1.3 — Comparative Advantage

ECON 324 • International Trade • Fall 2020

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○ [ryansafner/tradeF20](https://github.com/ryansafner/tradeF20)

🌐 tradeF20.classes.ryansafner.com

The Origins of Exchange I

- Why do we trade?

- **Resources are in the wrong place!**

- People have *better* uses of resources than they are currently being used!
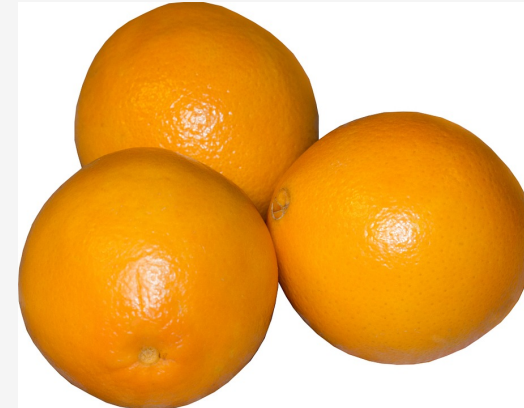
The Origins of Exchange II

- *Why* are resources in the wrong place?

- **We have the same stuff but different preferences**

The Origins of Exchange III

- *Why* are resources in the wrong place?

- **We have different stuff and/or different preferences**
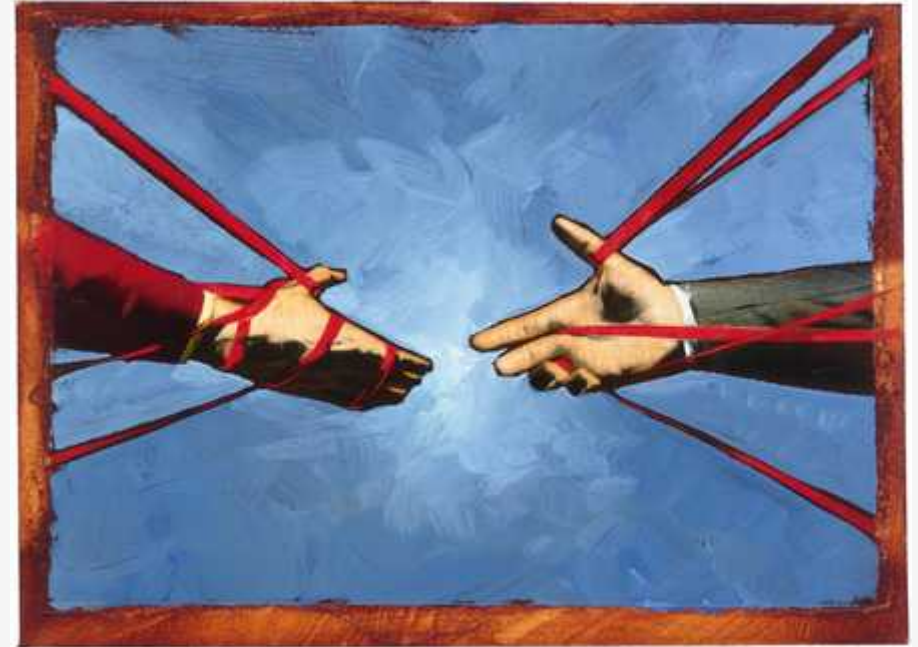
Transaction Costs and Exchange I

- But **Transaction costs**!
  - **Search costs**: cost of finding trading partners
  - **Bargaining costs**: cost of reaching an agreement
  - **Enforcement costs**: **trust** between parties, cost of upholding agreement, dealing with unforeseen contingencies, punishing defection, using police and courts
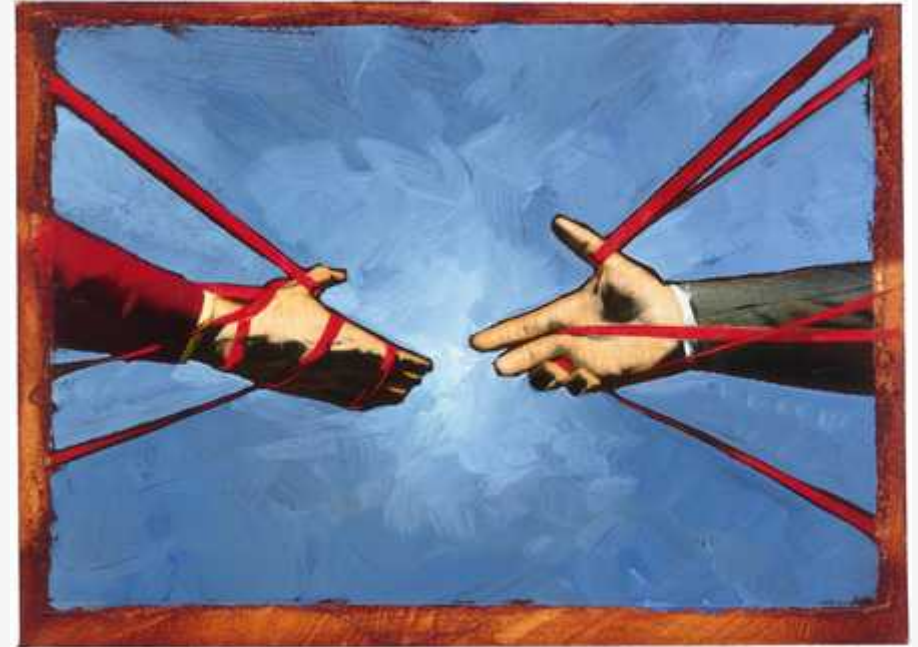
Transaction Costs and Exchange II

- With high transaction costs, resources *cannot* be traded

- Resources *cannot* be switched to higher-valued uses

- If others value goods higher than their current owners, resources are *inefficiently* allocated!

Transaction Costs and Exchange III

- **Markets** are institutions that facilitate voluntary *impersonal* exchange and reduce transaction costs

- There's a lot of institutions in the "bundle" we call "markets":

    - Prices, profits and losses, property rights, rule of law, contract enforcement, dispute resolution, protection, trust
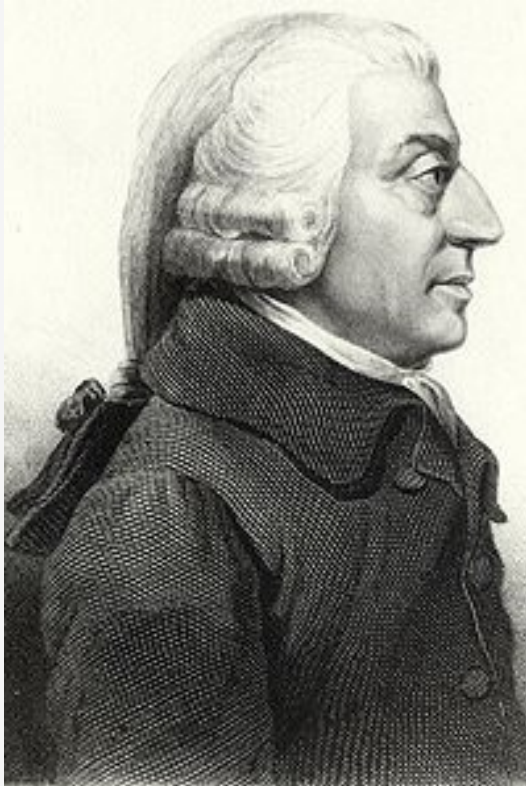
Transaction Costs and Exchange III

- All of those things are *assumed* when we draw nice supply & demand graphs on the blackboard

- How do various *political institutions* enable these market institutions to succeed?

Comparative Advantage

Specialization

"It is the maxim of every prudent master of a family, never to attempt to make at home what it will cost him more to make than to buy...If a foreign country can supply us with a commodity cheaper than we ourselves can make it, better buy it of them with some part of the produce of our own industry, employed in a way in which we have some advantage." (Book I, Chapter 2).

Smith, Adam, 1776, *An Enquiry into the Nature and Causes of the Wealth of Nations*

Adam Smith

1723-1790

Specialization in the Presence of Absolute Advantage

- Martha Stewart is a world renowned decorator and designer

- She also claims to be able to iron a shirt better and faster than anyone else

- Should she iron her own shirts?

  > "I don't always do all of my own ironing, even though I wish that I could."

Specialization in the Presence of Absolute Advantage

- Even in the presence of **absolute advantage** (one party is more efficient at producing *all* goods), it still often is better for them to specialize

    - A high opportunity cost of producing everything

- Pay others to perform a task, or purchase a good, and specialize in producing goods where you have the **lowest opportunity cost**

- This is the principle of **comparative advantage**

Comparative Advantage

Ricardian Comparative Advantage

David Ricardo

1772-1823

"To produce the wine in Portugal, might require only the labour of 80 men for one year, and to produce the cloth in the same country, might require the labour of 90 men for the same time. It would therefore be advantageous for her to export wine in exchange for cloth. This exchange might even take place, notwithstanding that the commodity imported by Portugal could be produced there with less labour than in England. Though she could make the cloth with the labour of 90 men, she would import it from a country where it required the labour of 100 men to produce it, because it would be advantageous to her rather to employ her capital in the production of wine, for which she would obtain more cloth from England, than she could produce by diverting a portion of her capital from the cultivation of vines to the manufacture of cloth."

Ricardian Comparative Advantage

David Ricardo

1772-1823

- Sought to explain an apparent paradox: countries often produce & export goods they don't seem to be "good at producing!"

- Answer: citizens of the importing country are *even better* at producing *something else* (in relative terms)

  - Worthwhile for the exporting country to buy this from abroad (with exports as payment)

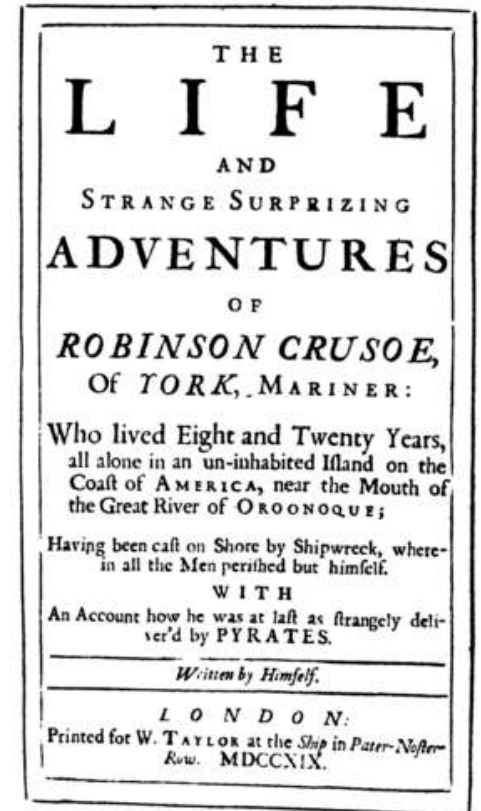Ricardo, David, 1817, *Principles of Political Economy and Taxation*

A Simple Example of Comparative Advantage

A Simple Example of Comparative Advantage

- Start with the simplest model of exchange

- A single person (Robinson Crusoe) marooned on a deserted island

- **Autarky**: complete self-sufficiency (no exchange)

  - Must produce everything one consumes

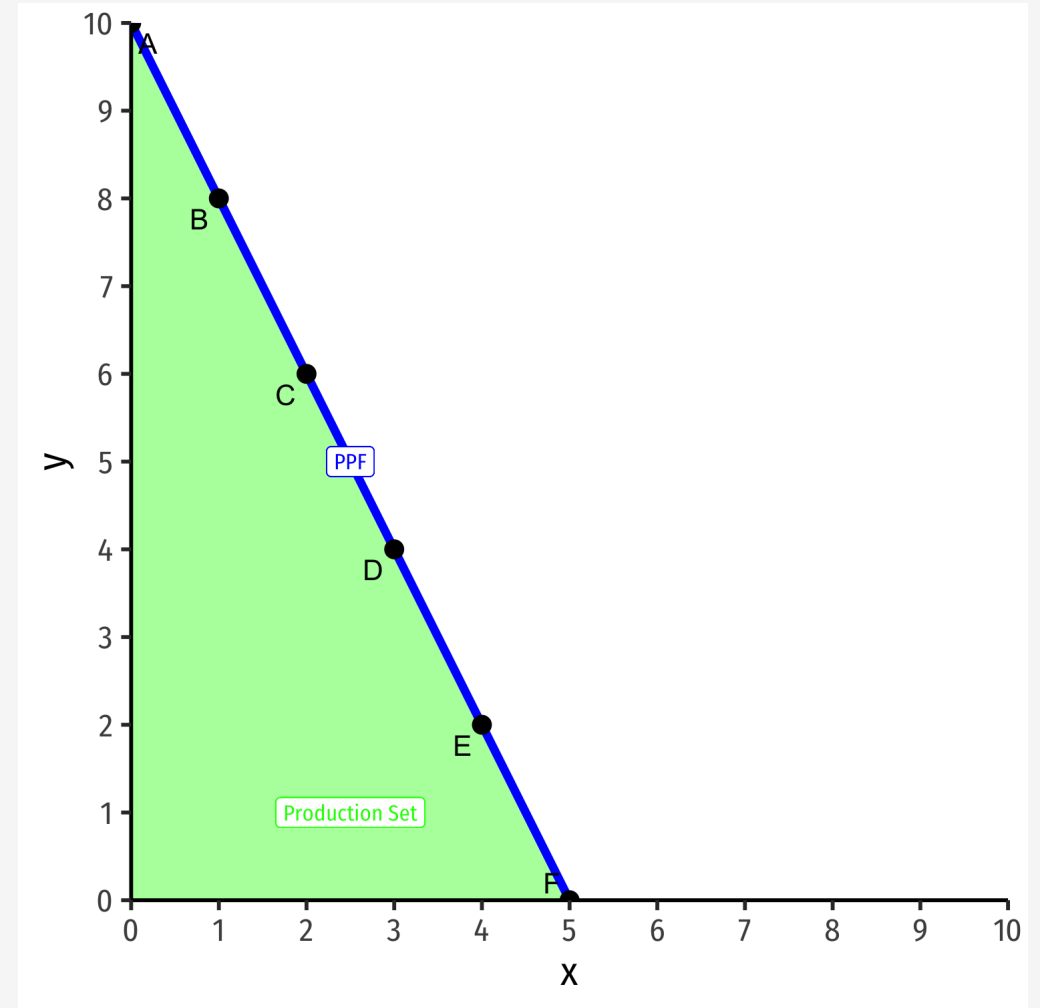# A Simple Example of Comparative Advantage

- Crusoe's **production set** represents the set of all possible production opportunities

- **Production possibilities frontier (PPF)** represents the subset of production opportunities that *use all available resources*

  - i.e. Crusoe uses all his available time to produce a combination on his PPF
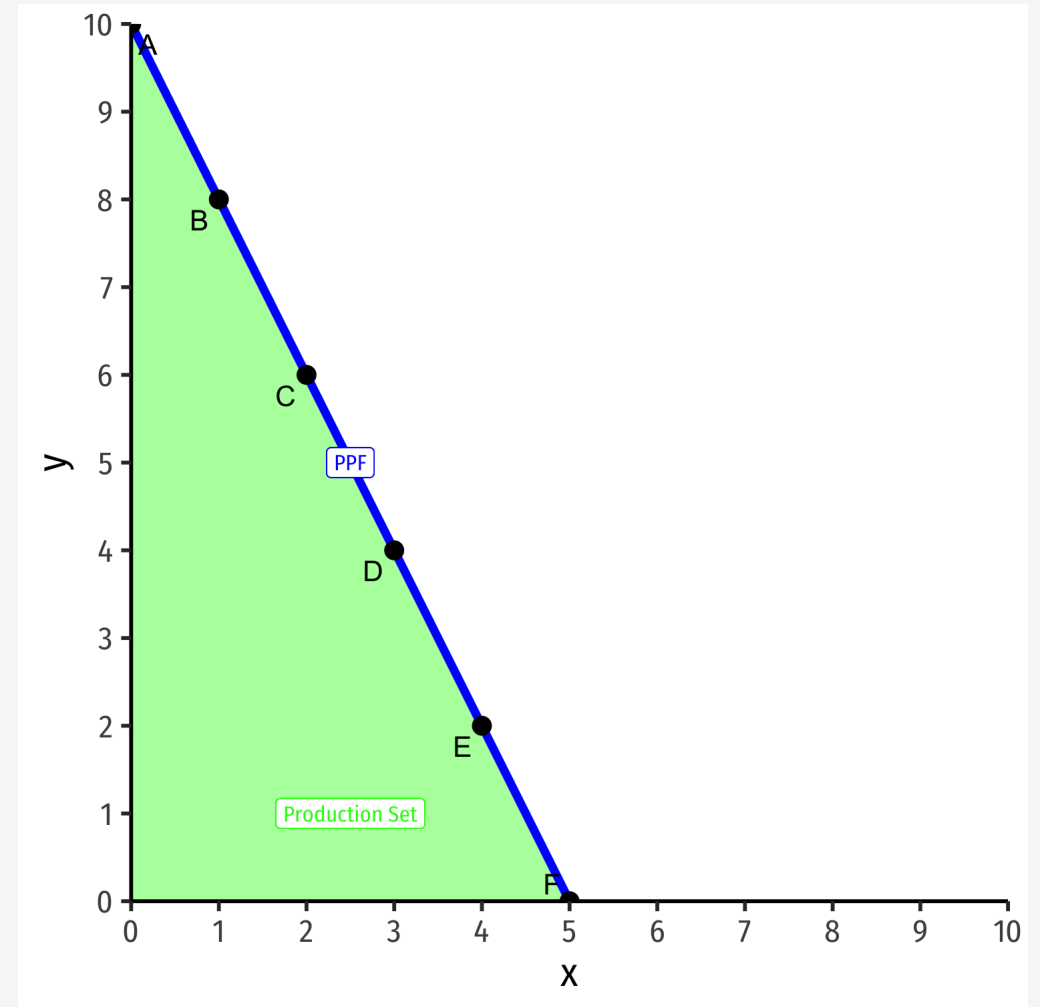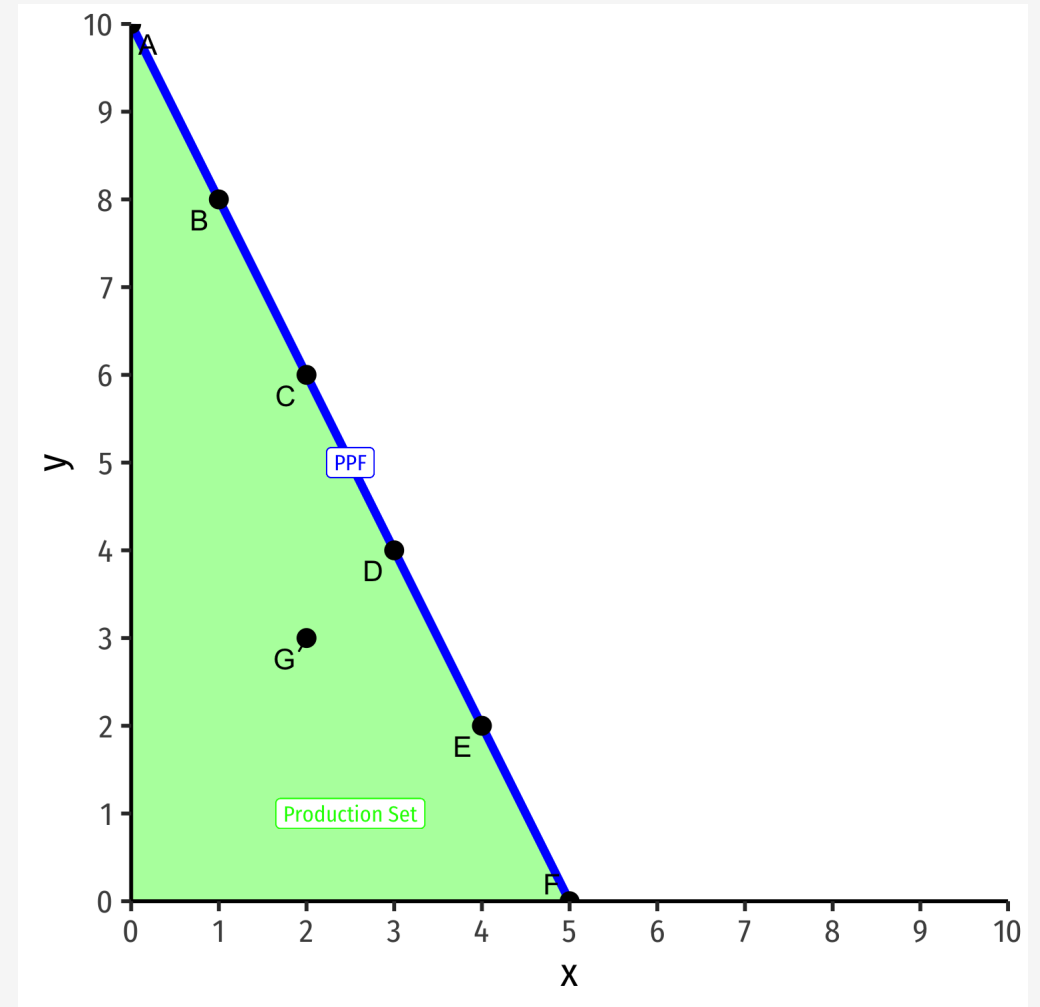
A Simple Example of Comparative Advantage

- Points **on the frontier** are efficient (uses all available labor supply)
  - Points A-F

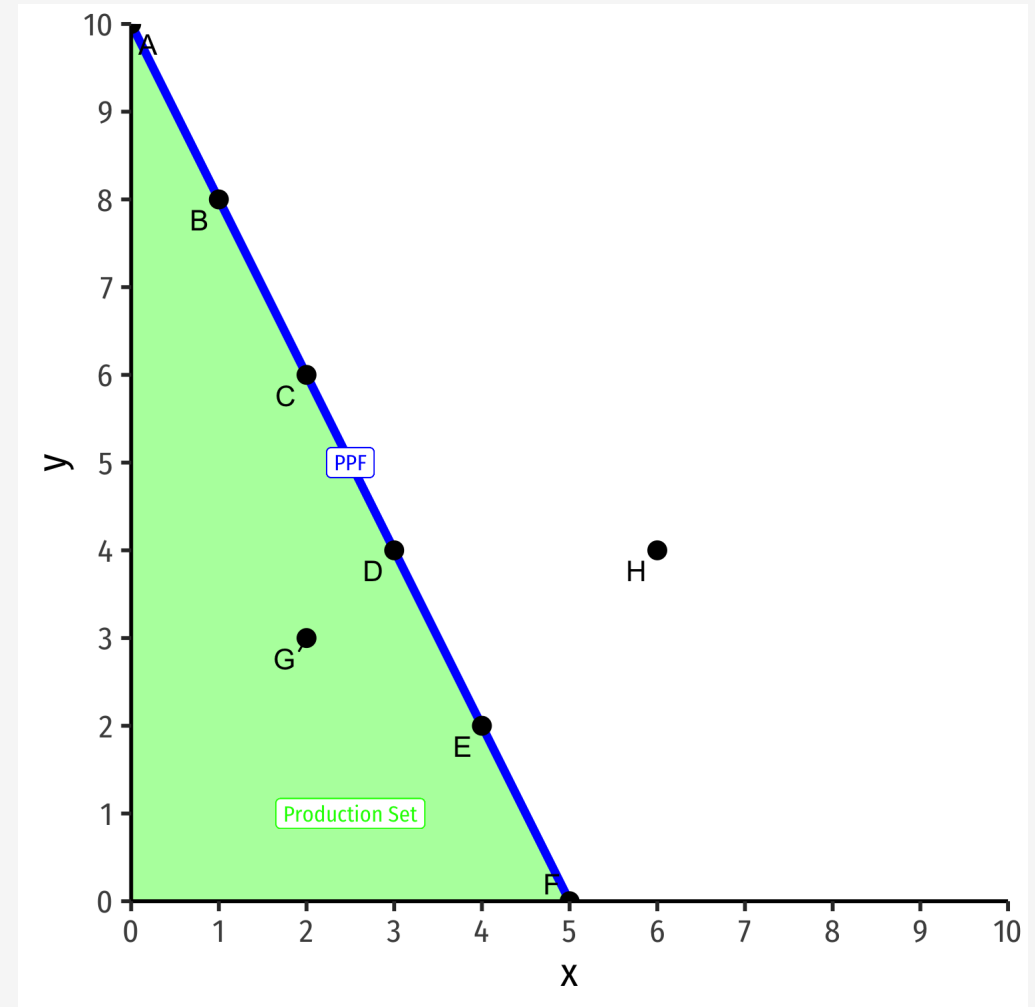# A Simple Example of Comparative Advantage

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  - Point G

A Simple Example of Comparative Advantage

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- Points **beneath the frontier** are feasible (in **production set**) but inefficient (does not use all available labor supply)

  - Point G

- Points **above the frontier** are impossible with current constraints (endowment, technology, trading opportunities)

  - Point H
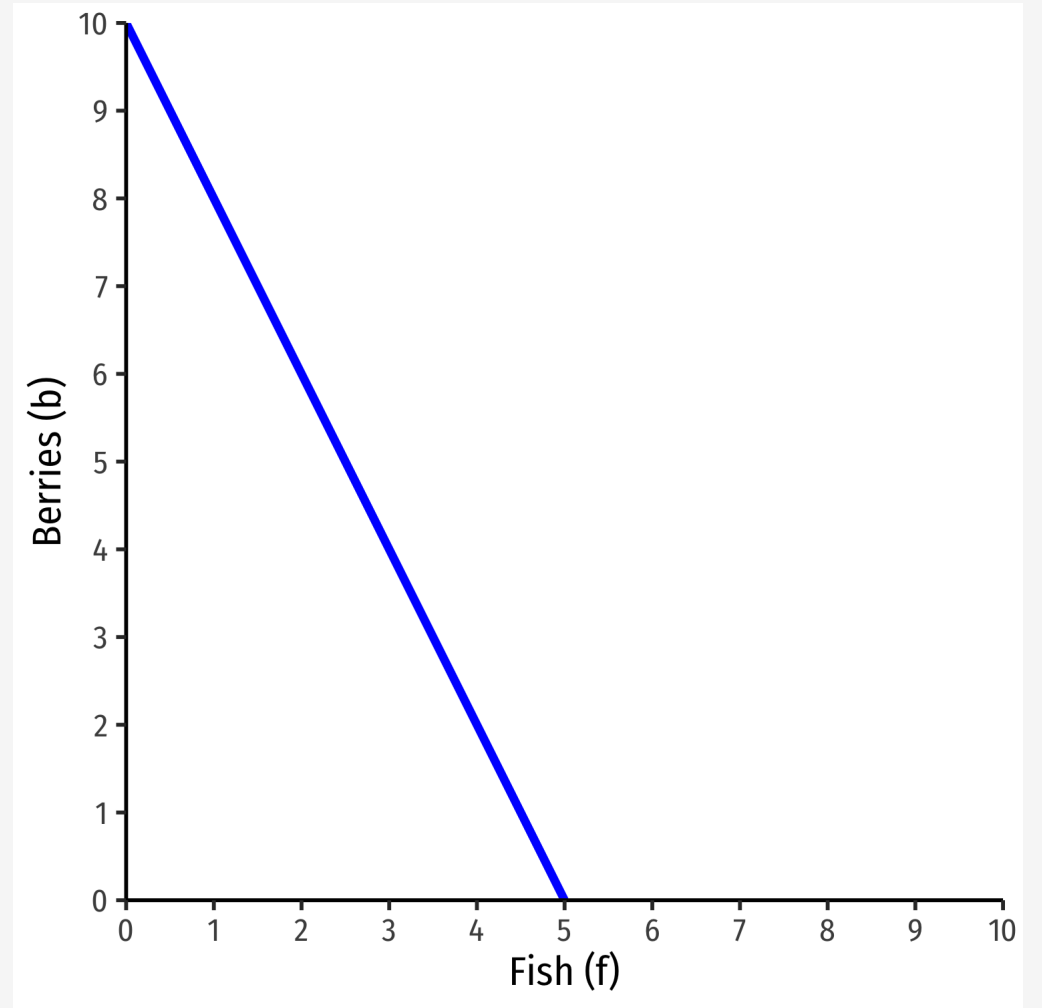
A Simple Example of Comparative Advantage

- Slope of PPF: **marginal rate of transformation (MRT)**

- Rate at which (domestic) market values **tradeoff** between goods x and y

- **Relative price of x** (in terms of y), or **opportunitiy cost of x**: how many units of y must be given up to produce one more unit of x
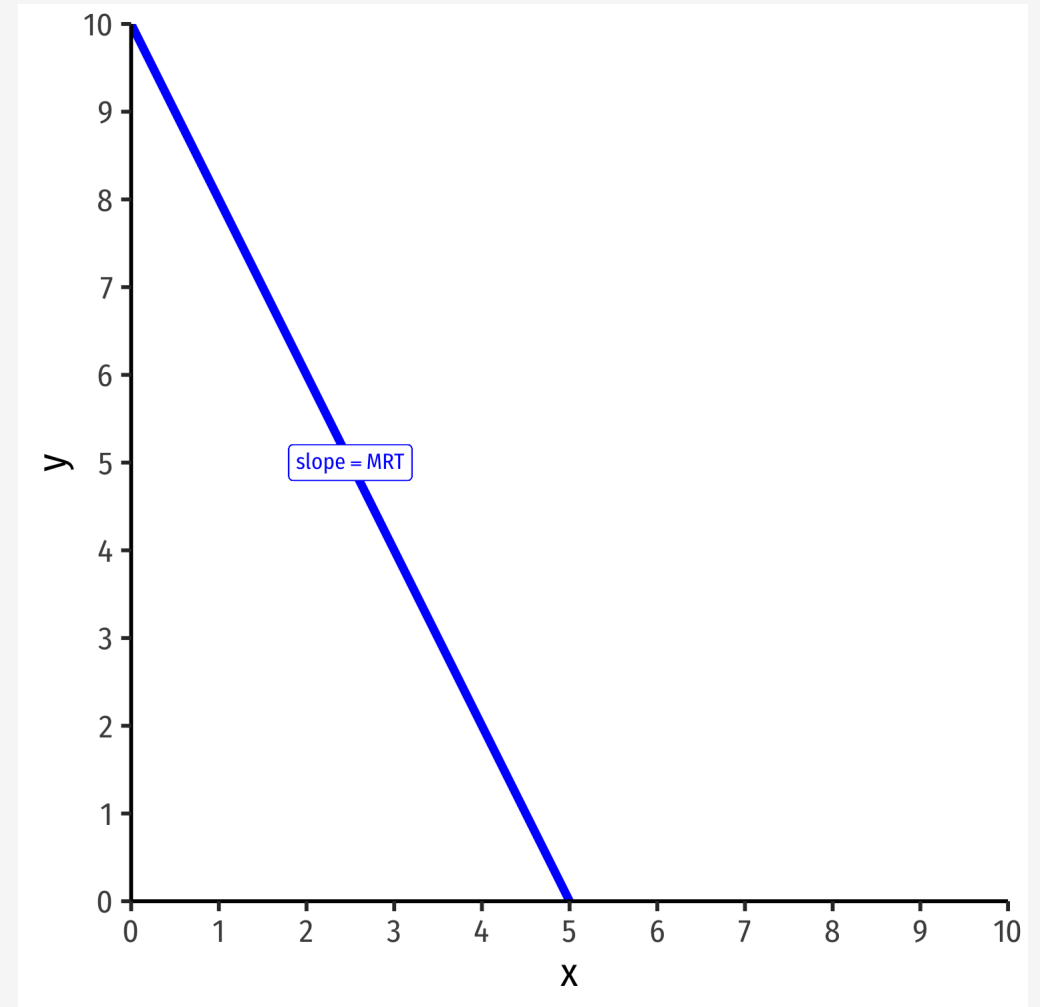
A Numerical Example

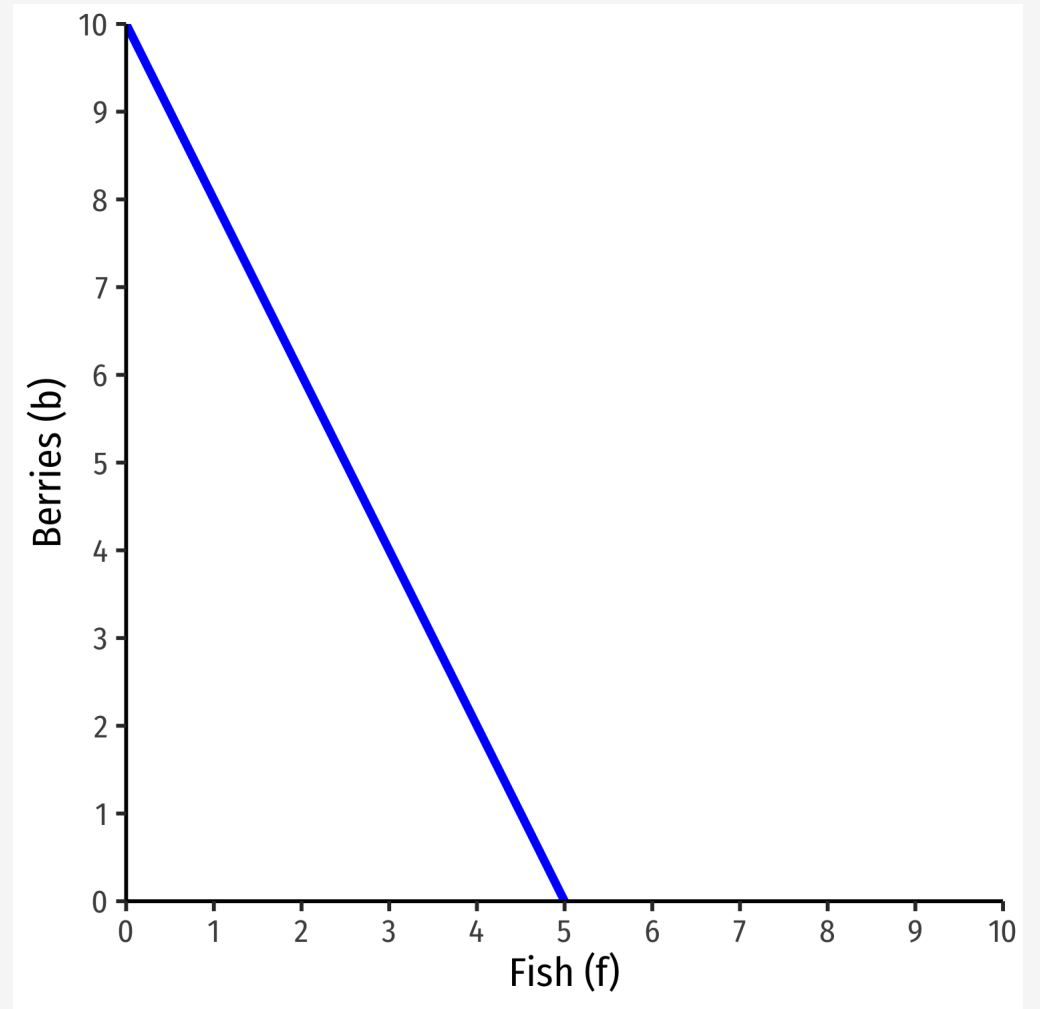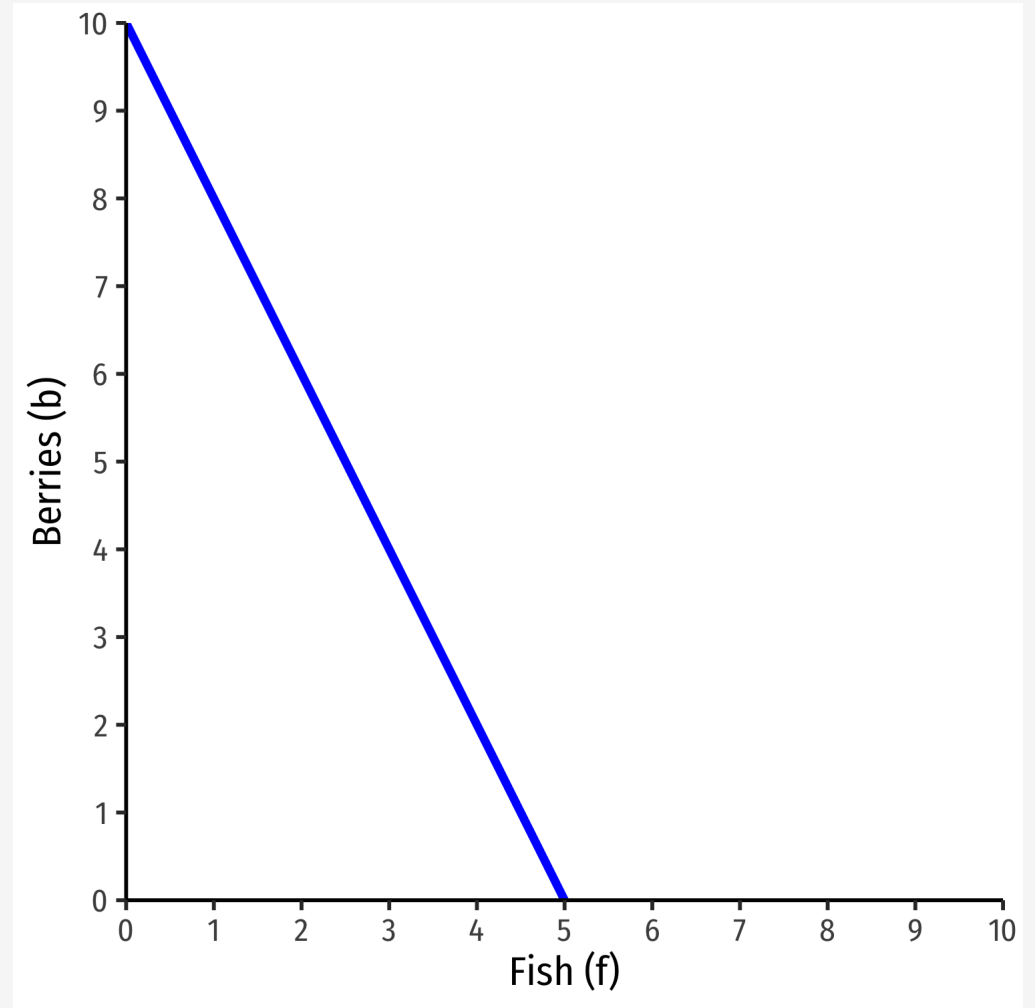- Suppose the two goods on the island are fish (f) and berries (b)

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$$b = 10 - 2f$$

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- Slope: -2
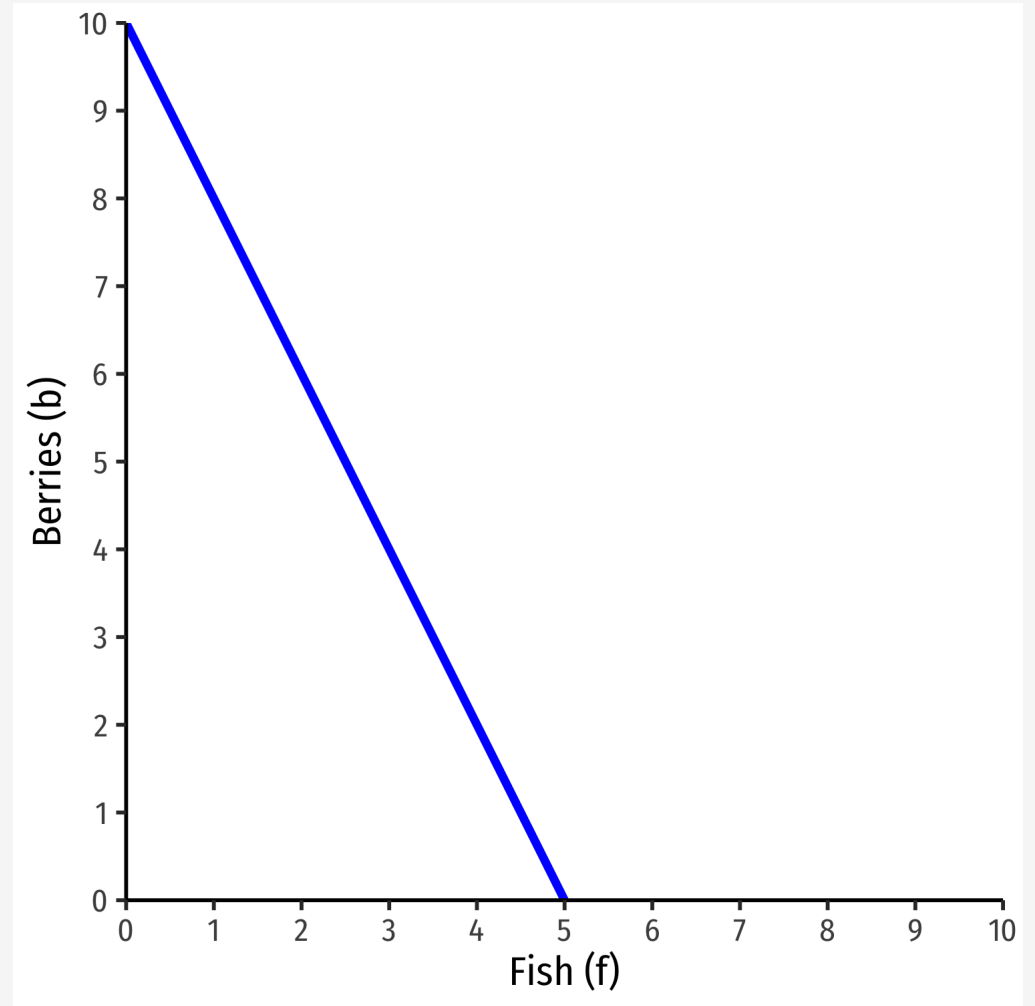- Opportunity cost of $1f : 2b$

A Numerical Example

- Suppose the two goods on the island are fish (f) and berries (b)

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- Slope: -2
- Opportunity cost of $1f$: $2b$
- Opportunity cost of $1b$: $\frac{1}{2}f$
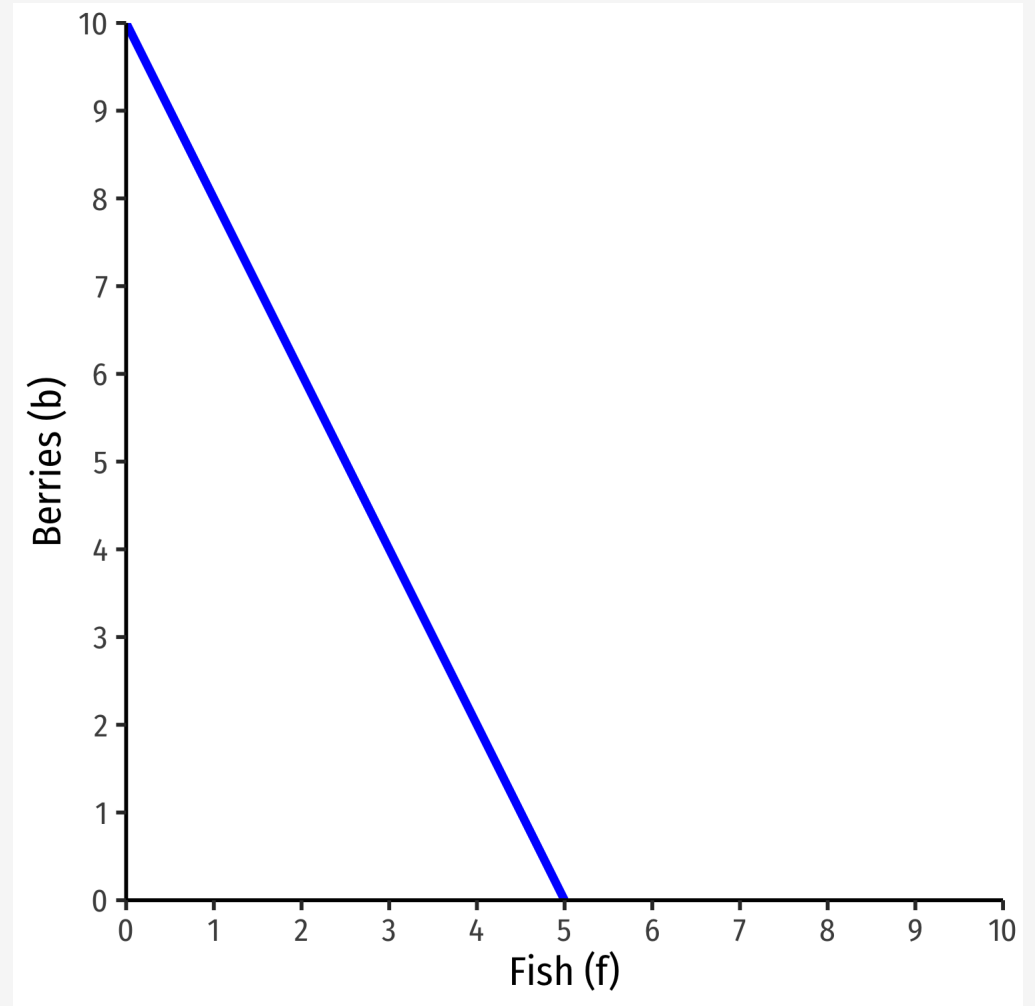- Hint: use the endpoints!

A Numerical Example

- Suppose the two goods on the island are fish (f) and berries (b)

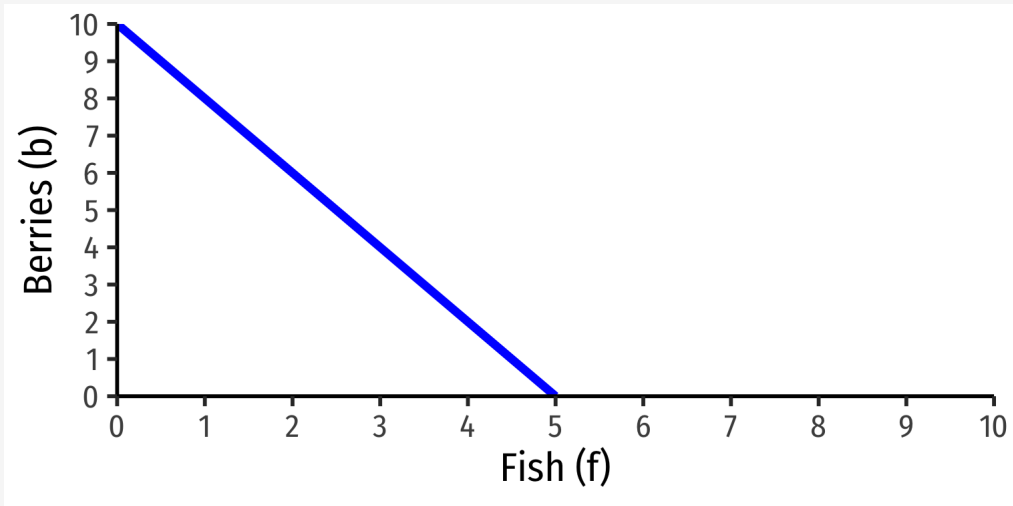- Can represent the PPF as a linear function:

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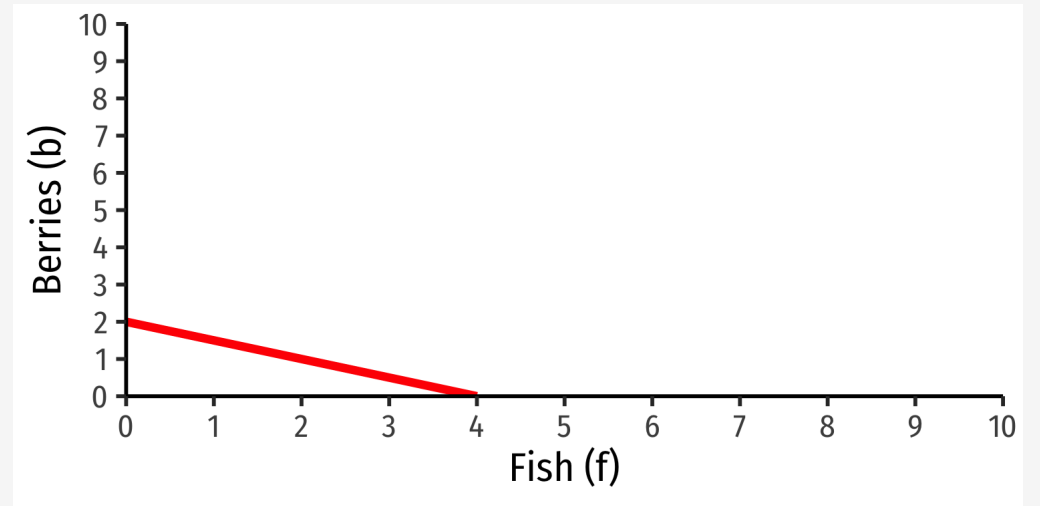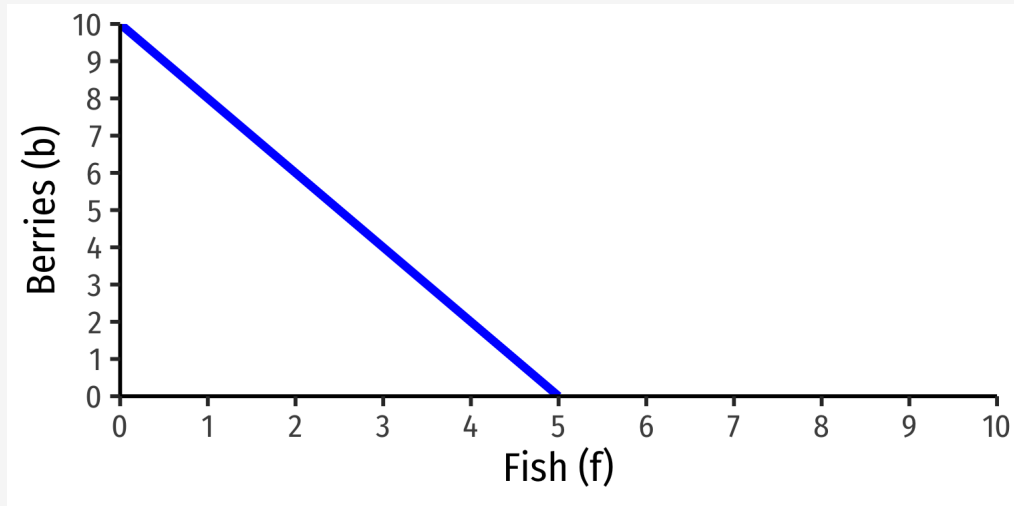- Opportunity cost of $1b$: $\frac{1}{2}f$

Meeting Friday

Crusoe
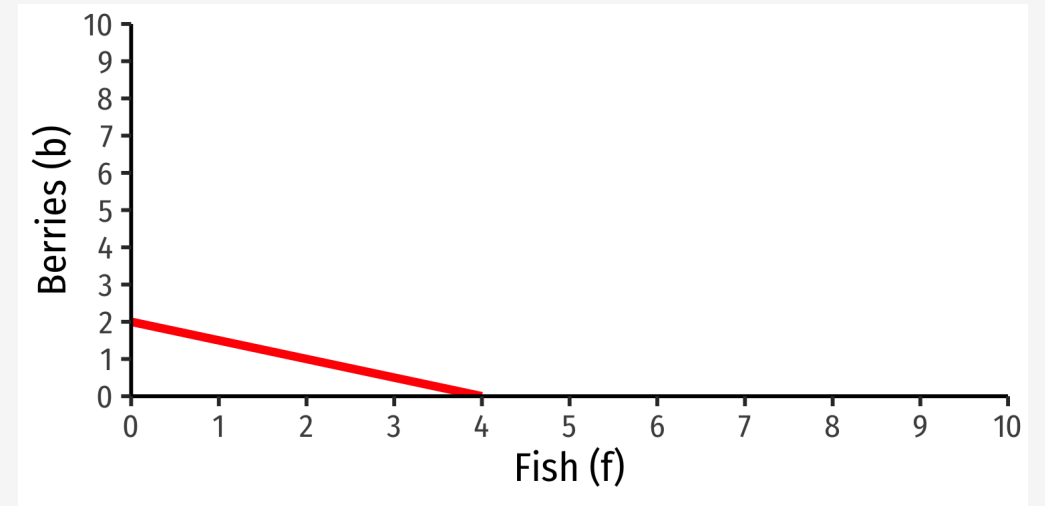

Friday

Meeting Friday

Crusoe

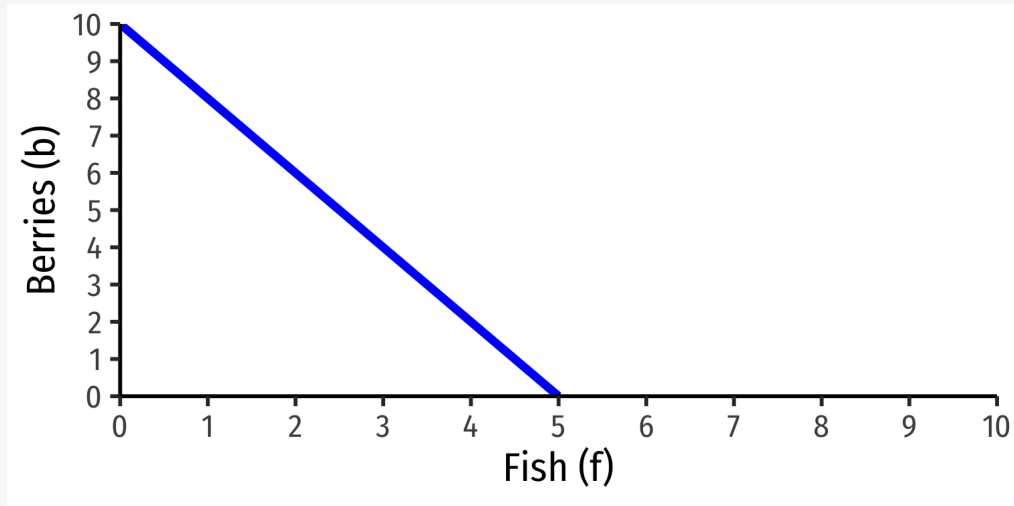Crusoe's PPF: $b = 10 - 2f$

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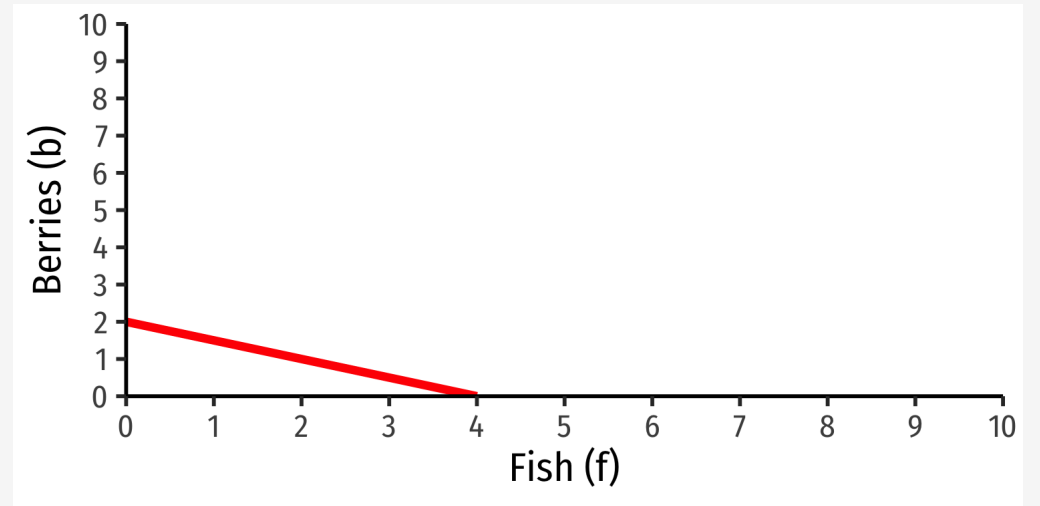
Friday

Friday's PPF: $b = 2 - \frac{1}{2}f$

Meeting Friday

Crusoe

Friday

Crusoe's PPF: $b = 10 - 2f$

Friday's PPF: $b = 2 - \frac{1}{2}f$

Crusoe's opportunity cost of 1f: $2b$

Friday's opportunity cost of 1f: $\frac{1}{2}b$

Meeting Friday
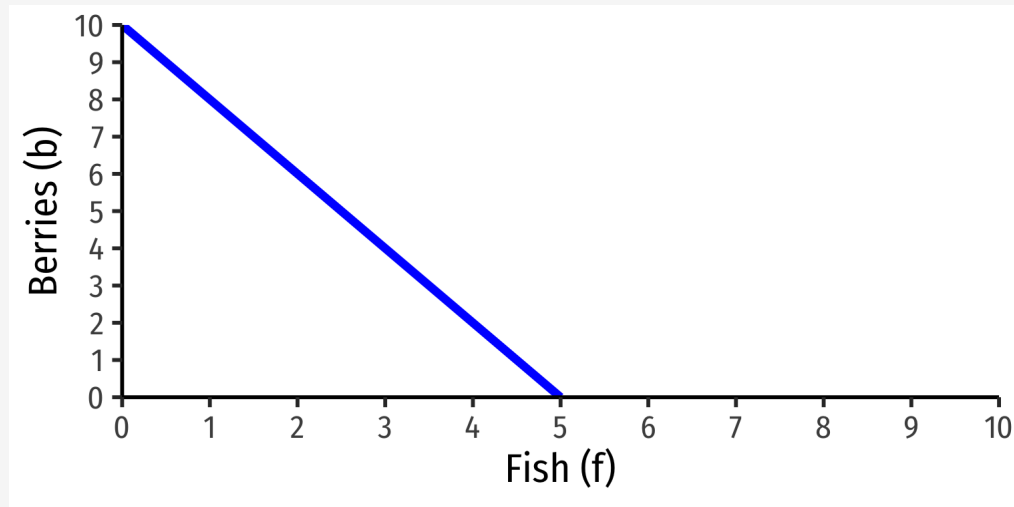
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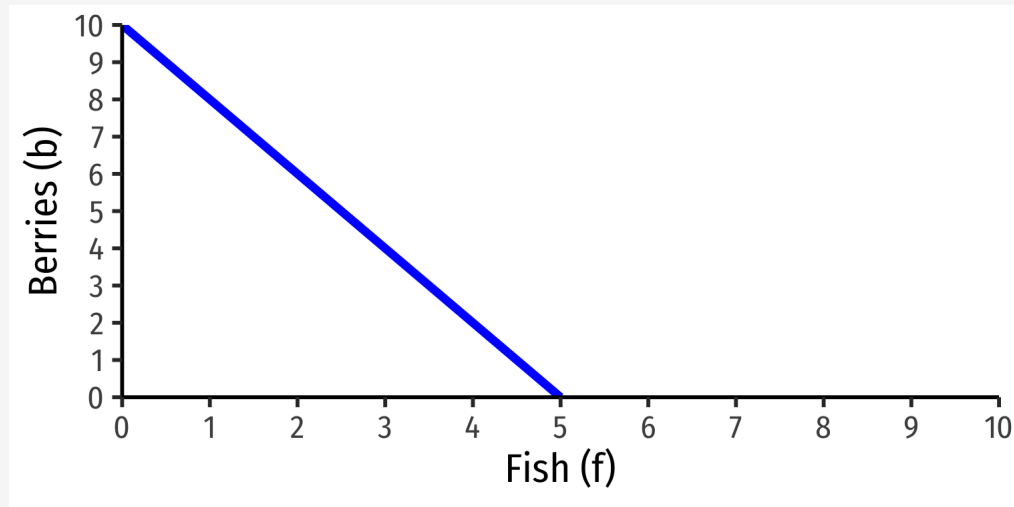
Crusoe's PPF: $b = 10 - 2f$

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Friday
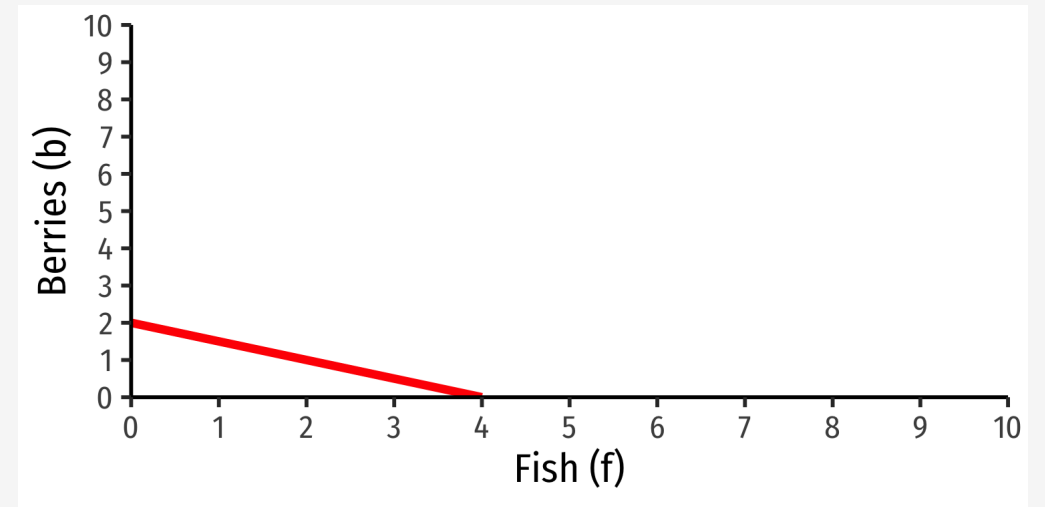
Friday's PPF: $b = 2 - \frac{1}{2}f$

Friday's opportunity cost of 1f: $\frac{1}{2}b$

Friday's opportunity cost of 1b: $2f$

Production Potentials

Maximum Possible Production

	Fish	Berries
Crusoe	5	10
Friday	4	2
TOTAL	9	12

- Why should Crusoe trade with Friday? Crusoe has an **absolute advantage** in everything!

Production Potentials

Maximum Possible Production

	Fish	Berries
Crusoe	5	10
Friday	4	2
TOTAL	9	12

Opportunity Costs

	1 Fish	1 Berry
Crusoe	2b	0.5f
Friday	0.5b	2f

- **Different opportunity costs imply differing comparative advantages!**

Production Potentials

Maximum Possible Production

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	1 Fish	1 Berry
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Friday	**0.5b**	2f

- **Different opportunity costs imply differing comparative advantages!**

- Person (country) with lower opportunity cost of *a particular good* should specialize in producing *that* good

Current Production & Consumption

Crusoe
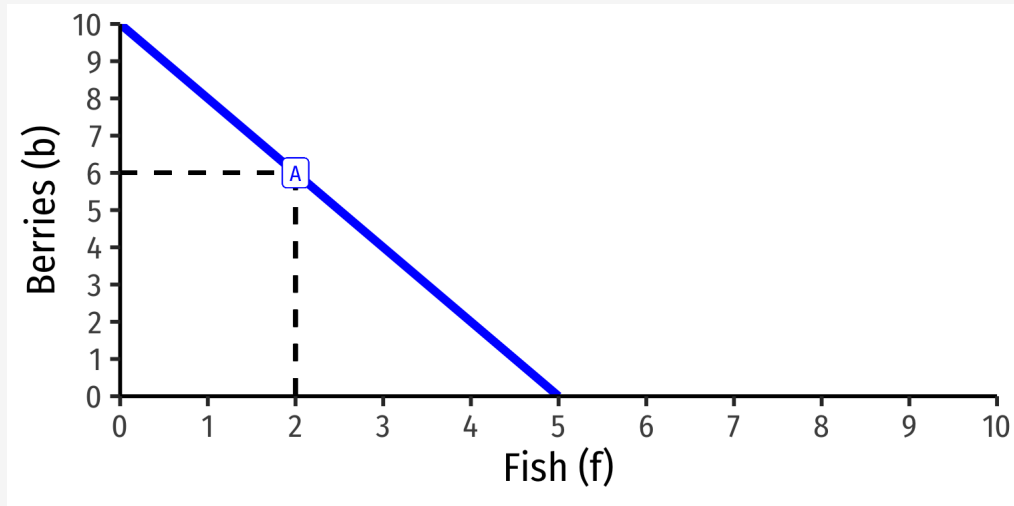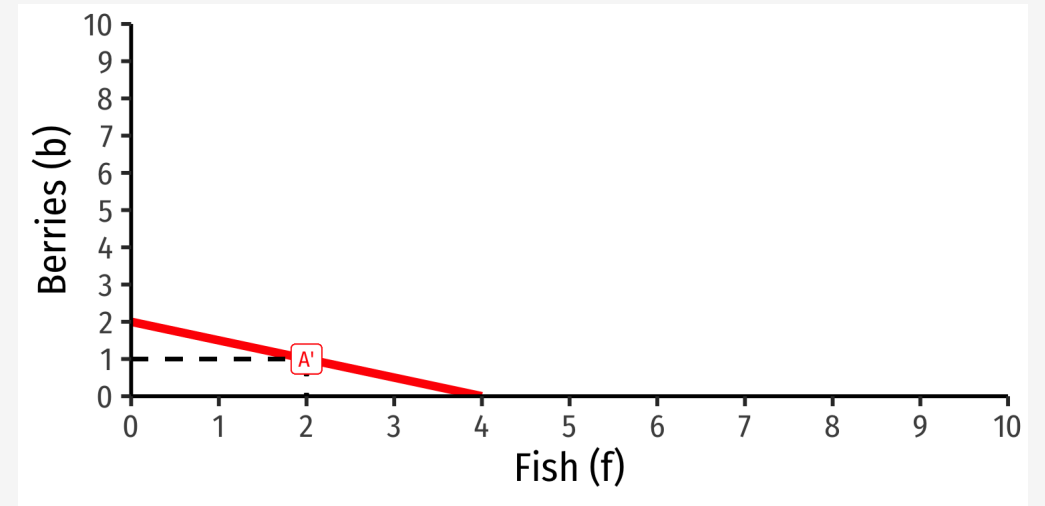
	Fish	Berries
Crusoe	2	6
Friday	2	1

Friday

- Each is producing & consuming at an (arbitrary) point on their PPFs (A and A')

Specialization in Production
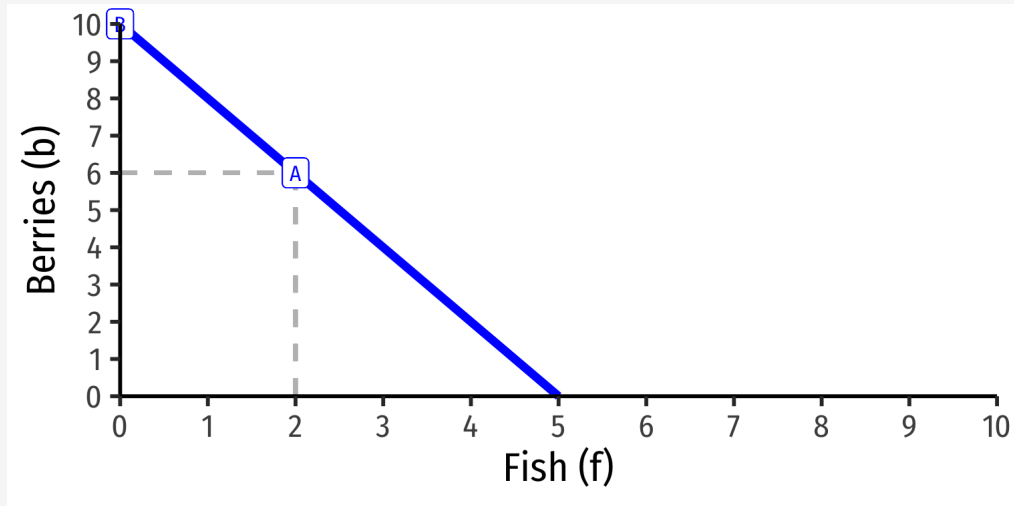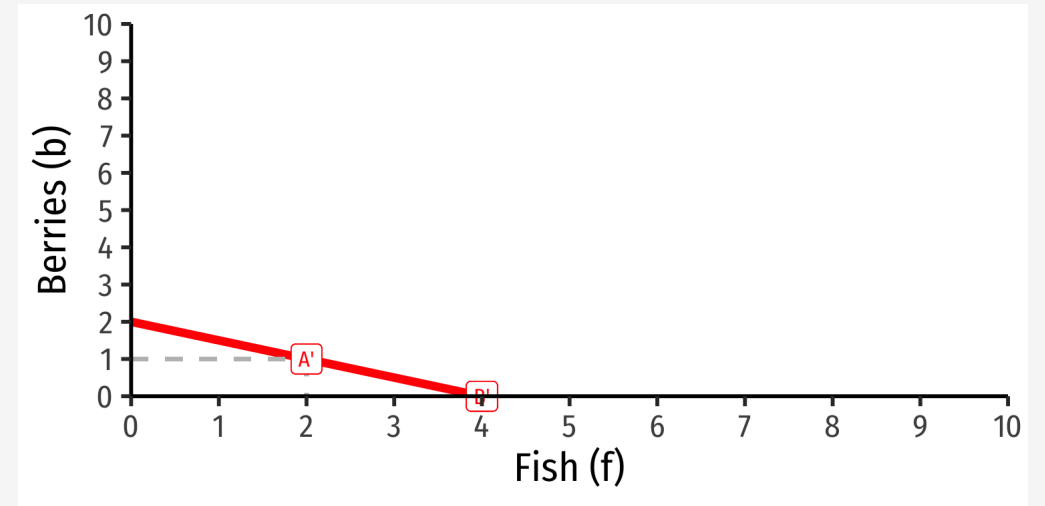
Crusoe

	Fish	Berries
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Friday

- Each then specializes in their comparative advantage (B and B')

Specialization in Production
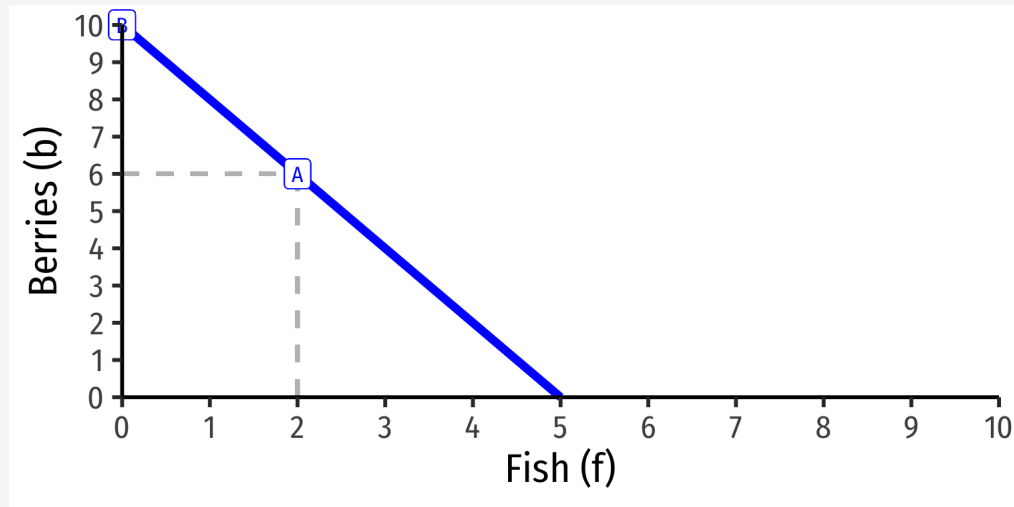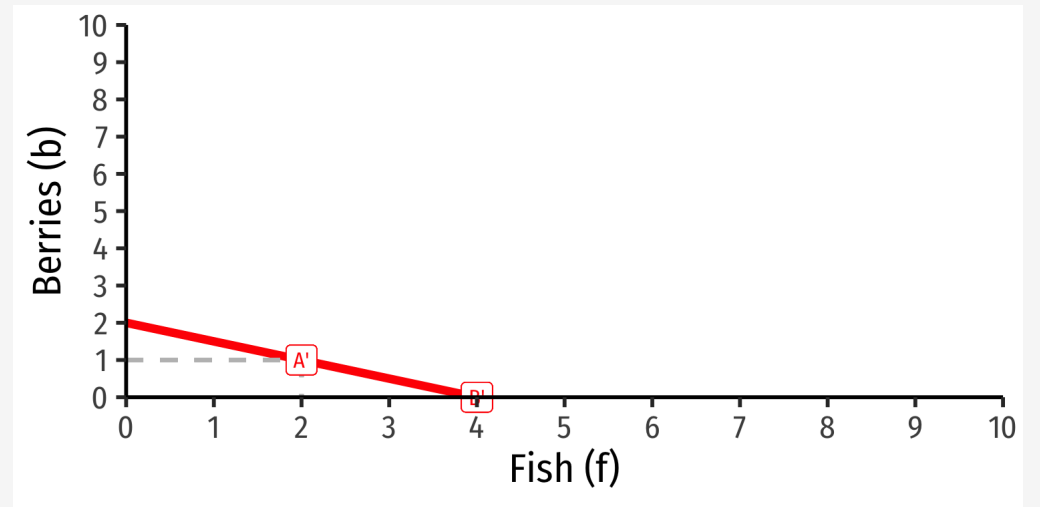
Crusoe

	Fish	Berries
Crusoe	0	10
Friday	4	0

Friday

- Each then specializes in their comparative advantage (B and B')

- Suppose they agree on the following terms of trade: 1 fish for 1 berry

The Terms of Trade

- The **"terms of trade"** are also known as **exchange rates** or **relative prices**

- (Without money), there are two prices here:

  - **(berry) price of fish,** p_f: amount of *berries* given up for *1 fish*
  - **(fish) price of berries,** p_b: amount of *fish* given up for *1 berry*

The Terms of Trade

- Each party wants to **buy** at a relative price **lower** than their own opportunity cost

  - Otherwise, "cheaper" to produce it yourself!

- Each party wants to **sell** at a relative price **higher** than their own opportunity cost

  - Otherwise, keep it!

Opportunity Costs

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$$\frac{1}{2} \text{ berry} < p_f < 2 \text{ berries}$$

$$\frac{1}{2} \text{ fish} < p_b < 2 \text{ fish}$$

Opportunity Costs

	1 Fish	1 Berry
Crusoe	2b	**0.5f**
Friday	**0.5b**	2f

Improvements in Post-Trade Consumption
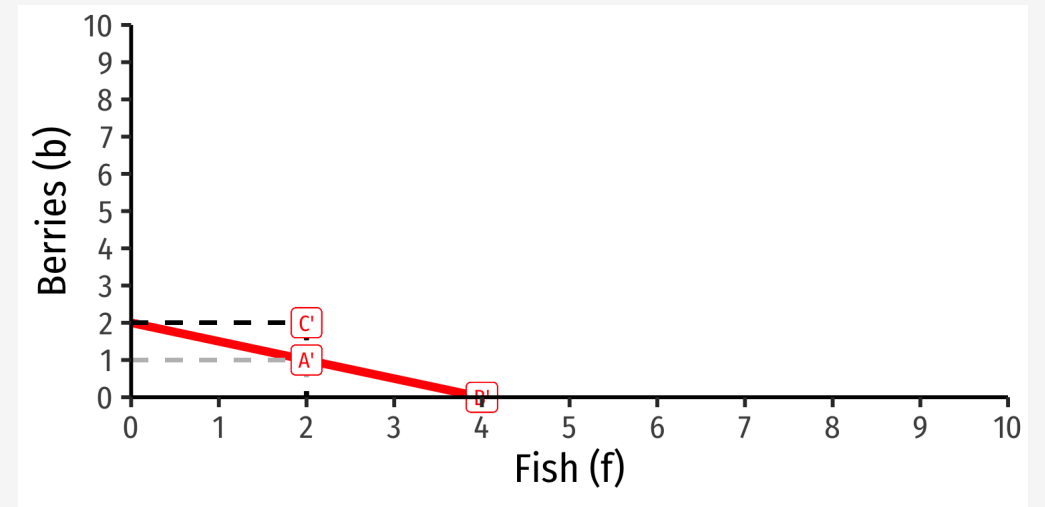
Crusoe

	Fish	Berries
Crusoe	2	8
Friday	2	2

Friday

- **Gains from exchange**: both Crusoe and Friday can comume more than they could possibly produce!

- At points above their PPFs

How Division of Labor Deepens Comparative Advantage

Friday's Productivity Increase

- Recall, Crusoe specialized in berry-gathering and Friday specialized in fishing

- Suppose Friday becomes better at fishing (Smith's reasons):

  - Lower switching costs
  - Learning by doing
  - Creating specialized tools (a net)

New Opportunity Costs

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New Opportunity Costs

	1 Fish	1 Berry
Crusoe	2b	**0.5f**
Friday	**0.25b**	4f

New Opportunity Costs Lead to New Prices

Original Opportunity Costs

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Crusoe	2b	**0.5f**
Friday	**0.5b**	2f

New Opportunity Costs

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$\frac{1}{2}$ berry $< p_f < 2$ berries

$\frac{1}{2}$ fish $< p_b < 2$ fish

$\frac{1}{4}$ berry $< p_f < 2$ berries

$\frac{1}{2}$ fish $< p_b < 4$ fish

New Post-Trade Consumption
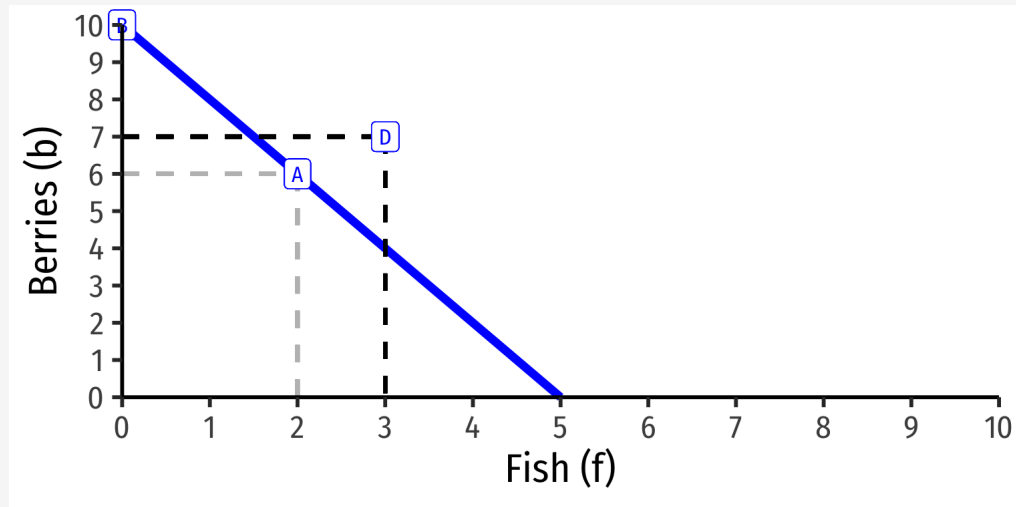
Crusoe

Friday
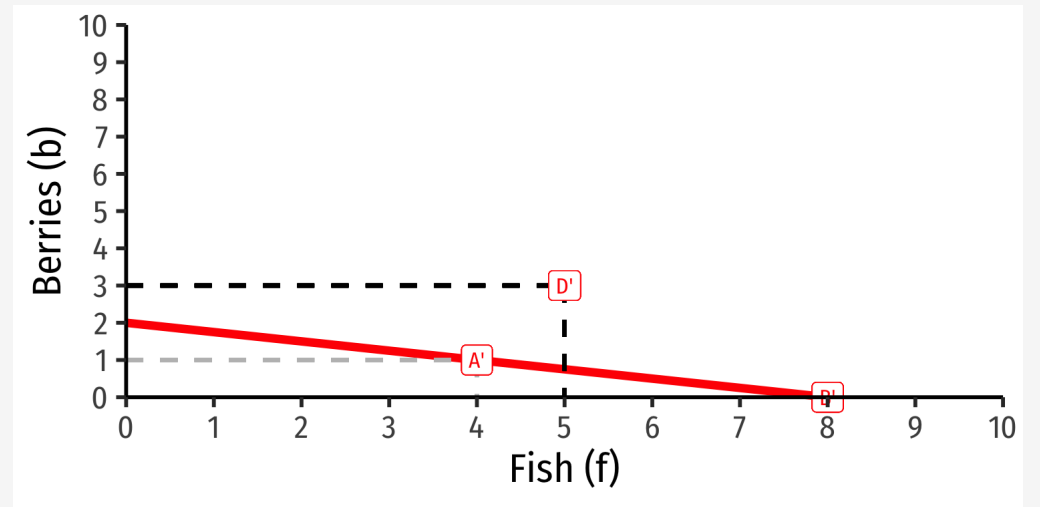
	Fish	Berries
Crusoe	3	7
Friday	5	3

- Keep same terms of trade (1b:1f)

- Crusoe gives Friday 3 berries for 3 fish

Gains from Exchange and Productivity

- Both exchange and increasing productivity here are **Pareto improvements**

  - At least one person made better off, and nobody worse off

- Friday, by becoming more productive, has more fish

  - by becoming **comparatively better** at catching fish, becomes **comparatively worse** at gathering berries

- **Trade becomes more important**

- Crusoe better off too, getting more fish in exchange for his berries!

Trade as a Production Technology

Two ways to produce a car:

Trade as a Production Technology

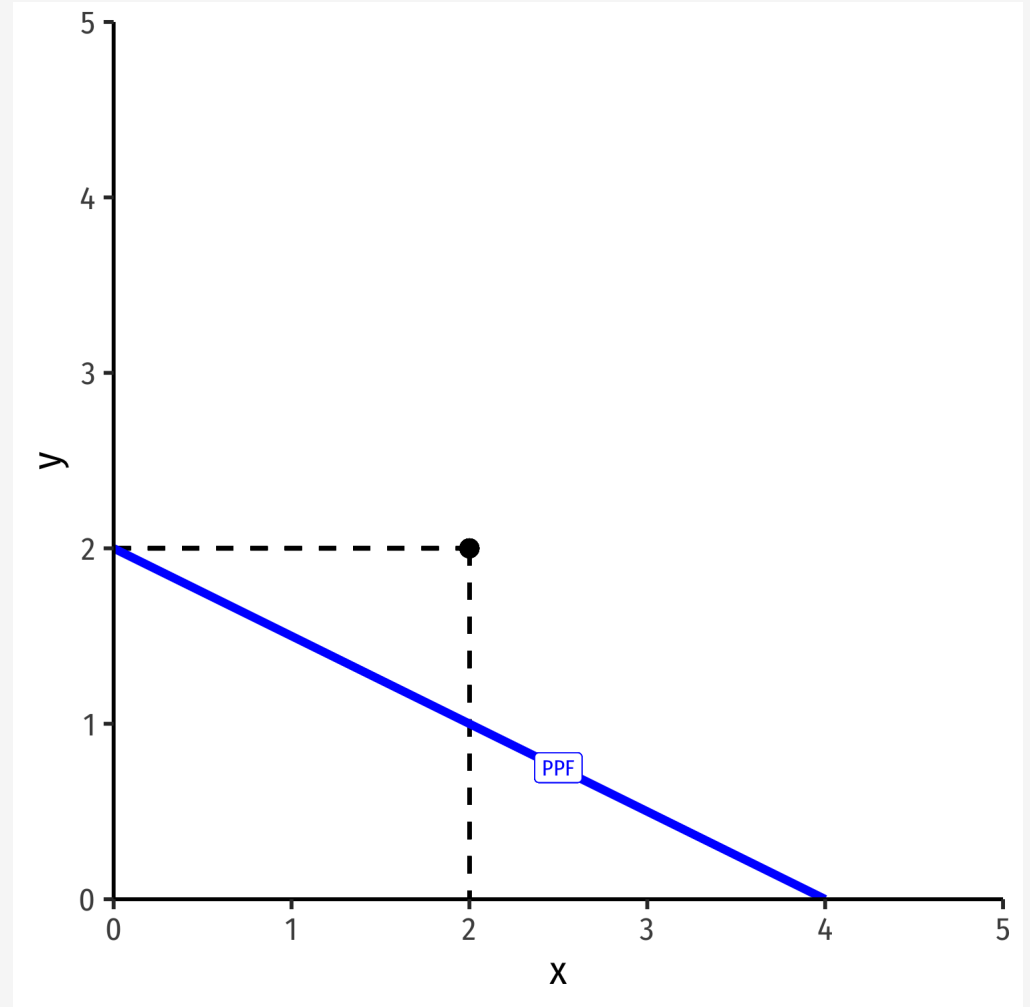Two ways to produce a car:

Trade as a Production Technology

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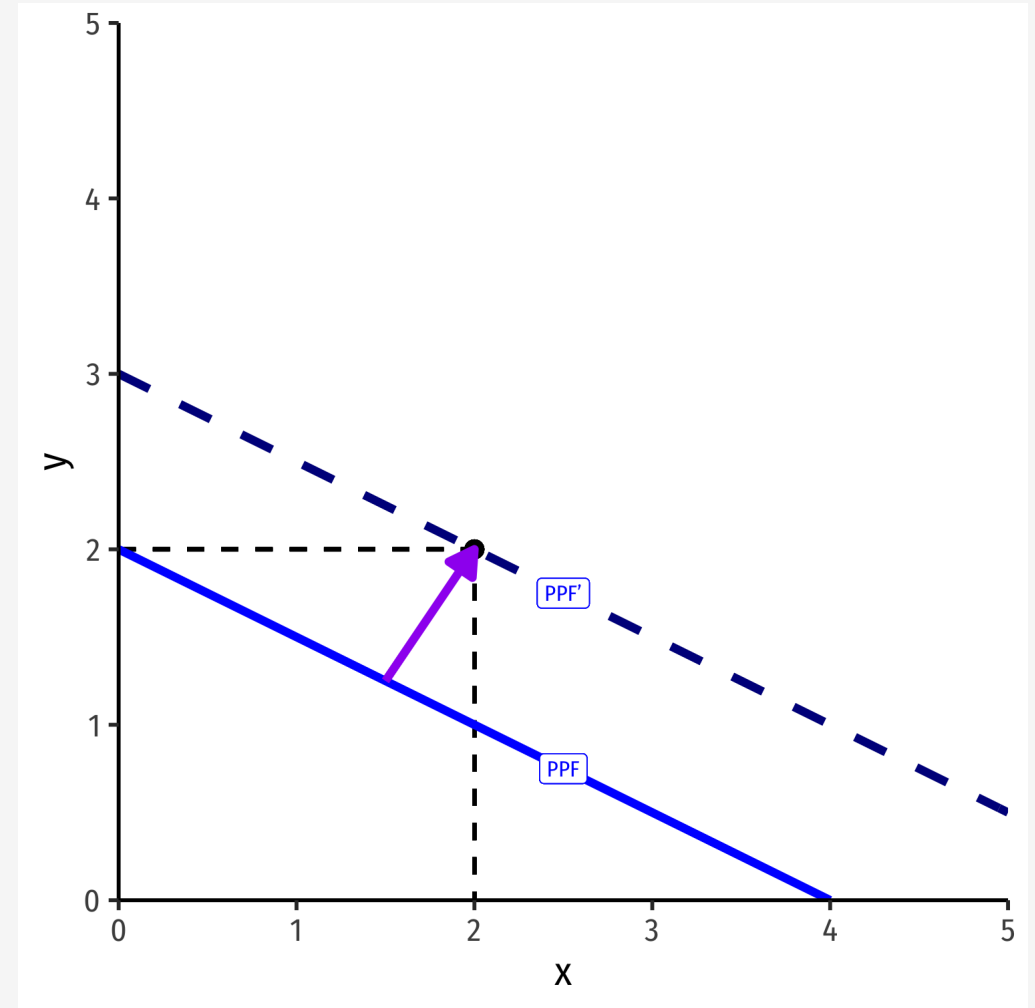
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Trade as a Production Technology

- Trade is only a more roundabout way of producing for consumption

- **Direct**: increase own productivity & production

- **Indirect**: specializing in production & exchanging with others

- Extends division of labor & extent of the market!