EC3355: International Trade Review

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In this review

- Trade empirics
- Trade theory
- Trade policy
- Trade and developing countries
- Adverse effects of trade

Trade empirics

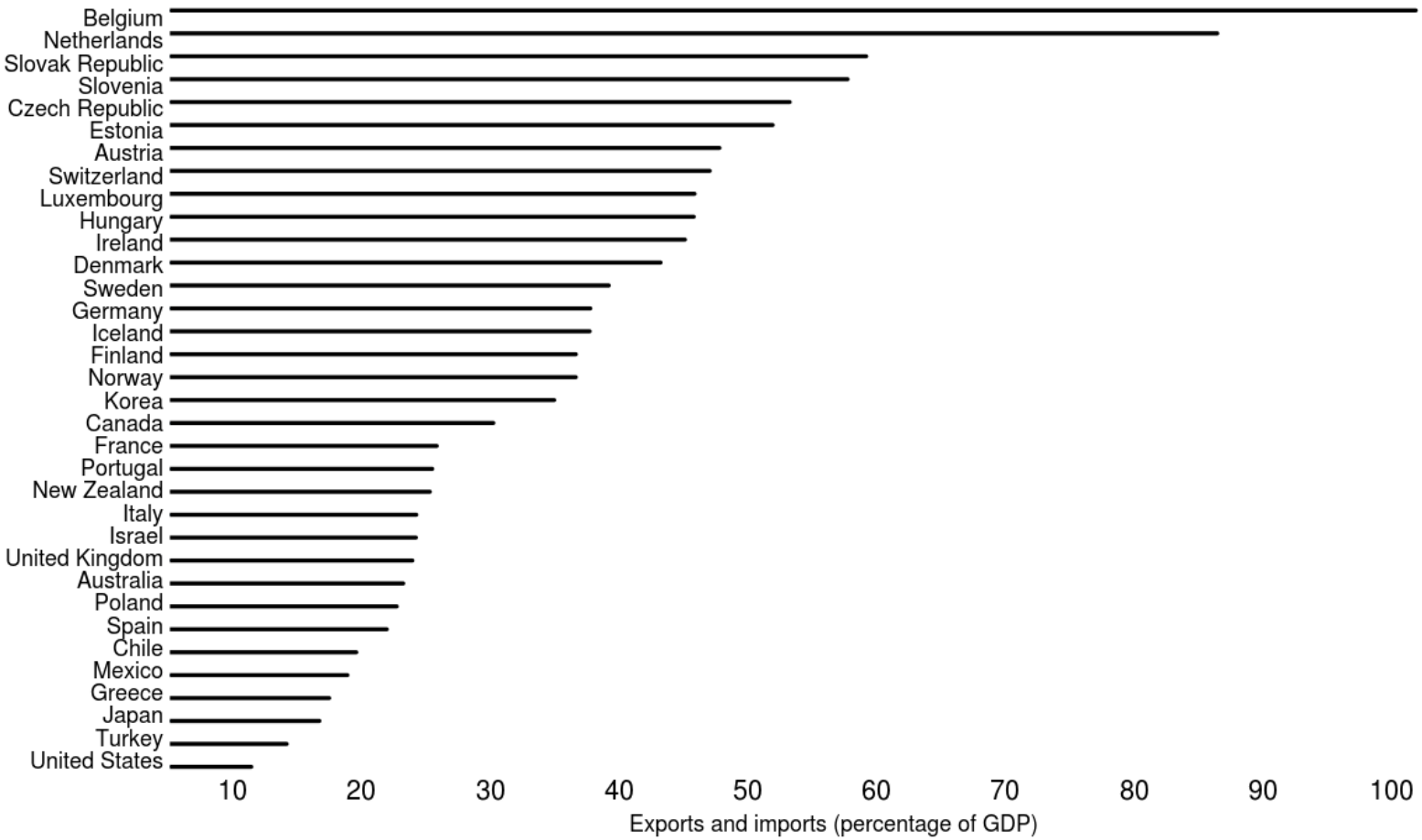
Trade to GDP ratio

- Measures trade intensity/openness of a country
- Most countries have high trade to gdp ratios
- Countries that serve as shipping and processing centres have high ratios (Belgium, the Netherlands, Malaysia)
- Countries with lower ratios are those with large economic values (USA) or those that have just started trading (most of South America)

Trade empirics

Trade relative to GDP in OECD countries in 2013

Source: OECD



Trade empirics

Terms of trade

- Relative price of exported goods versus imported goods

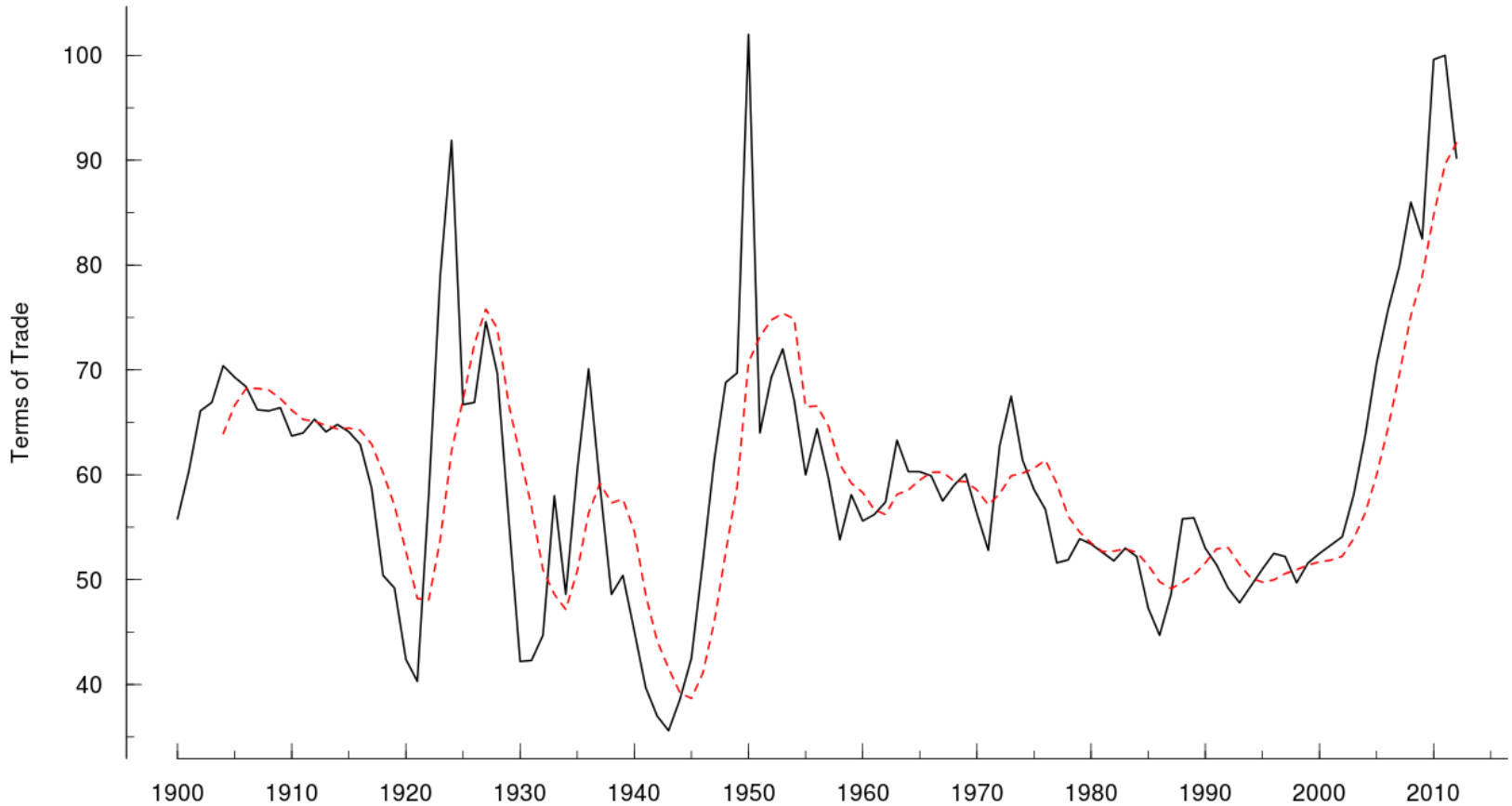
$$\frac{P_X}{P_M} * 100$$

- Terms of Trade increase if:
  - Export prices (P_X) increase
  - Import prices (P_M) decrease
- An increase in the Terms of Trade increases a country's *general* welfare
  - For every unit of export sold it can buy more units of imported goods

Trade empirics

Term of trade Australia 1900-2012

Source: Australian Bureau of Statistics



Trade empirics

World trade shares per region for 2012

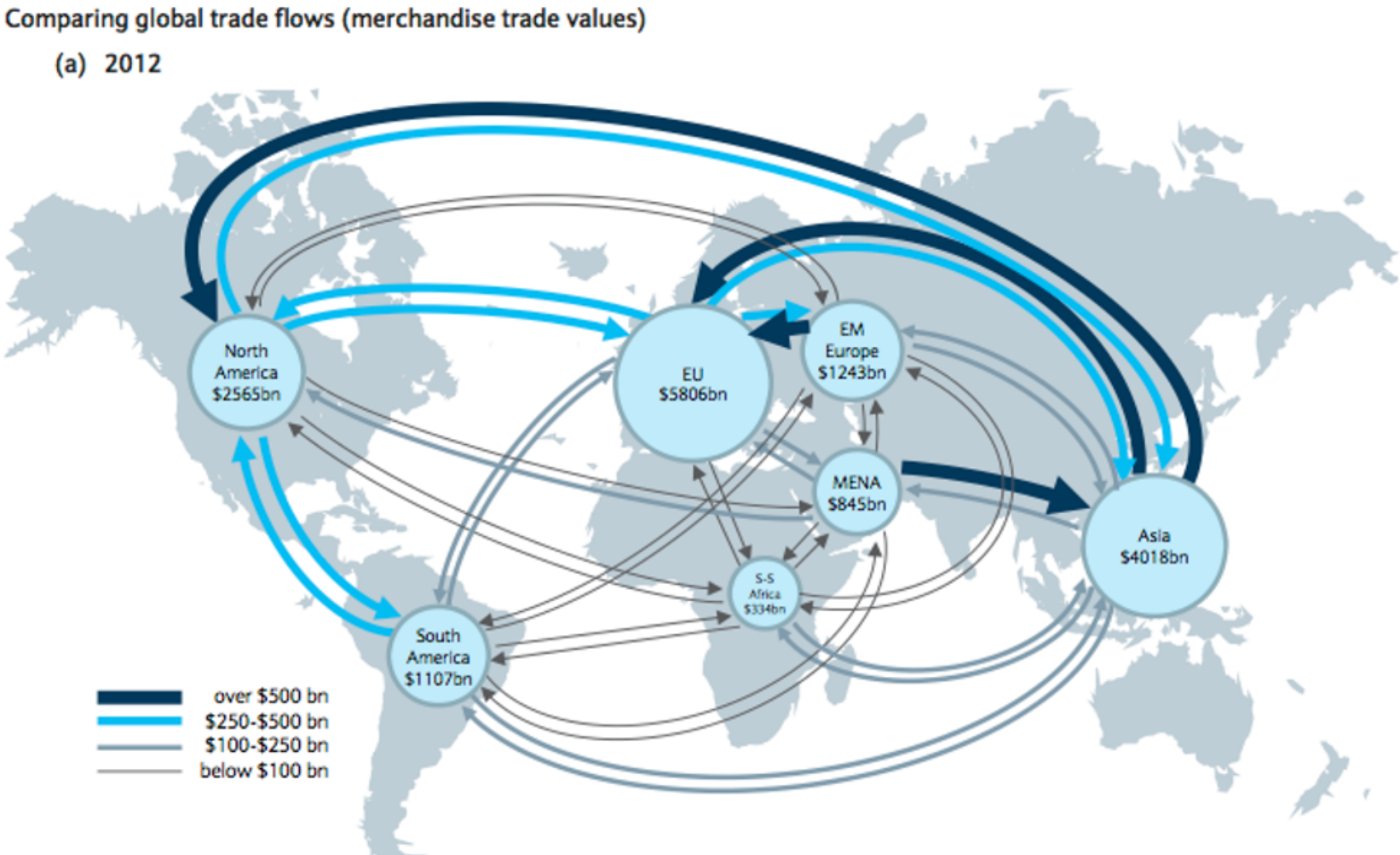
Source: WTO

Region	Exports	Imports
Africa	3.5	3.3
Asia	33.2	33.4
Commonwealth of Independent States	4.3	3.1
Europe	34.7	35.1
European Union internal trade	19.8	19.5
Middle East	7.3	3.9
North America	12.9	17.2
South and Central America	4.1	4.1

Trade empirics

World merchandise trade flows for Nov-Dec 2012

Source: Barclays Research



Trade empirics

Economic gravity

$$T_{ij} = g \frac{M_i^{\alpha} M_j^{\beta}}{D_{ij}^{\theta}}$$

- T_{ij}: Trade flow from country i to j
- M_i and M_j: Relevant economic size of the two locations
- D_{ij}: Distance between the two locations

Trade empirics

Key features gravity model

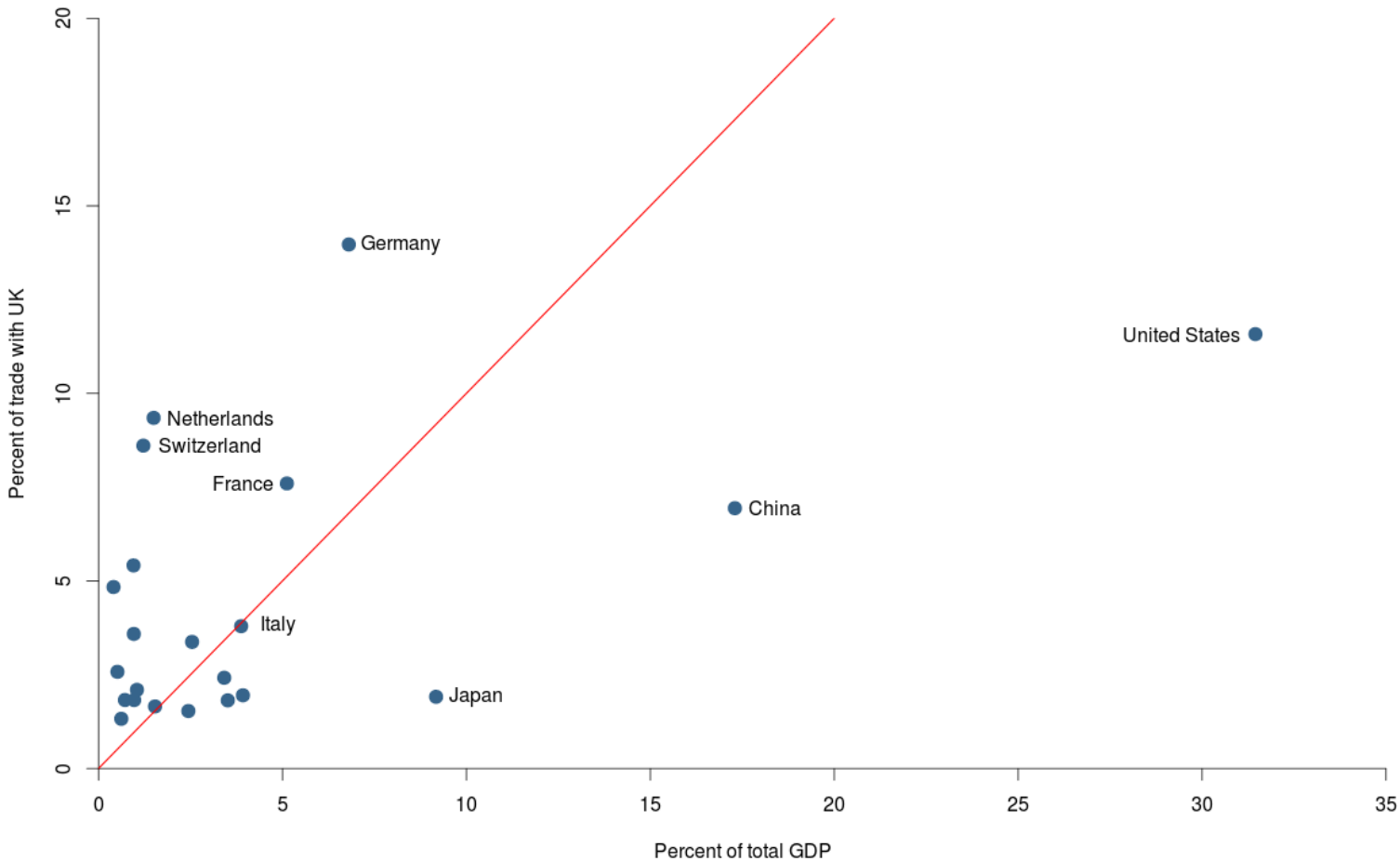
1. Everything enters multiplicatively - including distance
2. No 3rd country effects, except through GDP changes

- In its simplest form only size and distance are important for trade
- Gravity model has produced some of the most robust findings in economic research

Trade empirics

UK trade with major trade partners for 2012

Source: HM Revenue & Customs and World Development Indicators



Trade theory

Ricardian model: Relative prices under perfect competition

Under autarky we have:

$$p_x = a_x w; p_y = a_y w \Rightarrow p_a = \frac{p_x}{p_y} = \frac{a_x}{a_y}$$

$$p_x^* = a_x^* w^*; p_y^* = a_y^* w^* \Rightarrow p_a^* = \frac{p_x^*}{p_y^*} = \frac{a_x^*}{a_y^*}$$

Wage is given by:

$$w = \frac{p_x}{a_x} = \frac{p_y}{a_y}$$

Trade theory

Ricardian model: Three possible equilibria

1. Free trade relative price can equal Home autarky relative price
2. Free trade relative price can equal Foreign autarky relative price
3. Free trade relative price can be strictly in between autarky relative prices

Trade theory

Ricardian model: Free trade relative price = Home autarky relative price

- Home will produce both goods
- Foreign will only produce X
- Foreign gains, Home does not

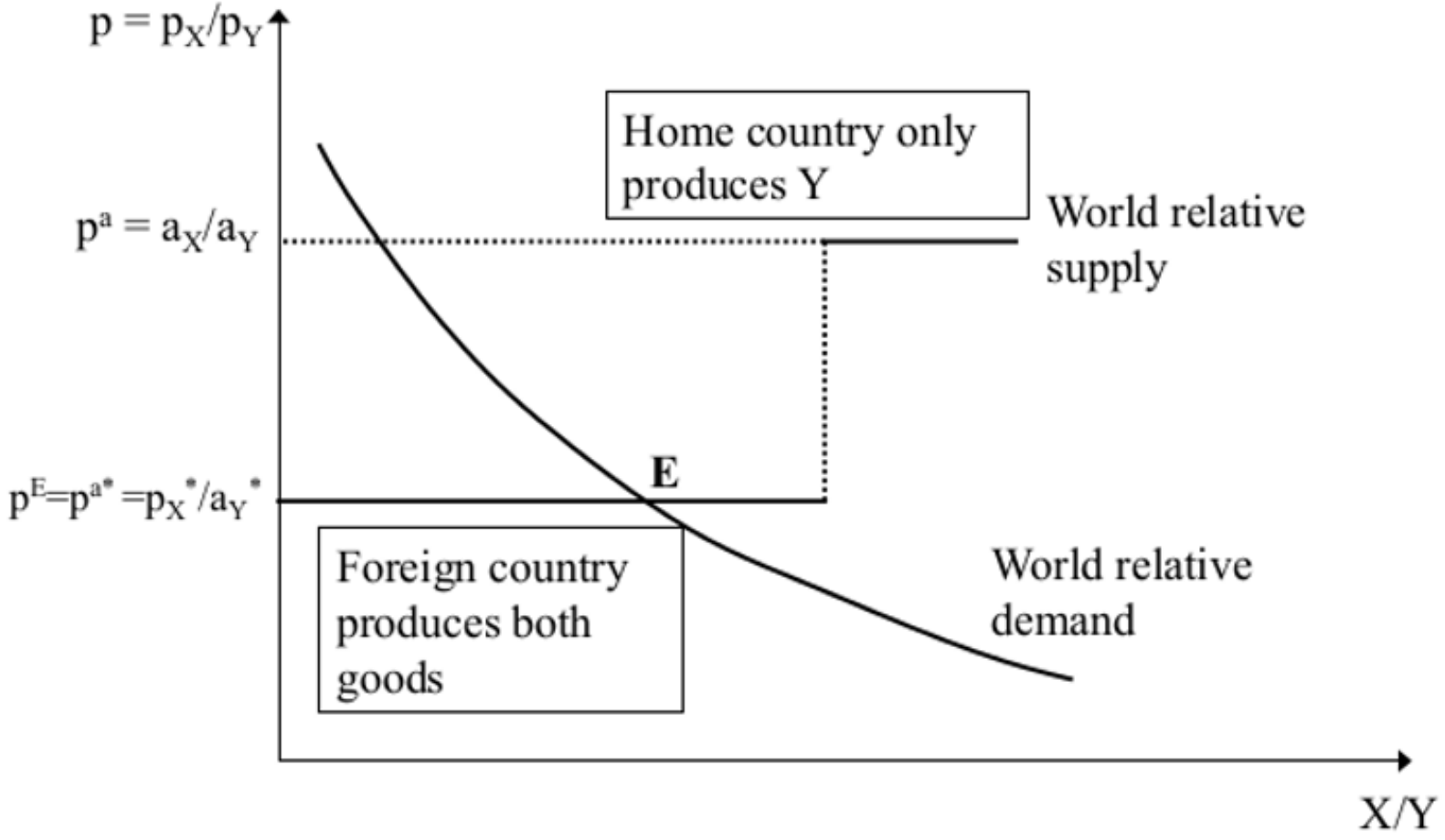
Trade theory

Ricardian model: Free trade relative price = Foreign autarky relative price

- Foreign produces both goods
- Home only Y
- Home gains, foreign does not

Trade theory

Ricardian model: World equilibrium with incomplete specialisation



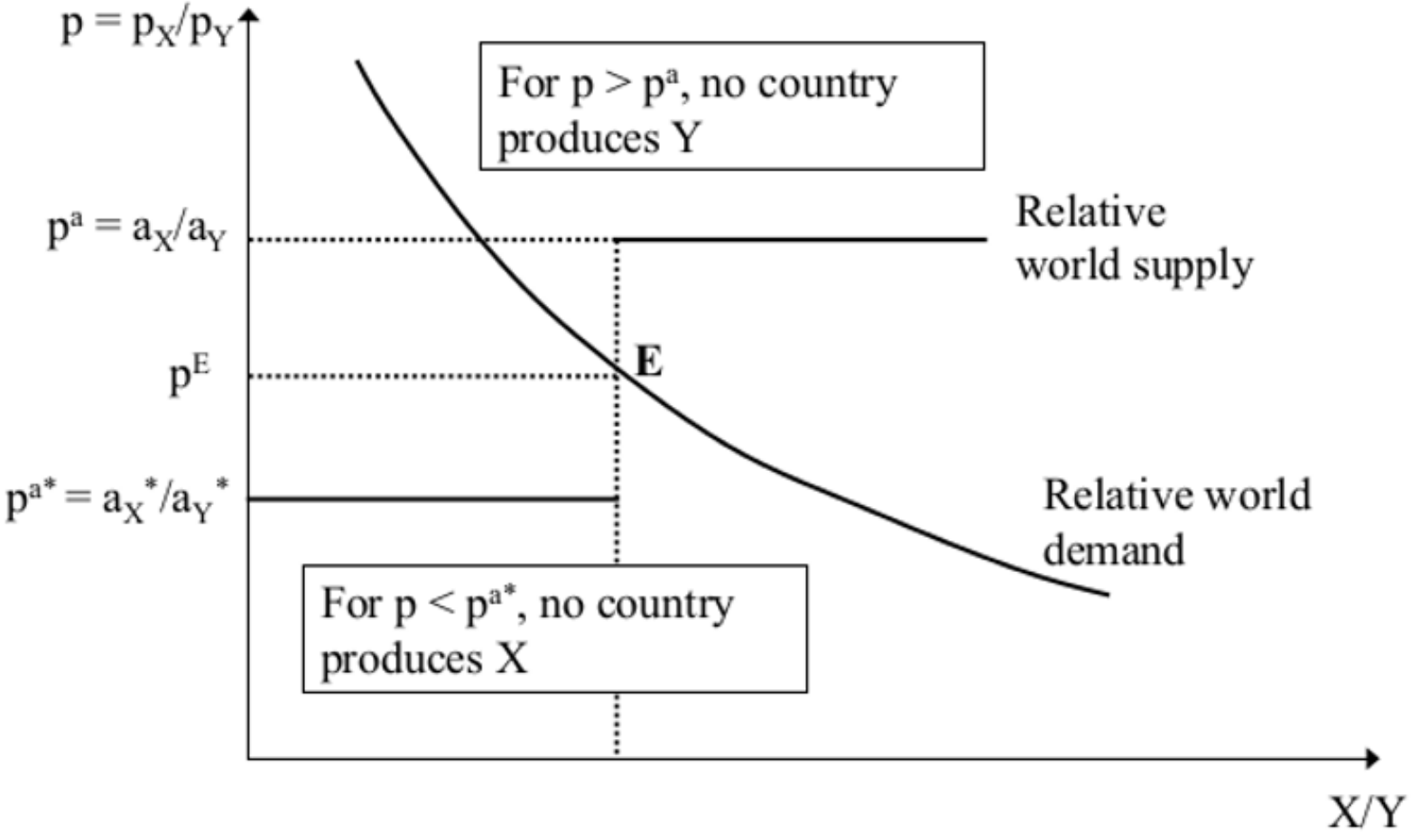
Trade theory

Ricardian model: Free trade relative price strictly in between autarky relative prices

- Home produces only X, Foreign only Y
- Both gain

Trade theory

Ricardian model: World equilibrium with full specialisation



Trade theory

Factor proportion theory

- Law of comparative advantage establishes relationship between relative autarky prices and trade flows
- Unclear where the relative autarky prices come from
- Factor proportion theory focuses on factor endowment differences

Trade theory

Factor proportion theory

1. Countries differ in terms of factor abundance (relative factor supply)
2. Countries differ in terms of factor intensity (relative factor demand)

- Interaction between 1 and 2 determines relative autarky prices and patterns of trade

Trade theory

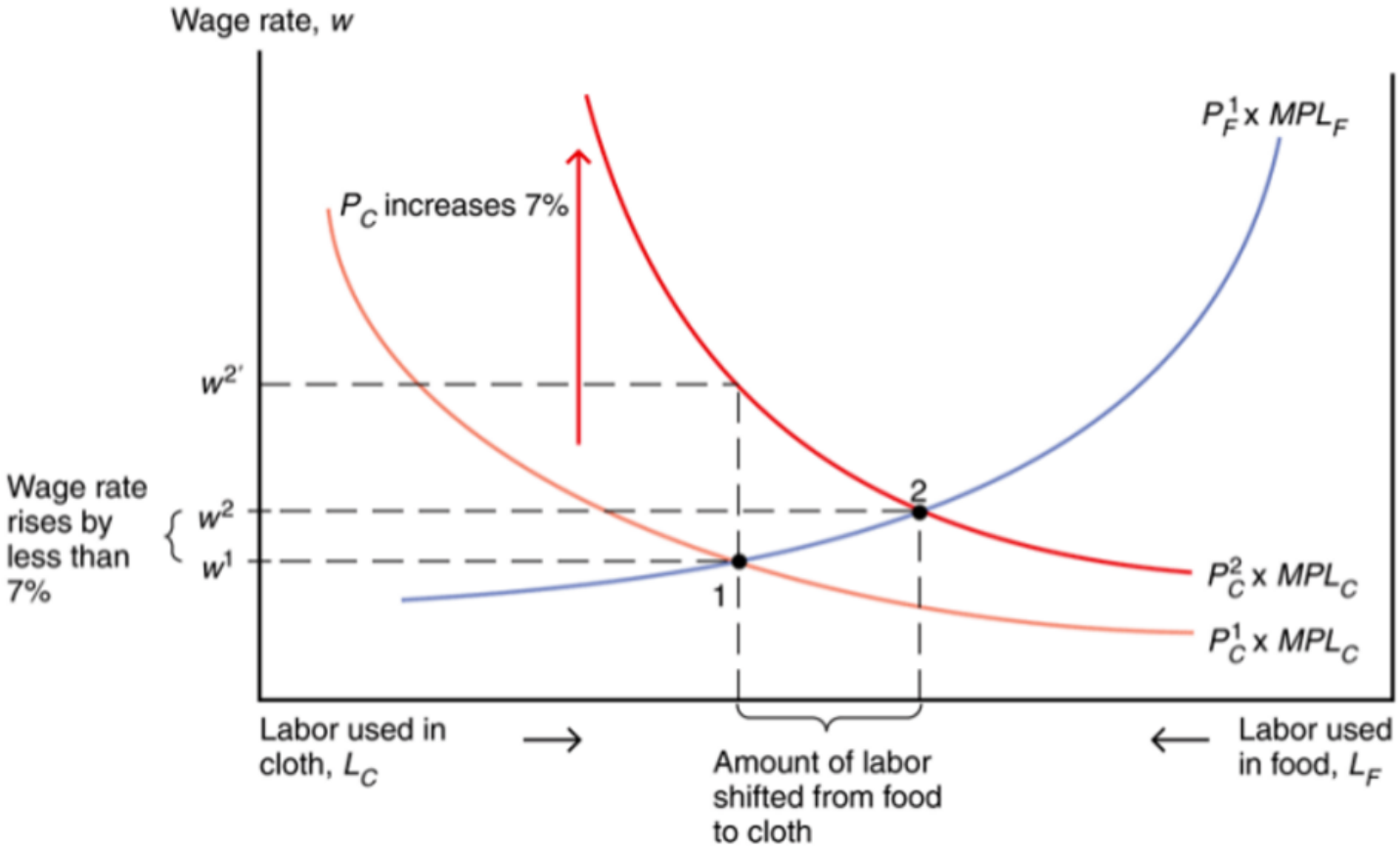
Specific factors model: Determining payment to capital and land

- Capital and land earn what is left over from sales revenue $(p * Q)$ after labour is paid $(w * L)$

$$r_K = \frac{p_c * Q_c - w * L_c}{K}$$
$$r_T = \frac{p_f * Q_f - w * L_f}{T}$$

Trade theory

Specific factors model: Change in prices



Trade theory

Four main theorems

1. Heckscher-Ohlin
   - Countries with relatively more of a resource will export goods for which that resource is more useful in production
2. Stolper-Samuelson
   - An increase in the relative price of a good will increase the relative remuneration of the factor which is intensively used in the production of this good and reduces the remuneration of the other factor
3. Rybczynski
   - For a given relative price, a higher endowment in one factor makes the production that uses this factor more intensively increase and the production that uses it less intensively decrease
4. Factor-price equalisation
   - Trade should cause resource prices to converge

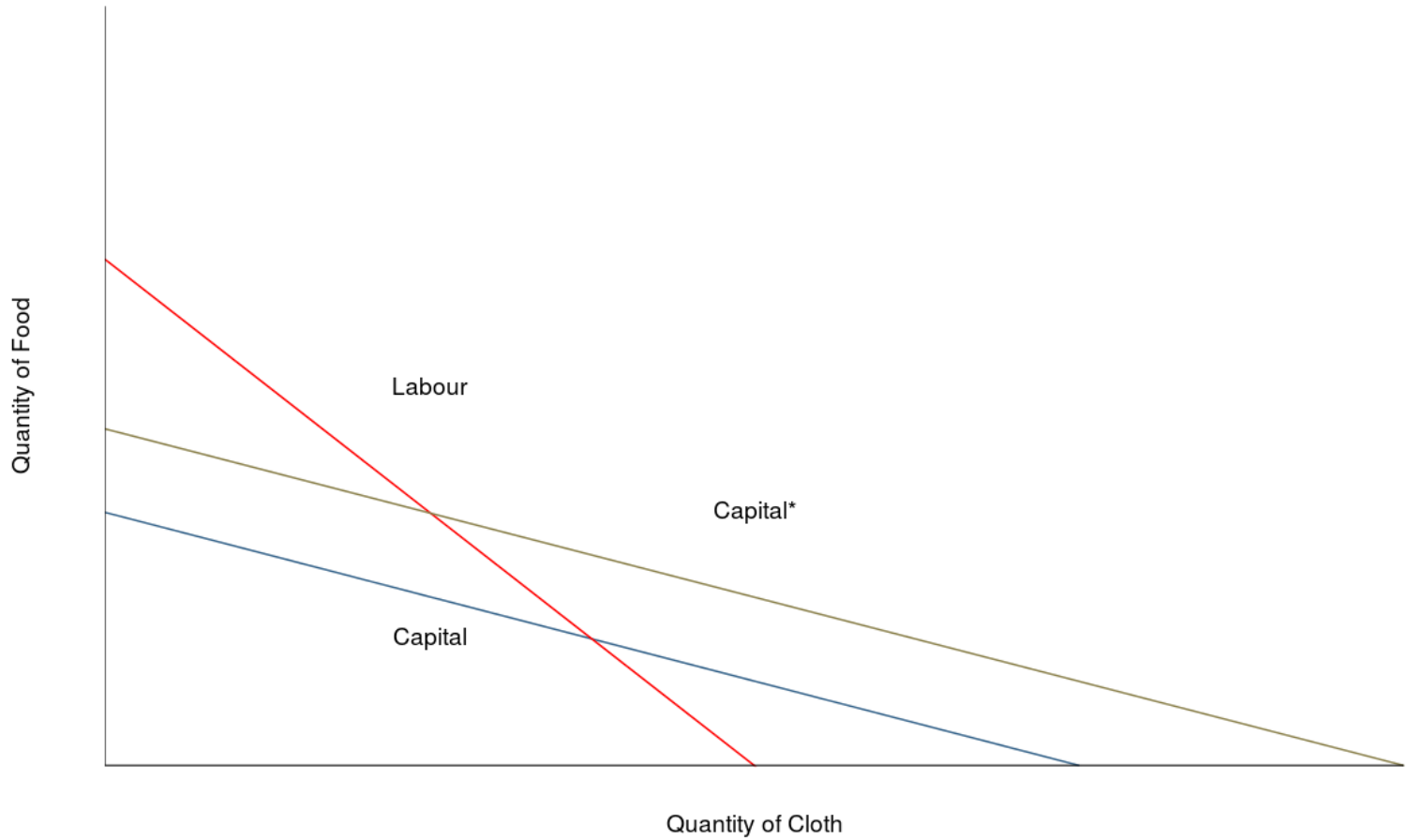
Trade theory

Heckscher-Ohlin model: Determination of prices

- Price of a good should equal cost or production which depends on factor prices
- How changes in w and r affect production costs depends on mix of factors used
- Change in $\frac{w}{r}$ are tied to changes in $\frac{p_c}{p_f}$

Trade theory

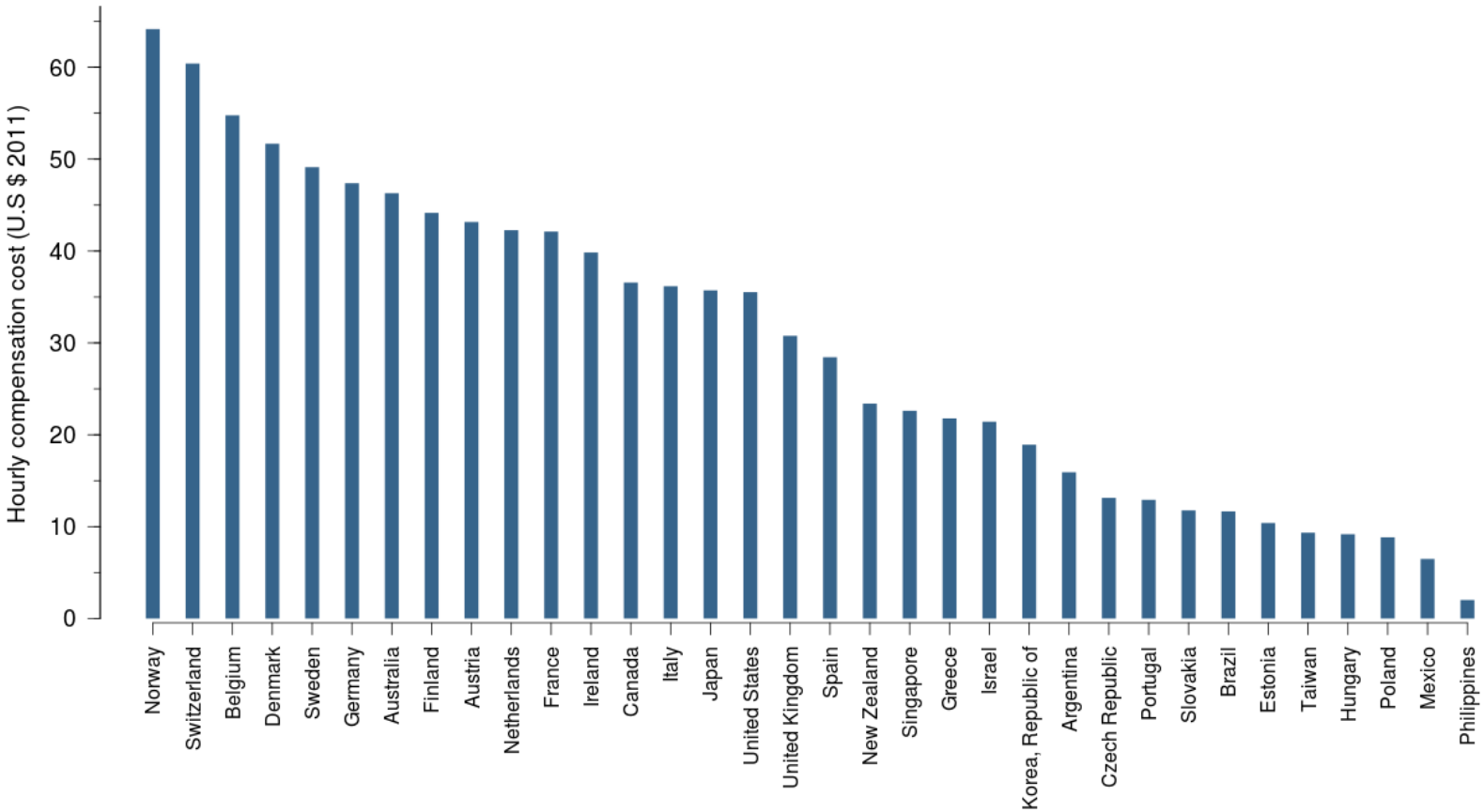
Rybczynski theorem: Increase in capital



Trade theory

Absence of wage equalisation

Source: U.S. Bureau of Labor Statistics,2012



Trade policy

- A way for large countries to manipulate the Terms of Trade
  - Manipulate price of exports relative to imports
  - Increase national income at expense of of trading partners
- Protecting infant industries
  - No economy of scale
- Protectionism as a second-best
  - Cope with market imperfections
  - Provide time and resources for firms to undertake cost-reducing investments
  - Compensating globalisation losers, labour allocation away from declining industries.

Trade policy

Tariffs

- Tax levied on imported goods
- Two types of tariffs
  1. **Ad valorem tariff**: based on value of imported goods (e.g. 10% of wheat imports)

$$P = P^*(1 + \tau)$$

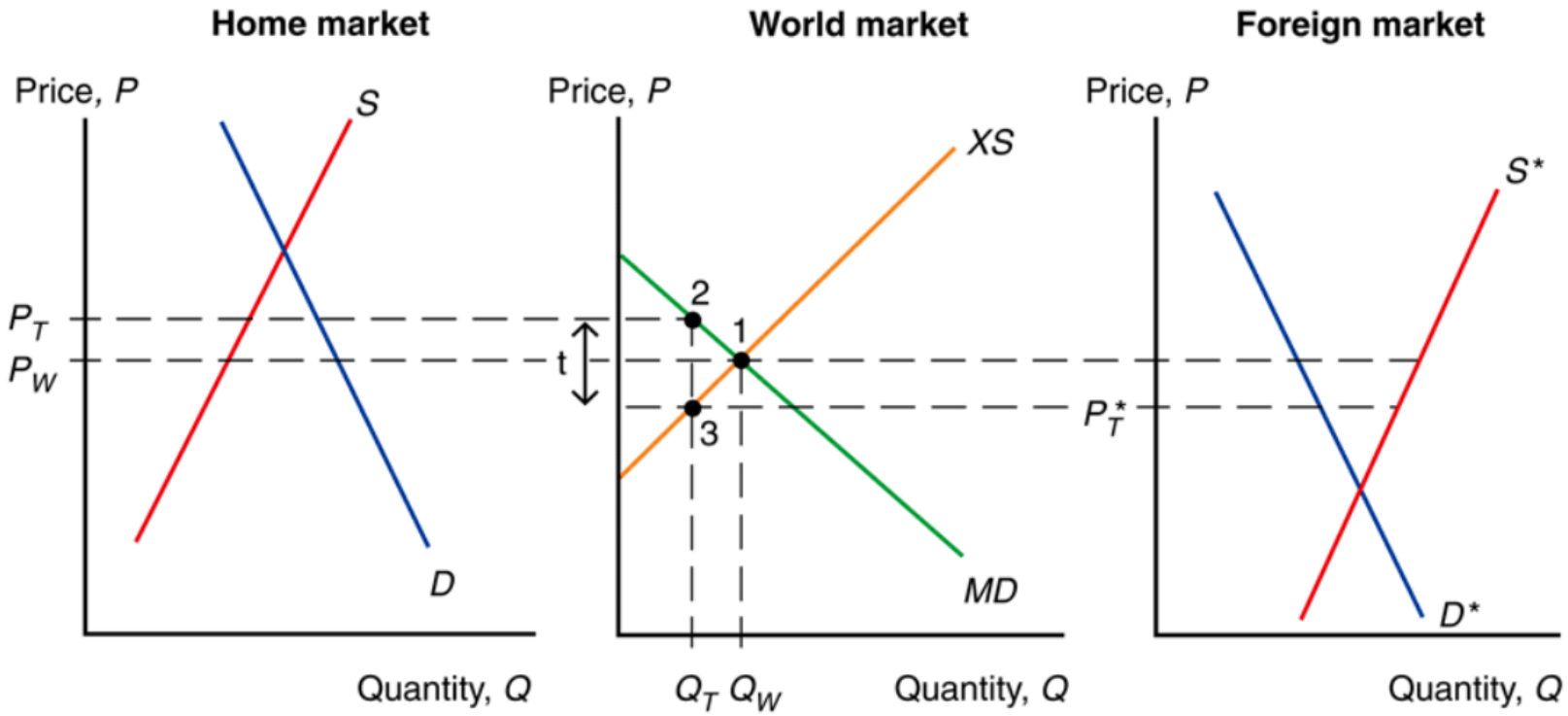
  2. **Specific tariff**: fixed charge for each unit of imported good (e.g. 5$ per barrel of oil)

$$P = P^* + \tau$$

- Most tariffs are *ad valorem* tariffs
- Analysis will focus on specific tariffs

Trade policy

Effects of tariff



Trade policy

Effects of tariff

- Home, price rises from P_W to P_T
  - Home producers supply more
  - Home consumers demand less
  - Import quantity falls from Q_W to Q_T (2)
- Foreign, price drops from P_W to P_T^*
  - Foreign producers supply less
  - Foreign consumers demand more
  - Export quantity falls from Q_W to Q_T (3)
- Home imports quantity demanded = Foreign exports quantity supplied when: $P_T - P_T^* = t$
  - Increase in Home price can be less than tariff
  - Part of tariff effect causes Foreign export price to decline (very small)

Trade policy

Effects various policy instruments

	Tariffs	Export subsidy	Import quota	Voluntary export restraint
Producer surplus	Increases	Increases	Increases	Increases
Consumer surplus	Decreases	Decreases	Decreases	Decreases
Government revenue	Increases	Decreases	Unchanged	Unchanged
Overall national welfare	Ambiguous	Decreases	Ambiguous	Decreases

Trade policy

Analysing the political economy of trade policies

1. Economic self interests
   - Individual favours or opposes trade policy based on effect on its real income
2. Social concerns
   - Government's concern for welfare and desire to promote national and international goals

Trade policy

Tariffs and trade wars

- Consider two countries: San Marcos, Nambutu
- Each country can protect its producers by setting tariffs
- Country's reaction depends on partner's policy

Trade policy

Tariffs and trade wars

	San Marcos	
Nambutu	Free trade	Tariff
Free trade	100,100	−100,200
Tariff	200,−100	−50,−50

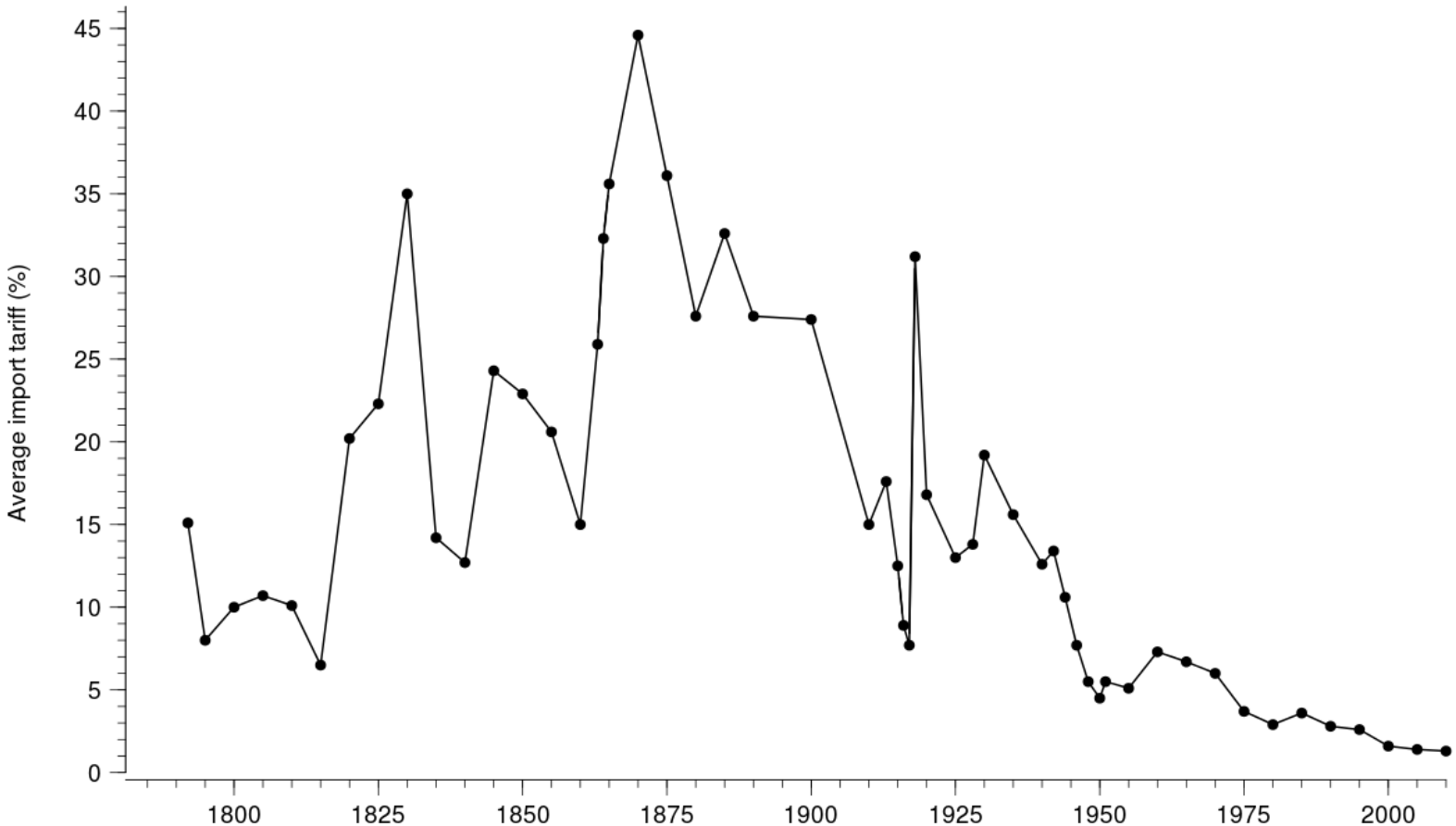
Trade policy

Tariffs and trade wars

- Can have cooperative equilibrium
- Can also have a non-cooperative equilibrium
- Risk of prisoner's dilemma
  - Tariff will be dominant strategy
  - Results in global welfare costs
- Illustrates need for trade negotiations
  - Help avoid trade wars as countries enact trade restrictions

Trade policy

US tariffs over time



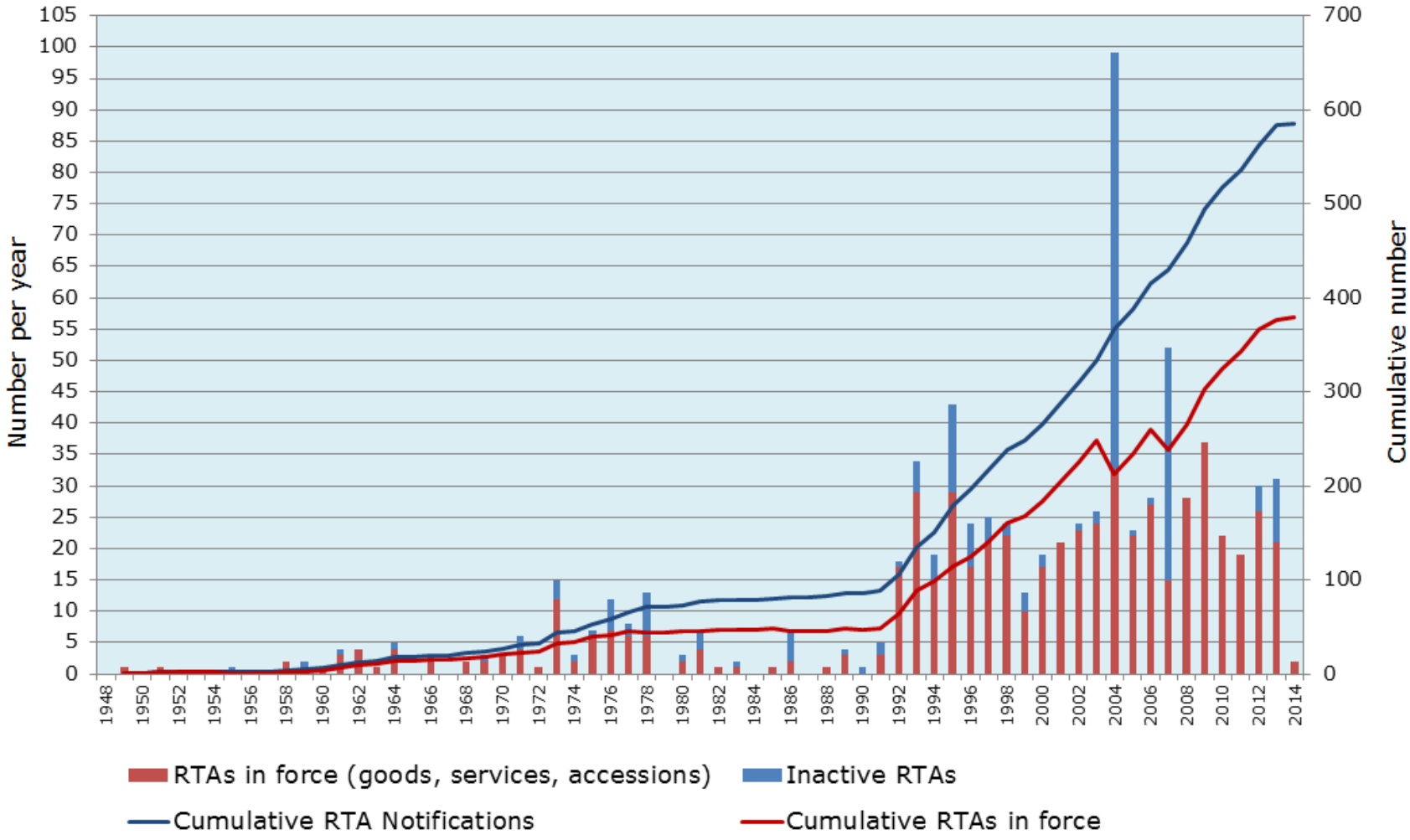
Trade policy

Trade negotiations: The World Trade Organization

- WTO negotiations addresses trade restrictions via three channels
  1. Reducing tariff rates
  2. Binding tariff rates (i.e. no future increases)
  3. Eliminating/prevention of non-tariff barriers

Trade policy

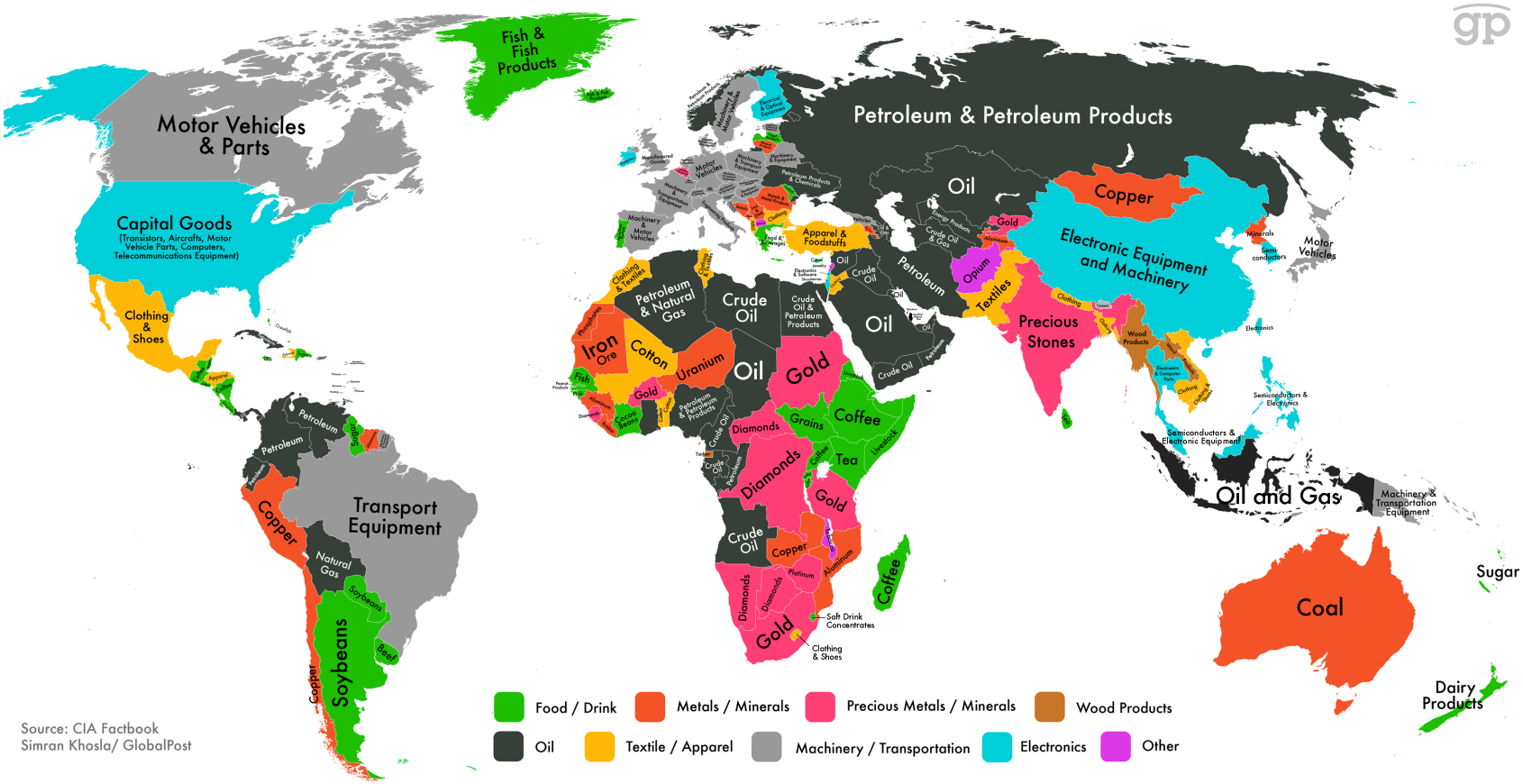
Regional Trade Agreements (*Source: WTO*)



Trade and developing countries

Main commodity export for each country

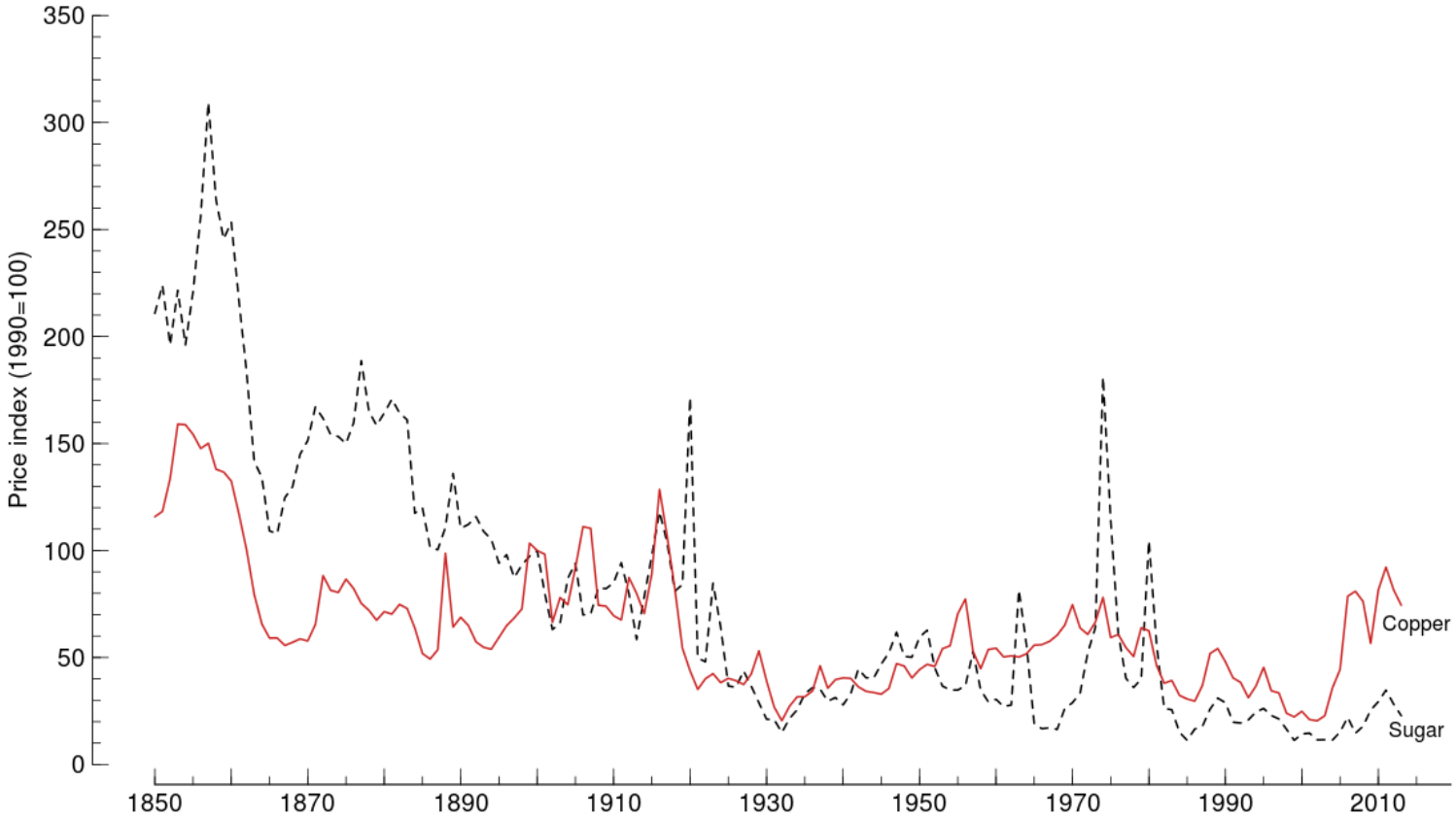
Source: *Global Post*



Trade and developing countries

Price index for sugar and copper

Source: David Jacks "From Boom to Bust"



Trade and developing countries

Implications of Prebisch-Singer hypothesis

- Primary commodity prices fall as efficiency rises
- As countries begin exporting the price of primary commodities declines relative to the price of manufactured goods
- Deterioration in terms of trade of countries with economy based on primary products
- These type of countries should diversify their economy, to become less dependent on primary commodity exports

Trade and developing countries

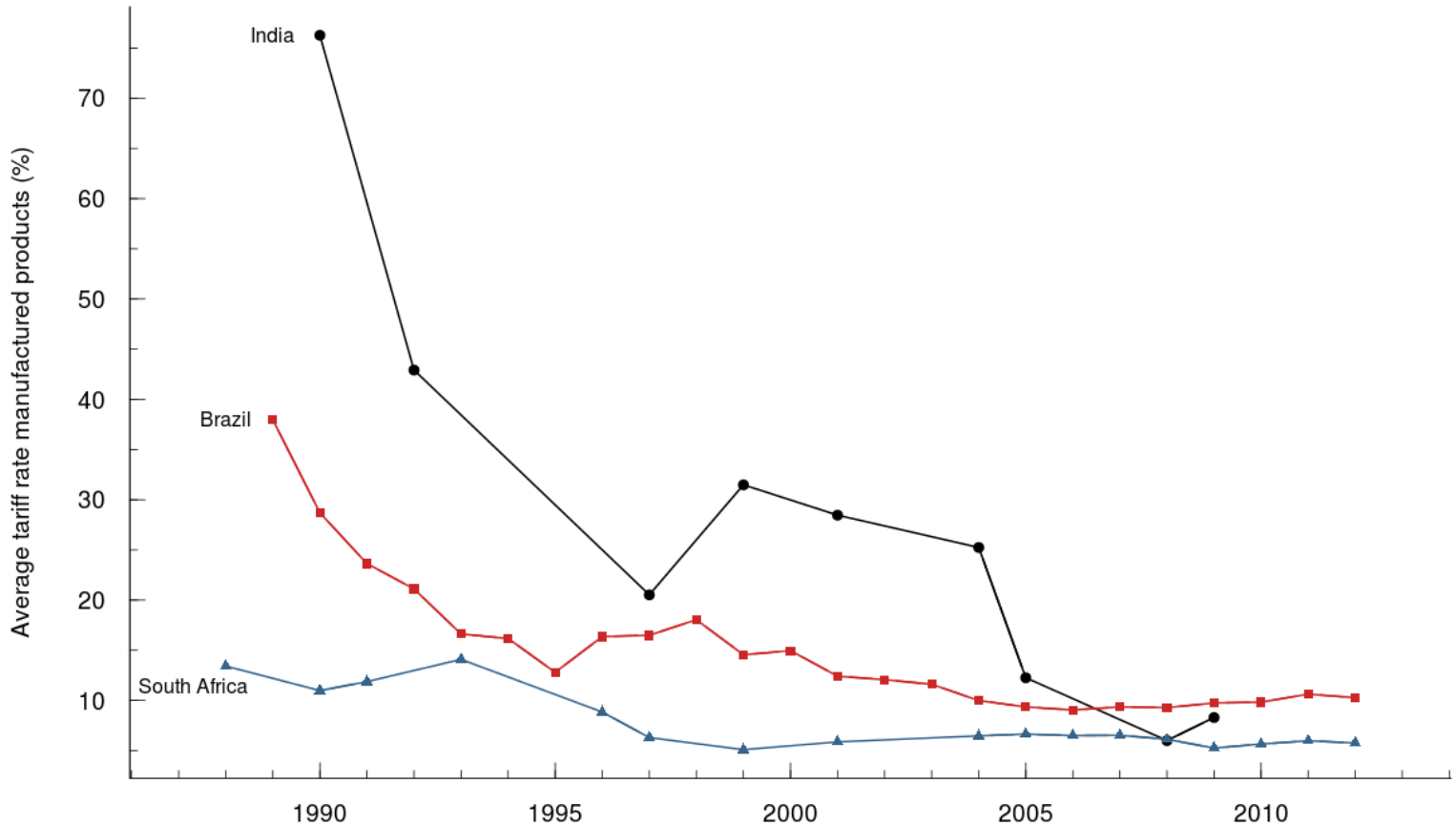
Import-substituting industrialisation: Infant industry argument

- Principle justification of ISI policy
- Potential comparative advantage in certain industries
- No economies of scale to compete with foreign competitors
- Governments should support these industries until they are strong enough

Trade and developing countries

Average tariff rates

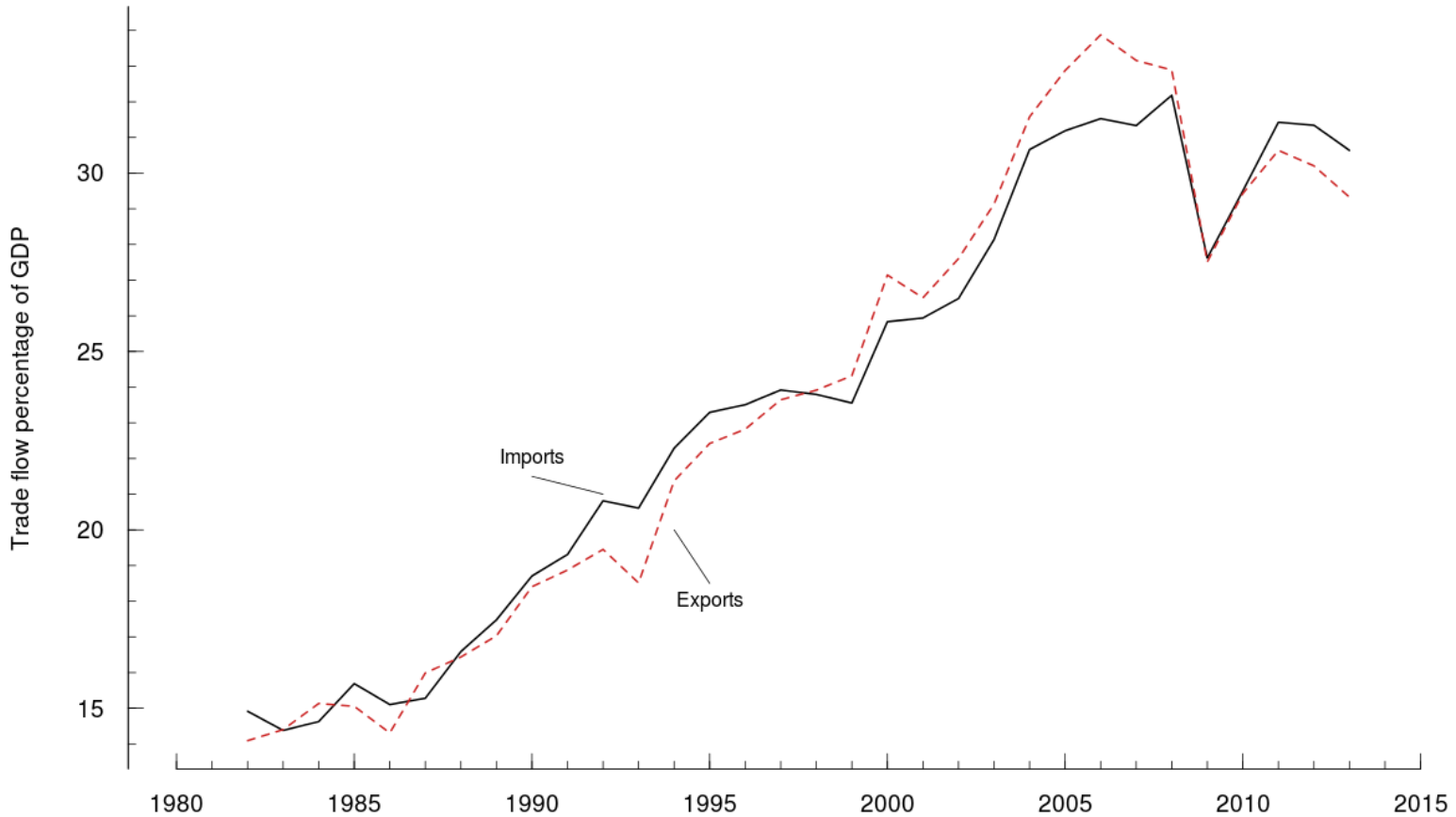
Source: World Development Indicators



Trade and developing countries

Imports and exports developing countries

Source: World Bank Development Indicators



Trade and developing countries

Export-oriented industrialisation: Using comparative advantage

- Rather than ISI, some countries adopted policies that promoted exports in targeted industries
  - Several East Asian countries such as China, Japan, Korea, Indonesia, etc.
  - Experienced rapid economic growth in export sectors and in general
- Generated high volumes of exports and imports relative to total production
  - By these standard these economies are "open economies" but the contribution to free trade is debatable
  - Although they have less trade restrictions, some restrictions were still in effect

Adverse effects of trade

Dumping

- Let P and P^* be the prices the firm sets on the domestic and foreign market
- Firm faces higher marginal costs in export market: $c + t$
- Prices are:

$$Home: P - c$$
$$Foreign: P^* - (c + t)$$

- This implies that the export price is lower than the domestic price

$$P^* - t < P$$

Adverse effects of trade

Trade model predictions on income inequality

- Capital gains in developed countries
  - More inequality in developed countries as capital owners get richer and workers poorer
- Labour gains in developing countries
  - Less income inequality in developing countries as workers see increasing wages

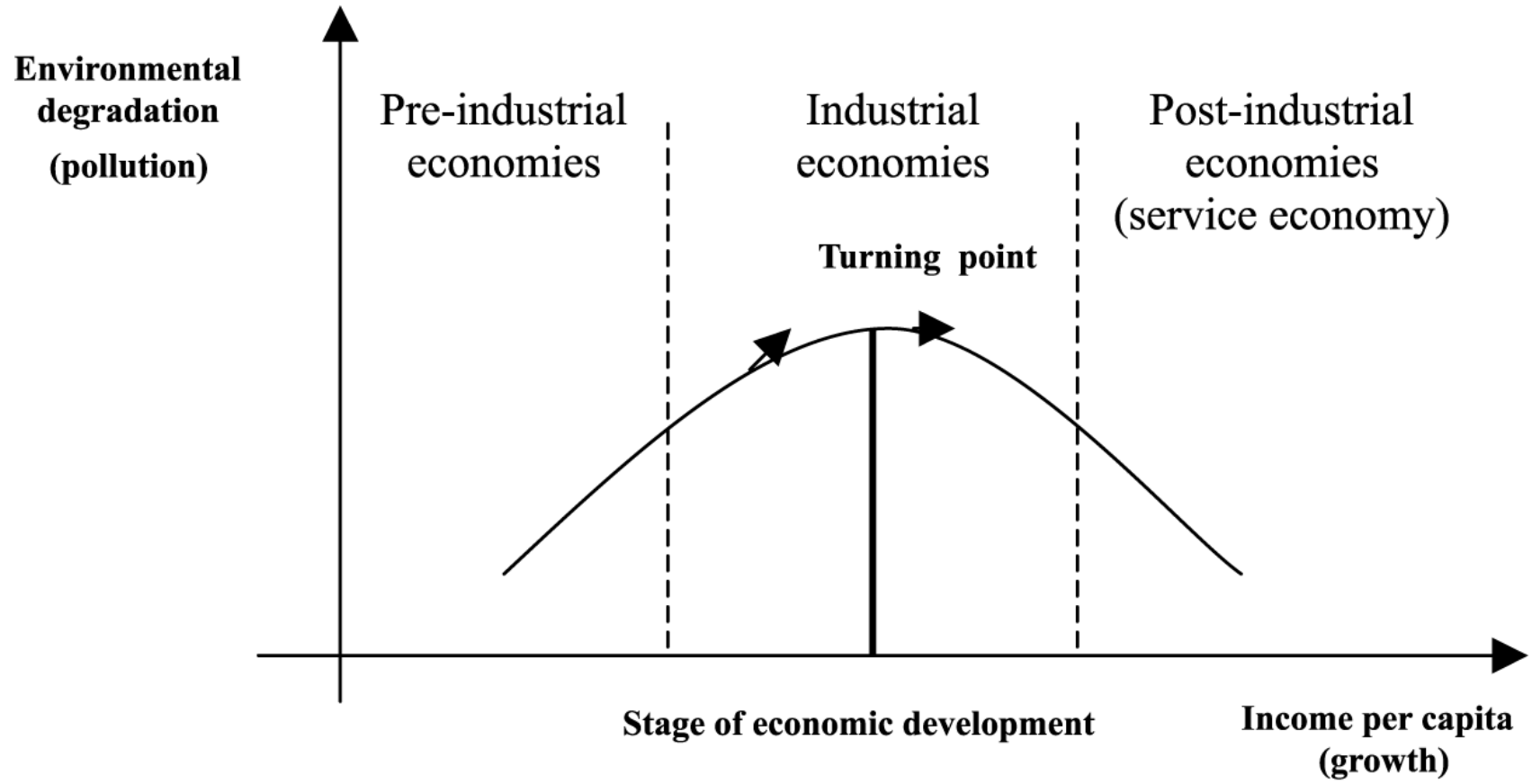
Adverse effects of trade

Pollution haven hypothesis

- Low environmental standards follow theory of comparative advantage
- When pollution control costs start to matter for some industries in some countries, other countries gain comparative advantage in those industries

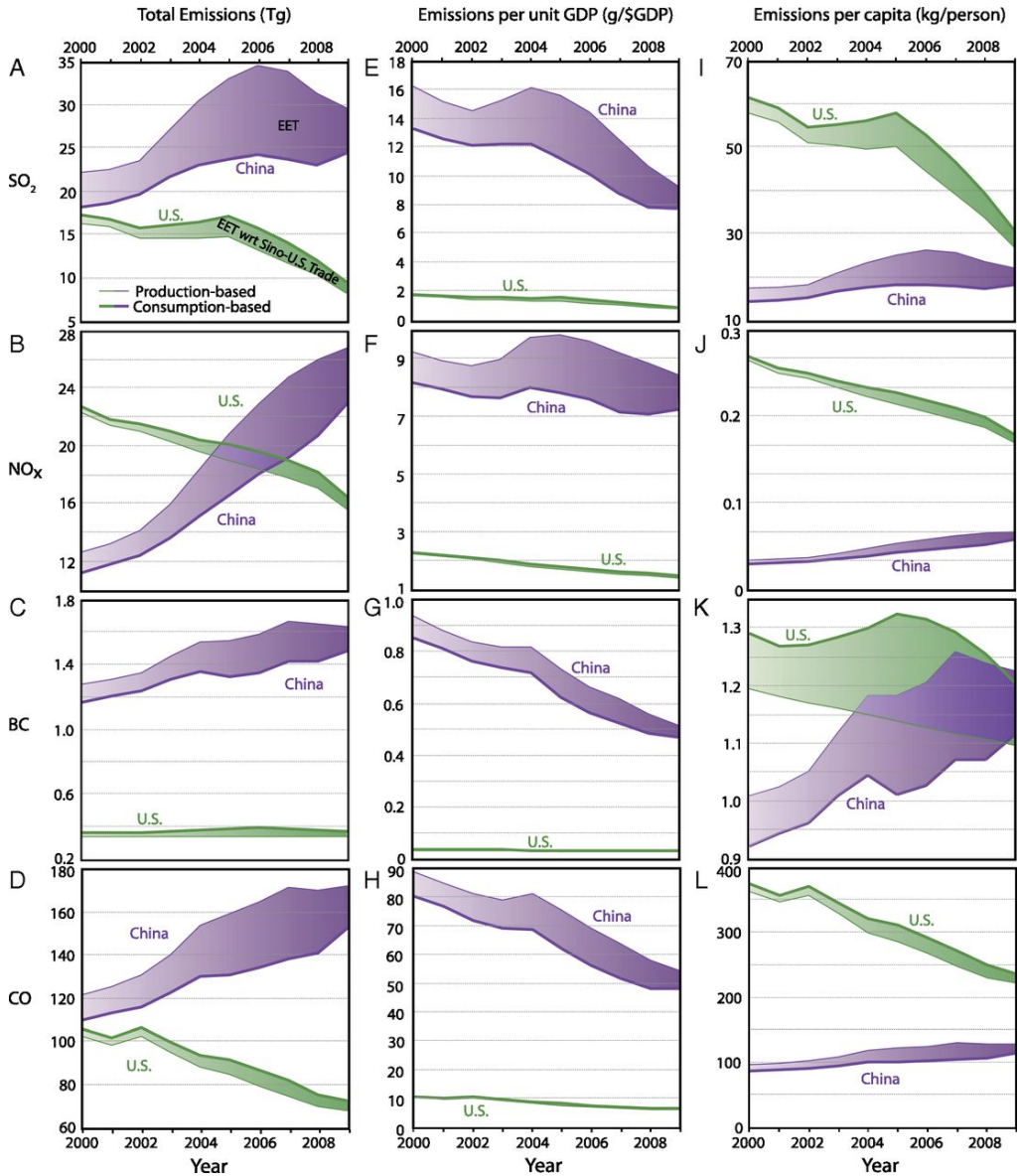
Adverse effects of trade

Environmental Kuznets curve



Adverse effects of trade

Air pollutants embodied in Chinese trade between 2000 and 2009 (*Lin et al., 2014*)



Adverse effects of trade

Example of tragedy of the commons: Overfishing