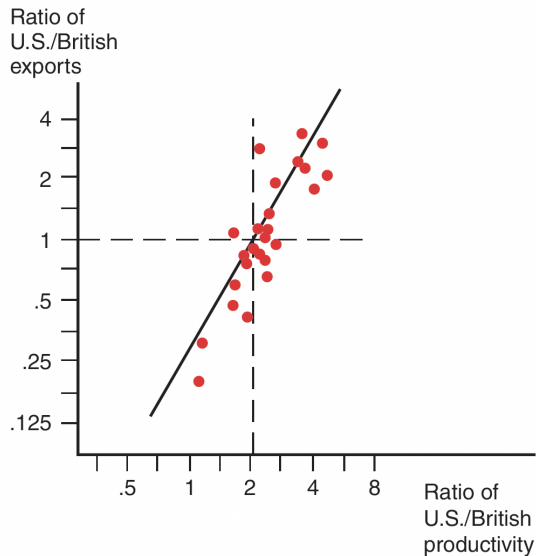
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Do pattern of trade follow comparative advantages?

- The Ricardian model suggests that a country should export the goods for which it is relatively more productive.
- First empirical tests of the Ricardian model in 1951 (MacDougall).
- British labor productivity is lower than U.S. labor productivity in all sectors!
 - The U.S. have an absolute advantage in everything.
- Though, British exports are as large as U.S. exports at the time.
 - The U.K. exports in sectors in which it has a comparative advantage.

Empirical exploration

Do pattern of trade follow comparative advantages?



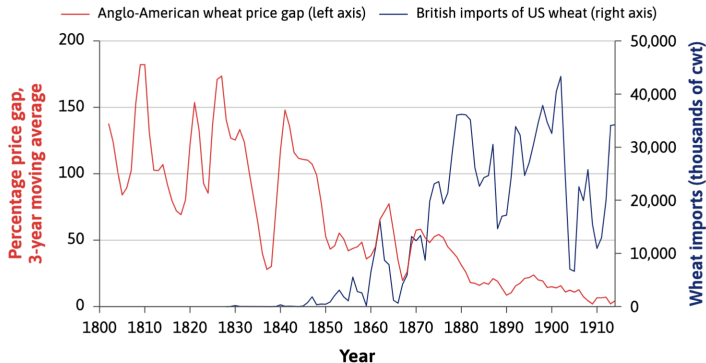
Do pattern of trade follow comparative advantages?

- Less clear-cut evidence in recent years.
- The specialization of the economy make that countries simply do not produce goods in which they are bad, so we cannot measure their productivity.
- The example of Bangladesh:
 - Output per worker as % of China in any industry: 28.5%
 - Exports per worker as % of China in any industry: 1%
 - Output per worker as % of China in apparel: 77%
 - Exports per worker as % of China in any apparel: 15.5%

Take-aways

- A simple model of productivity differences generates beneficial trade.
- Trade can be beneficial to both countries if they fully specialize in their **relative advantage**.
- Trade, **through specialization**, is a positive-sum game.
- Results unrealistic, but helpful.
- What we observe reflects Ricardo's predictions.
- Next sessions: introduce new trade models to explain more trade patterns.

The Law of One Price



FULLSCREEN

Figure 18.4 The Anglo-American wheat trade (1800–1914).

Figure 3 in Kevin H. O'Rourke and Jeffrey G. Williamson. 2005. 'From Malthus to Ohlin: Trade, Industrialization and distribution since 1500'. *Journal of Economic Growth* 10 (1) (March): pp. 5–34.

The Law of One Price

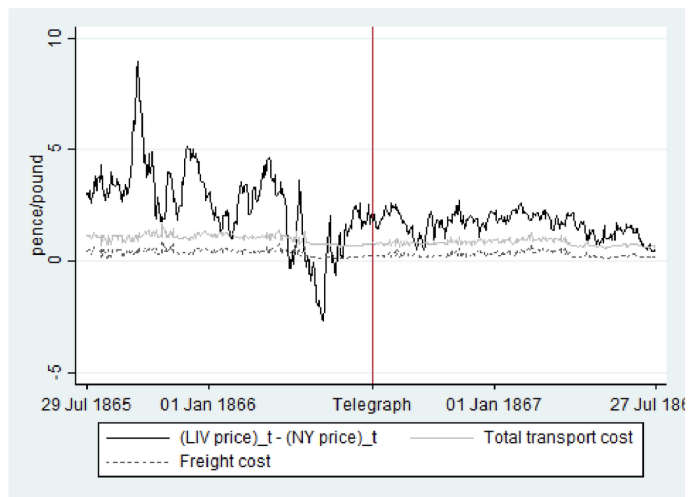


Figure: Impact of the introduction of the telegraph on Anglo-American wheat trade prices

Economics of Globalization

Sébastien Laffitte
CY Cergy Paris University

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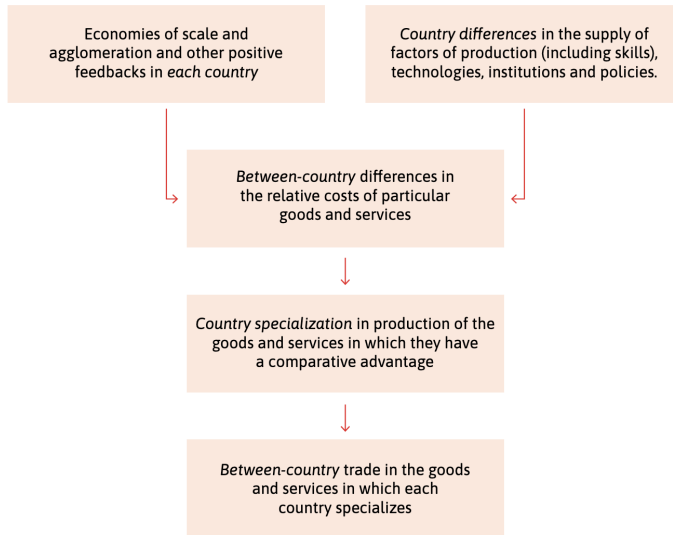
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 - Comparative advantage in the production of one good when the opportunity cost of producing this good is the lowest.
- Gains are coming from the specialization, and the international division of labor.

Last week



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- We introduce several factors of production.
- **Now that there is within-country heterogeneity, there might be distributive conflicts.**

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- There are winners and losers to trade.
 - **Stolper-Samuelson theorem: the abundant factor gains from trade and the scarce factor loses from trade.**

The HO model

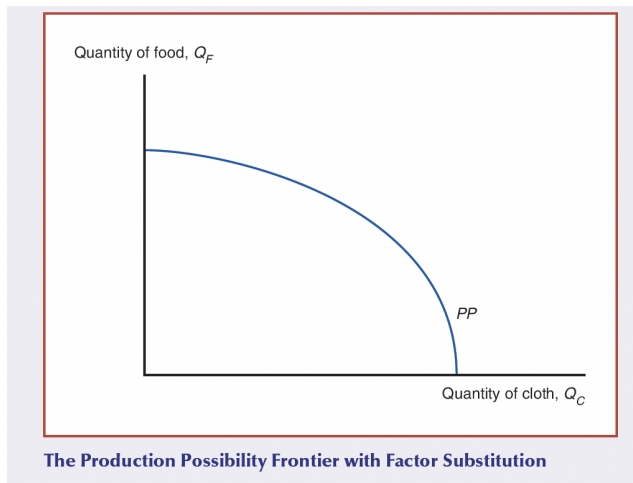
Assumptions

- 2 goods, 2 countries, **2 production factors**
 - Capital (K) and Labor (L) or high-skilled labor and low-skilled labor.
- Different endowments in each countries.
 - Home country is labor intensive: $\frac{L}{K} > \frac{L^*}{K^*}$
- Different capital intensities across goods: one is capital-intensive (e.g. cars or food), the other is labor-intensive (e.g. clothes).
 - The cloth industry employs relatively more labor compared to the food industry.

The HO model

- Contrary to the Ricardian model, producers have to choose the optimal combination of factors to produce a good: $Q_X = f(L, K)$.
- The choice of inputs depends on their relative price ($\frac{w}{r}$). If capital rental rates are high and wages are low, the producer will chose to employ relatively more labor.

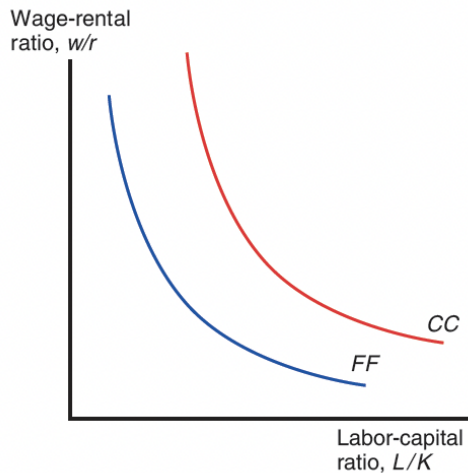
The HO model



→ The opportunity cost of cloth in terms of food rises as the production mix shifts towards producing more clothes.

The HO model

- In each sector, the ratio of labor to capital depends on the ratio of the cost of labor (w) to the cost of capital (r).
- FF shows the choices in the food industry and CC in the cloth industry.
- For a given $\frac{w}{r}$, cloth production uses a higher labor-capital ratio $\rightarrow$ cloth production is labor-intensive.



The HO model

- Perfect competition implies zero-profit $\longrightarrow$ the price of the good equals its cost of production.
- A rise in wages implies a rise in the good's price.
- If very few labor is used in the production of the good (case of a capital-intensive good), then the price will not increase a lot.

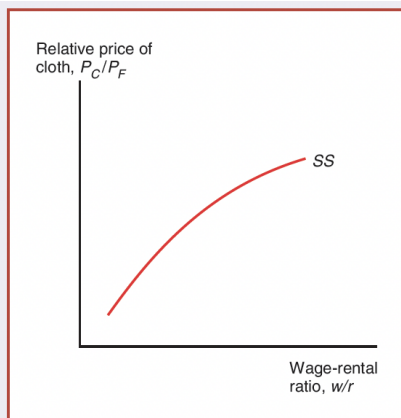
$\longrightarrow$ There is a relationship between relative factor costs and relative prices.

The HO model

FIGURE 5-6

Factor Prices and Goods Prices

Because cloth production is labor-intensive while food production is capital-intensive, there is a one-to-one relationship between the factor price ratio w/r and the relative price of cloth P_C/P_F ; the higher the relative cost of labor, the higher must be the relative price of the labor-intensive good. The relationship is illustrated by the curve SS .



The HO model

- One-to-one relationship between relative prices and relative factor costs.
 - Higher relative cost of labor $\rightarrow$ higher relative price of the labor-intensive good.
- $\rightarrow$ When relative price change (because of trade for instance), relative costs of factors will also change.



The HO model

- What happens when countries open to trade?
- Countries have the same technologies and only differ in terms of endowments.
- Assume that Home has a larger ratio of labor to capital: Home is labor-abundant, and Foreign is capital-abundant.
- For a given price, Home produces a higher-ratio of cloth to food $\longrightarrow$ larger relative supply of cloth to food.

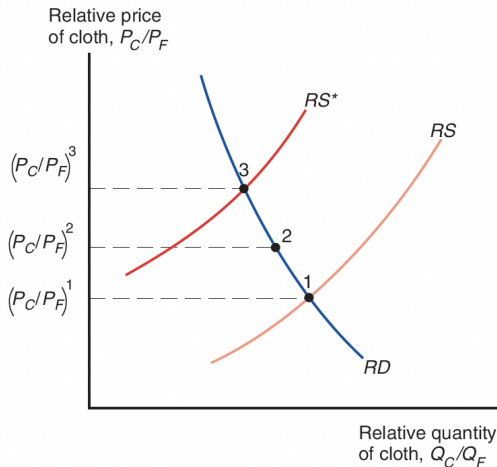
The HO model

- Trade leads to a convergence of relative prices (remember Ricardo).
- For any given ratio of the price of cloth to food, Home produces a higher ratio of cloth to food than foreign.
- Home will have a larger relative supply of the labor-intensive good.
- The price of the labor-intensive good rises in Home and decreases in Foreign.
- The economy exports the good whose relative price increases.
- Home then exports the labor-intensive good and Foreign the capital-intensive good.

The HO model

- In absence of trade, Home is at point 1 and Foreign at point 3: the relative supply of cloth is higher in Home than in Foreign.
- Trade leads to a convergence in world price, to point 2 (for instance)
- Increase in the relative price of clothes in Home

→ Countries will export the good for which the price is increasing (Clothes in Home and Food in Foreign)



The HO model

The Heckscher-Ohlin theorem

- **The country that is abundant in a factor exports the good whose production is intensive in that factor.**
- This theorem predicts the patterns of trade.
- Why is it the case?

The HO model

The Heckscher-Ohlin theorem

- **The country that is abundant in a factor exports the good whose production is intensive in that factor.**
 - This theorem predicts the patterns of trade.
 - Why is it the case?
 - Because it is relatively cheaper (lower opportunity cost) to produce the good that is intensive in the factor you are abundant in.
- Factor abundance creates comparative advantages and then determine the pattern of trade.

The HO model

The Stolper-Samuelson theorem

- Trade affects relative prices, which affects in return relative factor earnings.
- A rise in the price of the labor-intensive good increases the purchasing power of labor in terms of both goods.
- What is the impact on inequalities?

The HO model

The Stolper-Samuelson theorem

- Owners of a country's abundant factor gain from trade, but owners of country's scarce factors lose.

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 - Western countries (e.g. USA, France, Germany) are relatively abundant in capital or high-skill labor → increase in their remuneration while (low-skill) labor loses → increase in inequalities.

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 - China was relatively abundant in (low-skill) labor → increase in its remuneration → decrease in inequalities.
- Relatively scarce factors are relatively expensive compared to prices elsewhere when there is no trade.
- When their economies start trading with the rest of the world their price is dragged down towards the world average because they are competing with their abundant counterparts in the rest of the world.

The HO model

Takeaways

- In a world where there are two goods and two factors of production, there is a close relationship between the relative price of goods and the relative price of factors.
- A rise in the relative price of the capital-intensive good increase strongly the relative remuneration of capital. The real price of capital rises in terms of both goods.
- Similarly, the remuneration of labor (i.e. wages) decreases in terms of both goods.
- The converse is true when the relative price of the labor-intensive good increases.
- HO theory of trade: Countries tend to export goods that are intensive in the factors with which they are abundantly supplied.

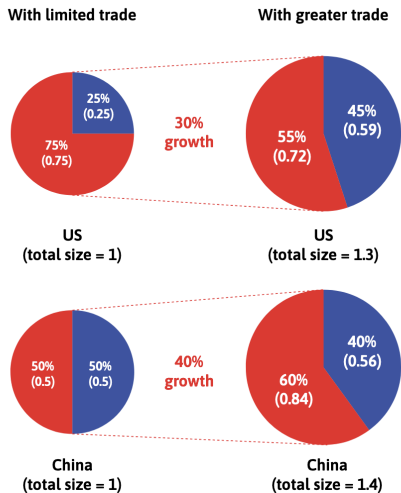
The HO model

Takeaways

- International trade has distributional effects!
- The owners of a country's abundant factors gain from trade, but the owners of scarce factors lose. In theory, there are still gains from trade, in the limited sense that the winners **could** compensate the losers and everyone would be better off.

The HO model

Takeaways



The HO model

Empirical tests

- The HO theory predicts the pattern of trade.
- Empirical tests tend to show that actual trade does follow HO, only when one relax the assumption of identical technologies (Trefler, 1995).
- In reality, a mix of Ricardo and HO seem to explain well many patterns of trade.

The HO model

Empirical tests

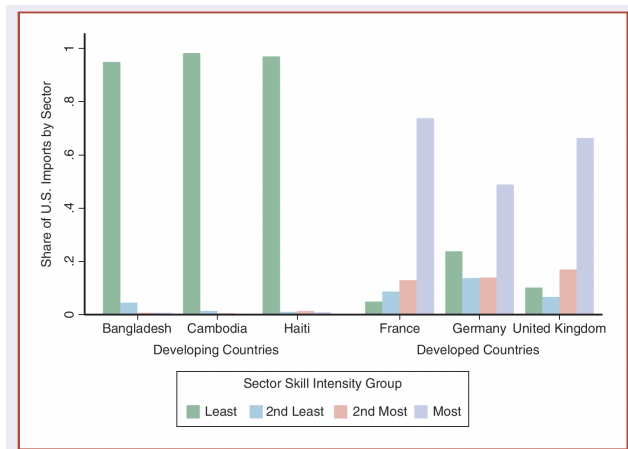


FIGURE 5-13

Export Patterns for a Few Developed and Developing Countries, 2008–2012

Source: NBER-CES U.S. Manufacturing Productivity Database, U.S. Census Bureau, and Peter K. Schott, "The Relative Sophistication of Chinese Exports," *Economic Policy* (2008), pp. 5–49.

The HO model

Empirical tests



FIGURE 5-14

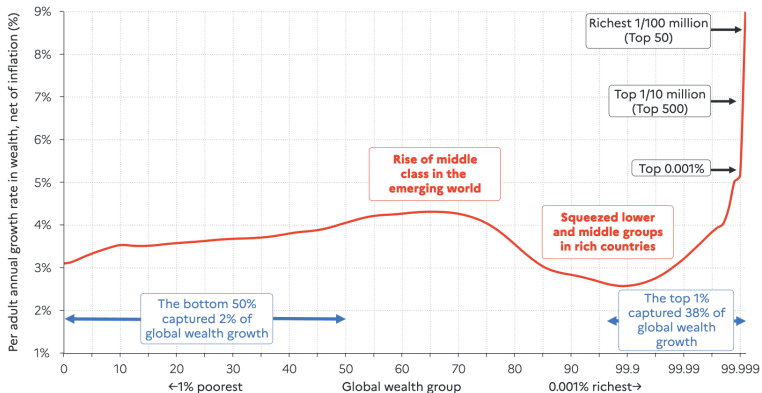
Changing Pattern of Chinese Exports over Time

Source: NBER-CES U.S. Manufacturing Productivity Database, U.S. Census Bureau, and Peter K. Schott, "The Relative Sophistication of Chinese Exports," *Economic Policy* (2008), pp. 5-49.

The HO model

Empirical tests

Figure 9 Average annual wealth growth rate, 1995-2021



Interpretation: Growth rates among the poorest half of the population were between 3% and 4% per year, between 1995 and 2021. Since this group started from very low wealth levels, its absolute levels of growth remained very low. The poorest half of the world population only captured 2.3% of overall wealth growth since 1995. The top 1% benefited from high growth rates (3% to 9% per year). This group captured 38% of total wealth growth between 1995 and 2021. Net household wealth is equal to the sum of financial assets (e.g. equity or bonds) and non-financial assets (e.g. housing or land) owned by individuals, net of their debts. **Sources and series:** wir2022.wid.world/methodology.

How trade affect exposed workers?

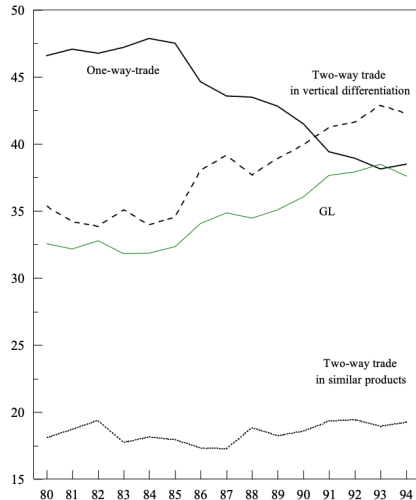
What has HOS missed?

- Workers not perfectly mobile across sectors and regions.
- Labour markets adjust to shocks not only via wages but also through changes in employment levels.
 - Chinese export competition reduced U.S. manufacturing employment, in particular for low-skill workers (Autor, Dorn, Hanson, 2013)

New trade theories

- The Ricardian model and the HO model only predict inter-industry trade between different countries
- But a lot of trade happens intra-industry...
- ... and between similar countries.

New trade theories



Source: Eurostat-Comext, calculations by the CEPII.

Source: Fontagne and Freudenberg, 1997

New trade theories

- They also assume perfect competition and constant returns to scale.
- **Internal returns to scale:**
 - Output increases faster than the quantity of inputs.
 - e.g. you double the number of workers and the quantity of output more than doubles (for instance through more efficient assembly line).

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- **Internal returns to scale:**
 - Output increases faster than the quantity of inputs.
 - e.g. you double the number of workers and the quantity of output more than doubles (for instance through more efficient assembly line).
- **External returns to scale:**
 - Productivity depends on external factors that create positive externalities.
 - Customer/suppliers networks.
 - Technological and knowledge spillovers (within-industry like in the Silicon Valley or between industry like GPS for instance).
 - Market size impacts firm performances! This justifies trade and industrial policies (Graham, 1923).

New trade theories

Krugman (1979, 1980)

- Why is it important for trade?
- Actors are not countries anymore but firms.
 - Assume firm's have internal returns to scale.
- Goods are not homogeneous anymore
 - Assume monopolistic competition: each producer has a monopoly over his variety of a good.
- Assume that consumers love variety, they want to consume all of them.
 - Not necessarily true at the individual level, but on aggregate.

New trade theories

Krugman (1979, 1980)

- Then, when trade opens, there is **intra-industry trade**.
 - Because consumers want to consume foreign goods.
- Each firm faces a larger market generating **gains from scale**.
 - Thanks to increasing returns to scale.
- Price decrease due to higher-competition: **pro-competitive effect of trade**.
- Less efficient firms exit the market because of the competition (*rationalization effect*).
 - Average productivity increases.
 - But there are adjustment costs → unemployment.
- **Gains from variety**: More varieties are available to consumers.
 - Uniformization of consumption patterns.

Economics of Globalization

Sciences Po Saint-Germain-en-Laye

Last weeks

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 - The owners of the abundant factor tend to win while the owners of the scarce factor tend to lose.

→ As a result countries may want to regulate trade → trade policy.

Trump tariffs

+ Add to myFT

Donald Trump says US truck imports to face 25% tariff from November 1

Announcement comes on eve of talks in Washington with Canadian Prime Minister Mark Carney



Next week

- Session on international taxation.
 - Very topical issue:
 - How to promote social justice in a globalized world?
 - How to tax capital (and workers) when they are internationally mobile (wealth tax, tax competition, etc.)?
- Course given with **Samuel Delpeuch**
 - Researcher at the *EU Tax Observatory* and *French Council of Economic Analysis*.
 - Former economist at the OECD, participated to negotiations for the reform of international taxation.

The World Trade System

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- In 1947, 23 countries began trade negotiations under the General Agreement on Tariff and Trade (GATT).
- In 1995, the WTO is created, creating a formal organization to manage GATT rules.

The World Trade System

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 - **Transparency** requirements and **dispute settlement** system to avoid trade wars (currently blocked by the U.S.).
 - Trade restrictions allowed for **safety reasons** (environment, public health, etc.).
- The WTO works with trade rounds where countries negotiate tariff reductions.
 - Eight trade rounds since 1947, Doha round opened since 2001.
 - World trade system needs to be rebuilt.

The World Trade System

- Preferential Trading Agreements (PTA) are one important exception to WTO rules.
- Countries within a PTA have lower tariff within the PTA than outside of it.
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- This includes agreements about international investment, labor, protection of intellectual property rights, environment.

The World Trade System

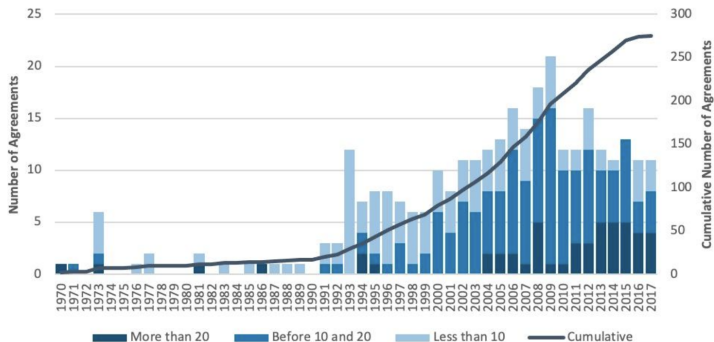
New Trade Agreements

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- **Deep trade agreements** have an expanded scope. They target international economic law on top of multilateral trade rules.
- This includes agreements about international investment, labor, protection of intellectual property rights, environment.
- These agreements are generally seen as favoring corporate power.
 - e.g. Investor-States Dispute Settlements (ISDS) where foreign investors can pursue State when they change their regulation (in particular labor, environmental, health regulations).
 - Evidence of intense lobbying by large multinational firms.

The World Trade System

New Trade Agreements

Figure 1 Number of policy areas covered in regional trade agreements, 1970-2017



Source: Hofmann et al. (2017).

The tools of Trade Policy

- A tariff is a **tax** levied when a good is imported.
 - Specific tariffs: tax per unit.
 - Ad valorem tariffs: percentage of good value.
- Oldest form of trade policy and large source of income in pre-modern taxation system and in developing countries.
- Designed to protect specific domestic sectors by raising the prices of foreign goods.

The tools of Trade Policy

- The importance of tariffs declined after WW2. It does not mean that it is the end of trade policy.

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Rare earths

+ Add to myFT

China unveils sweeping rare-earth export controls to protect 'national security'

Rules come ahead of expected meeting this month between Donald Trump and Xi Jinping

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Rare earths

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China unveils sweeping rare-earth export controls to protect 'national security'

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- The WTO also allows some type of temporary trade barriers (anti-dumping or countervailing measures against foreign subsidies).

Theory of Trade Policy

Basic Tariff Analysis (Source: Krugman et al., 2018)

- We study the consequences of a tariff on a good in a stylized model.

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- Assume the price of wheat is higher in H than in F $\longrightarrow$ H imports wheat $\longrightarrow$ Prices in F increase, prices in H decrease until equalization across countries.

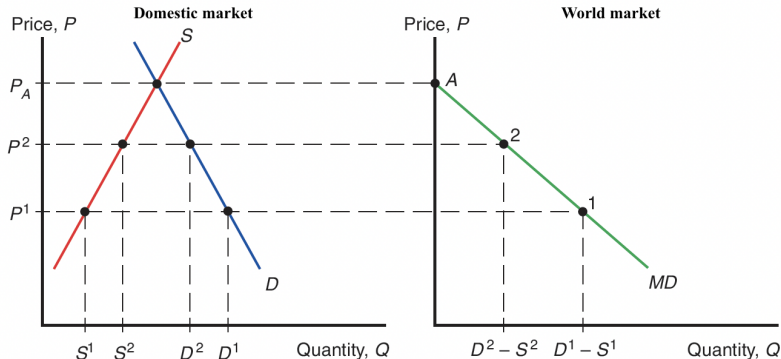
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- We can construct the import demand curve and the export supply curve.

Theory of Trade Policy

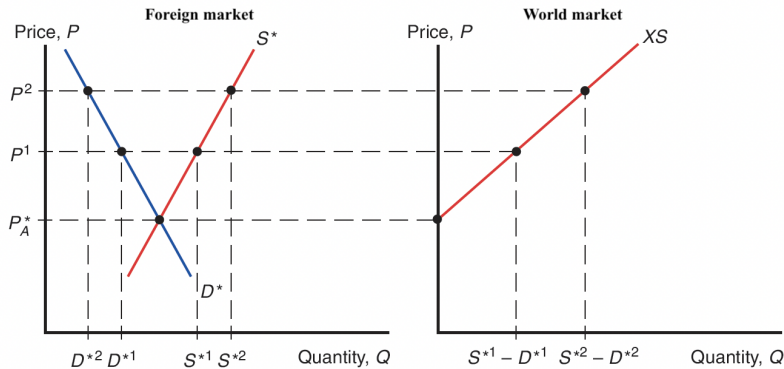
Basic Tariff Analysis: Home import demand curve



Import demand curve: as the price increase, home consumers demand less while home producers supply more, so that the demand for import decreases.

Theory of Trade Policy

Basic Tariff Analysis: Foreign export supply curve

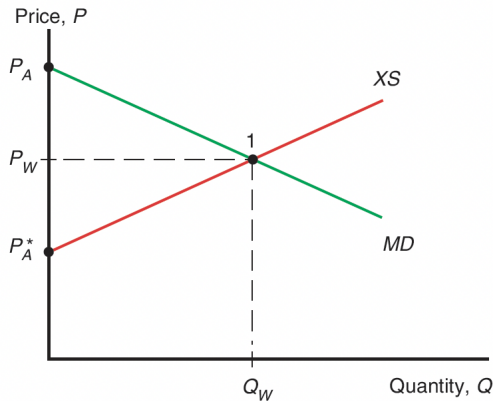


Export supply curve: as the price increase, foreign producers supply more while foreign consumers demand less, so that the export supply increases.

Theory of Trade Policy

Basic Tariff Analysis

- The equilibrium world price is where home import demand equals foreign export supply.



Theory of Trade Policy

Basic Tariff Analysis

- Now introduce a specific tariff of t .

Theory of Trade Policy

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- Now introduce a specific tariff of t \$.
 - The price received by foreign producers is P_T^*
 - The price received by domestic consumers is $P_T = P_T^* + t$

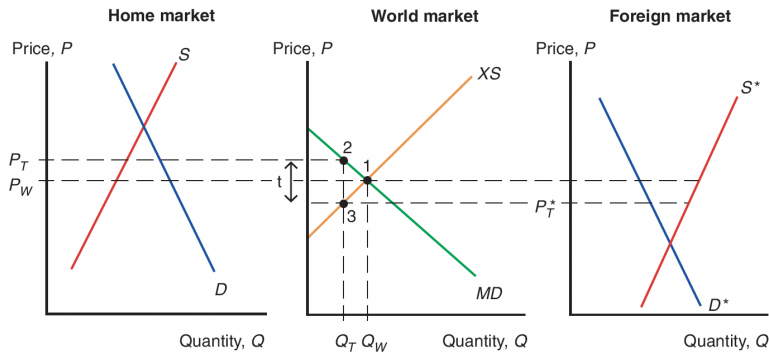
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- The equilibrium quantity should be consistent with these two different prices.

Theory of Trade Policy

Basic Tariff Analysis



A tariff raises the price in Home while lowering the price in Foreign. The volume of trade decreases. Home producers supply more, while Foreign producers supply less.

Theory of Trade Policy

Basic Tariff Analysis

- After the introduction of the tariff, the quantity exchanged decreases compared to the free-trade equilibrium.
- The price in both countries is between the autarky price and the free-trade price.
- The price of domestic producers is raised and the quantity imported decreases: domestic producers are protected from international competition.

Theory of Trade Policy

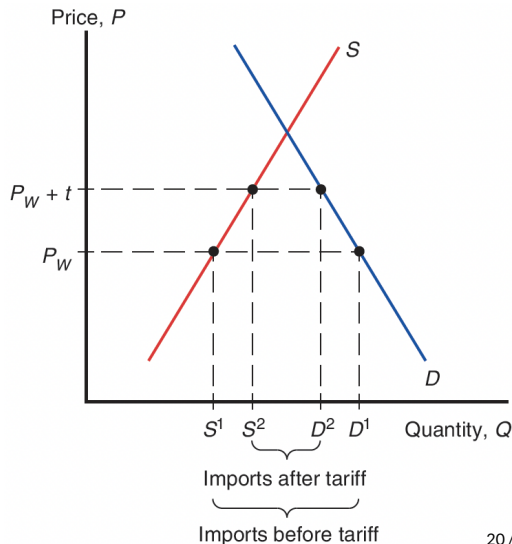
Basic Tariff Analysis

- The tariff is not fully passed-through to consumers: exporters' **bear a part of the tariff by decreasing their price.**
 - Producers prefer to decrease their price to counter the decrease in demand.
 - Works only for large countries that can influence the world price.
 - The economic incidence of the tariff (who ultimately pays the tax), is different from the legal incidence (who remits the cash to the tax authority).

Theory of Trade Policy

Basic Tariff Analysis

- Small countries do not lower the foreign price of the good it imports through tariffs.
- All the tariff is paid by domestic consumers.



Theory of Trade Policy

Basic Tariff Analysis

- We know the effect on prices and quantities, but what is the global effect on “welfare”?

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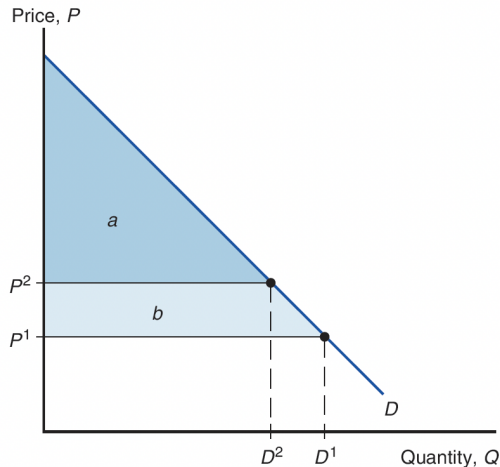
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- Goal: quantify this to say whether the tariffs creates net gains.
- We are going to assume that 1\$ is worth the same for the society point of view whoever it is allocated.
 - (This must not be the case! To deal with this, economists have imagined social welfare functions. Theories of justice deal with these questions.)
- We also assume that trade protection only benefits producers, not workers (while consumers are also workers).

Theory of Trade Policy

Basic Tariff Analysis

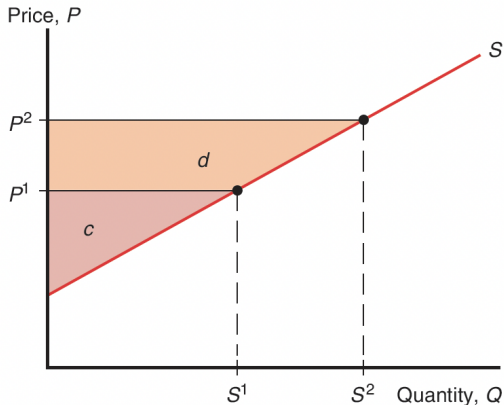
- Consumer surplus corresponds to the welfare derived by consumers when they buy a good.
- Consumer surplus is equal to the area above the demand curve.



Theory of Trade Policy

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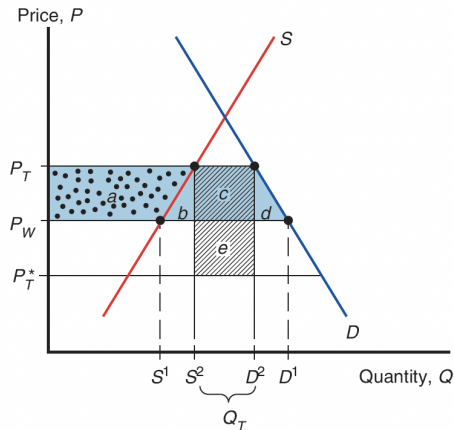
- Producer surplus corresponds to the welfare derived by producers when they sell a good → their profits.
- Producer surplus is equal to the area above the supply curve and below the price.



Theory of Trade Policy

Basic Tariff Analysis

- This figure puts together consumer surplus and producer surplus.
- There is a third agent: the government.
 - Collects the tariff which is equal to the difference between the foreign producer price (P_T^*) and the domestic price (P_T).
 - Tariff revenues = $(P_T - P_T^*) \times Q_T$, with Q_T the quantity imported i.e. the difference between domestic supply and domestic demand.

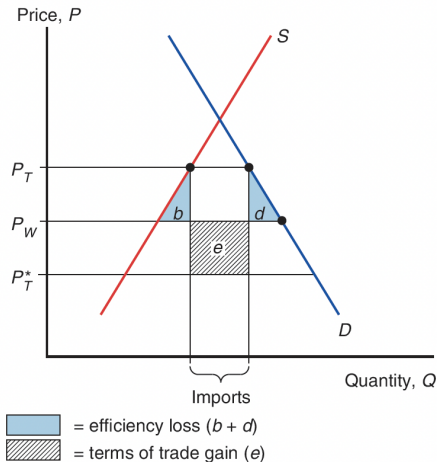


-  = consumer loss ($a + b + c + d$)
-  = producer gain (a)
-  = government revenue gain ($c + e$)

Theory of Trade Policy

Basic Tariff Analysis

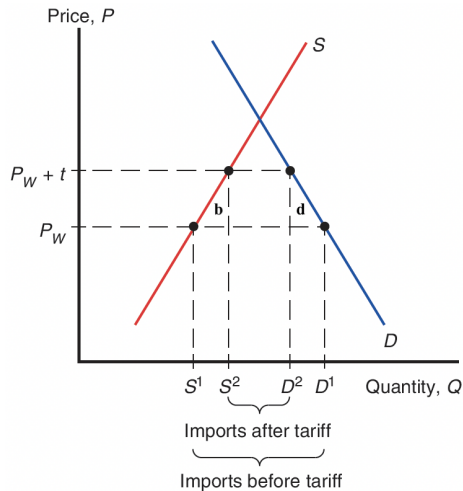
- This figure shows the net effect of the tariff.
- Efficiency losses: domestic producers produce “too much” and consumers consume “too little” with respect to the optimum.
- Terms of trade gains: gains due to the fact that the foreign producer partly pays the tax.



Theory of Trade Policy

Basic Tariff Analysis : Small country case

- In small countries, all the tax is paid by domestic consumers.
- The tariff generates net losses because $e = 0$.



Theory of Trade Policy

Tariff on an intermediate input.

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Tariff on an intermediate input.

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- Most trade is about intermediates inputs.
 - $\approx$ one-third of trade is between related parties.
 - $\approx 1/2$ of trade is in intermediates and $\approx 1/4$ is in capital goods.
- In this context, tariff is not anymore a tool for redistributing between producers and consumers, but also affects producers negatively.

Tariff on an intermediate input.

Trump tariffs

+ Add to myFT

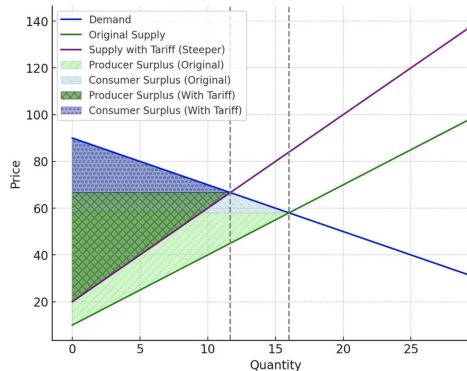
‘This is existential’: Donald Trump’s tariffs drive US car sector into turmoil

Michigan’s ‘Big Three’ carmakers forecast a combined \$7bn tariff-related hit to earnings in 2025



Tariff on an intermediate input.

- When tariffs hit intermediates goods, supply becomes steeper.
- For a given quantity, producers ask a higher price because costs are higher.
- In equilibrium there are less quantities traded by domestic suppliers ($\neq$ tariff on consumption goods), at a higher price.
- The tariff generates net losses.



Argument for free trade

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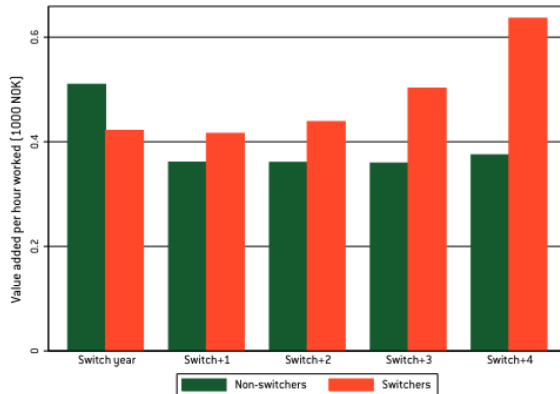
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 - Trade protection affects the costs of capital equipment and decreases the capital stock in the long-run.

Argument for free trade

Figure 7: Compared performance in labour productivity – Export (Norway)



Source: EFIM.

Source: Mayer and Ottaviano, 2007

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- Free trade creates unemployment in absence of quick and costless relocation of workers across occupations and industries (e.g. NAFTA, the China shock, etc.).
 - There might be larger social benefits to protect an industry than costs.
 - **Second-best theory:** ideally free trade would be better, but because there is an imperfect reallocation, protection can increase welfare.

Argument against free trade

- As time goes, the gains from lowering trade barriers becomes relatively lower than the induced redistribution.
 - The distributional consequences of trade are more and more important compared to the "increasing size of the pie".
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- Compensation is hard to achieve.
- Large loss of tax revenues can affect countries' policies.
 - Tariffs are an important source of revenues in developing countries.
 - Cagé and Gadenne (2018): 40% of developing countries experience a fall in total tax revenues that last more than 10 years after trade liberalization. Same for expenditures → lower provision of public goods.

Economics of Globalization

Sébastien Laffitte
Sciences Po Saint-Germain-en-Laye

Last weeks

- We have studied the main trade models.
 - Trade arises as the result of productivity differences, endowment differences, increasing returns to scale.
 - We have seen that trade creates winners and losers.
- Countries want to regulate trade and globalization.
 - Trade policy is an important area of the regulation of globalization.
 - Tariffs are generally seen as negative but can be beneficial.
 - New trade agreements try to regulate the international legal rules beyond trade.

Last weeks

Roberts and Lamp's narratives

- Everybody wins (*establishment narrative*)

Last weeks

Roberts and Lamp's narratives

- Everybody wins (*establishment narrative*)
 - Ricardian model of trade, Redistribution of trade gains, Absolute gains in GDP, Trade protection creates losses.

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- Globalization have created security vulnerabilities with respect to China (*geo-economic narrative*)
 - Strategic dependencies.
- Globalization have increased global threats (*global threats narrative*)

This week

- Not all firms are the same.
- Dive into the heterogeneity of firms.
 - Multinational firms are particularly important in today's globalization.
- Why are firms multinational?
- What is their role in globalization.
 - Roberts and Lamp's narrative about globalization: *the corporate power narrative* according to which MNEs have captured most gains from globalization.
 - Why? Enormous *market power* and *bargaining power* vis-a-vis governments and workers
 - Corporate tax competition, regulatory and cost arbitrage, IP protection, standard-setting, etc.

Firm heterogeneity

- The first heterogeneity comes from size.

TABLE 1—AGGREGATE IMPORTANCE OF THE TOP 100 FIRMS

Share of the top 100 in aggregate:	
Value added	0.219
Exports	0.220
Imports	0.183
Value added of foreign MNEs' affiliates	0.152
Value added of firms with foreign affiliates	0.828

Note: This table reports the share of the aggregates accounted for by the top 100 firms.

Source: Di Giovanni, Levchenko and Mejean, 2017

- This translates into different abilities to trade.
 - Only a few firms trade: less than 20% in France.
 - Even within exporters, most exports are due to very few firms.
- Even less firms are multinational.

Multinational firms

Definition

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- A firm that has at least one unit of production abroad.

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- A firm that owns at least 10% of a firm in another country.
 - e.g. Dacia, Romanian firm owned by Renault.
- MNEs come from an headquarter country, produce in multiple source countries and sell their products in multiple destination countries.
- FDI: flow of cross-border investment aimed at buying or enlarging a durable interest in a company and gaining influence on its management ($\geq 10\%$ of ownership according to IMF BoP standards).

Multinational firms

Definition

- Greenfield FDI: creation of a foreign subsidiary vs. Acquisition: taking ownership of an existing foreign company.

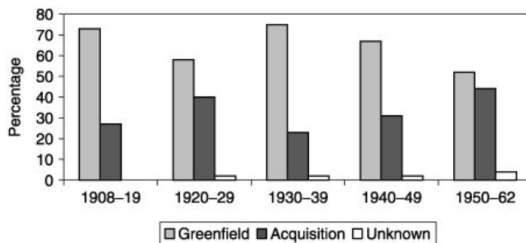


Fig. 6.1 Mode of entry used by US manufacturing companies to enter Britain, 1908-62.

Source: Jones and Bostock (1996).

Source: Jones, 2003

Multinational firms

History

- Who were the first multinationals?
 - Sumerian merchants, 2500BC that realized they needed men stationed abroad to receive, store and sell their goods? (Wilkins, 1970)
 - 13th century Italian bankers? (Wilson, 1976)
 - East India Company and Dutch East India Company?
- Trade has been early associated with long-distance firm activities.
- Internalizing activities helped for coordination and control.
- Pre-Modern MNEs: traders, shippers, bankers, family groups with investment abroad in manufacturing, mining or plantations.
- No single company expanded abroad to sell or manufacture its products before the 19th century.

Multinational firms

History

- From the 19th century and the Industrial revolution: rise in cross-border capital flows out of chartered companies monopoly rights.
- From $\approx$ 1820, companies began to expand abroad (mine in a border country, or in a colony, factories).
 - Siemens opened its first foreign affiliate in 1850 and Singer in 1867 (part assembly imported from the U.S. in Glasgow).
- By 1914: wide range of manufactured products, including chemicals, pharmaceuticals, electricals, machinery, motor cars, tires, branded food products, and cigarettes were undertaken by MNEs.
- From one-off cross-border transfers of knowledge to more sustained investments and continuous flow of knowledge and other resources across borders within the boundaries of firms: transition from manufacturing to services.
- Linked to the communications infrastructures.

Multinational firms

History

Box 4.2 Some large multinational manufacturing enterprises, c. 1914

Company	Nationality	Product	No. of foreign factories in 1914	Location of foreign factories
Singer	US	Sewing machines	5	UK, Canada, Germany, Russia, Austria-Hungary
J & P Coats	UK	Cotton thread	20	US, Canada, Russia, Austria-Hungary, Spain, Belgium, Italy, Switzerland, Portugal, Brazil, Japan
Nestlé	Swiss	Condensed milk/ baby food	14	US, UK, Germany, Netherlands, Norway, Spain, Australia
Lever Brothers	UK	Soap	33	US, Canada, Germany, Switzerland, Belgium, France, Japan, Australia, South Africa
Saint-Gobain	France	Glass	8	Germany, Belgium, Netherlands, Italy, Spain, Austria-Hungary
Bayer	Germany	Chemicals	7	US, UK, France, Russia, Belgium
American Radiators	US	Radiators	6	Canada, UK, France, Germany, Italy, Austria-Hungary
Siemens	Germany	Electricals	10	UK, France, Spain, Austria Hungary, Russia
L. M. Ericsson	Sweden	Telephone equipment	8	US, UK, France, Austria-Hungary, Russia

(Source: author's estimates)

Source: Jones, 2003

Why are multinational firms important to understand globalization?

Source: World Investment Report, 2023

- 79k MNEs with 790k foreign subsidiaries (2007).
- Employment went from 20,5 millions in 1990 to 80 millions in 2020 (x2.9).
- Turnover went from \$5000bn in 1990 to \$30000bn in 2020 (x6).
- World GDP has been multiplied by 2.75 over the period.
- Top 100 largest MNEs represent 30% of total MNEs sales and 25% of total employment

Largest MNEs

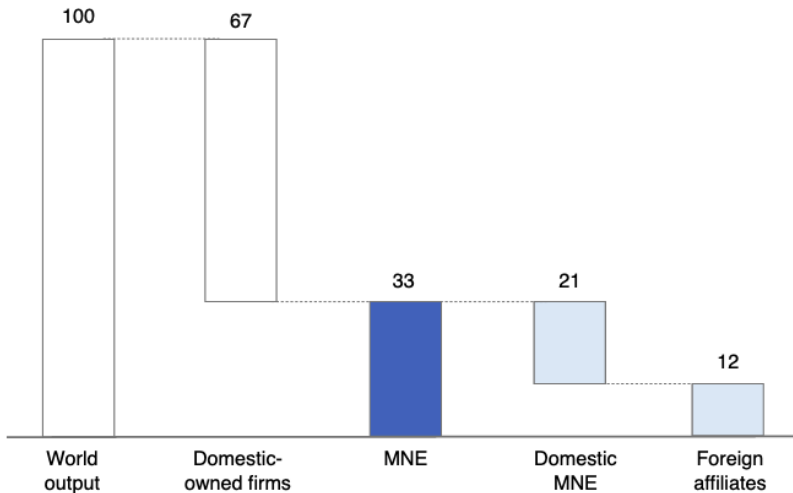
List Rank	Company Name	Revenues (\$b)	Profits (\$b) ▼
3	Exxon Mobil	449.9	44.9
19	Apple	156.5	41.7
21	Gazprom	153.5	38.1
29	Industrial & Commercial Bank of China	133.6	37.8
50	China Construction Bank	113.4	30.6
9	Volkswagen	247.6	27.9
1	Royal Dutch Shell	481.7	26.6
11	Chevron	233.9	26.2
64	Agricultural Bank of China	103.5	23.0
70	Bank of China	98.4	22.1

Largest MNEs

93	 Tunisia	Africa	46,282	2022
94	 Cameroon	Africa	44,212	2022
95	 Bahrain	Asia	43,544	2022
96	 Bolivia	Americas	43,431	2022
97	 Sudan	Africa	42,762	2022
98	 Paraguay	Americas	41,855	2022
99	 Libya	Africa	40,836	2022
100	 Latvia	Europe	40,588	2022
101	 Estonia	Europe	39,054	2022
102	 Nepal	Asia	39,028	2022
103	 Zimbabwe	Africa	38,280	2022
104	 El Salvador	Americas	31,989	2022
105	 Papua New Guinea	Oceania	31,362	2022
106	 Honduras	Americas	30,568	2022
107	 Trinidad and Tobago	Americas	29,337	2022
108	 Cambodia	Asia	28,330	2022
109	 Iceland	Europe	27,702	2022
110	 Yemen	Asia	27,594	2022

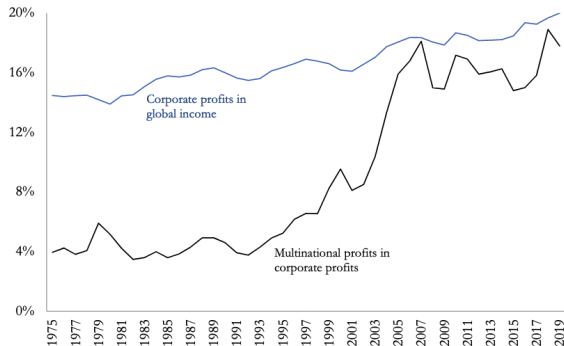
Why are multinational firms important to understand globalization?

Figure 3. Decomposition of global gross output by ownership status, 2014



Why are multinational firms important to understand globalization?

Figure 3: Global corporate profits and multinational profits, 1975–2019



Note: the blue line shows the evolution of the share of global corporate profits in global income (defined as global GDP minus global depreciation). The black line shows the share of global multinational profits (as defined in the text) in global corporate profits.

Source: for 1975–2015: Tørslev et al. (2022a), Data Appendix Table C7; for 2016–19 figures: Data Appendix, Table 1.

Where do FDI go? Where do they come from?

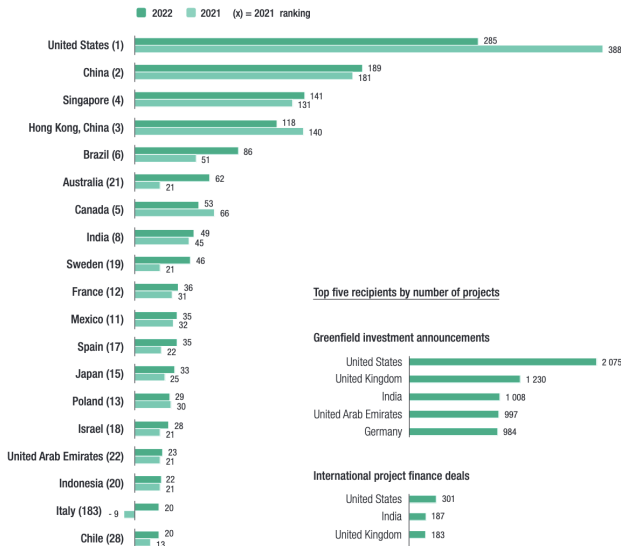
Table 2.1 Affiliates Relative to Local Firms (Percentage Accounted for by Affiliates)

	Finland	France	Ireland	Holland	Poland	Sweden
Enterprises	1.6	2.0	13.4	3.4	16.0	2.8
Employment	17.2	26.2	48.0	25.1	28.1	32.4
Sales	16.2	31.8	81.1	41.1	45.2	39.9
R&D Expenditure	13.1	27.4	77.3	35.8	20.9	52.0
Exports	17.5	39.5	92.3	60.0	69.1	45.8

Source: OECD (2007).

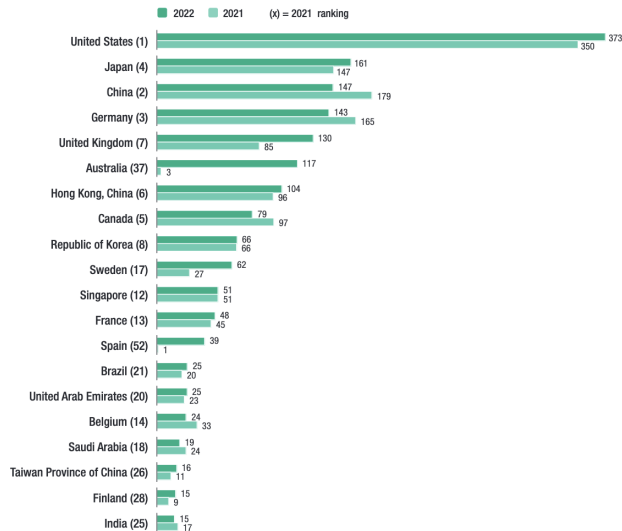
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Figure I.4. FDI inflows, top 20 host economies, 2021 and 2022 (Billions of dollars)

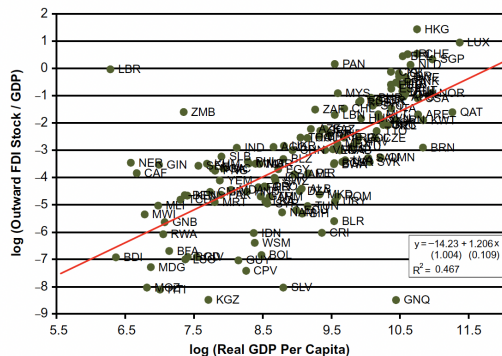


Where do FDI go? Where do they come from?

Figure I.12. FDI outflows, top 20 home economies, 2021 and 2022 (Billions of dollars)



Where do FDI go? Where do they come from?



Sources: UNCTAD and World Bank

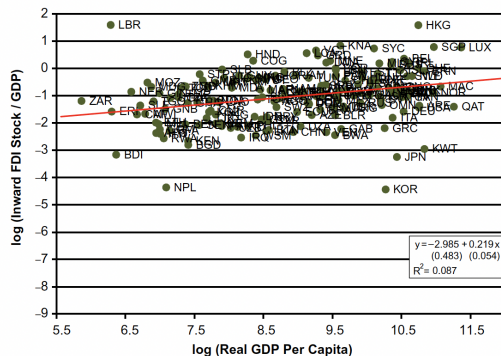
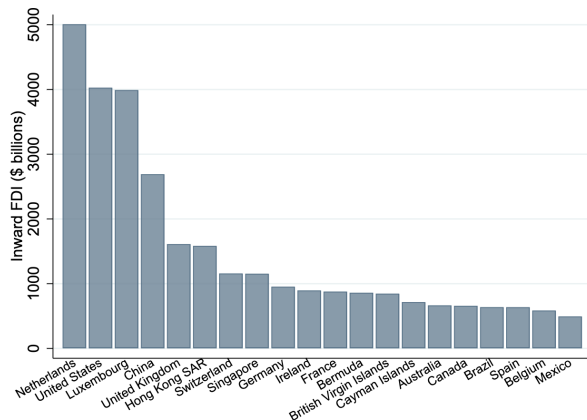


Figure 2.1 Aggregate FDI Stocks and Development

Where do FDI go? Where do they come from?

Measurement issues: Phantom FDI

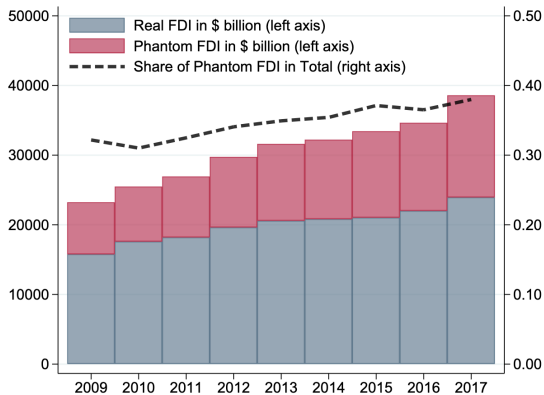
Figure 1 – Largest inward FDI positions in 2017. The figure shows the 20 economies with largest inward FDI positions in 2017. For economies reporting to CDIS, the figure shows the reported numbers. For non-reporting economies, the figure shows our estimates.



Where do FDI go? Where do they come from?

Measurement issues: Phantom FDI

Figure 6 – Global Real and Phantom FDI. The figure shows the evolution of inward FDI positions aggregated over all economies in the world over the period 2009-2017. Total FDI is decomposed into Real FDI (blue bars) and Phantom FDI (red bars).



Horizontal vs. Vertical FDI

Horizontal vs. Vertical FDI

- Horizontal FDI

Horizontal vs. Vertical FDI

- Horizontal FDI
 - Replication of the production process in a foreign country.
 - Produce close to consumer to save on transport costs, tariffs, and other costs.
 - Historically larger phenomenon.

Horizontal vs. Vertical FDI

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- Vertical FDI

Horizontal vs. Vertical FDI

- Horizontal FDI
 - Replication of the production process in a foreign country.
 - Produce close to consumer to save on transport costs, tariffs, and other costs.
 - Historically larger phenomenon.
- Vertical FDI
 - The firm acquires a company that acts as a supplier or distributor
 - The idea is to take advantage of production costs differentials.

Why becoming a MNEs: the proximity-concentration trade-off

- Import trade-off between proximity and concentration.
- Proximity:
 - Produce close to consumers, low transport costs.
 - Lower benefits from IRS.

Concentration:

- Produce in a single plant.
- Large transport costs and large benefits from IRS.

Why becoming a MNEs: the proximity-concentration trade-off

- Let us consider a domestic firm:
 - Q : Quantity that will be sold on the foreign market.
 - m_D : Marginal cost of production in the domestic country.
 - m_F : Marginal cost of production in the foreign country.
 - τ : Marginal transport cost.
 - F : Fixed Cost to settle abroad

Why becoming a MNEs: the proximity-concentration trade-off

- Cost of exporting:

Why becoming a MNEs: the proximity-concentration trade-off

- Cost of exporting: $C_X = (m_D + \tau)Q$

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- Cost of exporting: $C_X = (m_D + \tau)Q$
- Cost of FDI:

Why becoming a MNEs: the proximity-concentration trade-off

- Cost of exporting: $C_X = (m_D + \tau)Q$
- Cost of FDI: $C_{FDI} = m_F Q + F$

Why becoming a MNEs: the proximity-concentration trade-off

- Cost of exporting: $C_X = (m_D + \tau)Q$
- Cost of FDI: $C_{FDI} = m_F Q + F$
- FDI is preferred to export if:

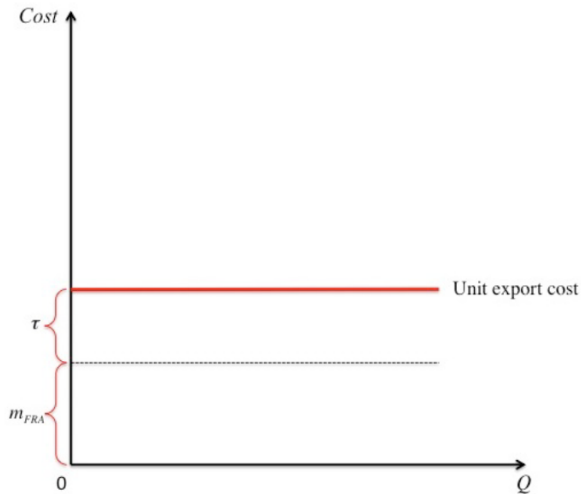
Why becoming a MNEs: the proximity-concentration trade-off

- Cost of exporting: $C_X = (m_D + \tau)Q$
- Cost of FDI: $C_{FDI} = m_F Q + F$
- FDI is preferred to export if: $C_{FDI} < C_X$

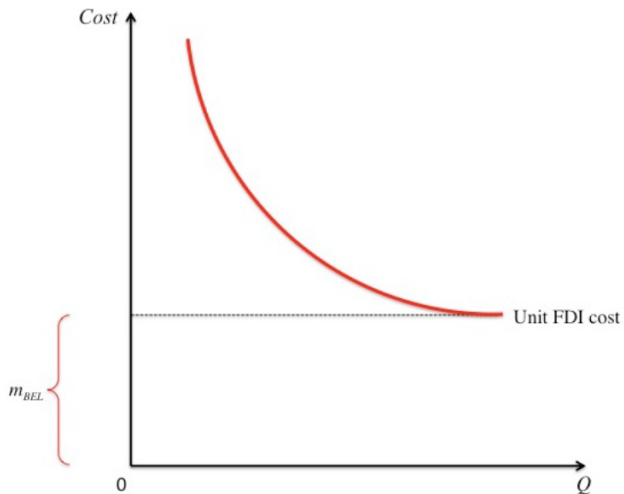
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- Cost of exporting: $C_X = (m_D + \tau)Q$
- Cost of FDI: $C_{FDI} = m_F Q + F$
- FDI is preferred to export if: $C_{FDI} < C_X$
- Or $\frac{F}{Q} + m_F < \tau + m_D$

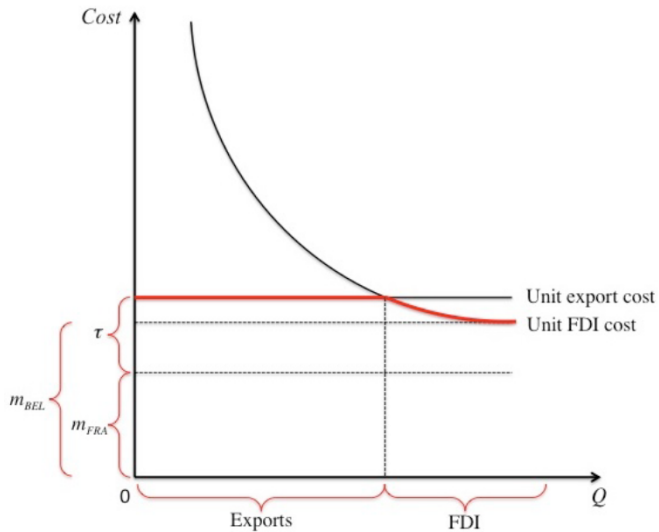
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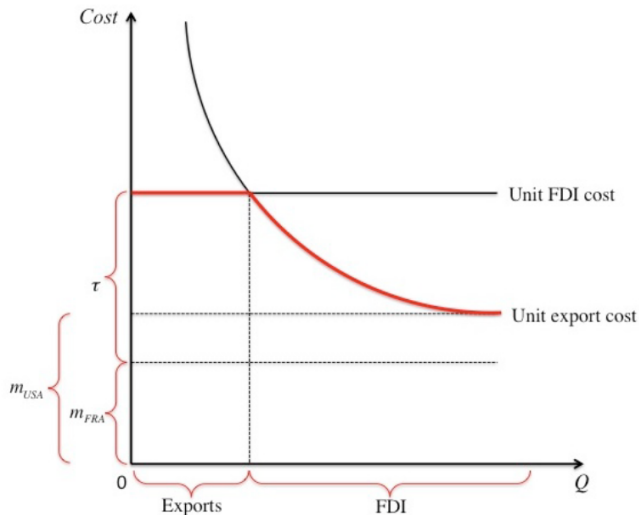
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Why becoming a MNEs: the proximity-concentration trade-off



Why becoming a MNEs: the proximity-concentration trade-off

- FDI is preferred if:
 - The fixed cost is small (F).
 - The foreign market is large (Q).
 - The market is remote or there are high trade barriers (large τ).
 - The comparative advantage of the foreign country is large ($m_f - m_D$ if large).

Why becoming a MNEs: the proximity-concentration trade-off

- FDI is a fixed-cost strategy and can be used to avoid variable costs (e.g. tariff-jumping FDI).
- Export is a variable-cost strategy, more suited for risky or short-term operations, or to reach small markets.
 - In between: Export-platform FDI is also suitable.
 - Do FDI and reach neighboring markets through exports: regionalization of activities.

Going beyond the proximity-concentration trade-off

- This trade-off explains the choice between exporting and serving markets domestically.
- But it does not really explain FDI in itself.
- A firm could for instance contracts with a foreign firm to produce domestically its products.
 - Coca-Cola does not produce itself (all of) its beverages.
 - It sells its recipe to contractors that produce, market and distribute beverages in foreign countries.

Going beyond the proximity-concentration trade-off

- The question of the boundaries of the firm and the choice of controlling and managing the firm abroad.
 - Coase Theorem: If contracts were complete, the firm structure should not matter.
 - There are costs to incomplete contracts e.g. the risk of intellectual expropriation.
 - One cannot totally force someone not to use a given technology.
 - e.g. DuPont suspects its Chinese partner to infringe its IP and launches a dispute in China. At the same time China launches an antitrust investigation against DuPont and ask DuPont to drop its infringement case to resolve the antitrust investigation.
- If the cost of doing it through the market is too large, then do it within the firm.

The impact of MNEs on host markets

Positive effects

- Foreign ownership have a positive impact on productivity which spills over to domestic affiliates.
- MNEs presence help domestic firms increasing the quality of their products.
- MNE tend to pay higher wages.
 - Setzler and Tintelnot (2021): MNEs have higher wages by 7% in the U.S. This premium is larger for high-skill workers.
 - Indirect gains for domestic firms that also increase wages: MNEs have positive effects on local activity, there are knowledge spillovers from workers moving between firms (Poole, 2013).

The impact of MNEs on host markets

Adverse effects

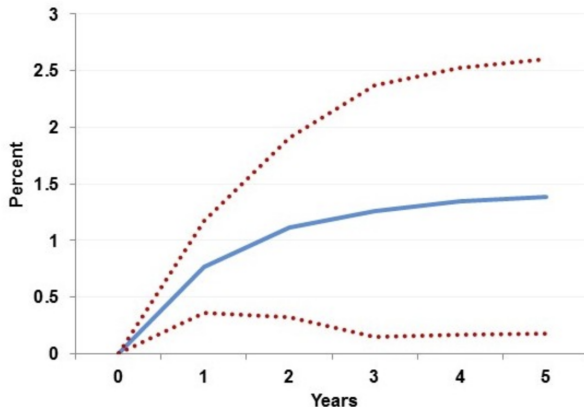
- Capital account opening is associated (on average) with increasing inequalities.
- This effect is larger when the liberalization is not well managed and followed by a crisis.

The impact of MNEs on host markets

Adverse effects

Chart 1

Impact of Capital Account Liberalization on Inequality



Source: Furceri and Loungani, 2015.

Notes: The chart shows the impact over a five-year period of capital account liberalization on inequality. The blue line shows the impact and the red dotted lines are the 95 percent confidence bands for the impact.

The impact of MNEs on host markets

Adverse effects

- MNEs are powerful companies and can use their corporate power to capture rents.
 - Lobbying: MNEs tend to lobby more than their domestic counterparts. They influence foreign policy and the content of deep trade agreements.
 - Tax avoidance: MNEs use their network of affiliates in tax havens to avoid paying taxes in other countries. Tax losses are estimated around \$200bn per year (Torslov et al., 2022).
 - Globalization has been associated with a rise in market concentration and market power. This is associated with a rise in the remuneration of capital compared to labor and a rise in mark-ups.

The impact of MNEs on host markets

Adverse effects

- Environment: MNEs use gap in local regulations to shift pollution to less-regulated countries → regulatory arbitrage.
- Developing countries: MNEs can help development but at the same time repatriate gains to their home country → harder for the host economy to benefit from economic gains.
- Security and sovereignty concerns, Natural resource capture, *etc.*

The impact of MNEs on host markets

Adverse effects

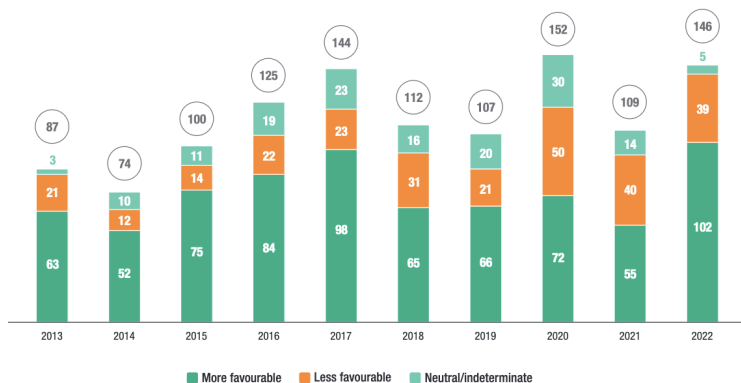
- The capacity of regulatory arbitrage by MNEs give them an important power and affect State regulation.
- Said differently, state regulation is endogeneous to MNE power.
 - Investor-State Dispute Settlement (ISDS) can limit State environmental and social policies (UNCTAD, 2023).
 - Tax competition: race to the bottom in terms of corporate taxation: each countries tries to attract foreign MNEs by lowering its tax rate.
 - Subsidy competition: Countries offer larger and larger subsidies to foreign firms to attract them.

Regulating MNEs

- States put in place different types of policies to regulate MNEs.
- Two core objectives: facilitation of business activity and regulation of its impacts.
- Recent rise in regulations aiming at regulating MNEs impact.
 - Many policies (40% of "less-favourable" policies) related to national security concerns (critical infrastructure, core technologies, sensitive assets).
 - Surge in investment screening mechanisms (from 3 countries in 2005 to 37 in 2022). Concerns about strategic industries (e.g. critical minerals in Canada, energy, transport and communication in Italy).
 - Withdrawal of M&A deals (e.g. the Chinese acquisition of Forbes media in the U.S.).
 - Windfall profits taxes.
 - Managing social impacts: law on MNEs' duty of care in 2017 in France. MNEs can be held responsible of their social and environmental adverse impacts in foreign countries.

Regulating MNEs

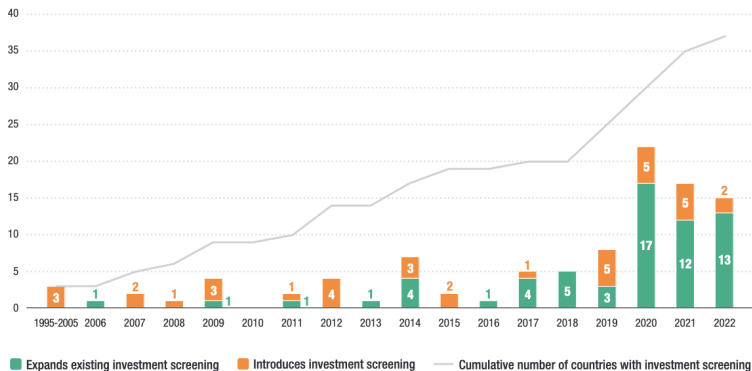
Figure II.1. Changes in national investment policies, 2013–2022 (Number of measures)



Source: UNCTAD, Investment Policy Monitor.

Regulating MNEs

Figure II.4. Countries introducing or expanding security-related investment screening, 1995–2022 (Number)



Source: UNCTAD.

Regulating MNEs

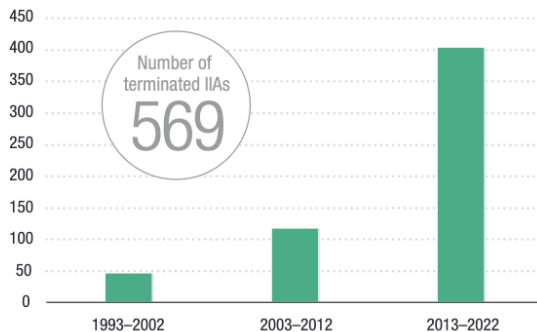
- Favorable laws are still implemented, in particular for promoting green industries or strategic areas..
 - e.g. 40% capital contribution for investments in sustainable biomethane or electricity plants in Italy, cash reimbursement of investment in chips, batteries and vaccines in Korea, U.S. IRA (\$400bn over 10 years) to boost the clean energy industry.
 - Developing countries generally do not target green industries.
 - Fossil fuel subsidies have reached a record on \$1tn (8 times the level of green subsidies).

Regulating MNEs

- Bilateral investment treaties
 - Large renegotiation and terminations of investment treaties.
 - Create dispute mechanisms between MNEs and States (ISDS): limits state hability to regulate, in particular in the Energy sector (due to the Energy Charter Treaty).
 - Affects the capacity and will of countries to regulate these areas.
 - New investment treaties try to facilitate (green) policies.
 - 80% of investment arbitration are based on treaties signed in the 1990' or earlier.

Regulating MNEs

Figure II.9. Number of terminated IIAs, 1993–2022 (By date of effective termination)



Source: UNCTAD, IIA Navigator.

Economics of Globalization

Sciences Po Saint-Germain-en-Laye

Last weeks

- We have studied the main trade models.
 - Trade arises as the result of productivity differences, endowment differences, increasing returns to scale.
 - We have seen that trade creates winners and losers.
- Countries want to regulate trade and globalization.
 - Trade policy is an important area of the regulation of globalization.
 - Tariffs are generally seen as negative but can be beneficial.
 - New trade agreements try to regulate the international legal rules beyond trade.

Last weeks

Roberts and Lamp's narratives

- Everybody wins (*establishment narrative*)

Last weeks

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- Not all firms are the same.
- Dive into the heterogeneity of firms.
 - Multinational firms are particularly important in today's globalization.
- Why are firms multinational?
- What is their role in globalization?
 - Roberts and Lamp's narrative about globalization: *the corporate power narrative* according to which MNEs have captured most gains from globalization. Why ?

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- Economic (set price) and political (directly influence decisions) power.

Firm heterogeneity

- The first heterogeneity comes from size.

TABLE 1—AGGREGATE IMPORTANCE OF THE TOP 100 FIRMS

Share of the top 100 in aggregate:	
Value added	0.219
Exports	0.220
Imports	0.183
Value added of foreign MNEs' affiliates	0.152
Value added of firms with foreign affiliates	0.828

Note: This table reports the share of the aggregates accounted for by the top 100 firms.

Source: Di Giovanni, Levchenko and Mejean, 2017

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- This translates into different abilities to trade.
 - Only a few firms trade: less than 20% in France.
 - Even within exporters, most exports are due to very few firms.
- Even less firms are multinational.

Firm heterogeneity

Table 2.1 Affiliates Relative to Local Firms (Percentage Accounted for by Affiliates)

	Finland	France	Ireland	Holland	Poland	Sweden
Enterprises	1.6	2.0	13.4	3.4	16.0	2.8
Employment	17.2	26.2	48.0	25.1	28.1	32.4
Sales	16.2	31.8	81.1	41.1	45.2	39.9
R&D Expenditure	13.1	27.4	77.3	35.8	20.9	52.0
Exports	17.5	39.5	92.3	60.0	69.1	45.8

Source: OECD (2007).

Multinational firms

Definition

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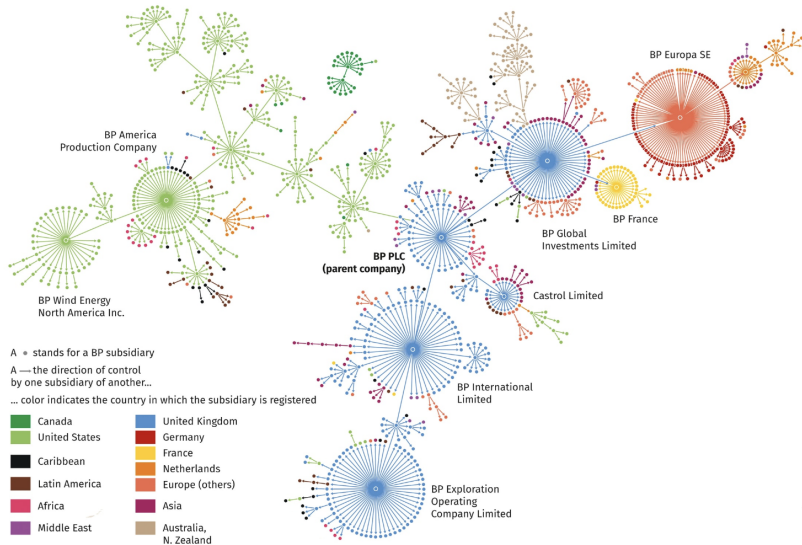
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 - e.g. Dacia, a Romanian firm is acquired by Renault in 1999.
- MNEs come from an headquarter country, produce in multiple source countries and sell their products in multiple destination countries.
- FDI: flow of cross-border investment aimed at buying or enlarging a durable interest in a company and gaining influence on its management ($\geq 10\%$ of ownership according to IMF BoP standards).

Web of BP oil subsidiaries, 2013



Multinational firms

Definition

- Greenfield FDI: creation of a foreign subsidiary vs. Acquisition: taking ownership of an existing foreign company.

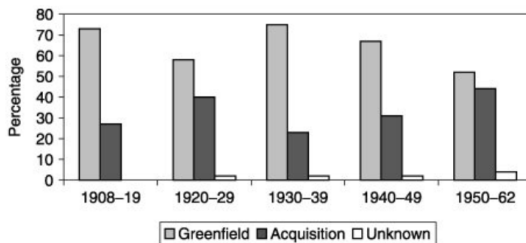


Fig. 6.1 Mode of entry used by US manufacturing companies to enter Britain, 1908-62.

Source: Jones and Bostock (1996).

Source: Jones, 2003

Multinational firms

History

- Who were the first multinationals?

Multinational firms

History

- Who were the first multinationals?
 - Charter companies (e.g. East India Company and Dutch East India Company) considered as the first MNEs → history of MNEs entangled with colonialism.
- Trade has been early associated with long-distance firm activities.
- Internalizing activities helped for coordination and control.
- Pre-Modern MNEs: traders, shippers, bankers, family groups with investment abroad in manufacturing, mining or plantations.
- No single company expanded abroad to sell or manufacture its products before the 19th century.

Multinational firms

History

- From the 19th century and the Industrial revolution: rise in cross-border capital flows out of chartered companies monopoly rights.
- From ≈ 1820 , companies began to expand abroad (mine in a border country, or in a colony, factories).
 - Siemens opened its first foreign affiliate in 1850 and Singer in 1867 (part assembly imported from the U.S. in Glasgow).
- By 1914: wide range of manufactured products undertaken by MNEs (e.g. chemicals, pharmaceuticals, electricals, machinery, motor cars, tires, branded food products).
- From one-off cross-border transfers of knowledge to more sustained investments and continuous flow of knowledge and other resources across borders within the boundaries of firms: transition from manufacturing to services and GVCs.
- Linked to the communications infrastructures.

Multinational firms

History

Box 4.2 Some large multinational manufacturing enterprises, c. 1914

Company	Nationality	Product	No. of foreign factories in 1914	Location of foreign factories
Singer	US	Sewing machines	5	UK, Canada, Germany, Russia, Austria-Hungary
J & P Coats	UK	Cotton thread	20	US, Canada, Russia, Austria-Hungary, Spain, Belgium, Italy, Switzerland, Portugal, Brazil, Japan
Nestlé	Swiss	Condensed milk/ baby food	14	US, UK, Germany, Netherlands, Norway, Spain, Australia
Lever Brothers	UK	Soap	33	US, Canada, Germany, Switzerland, Belgium, France, Japan, Australia, South Africa
Saint-Gobain	France	Glass	8	Germany, Belgium, Netherlands, Italy, Spain, Austria-Hungary
Bayer	Germany	Chemicals	7	US, UK, France, Russia, Belgium
American Radiators	US	Radiators	6	Canada, UK, France, Germany, Italy, Austria-Hungary
Siemens	Germany	Electricals	10	UK, France, Spain, Austria Hungary, Russia
L. M. Ericsson	Sweden	Telephone equipment	8	US, UK, France, Austria-Hungary, Russia

(Source: author's estimates)

Source: Jones, 2003

Why are multinational firms important to understand globalization?

Source: World Investment Report, 2023

- 79k MNEs with 790k foreign subsidiaries (2007).
- Employment went from 20.5 millions in 1990 to 82 millions in 2023 (x3).
- Turnover went from \$5000bn in 1990 to \$38000bn in 2023 (x6.6).
- Value added went from \$1000bn in 1990 to \$8300bn in 2023 (x7.3).
- World GDP has been multiplied by 3.5 over the period.
- Top 100 largest MNEs represent 20% of total MNEs sales and 10% of total employment

Largest MNEs

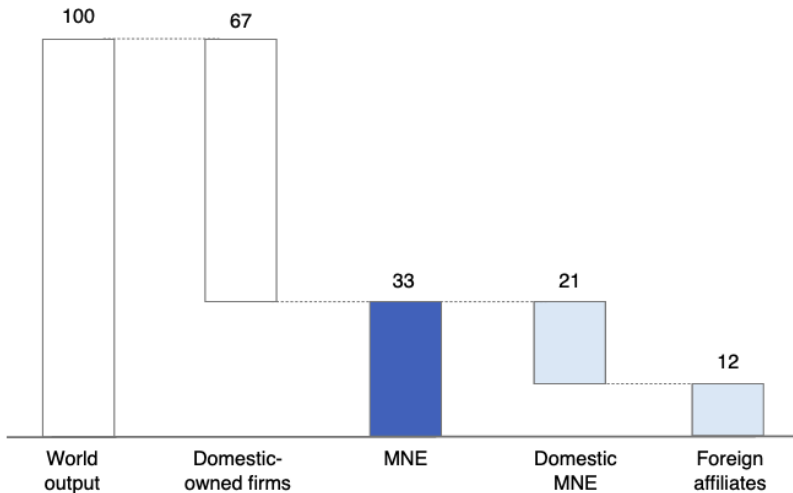
List Rank	Company Name	Revenues (\$b)	Profits (\$b) ▼
3	Exxon Mobil	449.9	44.9
19	Apple	156.5	41.7
21	Gazprom	153.5	38.1
29	Industrial & Commercial Bank of China	133.6	37.8
50	China Construction Bank	113.4	30.6
9	Volkswagen	247.6	27.9
1	Royal Dutch Shell	481.7	26.6
11	Chevron	233.9	26.2
64	Agricultural Bank of China	103.5	23.0
70	Bank of China	98.4	22.1

Countries GDP

93	 Tunisia	Africa	46,282	2022
94	 Cameroon	Africa	44,212	2022
95	 Bahrain	Asia	43,544	2022
96	 Bolivia	Americas	43,431	2022
97	 Sudan	Africa	42,762	2022
98	 Paraguay	Americas	41,855	2022
99	 Libya	Africa	40,836	2022
100	 Latvia	Europe	40,588	2022
101	 Estonia	Europe	39,054	2022
102	 Nepal	Asia	39,028	2022
103	 Zimbabwe	Africa	38,280	2022
104	 El Salvador	Americas	31,989	2022
105	 Papua New Guinea	Oceania	31,362	2022
106	 Honduras	Americas	30,568	2022
107	 Trinidad and Tobago	Americas	29,337	2022
108	 Cambodia	Asia	28,330	2022
109	 Iceland	Europe	27,702	2022
110	 Yemen	Asia	27,594	2022

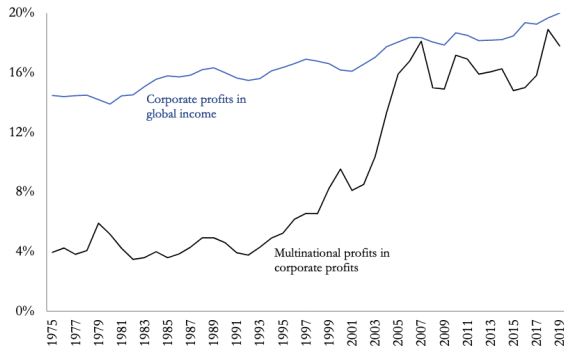
Why are multinational firms important to understand globalization?

Figure 3. Decomposition of global gross output by ownership status, 2014



Why are multinational firms important to understand globalization?

Figure 3: Global corporate profits and multinational profits, 1975–2019

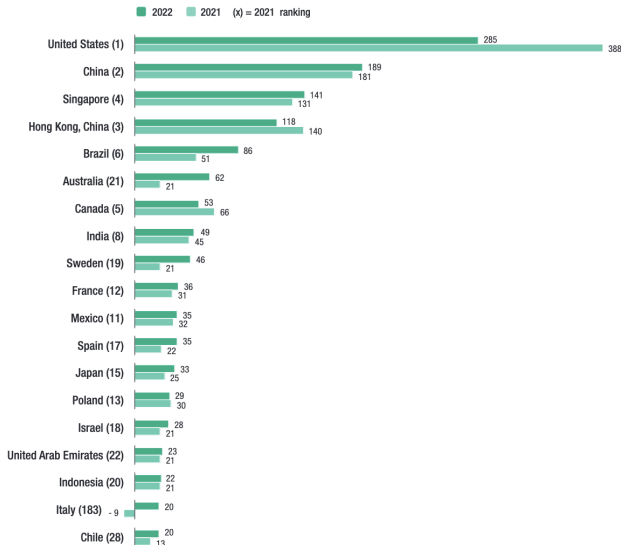


Note: the blue line shows the evolution of the share of global corporate profits in global income (defined as global GDP minus global depreciation). The black line shows the share of global multinational profits (as defined in the text) in global corporate profits.

Source: for 1975–2015: Tørslev et al. (2022a), Data Appendix Table C7; for 2016–19 figures: Data Appendix, Table 1.

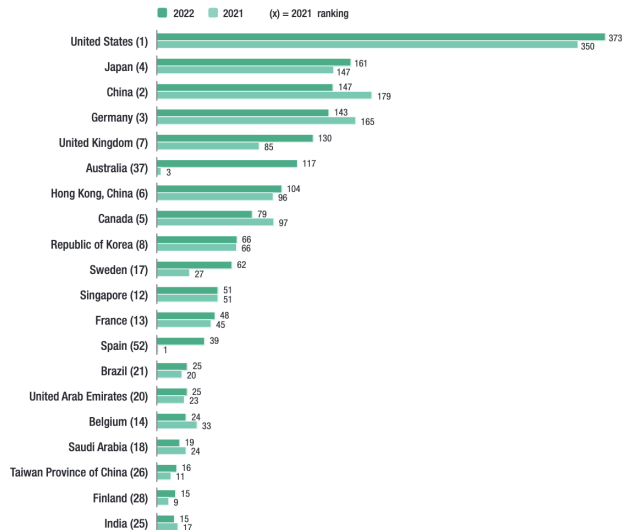
Where do FDI go? Where do they come from?

Figure I.4. FDI inflows, top 20 host economies, 2021 and 2022 (Billions of dollars)

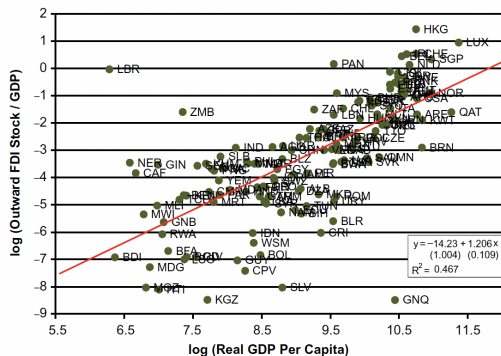


Where do FDI go? Where do they come from?

Figure I.12. FDI outflows, top 20 home economies, 2021 and 2022 (Billions of dollars)



Where do FDI go? Where do they come from?



Sources: UNCTAD and World Bank

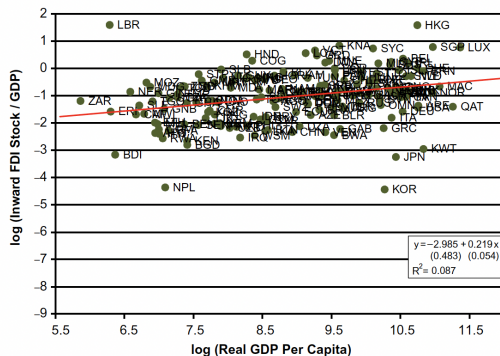
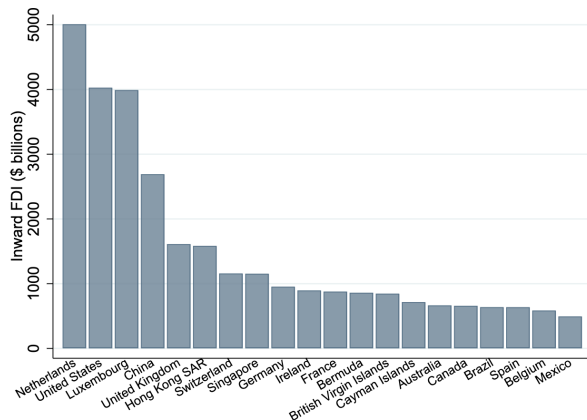


Figure 2.1 Aggregate FDI Stocks and Development

Where do FDI go? Where do they come from?

Measurement issues: Phantom FDI (Damgaard et al., 2024)

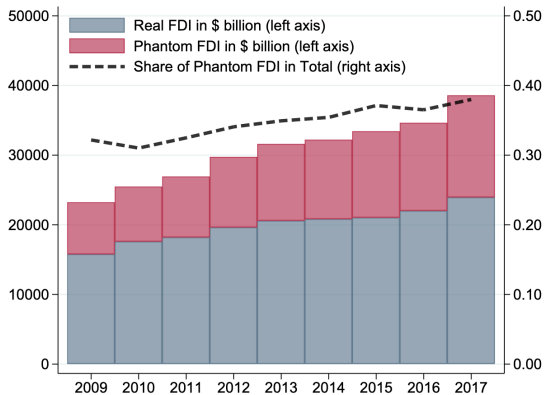
Figure 1 – Largest inward FDI positions in 2017. The figure shows the 20 economies with largest inward FDI positions in 2017. For economies reporting to CDIS, the figure shows the reported numbers. For non-reporting economies, the figure shows our estimates.



Where do FDI go? Where do they come from?

Measurement issues: Phantom FDI (Damgaard et al., 2024)

Figure 6 – Global Real and Phantom FDI. The figure shows the evolution of inward FDI positions aggregated over all economies in the world over the period 2009-2017. Total FDI is decomposed into Real FDI (blue bars) and Phantom FDI (red bars).



Horizontal vs. Vertical FDI

Horizontal vs. Vertical FDI

- Horizontal FDI

Horizontal vs. Vertical FDI

- Horizontal FDI
 - Replication of the production process in a foreign country.
 - Produce close to consumer to save on transport costs, tariffs, and other costs.
 - Historically larger phenomenon.

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- Horizontal FDI
 - Replication of the production process in a foreign country.
 - Produce close to consumer to save on transport costs, tariffs, and other costs.
 - Historically larger phenomenon.
- Vertical FDI
 - The firm acquires a company that acts as a supplier or distributor
 - The idea is to take advantage of production costs differentials.

Why becoming a MNE: the proximity-concentration trade-off

- Important trade-off between proximity and concentration.
- Proximity:
 - Produce close to consumers, low transport costs.
 - Lower benefits from increasing return to scale.

Concentration:

- Produce in a single plant.
- Large transport costs and large benefits from increasing returns to scale.

Why becoming a MNE: the proximity-concentration trade-off

- Let us consider a domestic firm:
 - Q : Quantity that will be sold on the foreign market.
 - m_D : Marginal cost of production in the domestic country.
 - m_F : Marginal cost of production in the foreign country.
 - τ : Marginal transport cost.
 - F : Fixed Cost to settle abroad

Why becoming a MNE: the proximity-concentration trade-off

- Cost of exporting:

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- Cost of exporting: $C_X = (m_D + \tau)Q$

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- Cost of FDI:

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- Cost of exporting: $C_X = (m_D + \tau)Q$
- Cost of FDI: $C_{FDI} = m_F Q + F$

Why becoming a MNE: the proximity-concentration trade-off

- Cost of exporting: $C_X = (m_D + \tau)Q$
- Cost of FDI: $C_{FDI} = m_F Q + F$
- FDI is preferred to export if:

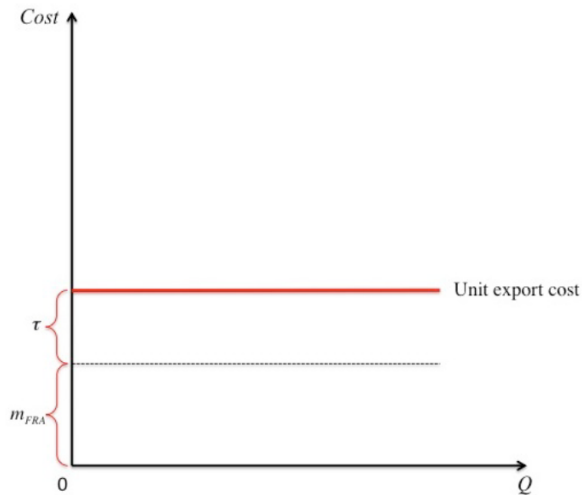
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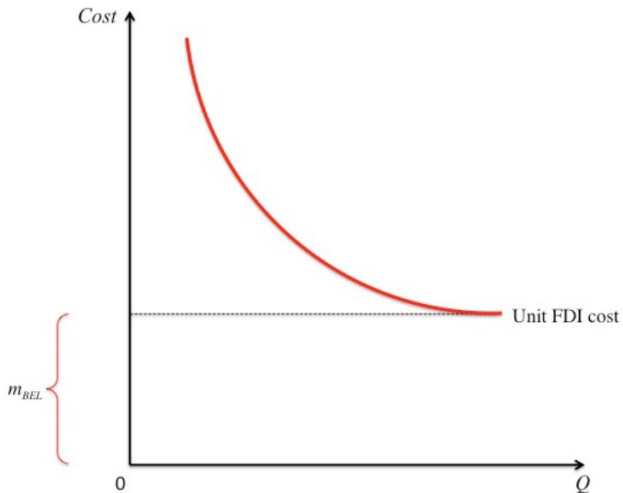
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- Or $\frac{F}{Q} + m_F < \tau + m_D$

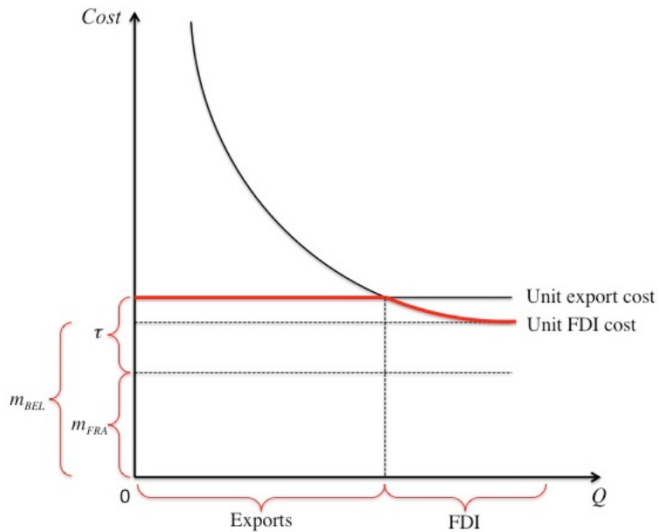
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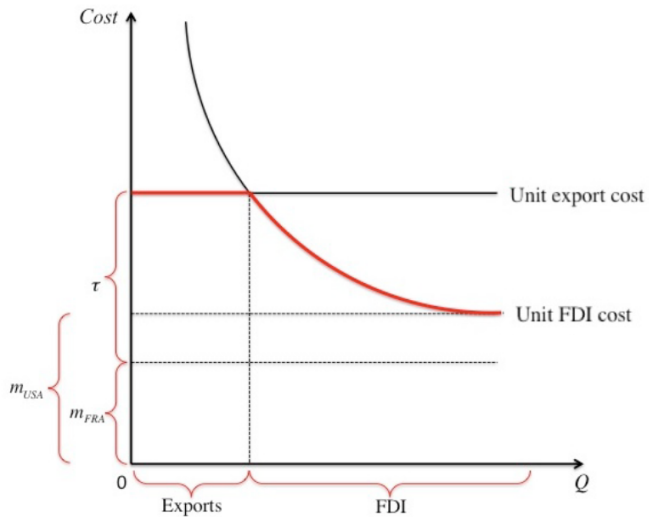
Why becoming a MNE: the proximity-concentration trade-off



Why becoming a MNE: the proximity-concentration trade-off



A rationale behind Trump tariffs?



Why becoming a MNE: the proximity-concentration trade-off

- FDI is preferred if:
 - The fixed cost is small (F).
 - The foreign market is large (Q).
 - The market is remote or there are high trade barriers (large τ).
 - The comparative advantage of the foreign country is large ($m_f - m_D$ if large).

Why becoming a MNE: the proximity-concentration trade-off

- FDI is a fixed-cost strategy and can be used to avoid variable costs (e.g. tariff-jumping FDI).
- Export is a variable-cost strategy, more suited for risky or short-term operations, or to reach small markets.
 - In between: Export-platform FDI is also suitable.
 - Do FDI and reach neighboring markets through exports: regionalization of activities.

Going beyond the proximity-concentration trade-off

- This trade-off explains the choice between exporting and serving markets domestically.
- But it does not really explain FDI in itself.
- A firm could for instance contracts with a foreign firm to produce domestically its products.
 - Coca-Cola does not produce itself (all of) its beverages.
 - It sells its recipe to contractors that produce, market and distribute beverages in foreign countries.

Going beyond the proximity-concentration trade-off

- The question of the boundaries of the firm and the choice of controlling and managing the firm abroad.
- Coase Theorem: If contracts were complete, the firm structure should not matter.
 - Firms internalize transactions when the transaction costs are smaller than through the market.
 - Matters a lot for MNEs because it is harder to enforce contracts across borders (regulations, distance, language, etc.)
- There are costs to incomplete contracts e.g. the risk of intellectual expropriation.
 - One cannot totally force someone not to use a given technology.
 - e.g. DuPont suspects its Chinese partner to infringe its IP and launches a dispute in China; Foxconn, Apple's manufacturer now also produces for Xiaomi, etc.

The impact of MNEs on host markets

Positive effects

- Foreign ownership have a positive impact on productivity which spills over to domestic affiliates.
- MNEs presence help domestic firms increasing the quality of their products.
- MNE tend to pay higher wages.
 - Setzler and Tintelnot (2021): MNEs have higher wages by 7% in the U.S. This premium is larger for high-skill workers.
 - Indirect gains for domestic firms that also increase wages: MNEs have positive effects on local activity, there are knowledge spillovers from workers moving between firms (Poole, 2013).

The impact of MNEs on host markets

Adverse effects

- MNEs are powerful companies and can use their corporate power to capture rents.
 - Lobbying: MNEs tend to lobby more than their domestic counterparts. They influence foreign policy and the content of deep trade agreements.
 - Tax avoidance: MNEs use their network of affiliates in tax havens to avoid paying taxes in other countries. Tax losses are estimated around \$200bn per year (Torslov et al., 2022).
 - Globalization has been associated with a rise in market concentration and market power. This is associated with a rise in the remuneration of capital compared to labor and a rise in mark-ups.

The impact of MNEs on host markets

Adverse effects

- Environment: MNEs use gap in local regulations to shift pollution to less-regulated countries → regulatory arbitrage.
- Developing countries: MNEs can help development but at the same time repatriate gains to their home country → harder for the host economy to benefit from economic gains.
- Security and sovereignty concerns, Natural resource capture, *etc.*

The impact of MNEs on host markets

Adverse effects

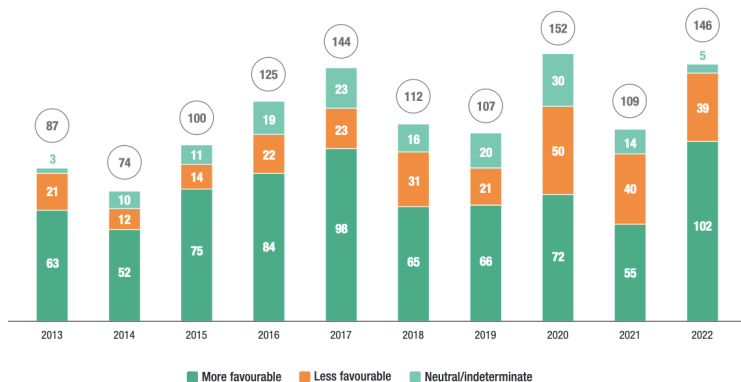
- The capacity of regulatory arbitrage by MNEs give them an important power and affect State regulation.
- Said differently, state regulation is endogeneous to MNE power.
 - Investor-State Dispute Settlement (ISDS) can limit State environmental and social policies (UNCTAD, 2023).
 - Tax competition: race to the bottom in terms of corporate taxation: each countries tries to attract foreign MNEs by lowering its tax rate.
 - Subsidy competition: Countries offer larger and larger subsidies to foreign firms to attract them.

Regulating MNEs

- States put in place different types of policies to regulate MNEs.
- Two core objectives: facilitation of business activity and regulation of its impacts.
- Recent rise in regulations aiming at regulating MNEs impact.
 - Many policies (40% of "less-favourable" policies) related to national security concerns (critical infrastructure, core technologies, sensitive assets).
 - Surge in investment screening mechanisms (from 3 countries in 2005 to 37 in 2022). Concerns about strategic industries (e.g. critical minerals in Canada, energy, transport and communication in Italy).
 - Withdrawal of M&A deals (e.g. the Chinese acquisition of Forbes media in the U.S.).
 - Windfall profits taxes.
 - Managing social impacts: law on MNEs' responsibility in 2017 in France. MNEs can be held responsible of their social and environmental adverse impacts in foreign countries.

Regulating MNEs

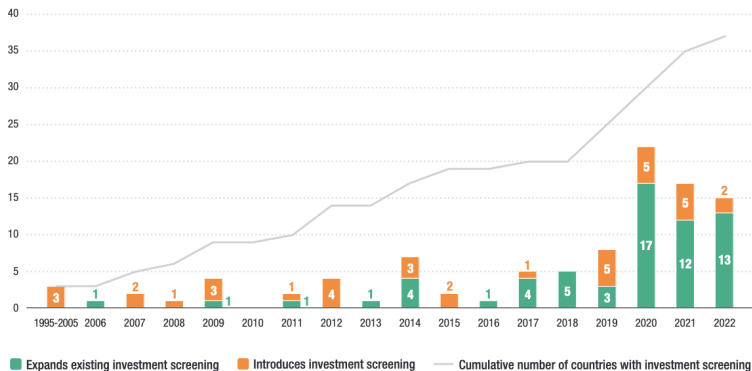
Figure II.1. Changes in national investment policies, 2013–2022 (Number of measures)



Source: UNCTAD, Investment Policy Monitor.

Regulating MNEs

Figure II.4. Countries introducing or expanding security-related investment screening, 1995–2022 (Number)



Source: UNCTAD.

Regulating MNEs

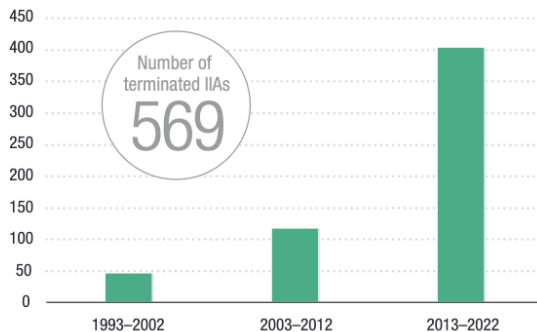
- Favorable laws are still implemented, in particular for promoting green industries or strategic areas.
 - e.g. 40% capital contribution for investments in sustainable biomethane or electricity plants in Italy, cash reimbursement of investment in chips, batteries and vaccines in Korea, U.S. IRA (\$400bn over 10 years) to boost the clean energy industry.
 - Developing countries generally do not target green industries.
 - Fossil fuel subsidies have reached a record on \$1tn (8 times the level of green subsidies).

Regulating MNEs

- Bilateral investment treaties
 - Large renegotiation and terminations of investment treaties.
 - Create dispute mechanisms between MNEs and States (ISDS): limits state hability to regulate, in particular in the Energy sector (due to the Energy Charter Treaty).
 - Affects the capacity and will of countries to regulate these areas.
 - New investment treaties try to facilitate (green) policies.
 - 80% of investment arbitration are based on treaties signed in the 1990' or earlier.

Regulating MNEs

Figure II.9. Number of terminated IIAs,
1993–2022 (By date of effective termination)



Source: UNCTAD, IIA Navigator.

Economics of Globalization

Sciences Po Saint-Germain-en-Laye

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 - Regulatory competition.
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- How to transform globalization to answer the challenges posed by environmental change?

Quick reminder

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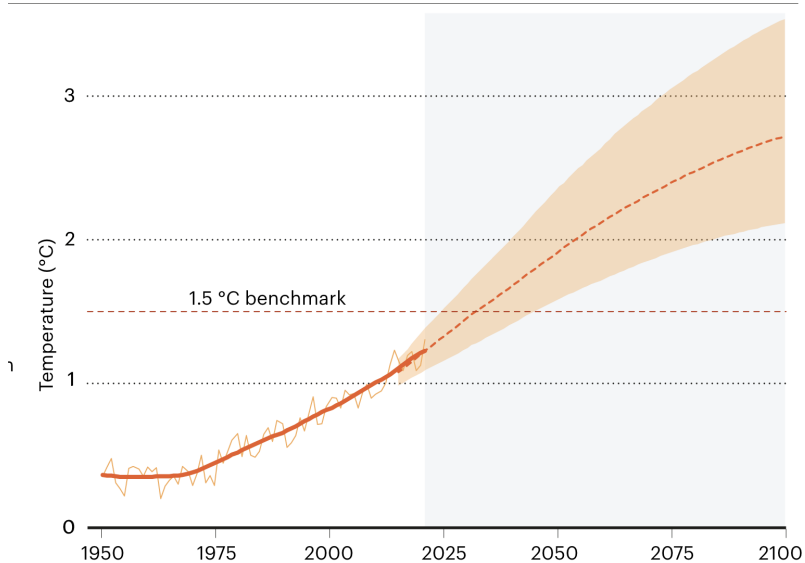
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- Environmental damage beyond GHG emissions: biodiversity, deforestation, sea level rise, extreme events, etc. → both local and global.

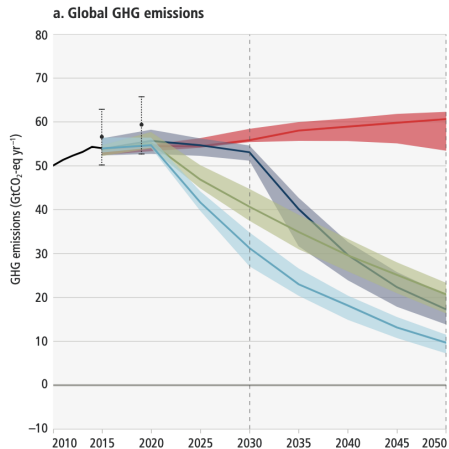
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- Environmental damage beyond GHG emissions: biodiversity, deforestation, sea level rise, extreme events, etc. → both local and global.
- Direct costs on human life, life quality and economics.
 - Direct costs estimated to 1.3 trillion over the last decade.
 - Indirect costs: Estimations that 1°C of warming reduces GDP by 12%.
 - Conservative cost: does not account for effects on conflicts, mortality, and other nonmonetary effects.

Quick reminder



Quick reminder



- Trend from implemented policies
- Limit warming to 2°C (>67%) or return warming to 1.5°C (>50%) after a high overshoot, NDCs until 2030
- Limit warming to 2°C (>67%)
- Limit warming to 1.5°C (>50%) with no or limited overshoot

Globalization and the Environment

An important clarification

- Different scopes to measure emissions:

Globalization and the Environment

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 - **Scope 1:** Direct emissions from production → the smokestack of a vehicle manufacturing plant

Globalization and the Environment

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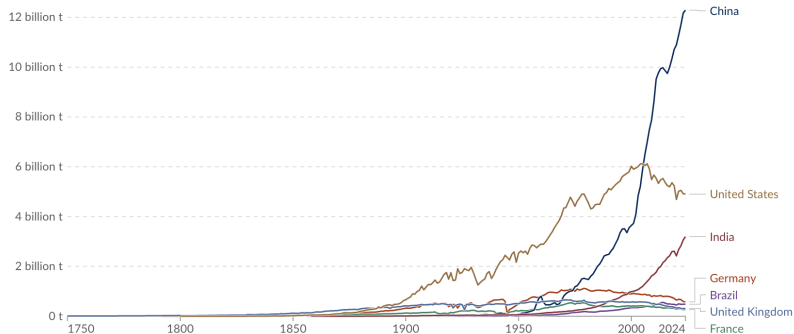
Globalization and the Environment

An important clarification

- Different scopes to measure emissions:
 - **Scope 1:** Direct emissions from production → the smokestack of a vehicle manufacturing plant
 - **Scope 2:** Direct emissions + emissions due to energy → add the emissions due to electricity generation.
 - **Scope 3:** Indirect emissions → the pollution from the plant + from the plants supplying tires, engines to that plant + from the plants and mines supplying rubber, steel, etc. to the input plants, etc. + from the use of the product.

Globalization and the Environment

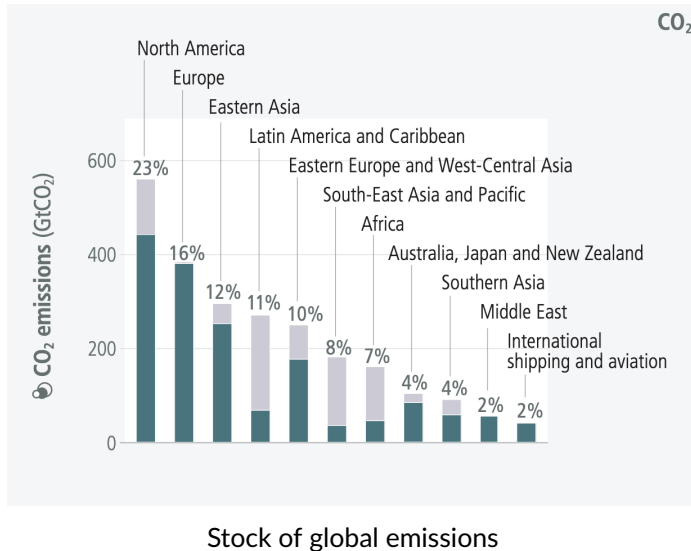
Fact 1: Most global emissions growth comes from developing countries.



- More developed countries have lower emission rates on average.
- Dirtiest countries have 20 times the emission intensity of the cleanest countries.
- Very recent evidence of flat emissions in China.

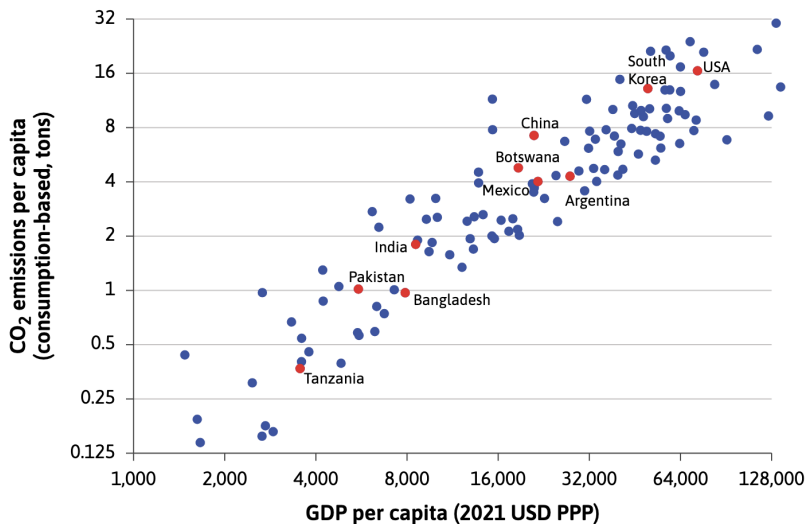
Globalization and the Environment

Fact 2: Most global emissions stock comes from developed countries.



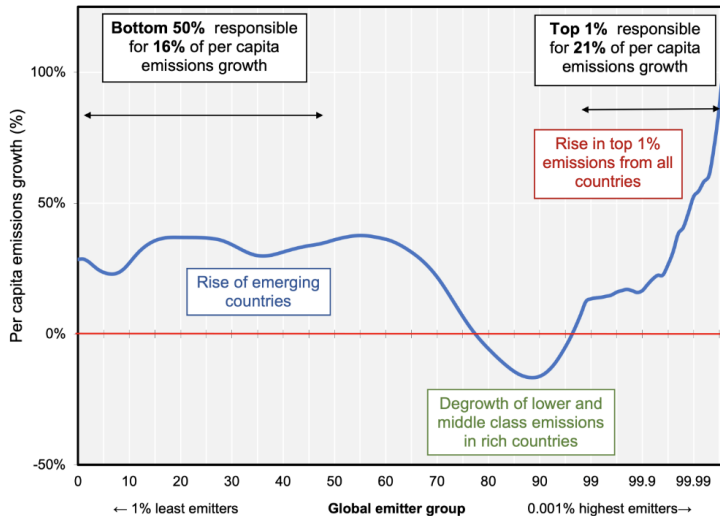
Globalization and the Environment

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Globalization and the Environment

Fact 3: Emissions inequalities



Globalization and the Environment

Fact 3: Emissions inequalities

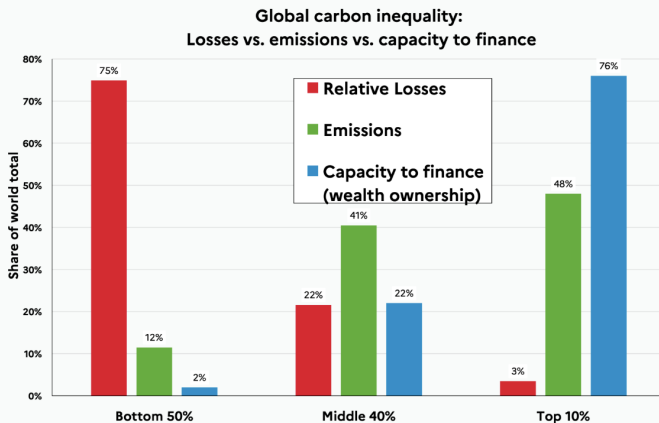


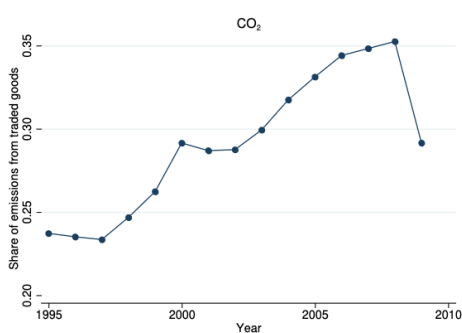
Figure A: Global climate inequality: relative losses, emissions and capacity to finance

Notes: Relative income losses due to climate change, vs. greenhouse gases emissions vs. wealth ownership. See Figure 29 for methodological details and how to read this graph.

Globalization and the Environment

Fact 4: International Trade accounts for a fourth to a third of global pollution emissions.

(a) Carbon Dioxide (CO₂)

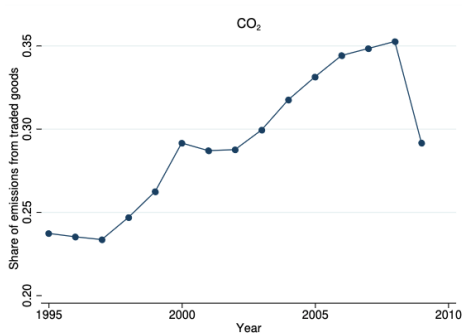


Share of Global Pollution Embodied in International Trade, by Year

Globalization and the Environment

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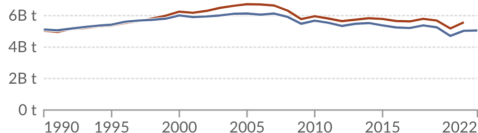
Does it mean that 1/3 of emissions will disappear if trade stops?

Globalization and the Environment

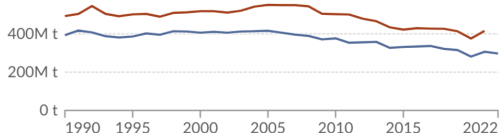
Fact 5: Rich countries are increasingly outsourcing pollution.

■ Territorial emissions ■ Consumption-based emissions

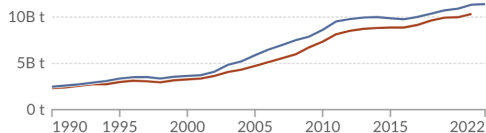
United States



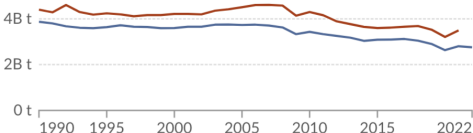
France



China



European Union (27)

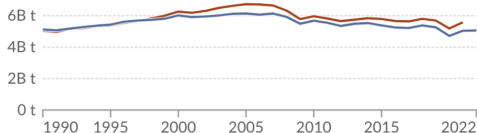


Globalization and the Environment

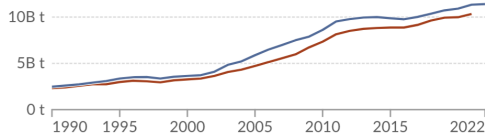
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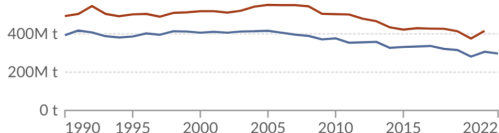
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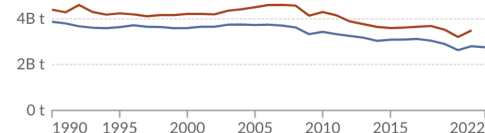
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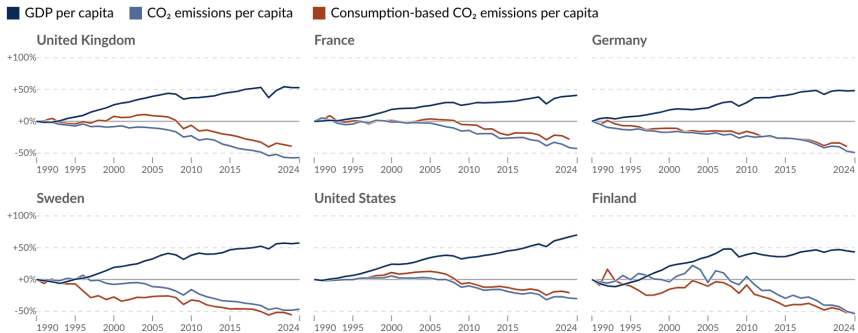
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Consequence: French emissions rely a lot on foreign technologies. Decrease in French emissions from 2000 to 2014 driven at 58% by foreign countries, and 12% by China only.

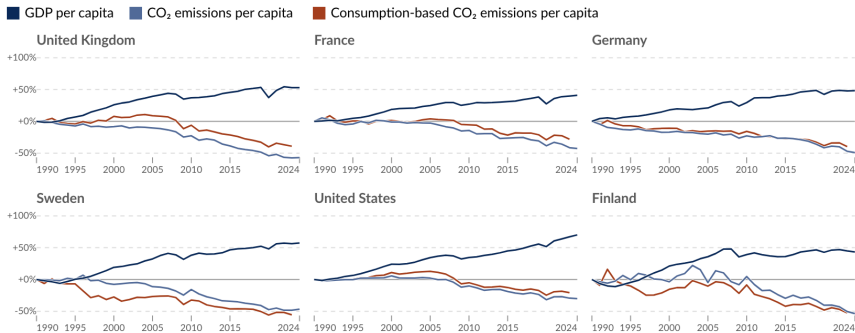
Globalization and the Environment

Fact 5: ... but are decoupling emissions and growth



Globalization and the Environment

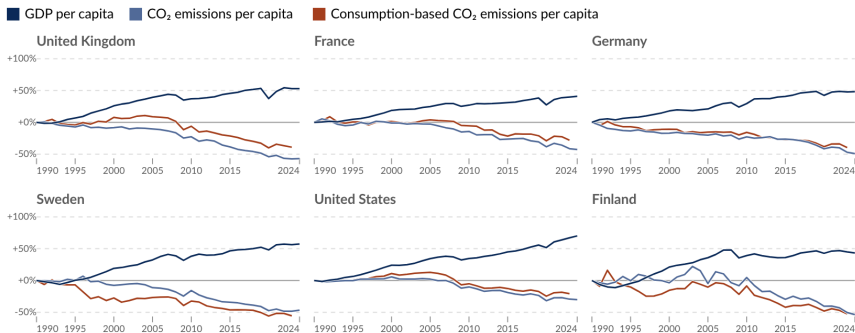
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How is it possible?

Globalization and the Environment

Fact 5: ... but are decoupling emissions and growth



How is it possible?

→ **Offshoring; Efficiency** (better technologies allow to use less energy to produce one \$ of GDP), **Reallocation** (switch from high-emissions – fossil fuels – to low-emissions sources of energy – renewables, nuclear energy).

Climate policy and globalization

Domestic policies

- What economic policies are necessary to limit climate change and environmental damage?

Climate policy and globalization

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- Pigouvian tax

Climate policy and globalization

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Climate policy and globalization

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 - Pros: Integrate the social cost into behavior, generate tax revenues to fund environmental policies or do redistribution.
 - Limits: leakage effects, can be regressive (eg Yellow Vests), how to find the right social carbon price (between 100\$ and 1000\$)?

Climate policy and globalization

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 - Limits: leakage effects, can be regressive (eg Yellow Vests), how to find the right social carbon price (between 100\$ and 1000\$)?
- Alternatives: regulatory standards and bans, industrial policies to foster innovation, investment in green infrastructure and public goods, etc.

Climate policy and globalization

Domestic policies

- Carbon pricing:

Climate policy and globalization

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Climate policy and globalization

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- Carbon pricing:
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 - Cap-and-trade policies such as the ETS.

Climate policy and globalization

Domestic policies

- Carbon pricing:
 - Carbon taxes
 - Cap-and-trade policies such as the ETS.
- Evaluation of carbon tax find positive effect on the reduction of emissions (between 5% and 20% depending on the tax)

Climate policy and globalization

Emissions Trading Schemes

- ETS are cap and trade systems designed to limit the total amount of GHG that can be emitted.
- To emit GHG, firms need permit that they can trade among each other.

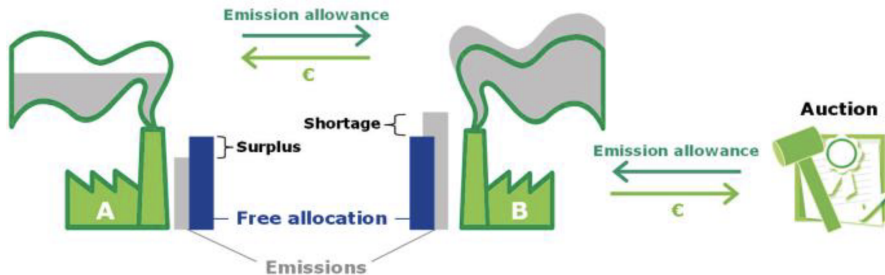
Climate policy and globalization

Emissions Trading Schemes

- ETS are cap and trade systems designed to limit the total amount of GHG that can be emitted.
- To emit GHG, firms need permit that they can trade among each other.
 - The total number of permits is fixed so that the government can control the total number of emissions.
 - Given that firms vary in their production technologies, how will the total amount of required abatement be divided among them?
 - The abatement should be done by the firms for which this is least costly because this saves scarce resources that can be used elsewhere.
 - Works for *in-scope* industries e.g. 45% of the EU emissions are within the EU-ETS, 80% for the Californian ETS, 14% at the World level.

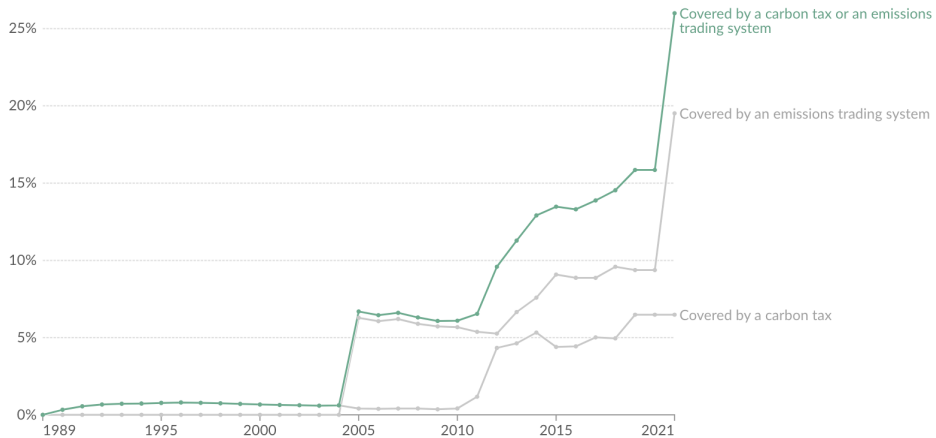
Climate policy and globalization

Emissions Trading Schemes [More details](#)



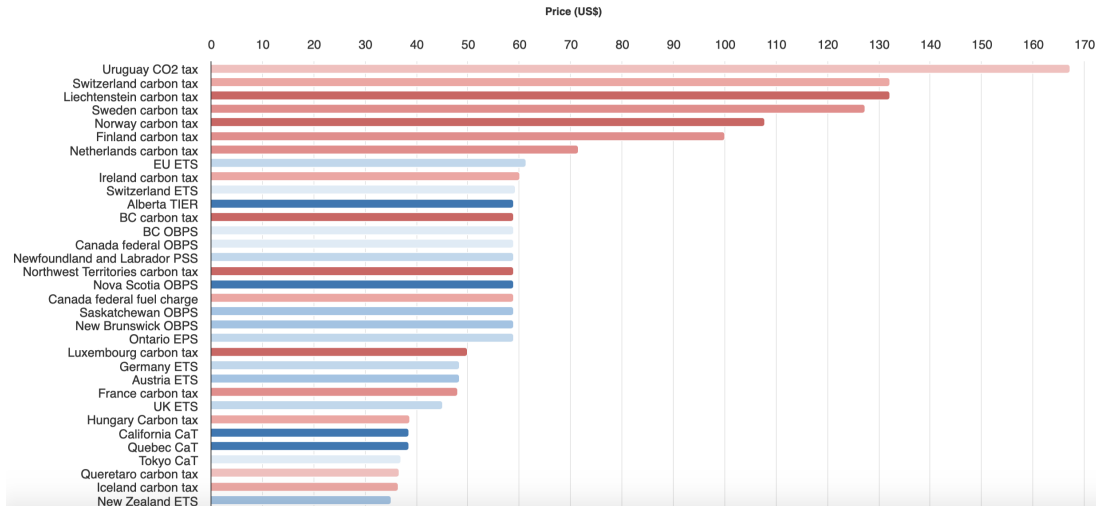
Climate policy and globalization

Domestic policies



Climate policy and globalization

Domestic policies: Carbon Pricing Dashboard



Climate policy and globalization

Collective action

- Why is it so hard to make countries coordinate at the world level?

Climate policy and globalization

Collective action

- Why is it so hard to make countries coordinate at the world level?

Talk of a global carbon pricing scheme grows louder ahead of COP30

Brazil wants to use the presidency to push for an international framework



Climate policy and globalization

Collective action

- Why is it so hard to make countries coordinate at the world level?

‘Additional promises mean nothing’: The awkward flaw in the world’s climate talks

World leaders have vowed to fight rising temperatures for years. Many of those pledges fade when the summits end.



Climate policy and globalization

Collective action

- Why is it so hard to make countries coordinate at the world level?

Climate policy and globalization

Collective action

- Why is it so hard to make countries coordinate at the world level?
 - Pollution is a global externality: you do not bear the cost of your emissions.
 - You gain if you free ride → collective action problem.

		US	
		Restrict	BAU
China	Restrict	GOOD GOOD	BEST WORST
	BAU	WORST BEST	BAD BAD

Climate policy and globalization

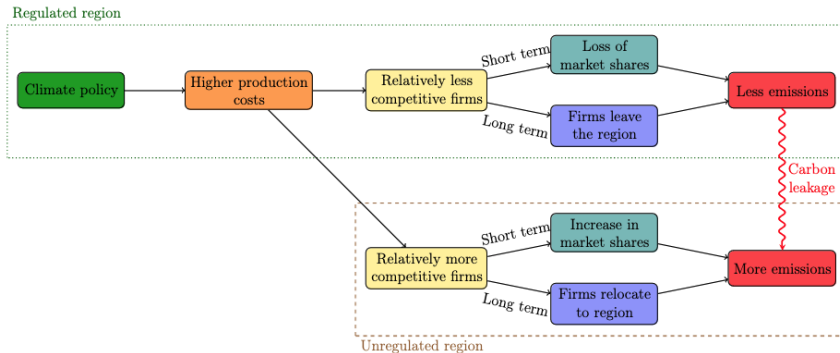
Leakage effects

- Leakage: When a coalition of countries regulate pollution emission, this might increase emissions in non-coalition countries.
- Leakage effects reduce the efficacy of domestic policies: carbon emissions embodied in the exports of countries that did not ratify the Kyoto protocol increased by 8%.

Climate policy and globalization

Leakage effects: the competition channel

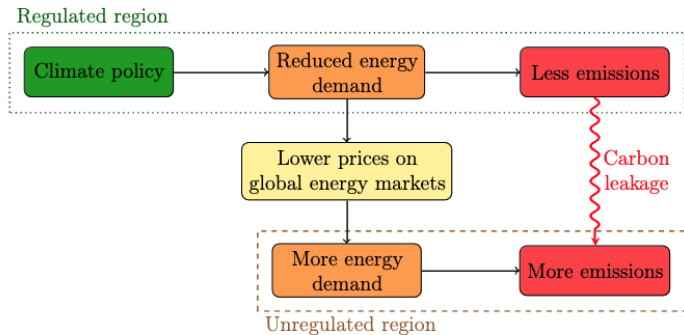
Figure 2: A schematic view of the competition channel



Climate policy and globalization

Leakage effects: the energy channel

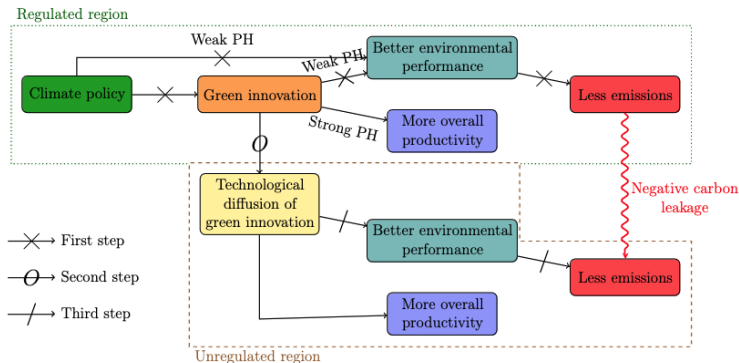
Figure 3: A schematic view of the energy channel



Climate policy and globalization

Leakage effects: the innovation channel

Figure 4: A schematic view of the innovation channel



Note: PH = Porter Hypothesis

Porter hypothesis: strict environmental regulations can induce efficiency and encourage innovations that help improve commercial competitiveness.

Climate policy and globalization

Addressing Leakage effects.

- Addressing leakage effects requires aligning incentives.

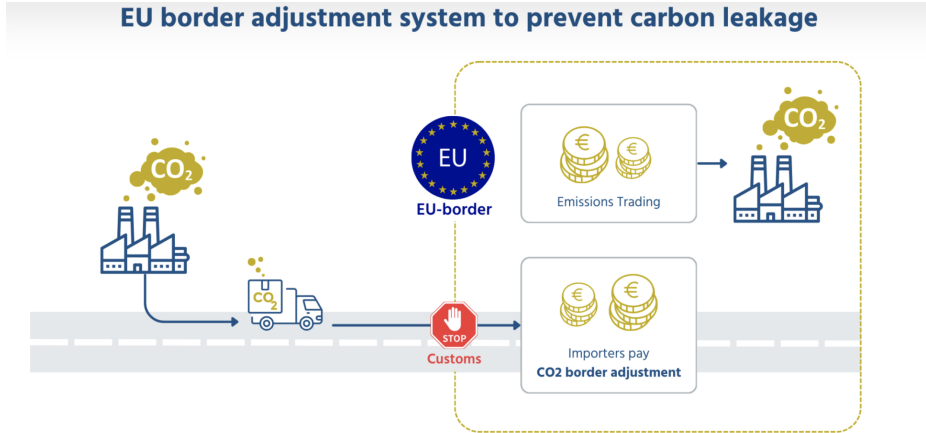
Climate policy and globalization

Addressing Leakage effects.

- Addressing leakage effects requires aligning incentives.
- EU-Carbon border-adjustment mechanisms (CBAM) in place from October 2023 to avoid leakage effects.
- Main objective: ensure the carbon price of imports is equivalent to the carbon price of domestic production.
- Applies on carbon-intensive goods and goods at risk of leakage effects.
 - Cement, iron and steel, aluminium, fertilizers, electricity and hydrogen
- Capture 50% of the emissions in the European Trading Scheme when fully phased-in.

Climate policy and globalization

Addressing Leakage effects.



Climate policy and globalization

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Climate policy and globalization

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Climate policy and globalization

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Climate policy and globalization

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Climate policy and globalization

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Climate policy and globalization

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Climate policy and globalization

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Climate policy and globalization

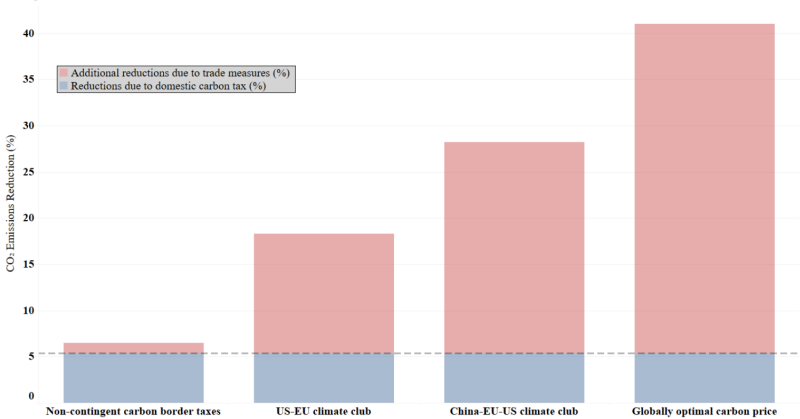
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 - Incentivizes joining the club.
 - Problem: Need to put many big countries in the club to make it work.

Climate policy and globalization

Addressing Leakage effects.

Projected CO₂ Reduction under Trade-Based Climate Policies



Source: Farrokhi and Lashkaripour (2024)'s projections based on GTAP database.

EconoFact EconoFact.org

Note: The blue portion represents the effect of a domestic carbon tax set at a level that only considers the damage caused by emissions to the local economy. Non-contingent carbon border taxes are tariffs levied on imported goods based on the greenhouse gas emissions from production. The climate club projections assume contingent trade penalties that elicit global participation. The final column shows emissions reduction achievable under globally optimal carbon pricing.

Trade and investment policy

Openness and environmental policy

- Openness might constrain environmental policy: trade policy limits the use of many instruments (tariff, quotas, subsidies).
- Trade liberalization might be compensated by weak environmental policies or specific product standards that can be seen as a subsidy to domestic producers.
- Risk of lobbying increases.
 - Closed economy: regulations increase costs which are partly passed-through consumers.
 - Open-economy: prices are less sensible. Producers tend to bear the costs and will be more resistant to tighter environmental regulation.
- Regulatory competition can also go through the investment policy (cf. ISDS discussed in previous classes).

Trade and investment policy

Using trade policy

- Trade policy can be used to restrict products that cause environmental damages.
 - Chinese restrictions on the export of rare earths to limit pollution.
 - Generated price increase: U.S. Canada, the EU and Japan filled a complaint at WTO.
 - WTO ruled against China with the motive that other instruments were available and that export quotas were “designed to achieve industrial policy goals rather than conservation”.
- Environmental policies might be confounded by industrial policy.

Trade and investment policy

Using trade policy

- Defenders of trade agreements state that it can be used for the diffusion of environmental norms.
- The EU pushes for this vision of trade agreements, e.g., for the EU-Mercosur agreement. But is it enough, or is it greenwashing?
 - Introduce a dispute settlement mechanism to enforce workers' right and environmental provisions.
- Environmental provisions in PTA seem to work by reducing dirty exports and increasing green exports.
- Questions remain unanswered:
 - Is it working?
 - Does it spill-over to domestic production?
 - Are there leakage effects?

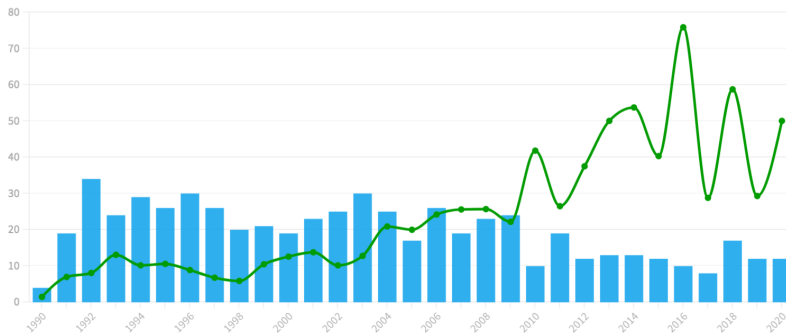
Trade and investment policy

Using trade policy

Number of RTAs and environmental provisions on average (by year of signature)

1990-2020

(Click to select) ■ Average environmental provisions per RTA signed in that year ■ RTAs signed in that year

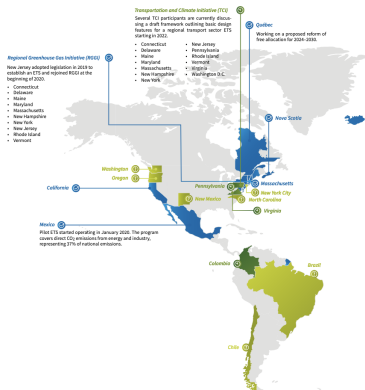


Source: [OECD work on Regional Trade Agreements and the environment: Policy Perspectives \(2023\)](#)

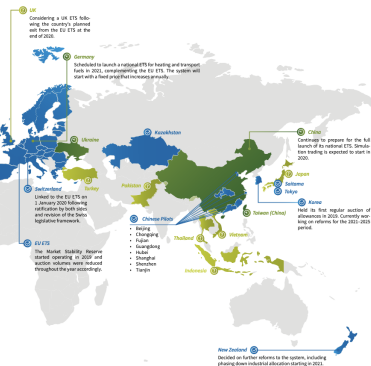
Emissions Trading Schemes

EMISSIONS TRADING WORLDWIDE

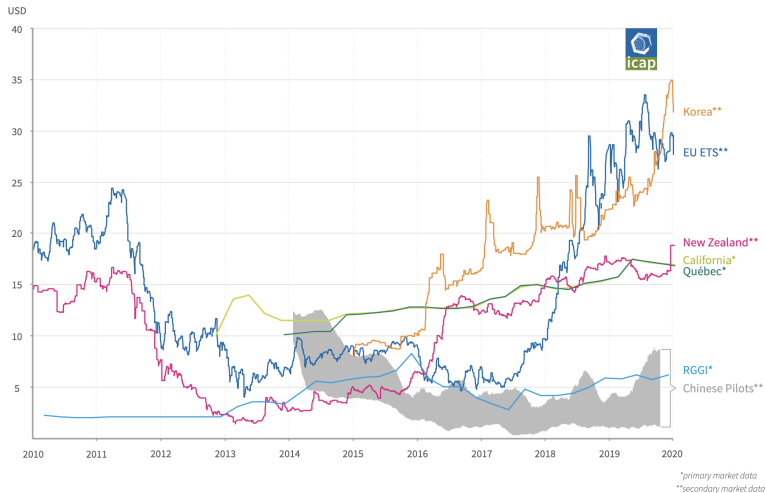
The state of play in existing and upcoming systems in 2020



The ICAP ETS world map depicts emissions trading systems currently in force, under development or under consideration. There are now 21 systems covering 29 jurisdictions with an ETS in force. Another nine jurisdictions are putting in place their systems for operation in the next few years, including China, Germany and Colombia. 15 jurisdictions including China, Turkey and Pakistan are also considering the role an ETS can play in their climate change policy mix. The number of systems under development and consideration includes Montenegro and the Philippines, respectively, but this is not reflected in the map as they have not yet submitted an official call-off order for this report. The map also shows that one jurisdiction already has a system in force and is developing or considering an additional system. It is depicted in the map as its system being in force only in its blue.

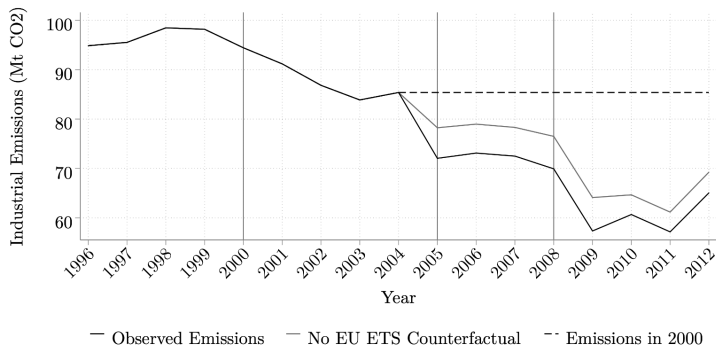


Emissions Trading Schemes



Emissions Trading Schemes

Figure 4: The Effect of the EU ETS on Aggregate Emissions Reductions



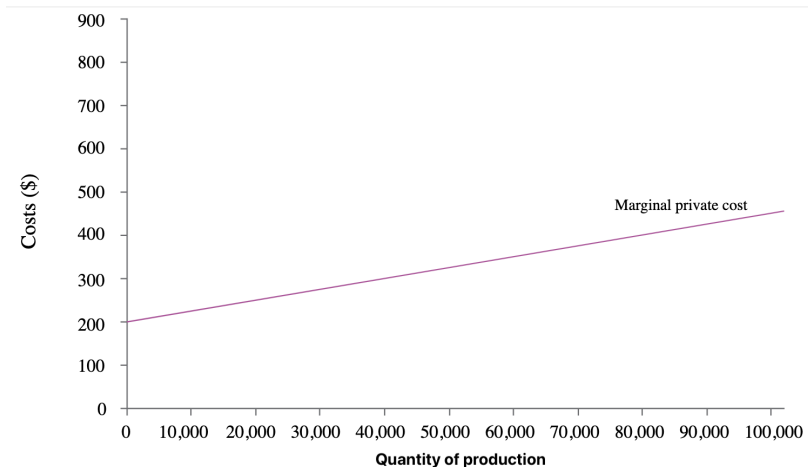
Notes: The black line presents the aggregate time series for industrial emissions in France, measured in millions of tonnes of CO₂. The dark gray line represents counterfactual emissions in the absence of the EU ETS, using our difference-in-differences estimates and assuming that 75% of industrial emissions are regulated. The dashed black line represents the level of emissions in 2000 as a benchmark. Source: Authors calculations based on French microdata and Eurostat data.

Emissions Trading Schemes

EU ETS Leakage effects.

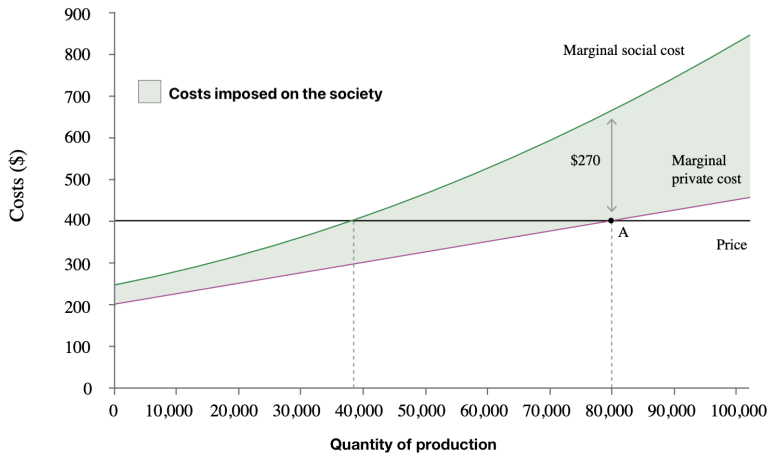
- Competition channel: no evidence
 - Energy channel: no leakage through this channel because the EU demand for fossil fuel has not yet significantly decreased (because of fuel intensive activities are out of scope).
 - Innovation channel: limited impact on clean energy innovation.
- Current estimations are based on the first phases of the implementation of EU ETS (low price, free allocations). More important effects are expected with higher carbon prices.

Pigouvian Taxes

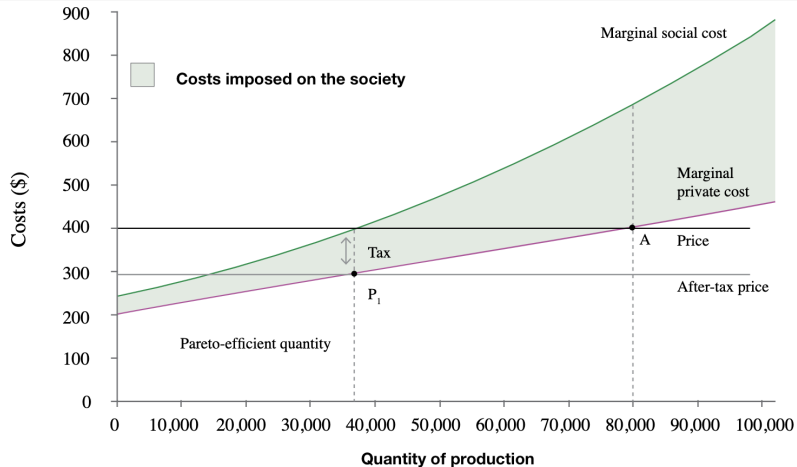


In a competitive environment, producers are price-takers and production is set at the point where the price is equal to the marginal private cost of production. [Back](#)

Pigouvian Taxes



Pigouvian Taxes



Economics of Globalization

Sébastien Laffitte
Sciences Po Saint-Germain-en-Laye

Taking stock

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- **Distribution:** How globalization affects the distribution of resources.
 - Factor remuneration, Multinational Firms, Taxes.

→ Globalization and Inequalities.

Globalization and Inequalities

Opinion **Global inequality**

+ Add to myFT

Lula, Ramaphosa and Sánchez: We face an inequality emergency

The needs of ordinary people must be placed at the centre of the world's agenda



Globalization and Inequalities

- How have global inequalities evolved?
- What are the links between globalization and inequalities?
 - Within-country inequalities.
 - Between-country inequalities.

Measuring Inequality

- How to measure inequality?

Measuring Inequality

- How to measure inequality?
 - Labor share.
 - Gini Coefficient.
 - Income and Wealth shares.

Measuring Inequality

- What are income (flow) and wealth (stock)?

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Measuring Inequality

The Labor share

- Share of income going to labor is a good proxy for inequalities. Why?

Measuring Inequality

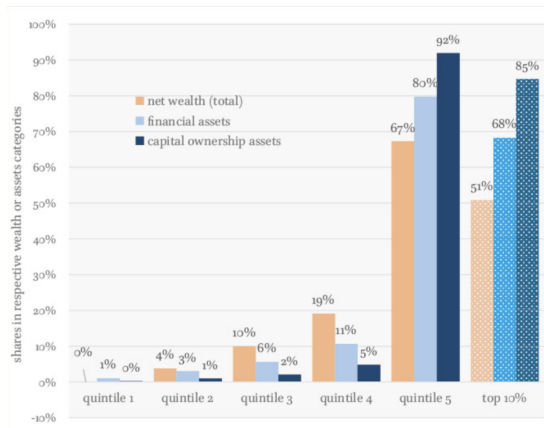
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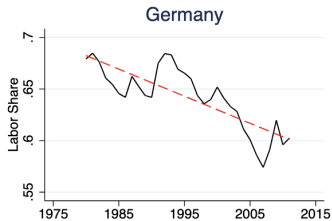
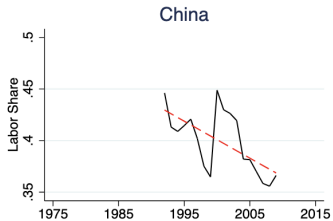
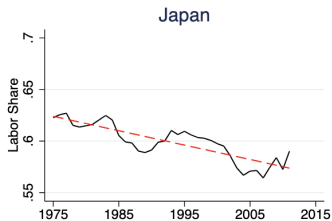
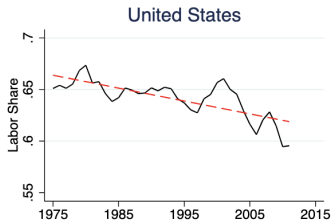
Measuring Inequality

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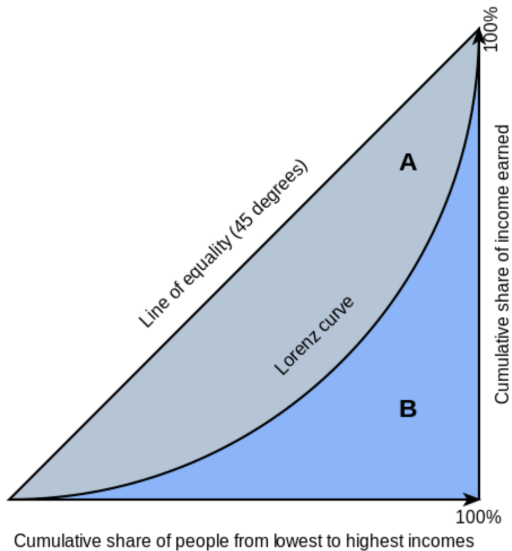
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- Lorenz Curve shows the share of income earned by people below a given fractile.
 - e.g. The 50% poorest people in a country earn 22% of national income in Europe.
- The Gini coefficient measures inequality based on Lorenz Curves
- It summarizes in one number all the distribution of income.

Measuring Inequality

The Gini coefficient



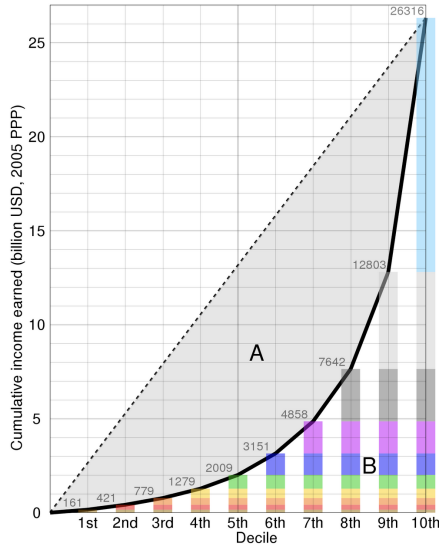
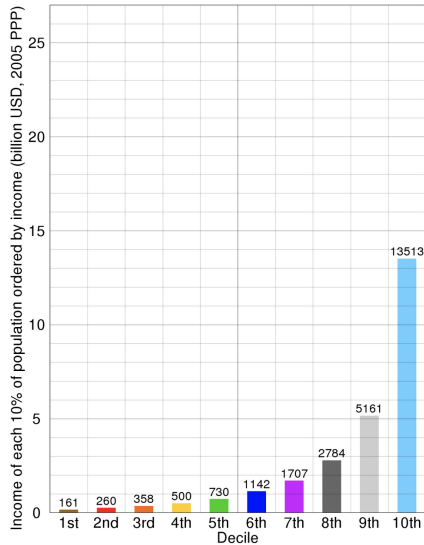
Measuring Inequality

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- The Gini coefficient measures inequality based on Lorenz Curves.
 - How does A move with inequality?
 - The Gini coefficient is computed as $\frac{A}{A+B}$.

Measuring Inequality

The Gini coefficient



Measuring Inequality

Income and wealth shares

- A drawback of the Gini coefficient is that it requires a lot of data.
 - You need all the income or wealth shares at all percentiles.
 - Not available back in the past or in developing countries.
 - It is also hard to interpret: change in the Gini coefficient can mean many things.

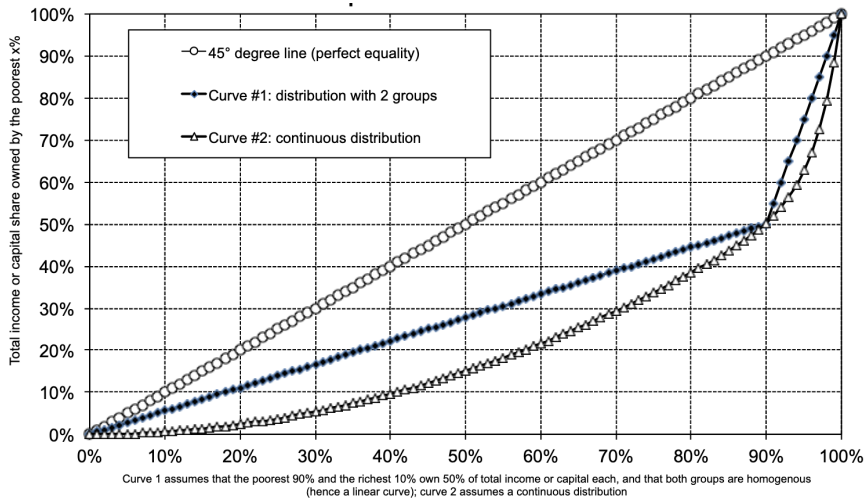
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 - It is also hard to interpret: change in the Gini coefficient can mean many things.
- We can focus on income and wealth shares for specific percentiles.
 - Bottom 50% share, Top 1% share, Top 0.1% share, *etc.*
 - Easy to interpret but does not tell the whole story.
- The Gini coefficient and income shares are linked.

Measuring Inequality

Income and Wealth shares



Source: Zucman

Evolution of Global Inequalities

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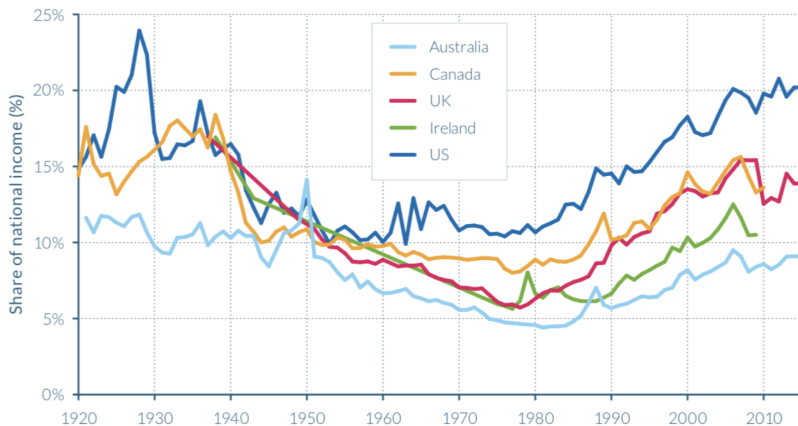
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 - Poorest half of the population owns only 2% of the total wealth in the world.
- MENA countries are the most unequal and Europe is the less unequal region.

Evolution of Global Inequalities

- Change in inequalities varies across countries and level of development.
 - There are different regimes of inequality
 - For given levels of economic and technological development, different inequality regimes that are possible.
- A long-run comparative and historical perspective on development is necessary.
 - e.g. Piketty's *Capital in the 21st century* and *Capital and Ideology*.
 - **World Inequality Report.**
- Studying inequalities is also interesting because it reveals **inequalities in power.**

Evolution of Global Inequalities

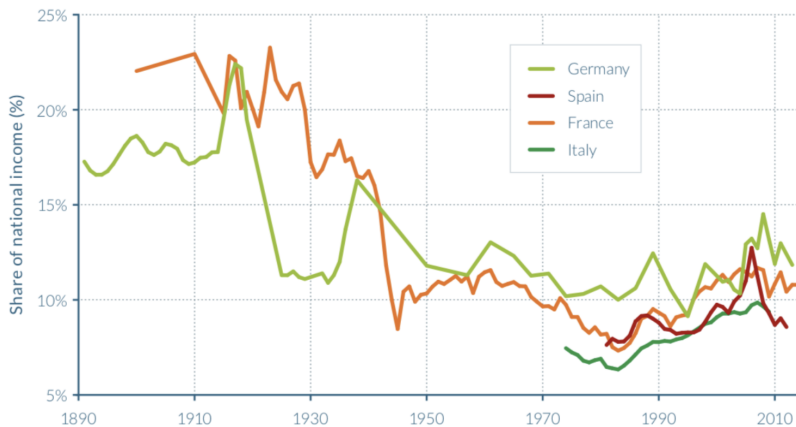
Top 1% national income share in Anglophone countries, 1920–2015



Source: Novokmet, Piketty & Zucman (2017). See wir2018.wid.world for data series and notes.

Evolution of Global Inequalities

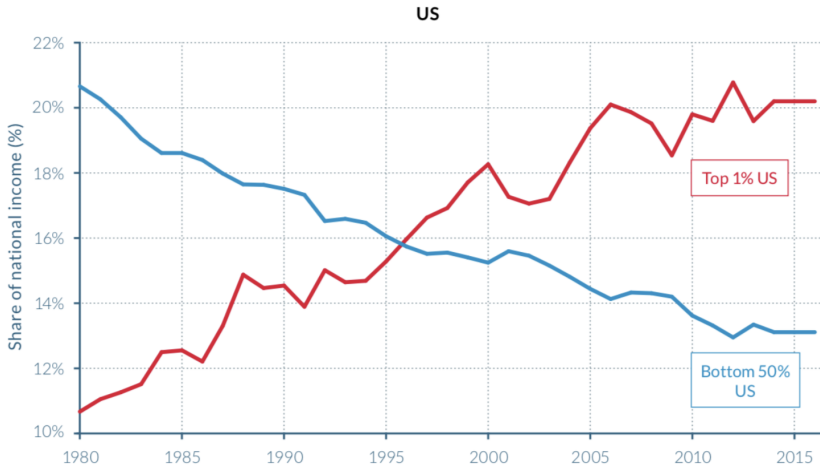
Top 1% national income share in European countries, 1890–2014



Source: WID.world (2017). See [wir2018.wid.world](#) for data series and notes.

Evolution of Global Inequalities

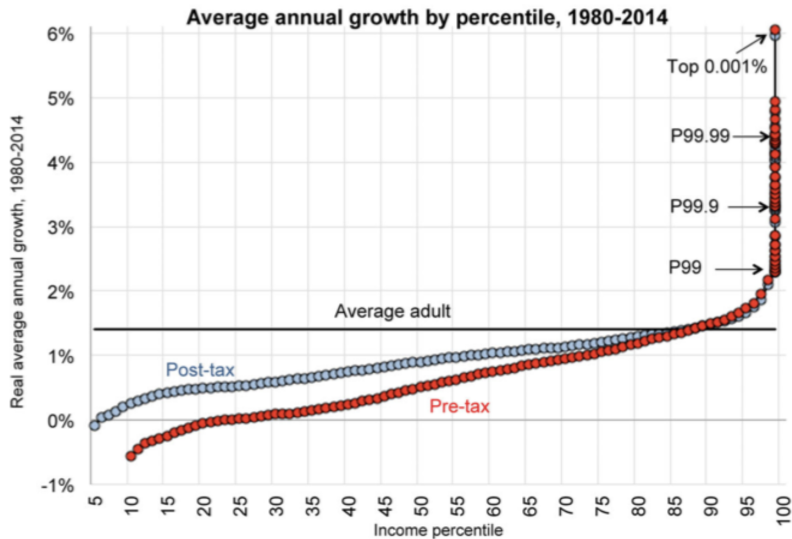
Top 1% vs. Bottom 50% national income shares in the US and Western Europe, 1980–2016



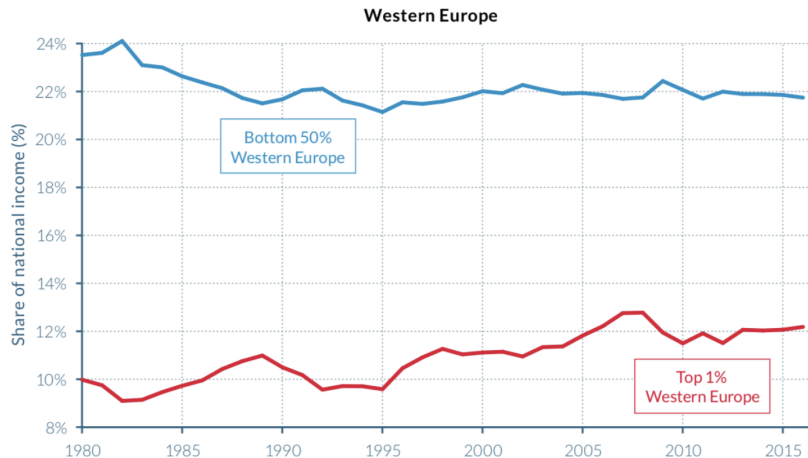
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Evolution of Global Inequalities



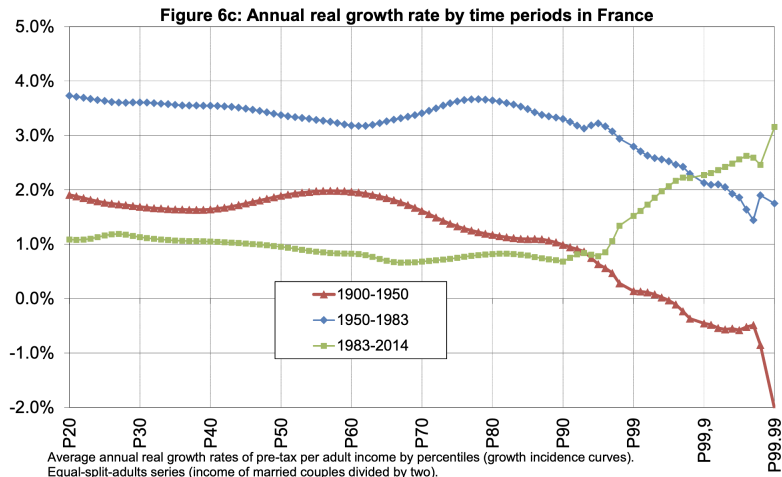
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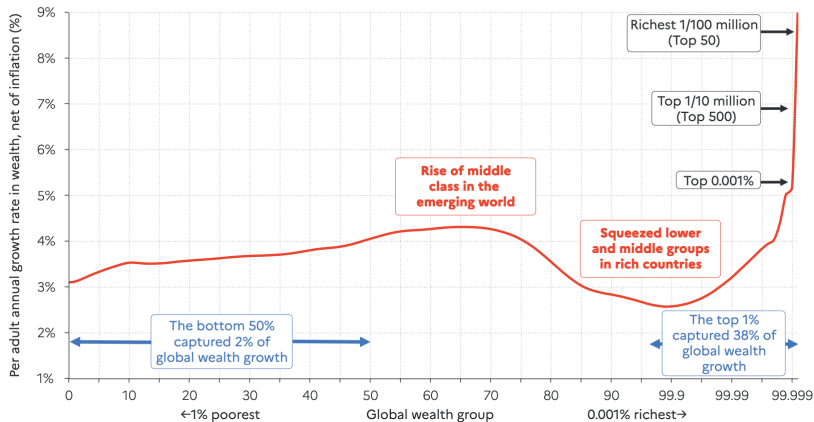
In 2016, 22% of national income was received by the Bottom 50% in Western Europe.

Evolution of Global Inequalities



Evolution of Global Inequalities

Figure 9 Average annual wealth growth rate, 1995-2021



Interpretation: Growth rates among the poorest half of the population were between 3% and 4% per year, between 1995 and 2021. Since this group started from very low wealth levels, its absolute levels of growth remained very low. The poorest half of the world population only captured 2.3% of overall wealth growth since 1995. The top 1% benefited from high growth rates (3% to 9% per year). This group captured 38% of total wealth growth between 1995 and 2021. Net household wealth is equal to the sum of financial assets (e.g. equity or bonds) and non-financial assets (e.g. housing or land) owned by individuals, net of their debts. **Sources and series:** wir2022.wid.world/methodology.

Evolution of Global Inequalities

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 - Between-country inequalities are still increasing.
 - Decline in within-countries inequalities: rise of labor regulation, the social state and modern taxation.
- Since 1980:
 - Rise in within-country inequalities again.
 - Decline in between-country inequalities (rise of developing countries).

Globalization and Inequalities

Theoretical Effects

- Stolper-Samuelson Theorem:

Globalization and Inequalities

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- Stolper-Samuelson Theorem: trade increases the remuneration of the relatively abundant factor.

Globalization and Inequalities

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Globalization and Inequalities

Theoretical Effects

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 - (Low-skilled) Labor is relatively abundant in developing countries: inequalities should decrease there.
 - High-Skilled labor/Capital is relatively abundant in developed countries: inequalities should increase there.
- Non-competing imports: imports of goods that are not produced locally.
 - Price decreases but factor costs are not affected.
 - Might counter the inequality-increasing effect of trade.

Globalization and Inequalities

Theoretical Effects

- Increase in MNEs market power implies larger mark-ups.
 - $Price = Cost \times (1 + markup)$
- Increase in mark-up tend to favor the remuneration of capital over labor.

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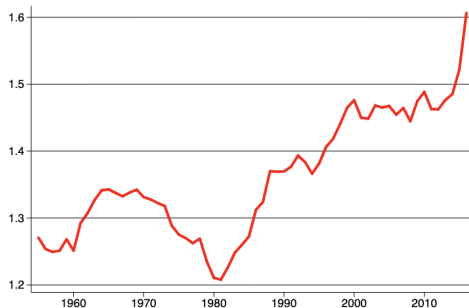


FIGURE I
Average Markups

Globalization and Inequalities

Theoretical Effects

- Increase in MNEs market power implies larger mark-ups.
 - $Price = Cost \times (1 + markup)$
- Increase in mark-up tend to favor the remuneration of capital over labor.
- Alternative/Complementary explanation for declining labor share: investment in ICT capital substitutes labor with capital + favors high-skilled workers

Globalization and Inequalities

What do people think?



Source: Stantcheva (2023), Survey on a U.S sample

Globalization and Inequalities

Policy

- It is difficult to conclude on the size of the impact of globalization in inequalities: all effects are intertwined.
- Though, we can be confident in the fact that globalization affects inequalities and is perceived as such.
- Education appears to be an important equalizing factor.
 - Public investment in education and skills is necessary to counteract the inequality-increasing effects of trade and technology.
- Developing an efficient social system is key.
 - Role for the tax and transfer system.
 - More generally the quality of institutions (=allocation of rights in the society) can help to redistribute gains more equally.
- Failing to address the consequences of globalization do have consequences.
 - e.g. on political attitudes (push towards nationalism and right-wing votes).

General conclusion of the course

General conclusion of the course

- The economics of globalization.
 - Globalization studied in a broad sense: trade, multinational firms, taxation, inequalities, environment.
 - How does the economic activity (production, consumption, distribution) affects and is affected by globalization?
 - Goal: Be able to answer general-interest questions about globalization with the tools of economic analysis.
 - How does globalization affect welfare? How does globalization affect inequalities? How do we address the negative consequences of globalization?
 - Need to know about the important trade-offs.
 - Having the trade-offs in mind, policy choices depend on political/moral views.

General conclusion of the course

- Set of theoretical tools to analyze globalization.
- Set of historical facts and empirical regularities.
- Policy analysis.

General conclusion of the course

Theoretical tools

- Trade models: country differences in productivity, institutions and policy generate relative cost differences, and then comparative advantages. Gains come from specialization and exchange.
 - Ricardian model: productivity differences drive trade. Trade increases welfare.
 - Heckscher-Ohlin model (+ Stolper-Samuelson theorem): trade arises from the difference of endowments between countries. Trade creates net gains but there are winners and losers: redistribution is necessary.
 - Fundamental link between trade and inequalities.
- Trade can also arise from economies of scale.
 - Trade also happens when there are no productivity or endowment differences.
- Game theory
 - Helps understanding the key incentives behind globalization dynamics

General conclusion of the course

Theoretical tools

- Trade policy
 - Economic Analysis of a tariff (*the triangles*).
 - The trade policy can be welfare-enhancing (for large countries that can manipulate trade prices, not for small countries).
- Basic determinants of multinational firms activity.
 - Proximity-concentration trade-off: FDI is preferred when trade costs are large, fixed costs are small, foreign markets are large
- Environmental regulations create leakage effects through three channels (competition, energy and innovation).

General conclusion of the course

Historical Facts and Empirical Regularities

- History of globalization and trade policies.
- The current state of globalization.
- Globalization and inequalities.
- The regulation of globalization: MNEs, international taxation, environment.

The Exam I

- Multiple choice questions.
 - e.g. In country A, producing producing good 1 takes 3 hours, and producing good 2 takes 6 hours. In country B, producing good 1 takes 5 hours and producing good 2 take 20.
Hence:
 1. Country A has a comparative advantage for both goods.
 2. Country A has a comparative advantage for good 1 and country B for good 2.
 3. Country A has a comparative advantage for good 2 and country B for good 1.
 4. Country A has no comparative advantage.

Keeping the parameters of question 1: if we move from autarky to free trade, and assuming that the world demand is such that both countries fully specialize:

1. The relative price of good 1 will rise in country A.
2. The relative price of good 2 will rise in country A.
3. Relative prices will remain the same for both goods.
4. Relative prices will move, but we can't say anything about the direction of the change.

The Exam II

If we observe a decrease in the ratio of value-added of exports over gross exports of a country, it suggests that:

1. The country is exporting more intermediate goods
 2. The fragmentation of the production process has reached its limits.
 3. The country is more integrated in global value chains.
 4. None of the above.
- Exercise (see example online)
 - Course questions.
 - Graphical interpretation.
 - Use of course concepts to answer the case study.

The Exam III

- Open Question e.g.
 - What is the impact of globalization on inequalities within and between countries? How can governments play a role to regulate these effects?
 - The EU has recently launched an investigation in order to set up a tariff against the import of electric vehicles from China. You will discuss the rationale and the consequences of such trade policy to answer the question: Should a government limit the import of foreign products in order to protect its national economy?

Thank you and good luck for the exam