Specific factor and Income Distribution

ECES905205 pertemuan 3

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The Repeal of the Corn Law

- An effort to reduce food price
  - tarif grains sampe 80%
- Repealed under Robert Peel ruling in 1846.
- pivotal for UK manufacturing transformation.
- Birth of the economist magazine
- Our model today explains this phenomenon.

Finance & economics | The Corn Laws at 175

An anniversary for free traders

How the Victorians fought for cheap food

Jun 24th 2021

Lerning outcomes

▶ We've learned how trade gains both parties

▶ Today we learn why trade is unpopular to some:

   ▶ How trade generate winners and losers in the short run

   ▶ Why, despite generating losers, trade is still good.

Specific factor model

▶ 2 Sectors i: Cloth (C) and Food (F)

▶ 3 factor j: Labor (L), Terrain (T), and Capital (K).

  ▶ Labor can move between sectors
  ▶ T can only used to produce F, K only C.

$$Q_F = F(L_F, T) \qquad (1)$$
$$Q_C = C(L_C, K) \qquad (2)$$
$$L_F + L_C = L \qquad (3)$$

PPF

▶ How does the economy's mix of output change as labor is shifted from one sector to the other?

▶ When labor moves from food to cloth, food production falls while output of cloth rises.

▶ The shape of the production function reflects the law of diminishing marginal returns.

▶ Adding one worker to the production process (without increasing the amount of capital) means that each worker has less capital to work with.

▶ Therefore, each additional unit of labor adds less output than the last.

▶ This is not like ricardian where production function is linear and MPL is constant.
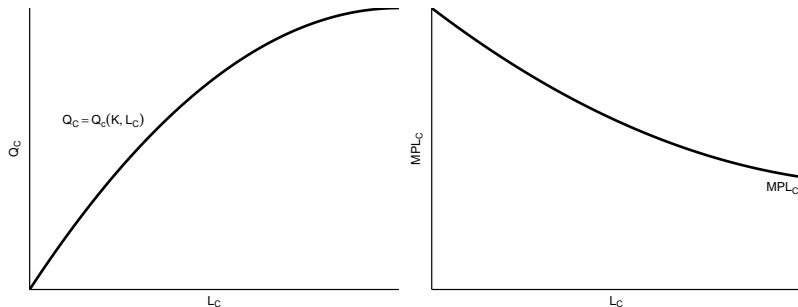
PPF dan MPL

Figure 1: Production function and MPL

PPF

▶ If an autarky wants to increase Q_C by 1 unit, it has no choice but to get labor from industry F

  ▶ That is, L_C has to $\uparrow$ and L_C has to $\downarrow$

▶ However, changes in labor affects production differently in different starting point.

▶ If L_C goes up by 1, Q_C goes up by MPL_C, which is decreasing as L_C keeps on increasing.

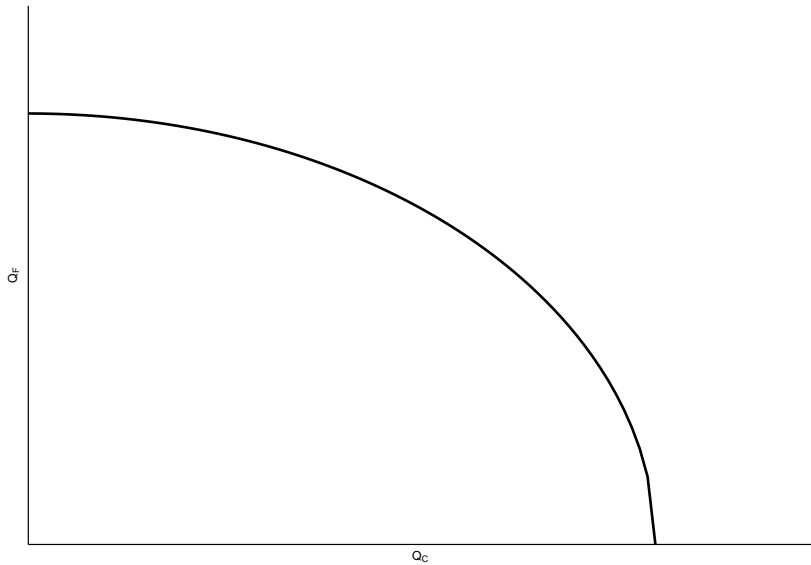 ▶ to produce 1 unit of C, need $\frac{1}{MPL_C}$ hours of labor.

PPF

▶ And while L_F goes down by 1, Q_F goes down by MPL_F, which is increasing as L_F keeps on decreasing.

  ▶ To get labor to make 1 unit of C, F must down by MPL_F

▶ In other words, to increase Q_C by 1 unit, Q_F must go down by $\frac{MPL_F}{MPL_C}$

$$\text{opportunity cost}_C = -\frac{MPL_F}{MPL_C} = \text{Slope of PPF}$$

▶ We can show this using a 4-quadrant graph.

PPF

PPF

Why is the production possibilities frontier curved?

▶ Diminishing returns to labor in each sector cause the opportunity cost to rise when an economy produces more of a good.

▶ Opportunity cost of cloth in terms of food is the slope of the production possibilities frontier—the slope becomes steeper as an economy produces more cloth.

Labor allocation

▶ In each sector, employers will maximize profits by demanding labor up to the point where the value produced by an additional hour equals the marginal cost of employing a worker for that hour.

▶ A profit maximizing firms will want to employ until:

$$MPL_C \times P_C = W$$

▶ The wage equals the value of the marginal product of labor in food manufacturing.

Labor demand

▶ The two sectors must pay the same wage because labor can move between sectors.
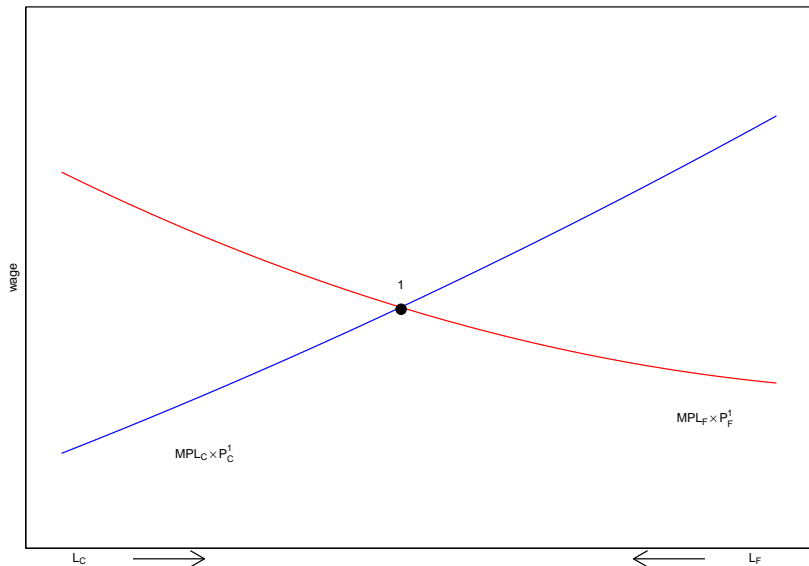
$$MPL_C \times P_C = MPL_F \times P_F = w \tag{4}$$

$$\tag{5}$$

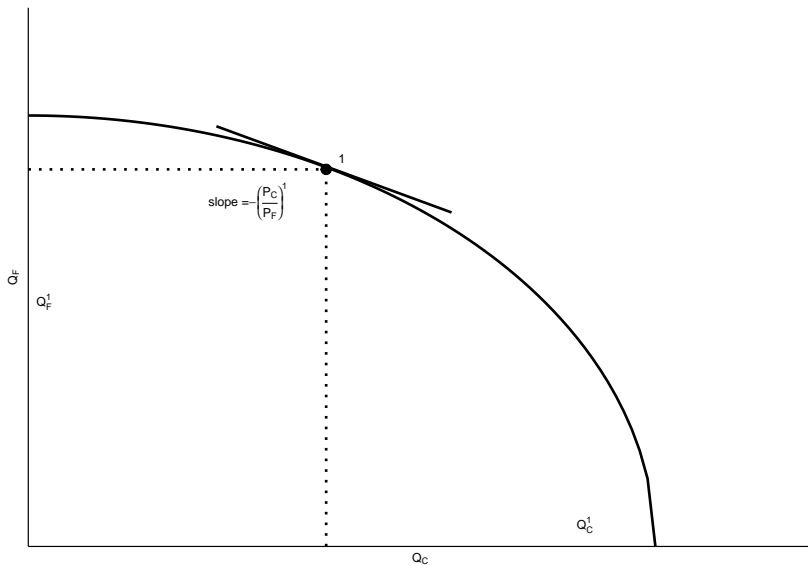$$-\frac{MPL_F}{MPL_C} = -\frac{P_C}{P_F} = w = \text{slope PPF} \tag{6}$$

▶ Equilibrium wage is set by price ratio (which reflects demand) and Opportunity costs.

Labor market

Note that L is fixed. Left is C, right is F.

Production

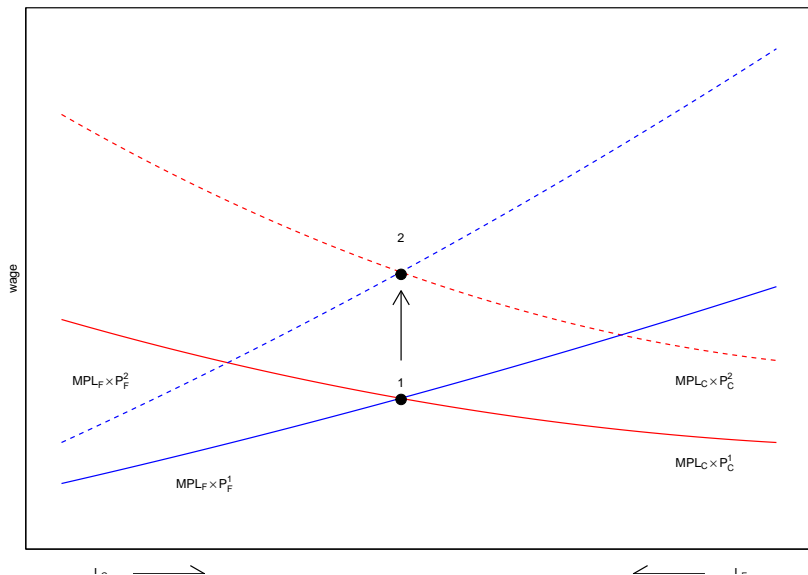# Trade

▶ Trade leads to changes in relative price: previously set by local demand endogeneously, now is exogenously given by the global market.

▶ What happens to the allocation of labor and the distribution of income when the prices of food and cloth change?

▶ Two cases:

  1. An equal proportional change in prices
  2. A change in relative prices

Increase in both price

- Let trade leads to changes in price as such $P_C^* = 1.1 P_C$ and $P_{F^*} = 1.1 P_F$
- The movement of the labor demand curve $MPL_i \times P_i$ will both go up by the same multiplier
- no changes in labor allocation.
- while prices both increase, wage increase by the exact same proportion.
- The real incomes of capital owners and landowners also remain the same.

Increase in both price

Change in relative price

▶ Katakanlah negara ini terekspose international trade.
  ▶ Di pasar internasional, $P_C^* = 1.1 P_C$ tapi $P_F^* = P_F$
▶ Katakanlah P_C naik 10%, tapi P_F tetap.
▶ Terjadi perubahan rasio harga di mana $\frac{P_C}{P_F} \uparrow$
▶ Ada kenaikan L_C dengan mengambil L_F
  ▶ inget, L secara total tetap.
▶ gaji naik, tapi ga sebanyak kenaikan P_C.

Change in relative price
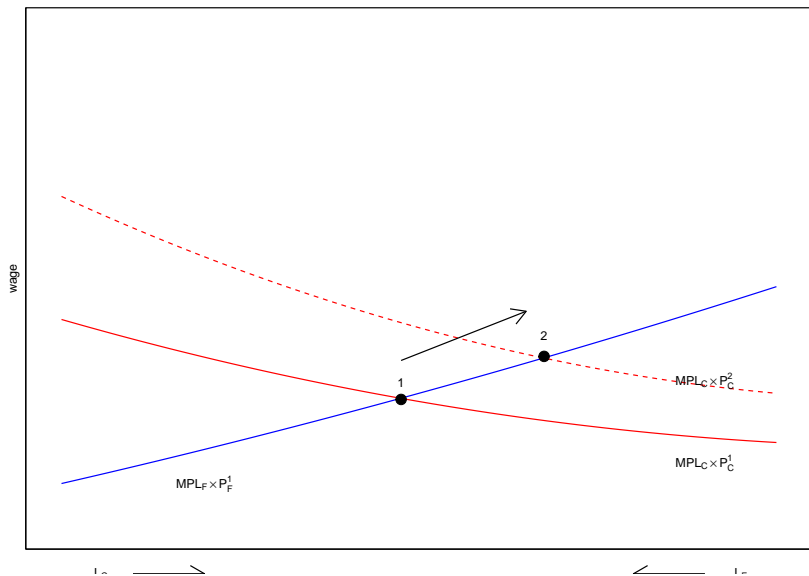
New production allocation

▶ Now what if the global market price P_C 10% more than the local market while P_F remains the same?

▶ When only P_C rises, labor shofts from the food sector to the cloth sector and the output of cloth rises while that of food falls.

▶ W does not rise as much as P_C since cloth employment increases hence MPL_C falls.
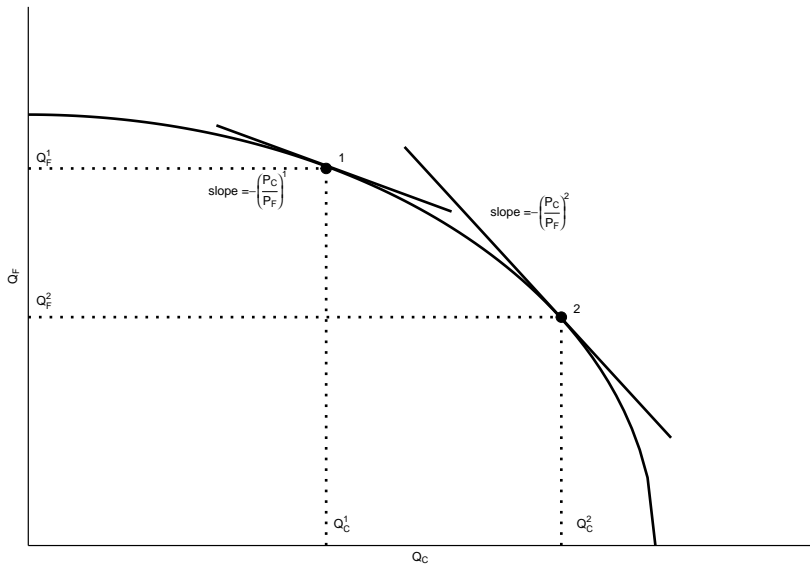
New production allocation

Figure 2: New production allocation

Understanding income distribution

▶ Changes in relative prices leads to changes in income distribution.
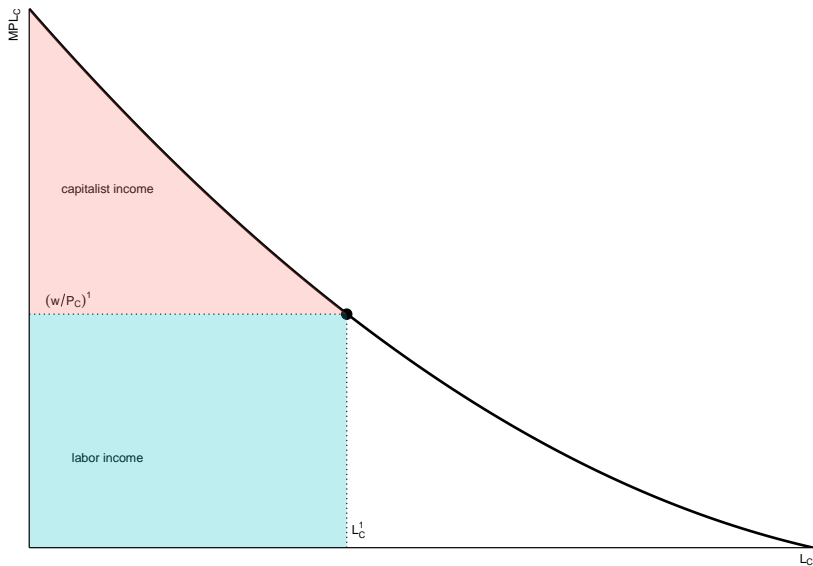
▶ This comes from disproportion changes:

$$\Delta P_C > \Delta w > \Delta P_F$$
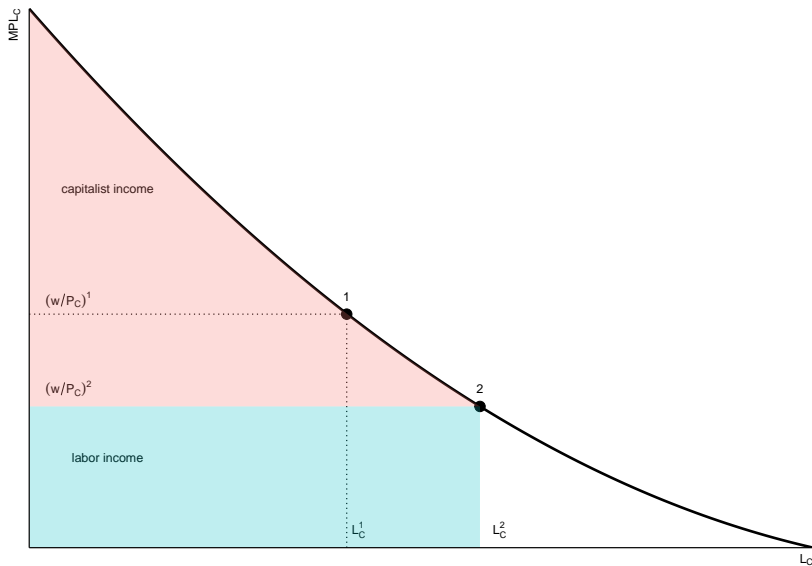
$$\frac{w}{P_C} < \frac{w}{P_F}$$

Income distribution

- ▶ Labors gain depends on their preference:
  - ▶ if C dominates their expenditure basket, then they lose.
  - ▶ If F dominates their expenditure basket, then they gain.
- ▶ Specific factor owners are conclusive.
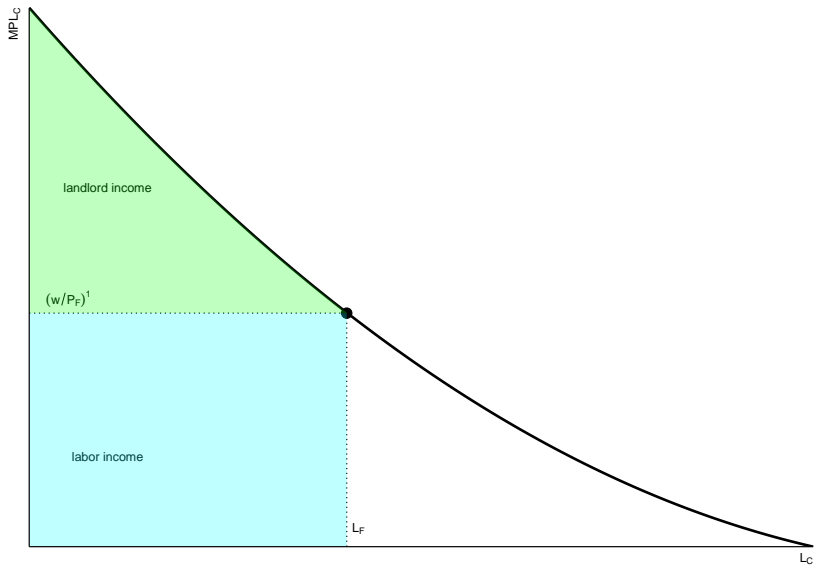 - ▶ Capital owners gain, Land owners loses.
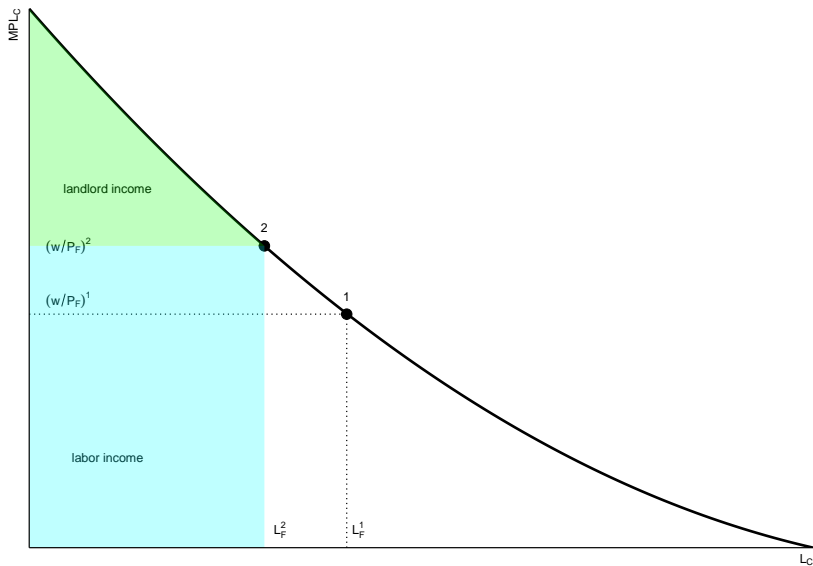
Cloth Sector

Increase in textile price

Food sector

Landlord surplus

Gains from trade

Trade benefits the factor that is specific to the export sector of each country but hurts the factor specific to the import-competing sectors, with ambiguous effect on mobile factors.

▶ Now, if trade benefit some and hurt some, can we still say gains of trade will always be positive overall?

Gains from trade

With no trade, then we must produce what we consume. That is:

$$D_C = Q_C \ and \ D_F = Q_F$$

▶ With trade, we don't have to! As long as:

$$P_C \times D_C + P_F \times D_F = P_C \times Q_C + P_F \times Q_F$$

Gains from trade

A bit of algebra to get:

$$D_F - Q_F = \left(\frac{P_C}{P_F}\right) \times (Q_C - D_C)$$

That is, import of F equals relative price times export of C

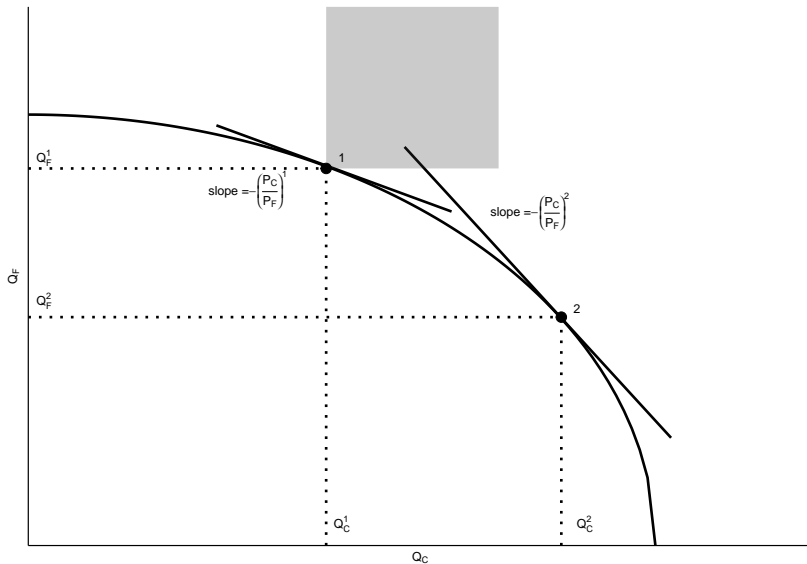How much we import depends on how much we export.

Gains from trade

Figure 3: semua daerah abu-abu adalah better set

Gains from trade

1. Understand that trade allows for bundles of options.

2. There's always better allocation with trade.

3. If there's always a better allocation, then the gain for gainers is larger than the loss for losers.

   ▶ Meaning, compensation transfer is possible.

Protectionist politics

▶ International trade shifts the relative price of cloth to food, so factor prices change.

▶ Trade benefits the factor that is specific to the export sector of each country, but hurts the factor that is specific to the import-competing sectors.

▶ Trade has ambiguous effects on mobile factors.

Protectionist politics

▶ Trade benefits a country by expanding choices.

▶ Possible to redistribute income so that everyone gains from trade. Those who gain from trade could compensate those who lose and still be better off themselves.

▶ That everyone could gain from trade does not mean that they actually do—redistribution usually hard to implement.

Protectionist politics

▶ Trade often produces losers as well as winners.

▶ Optimal trade policy must weigh one group's gain against another's loss.

▶ Some groups may need special treatment because they are already relatively poor (e.g., Indonesian farmers).

Protectionist politics

▶ Typically, those who gain from trade are a much less concentrated, informed, and organized group than those who lose.

  ▶ Example: consumers of food and rail services tend to be less influential than farmers and SOEs.

▶ Governments can provide a "safety net" of income support to cushion the losses to groups hurt by trade (or other changes).
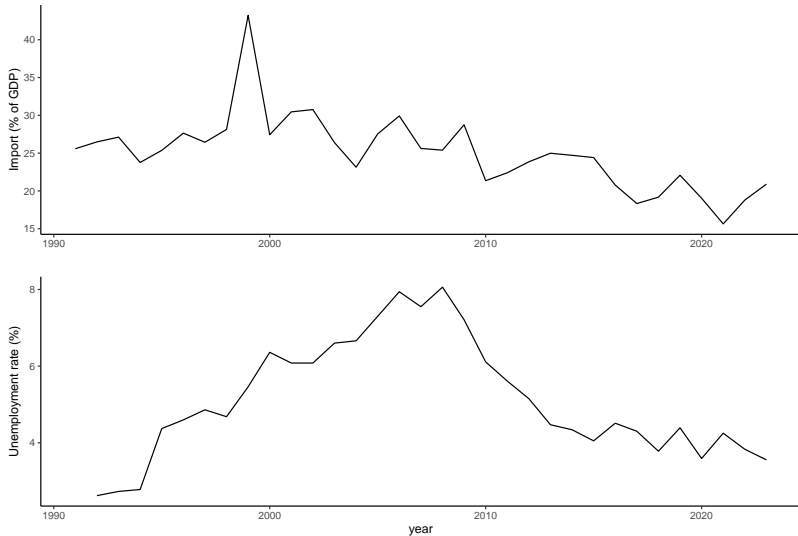
Protectionist politics

▶ Most economists strongly favor "free" trade.

▶ it is efficient, even if we include mitigation policies.

  ▶ subsidies, prakerja, etc financed with taxes paid by "winning" sectors.

▶ changes in prices and welfare happens all the time, even without trade.

  ▶ Pandemic favors WFH jobs, data favors people who know how to crunch them, etc.

Trade & jobs

▶ Trade shifts jobs from import-competing to export sector.

  ▶ Process not instantaneous—some workers will be unemployed as they look for new jobs.

▶ How much unemployment can be traced back to trade?

  ▶ In the US, From 2001 to 2010, only about 2% of involuntary displacements stemmed from import competition or plants moved overseas.

  ▶ Results is rather mixed in Indonesia[1]

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[1]Kis-Katos, K., & Sparrow, R. (2015). Poverty, labor markets and trade liberalization in Indonesia. Journal of Development Economics, 117, 94-106.

Unemployment vs import

source: WDI

Trump Trade War

- ▶ Substantial political pressure to protect import-competing sectors, even if leads to aggregate losses.
  - ▶ Trade protection usually limited to a few hard-hit sectors.
- ▶ The Trump administration enacted a vast set of tariffs on solar panels, washing machines, steel, aluminium, and an expanding list of manufactured good produced in China.
  - ▶ Many of the protected sectors contained a high proportion of intermediate goods imported by U.S. producers, harming jobs in these downstream sectors.
  - ▶ Retaliation by trading partners had a negative impact on employment by U.S. exporters.