Trade-Offs, Production Possibilities, Comparative Advantage

Gains from Trade in a World Confronting Scarcity

Outline

1. Production Possibilities Frontier

2. Comparative Advantage

3. The Market System

- Textbook Readings: Ch. 2

Interdependence and Gains from Trade

- You consume goods and services produced around the world
  - People producing those G&S do not do it to be generous
- Parable: a rancher and a farmer
  - Goods: meat and potatoes
  - Specialization and trade
  - Are there gains from trade when one is better at producing both goods?

Scarcity

- **Limited** Resources vs **Unlimited** Wants

- **Scarcity**:
  - Unlimited wants **exceed** the limited resources available to fulfill those wants

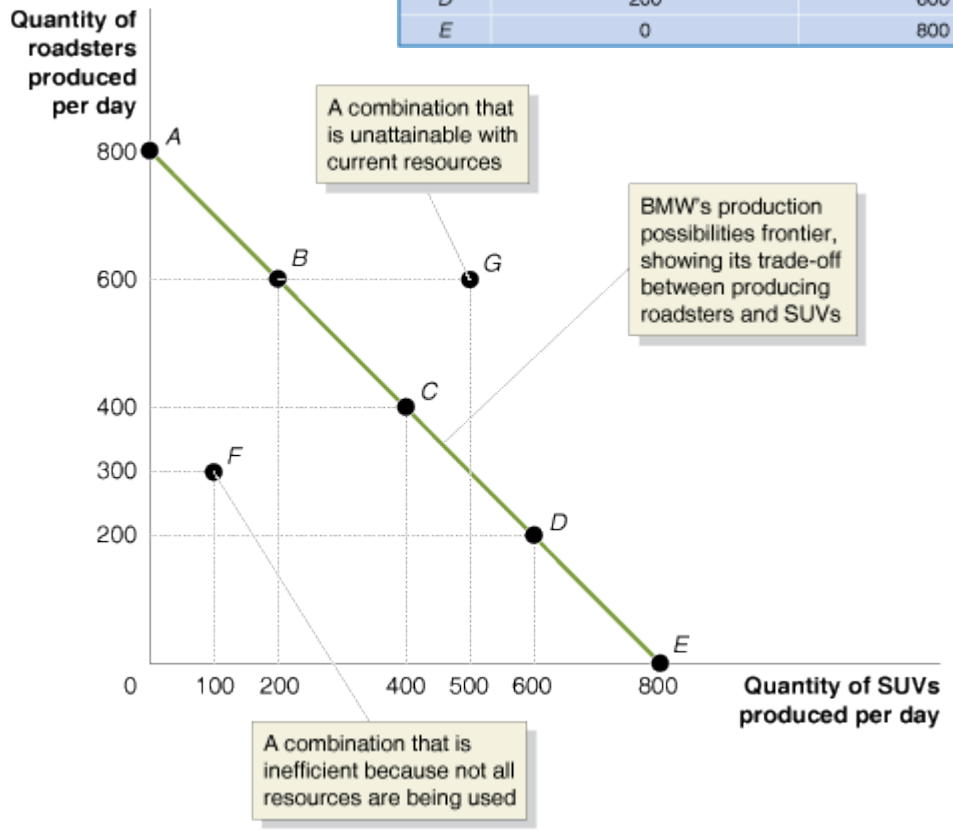
- Scarcity creates **trade-offs**

Production Possibilities Frontier (PPF)

BMW's Production Possibilities Frontier

A curve showing the maximum attainable combinations of two products that may be produced with available resources and current technology.

BMW's Production Choices at Its Spartanburg Plant		
Choice	Quantity of Roadsters Produced	Quantity of SUVs Produced
A	800	0
B	600	200
C	400	400
D	200	600
E	0	800



Exercise

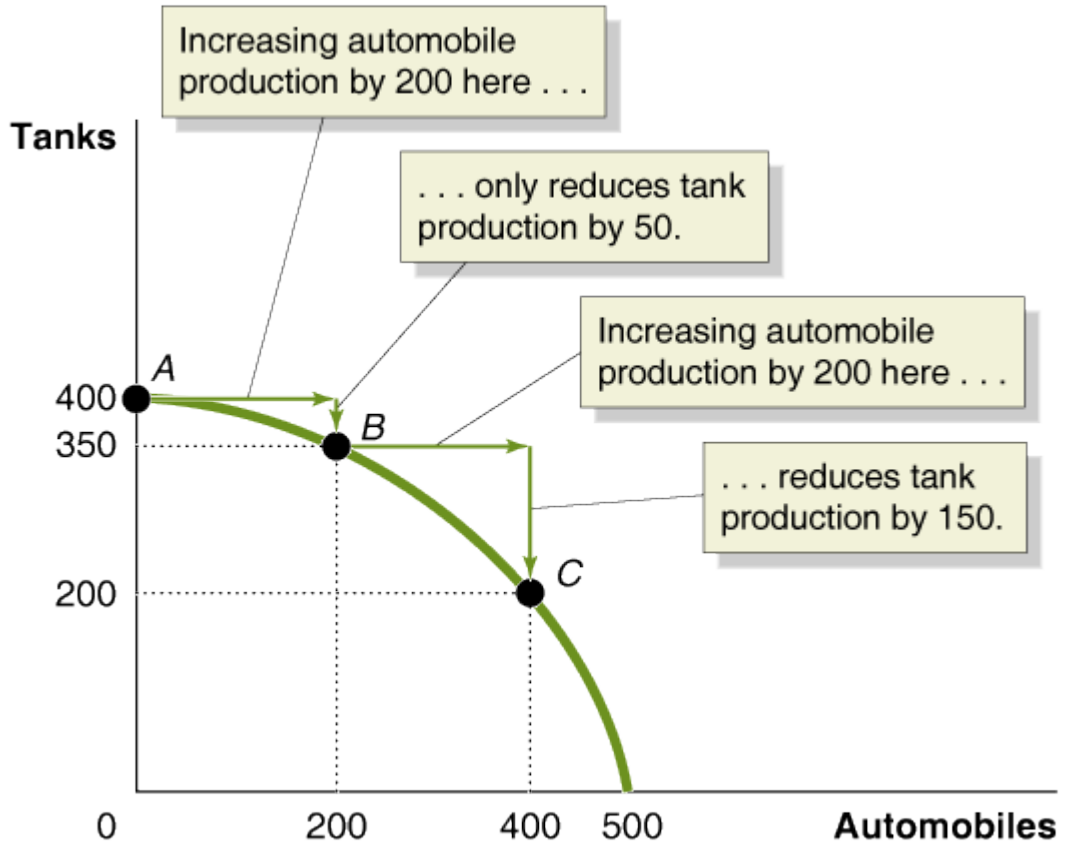
- Suppose that during any given week resources cannot be increased.
  - If Tesla devotes an hour to assembling sedans, it will produce 15 vehicles, but if Tesla devotes an hour to producing SUVs, it will produce only 10 vehicles. Assume that the plant can run for 8 hours per day.
  - Use the data in the table to draw a PPF graph.
  - Label the points representing choice D and choice E. If Tesla is at choice D, what is its opportunity cost of making 10 more SUVs?

	Hours Spent Making		Quantity Produced per Day	
Choice	Sedans	SUVs	Sedans	SUVs
A	8	0		
B	7	1		
C	6	2		
D	5	3		
E	4	4		
F	3	5		
G	2	6		
H	1	7		
I	0	8		

PPF and Opportunity Costs

Increasing Marginal Opportunity Costs

As the economy moves down the production possibilities frontier, it experiences *increasing marginal opportunity costs* because increasing automobile production by a given quantity requires larger and larger decreases in tank production.

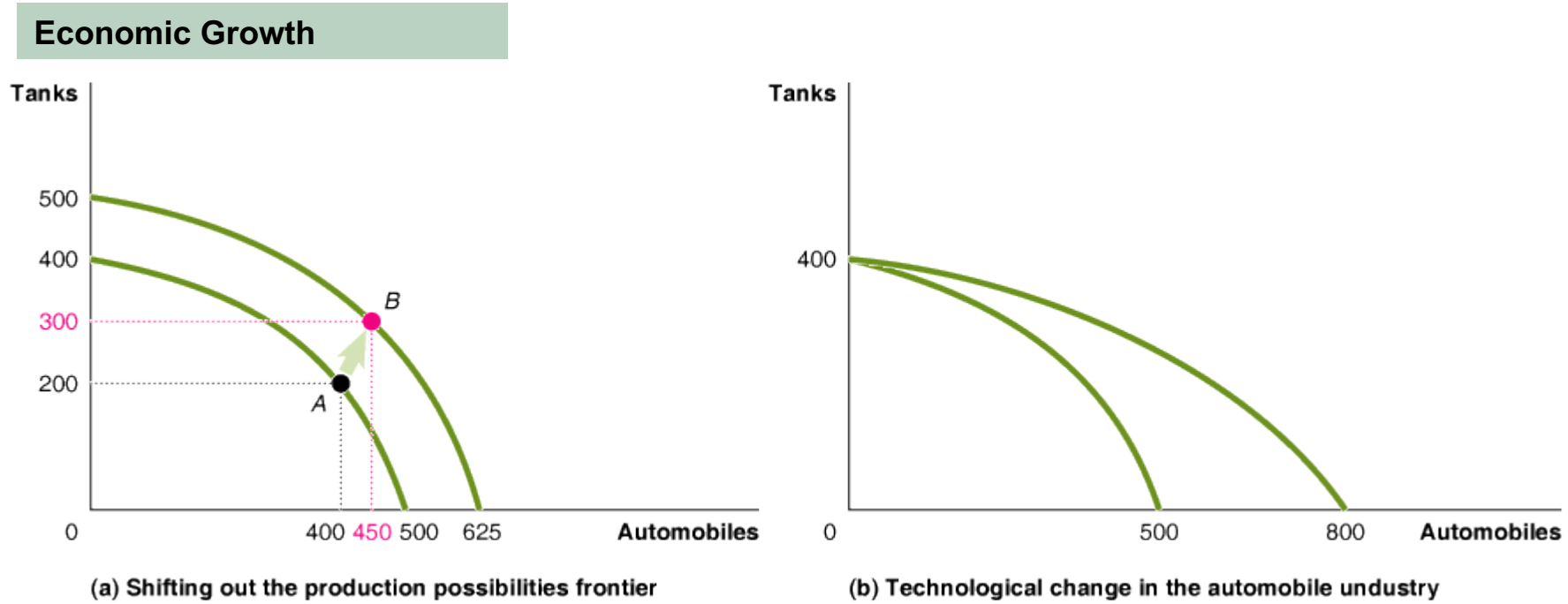


PPF

- **Engineers**: **Establish** optimal use of inputs
  - They insure we **operate** along PPF
- **Economists**: **Assume** optimal use of inputs
  - Evaluate **tradeoffs** along PPF
- **Entrepreneurs**: **Revolutionize** use of inputs
  - **Shift** the PPF outward

Shifting PPF Outward

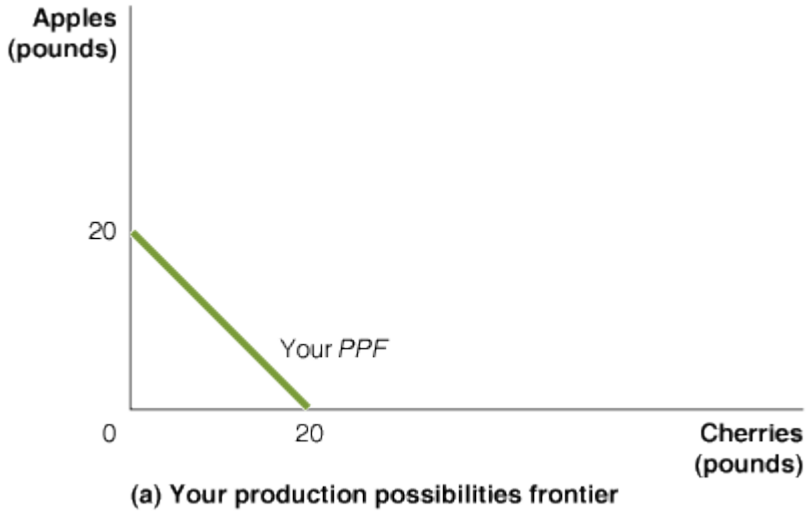
- **Economic growth**: The ability of the economy to increase the production of goods and services
  - **Technology** is the key to growth



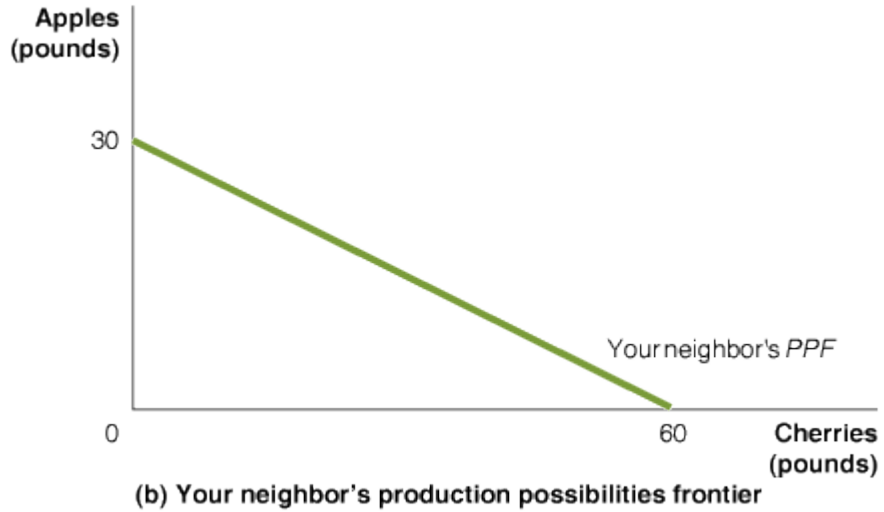
Opportunity Cost

Production Possibilities for You and Your Neighbor, without Trade

	You		Your Neighbor	
	Apples	Cherries	Apples	Cherries
Devote all time to picking apples	20 pounds	0 pounds	30 pounds	0 pounds
Devote all time to picking cherries	0 pounds	20 pounds	0 pounds	60 pounds



(a) Your production possibilities frontier



(b) Your neighbor's production possibilities frontier

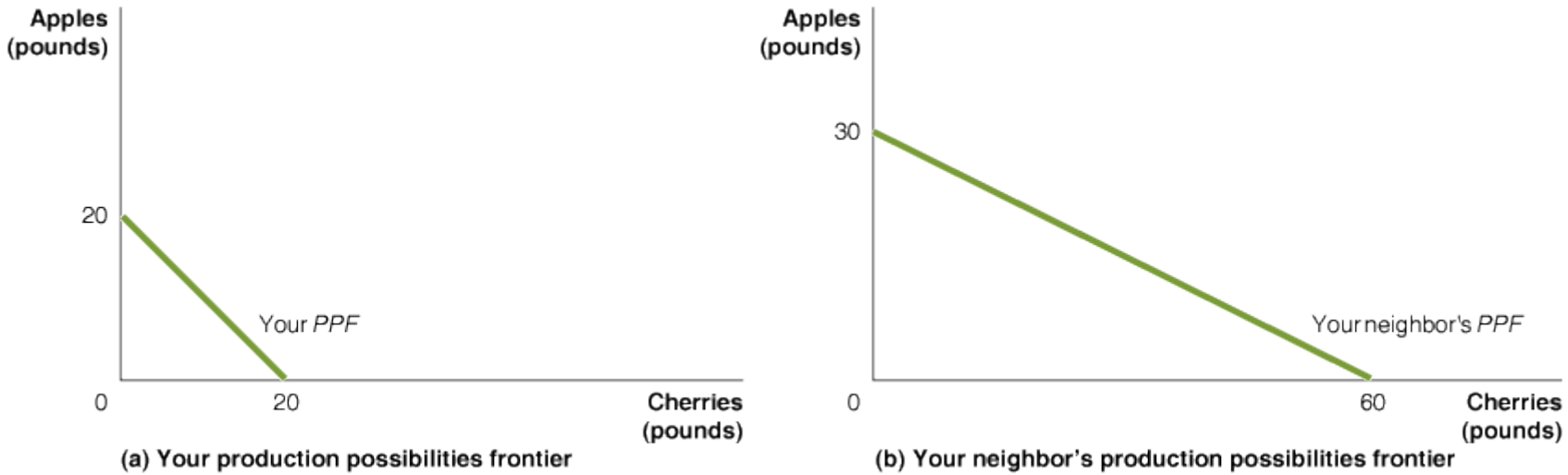
- **Opportunity cost**: Highest valued alternative that must be given up to do another activity

Absolute Advantage vs Comparative Advantage

- **Absolute advantage**: Ability to **produce more** of a good or service than competitors using the same amount of resources

- **Comparative advantage**: Ability to **produce** a good or service **at a lower opportunity cost** than competitors

Opportunity Costs and Comparative Advantage



Opportunity Costs of Picking Apples and Cherries

	OPPORTUNITY COST OF PICKING 1 POUND OF APPLES	OPPORTUNITY COST OF PICKING 1 POUND OF CHERRIES
YOU	1 pound of cherries	1 pound of apples
YOUR NEIGHBOR	2 pounds of cherries	0.5 pound of apples

Absolute Advantage vs Comparative Advantage

Opportunity Costs of Picking Apples and Cherries

	OPPORTUNITY COST OF PICKING 1 POUND OF APPLES	OPPORTUNITY COST OF PICKING 1 POUND OF CHERRIES
YOU	1 pound of cherries	1 pound of apples
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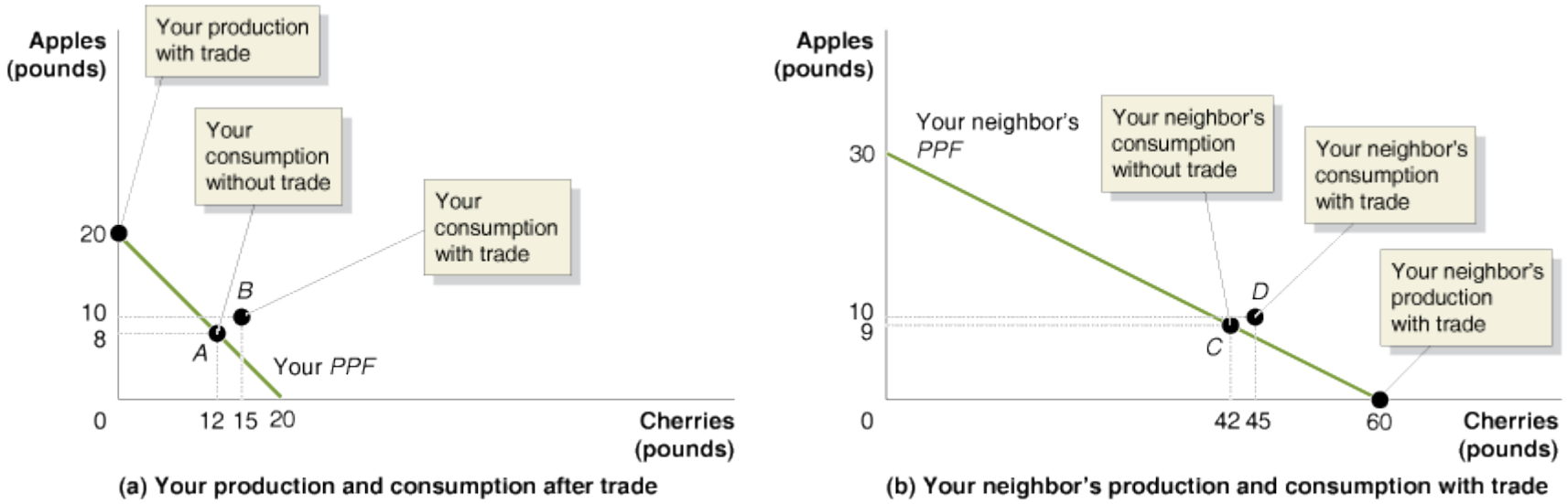
- **Your neighbor** has an absolute advantage in picking BOTH
- But only has a **comparative advantage** in picking **cherries**
- **You** have a **comparative advantage** in picking **apples**

Specialization and Gains from Trade

Gains from Trade



- Gains from trade exist **even if** one side is **inferior on all fronts**
- There will be **gains from trade** as long as each has a comparative advantage in different goods

Comparative Advantage and Trade

- AA and CA are **different**
  - AA compares x's and y's
  - CA compares slopes
- Possible to have an **AA** in producing one good **without** having a **CA**
  - Your neighbor with apples
- Possible to have a **CA** in producing one good **without** having an **AA**
  - You with apples

- *Economic principle*: The basis for trade is CA not AA!

Exercise

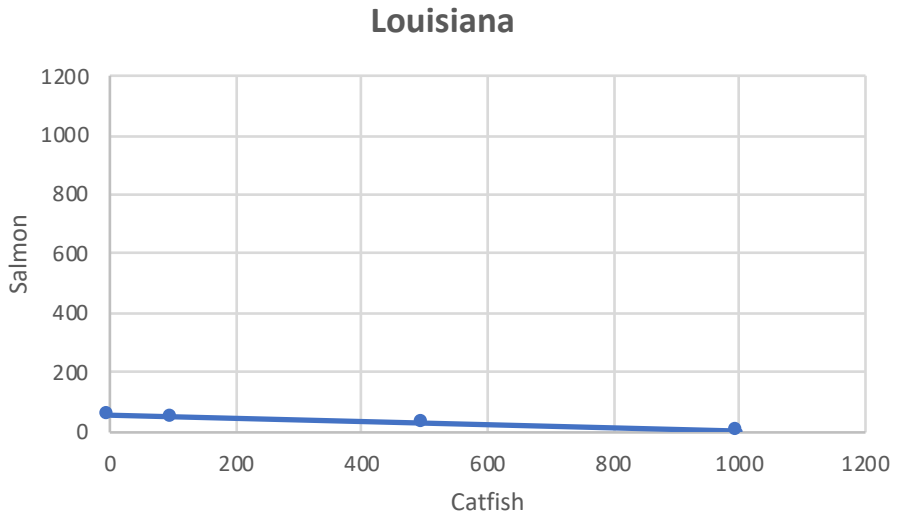
- Canada and the US both produce maple syrup and honey. The table shows the combinations of the two goods that each country can produce in one day, using the same amounts of capital and labor.
  - Which country has a CA in producing maple syrup and which in honey?
  - Suppose that Canada is currently producing 30 tons of honey and 15 tons of maple syrup, and the US is currently producing 10 tons of honey and 40 tons of maple syrup. Demonstrate that Canada and the US can both be better off if they specialize in producing only one good and trade for the other.
  - Illustrate your answer.

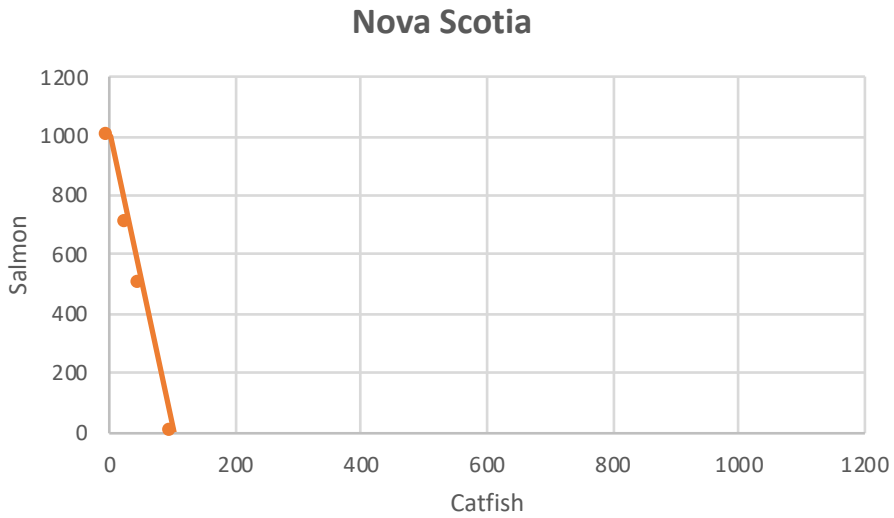
Canada		United States	
Honey (in tons)	Maple Syrup (in tons)	Honey (in tons)	Maple Syrup (in tons)
0	60	0	50
10	45	10	40
20	30	20	30
30	15	30	20
40	0	40	10
		50	0

Another Example

Louisiana	
Catfish	Salmon
1000	0
500	25
100	45
0	50
20 Catfish = 1 Salmon	

Nova Scotia	
Catfish	Salmon
0	1000
30	700
50	500
100	0
1 Catfish = 10 Salmon	

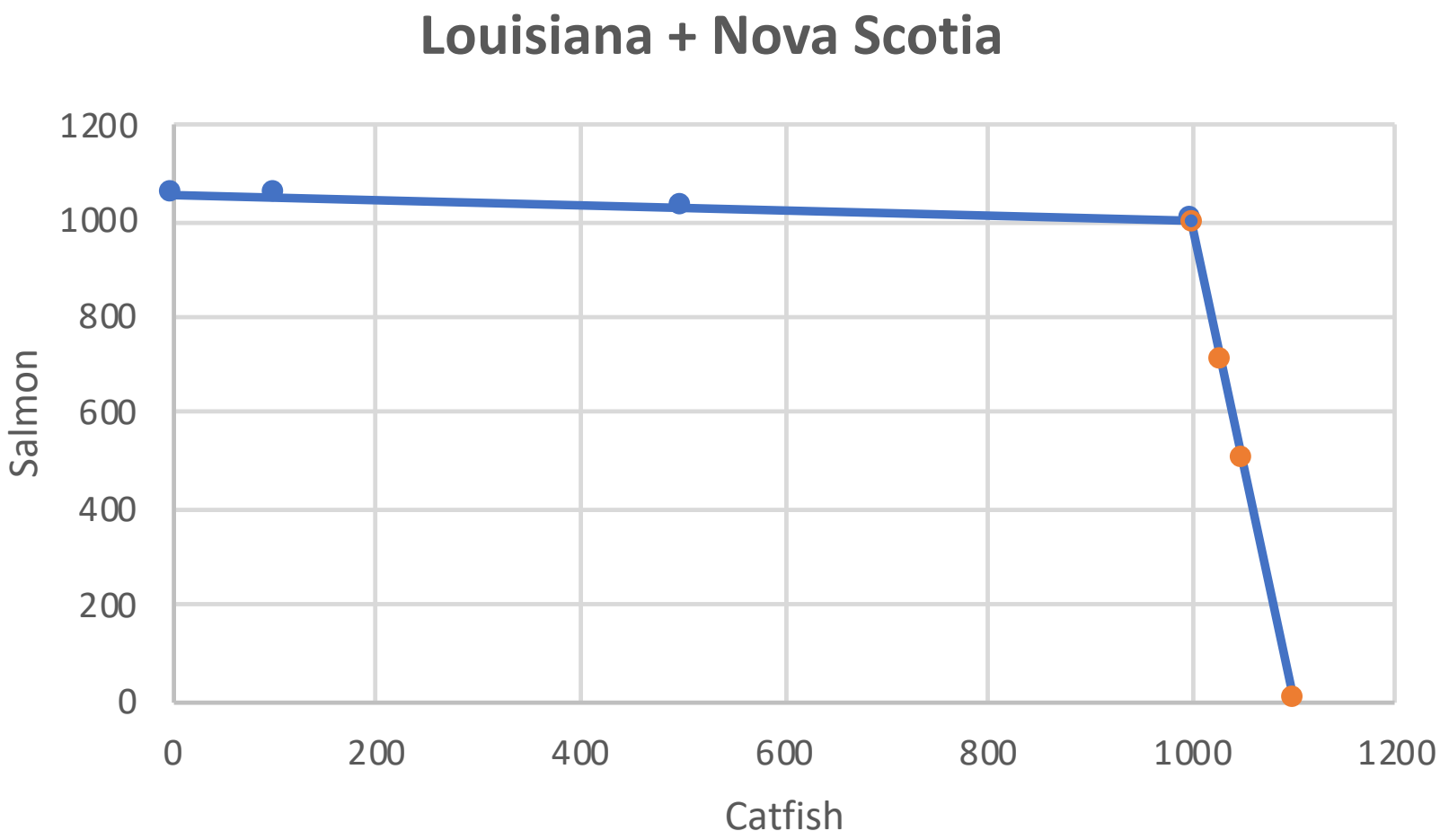




Constructing a Combined PPF

Louisiana		Nova Scotia	
Catfish	Salmon	Catfish	Salmon
1000	0	0	1000
500	25	30	700
100	45	50	500
0	50	100	0
Maximize		Maximize	
Catfish		Salmon	
Catfish	Salmon	Catfish	Salmon
1000	1000	1000	1000
1030	700	500	1025
1050	500	100	1045
1100	0	0	1050

Combined PPF



Both Sides Are Better Off

Before Trade

Louisiana: **25** Salmon/ **500** Catfish

Nova Scotia: **500** Salmon/**50** Catfish

With Specialization and Trade

Louisiana: 1,000 Catfish/half to Nova Scotia

Nova Scotia: 1,000 Salmon/half to Louisiana

After Trade

Louisiana: **500** Salmon/**500** Catfish

Nova Scotia: **500** Salmon/**500** Catfish

The Market System

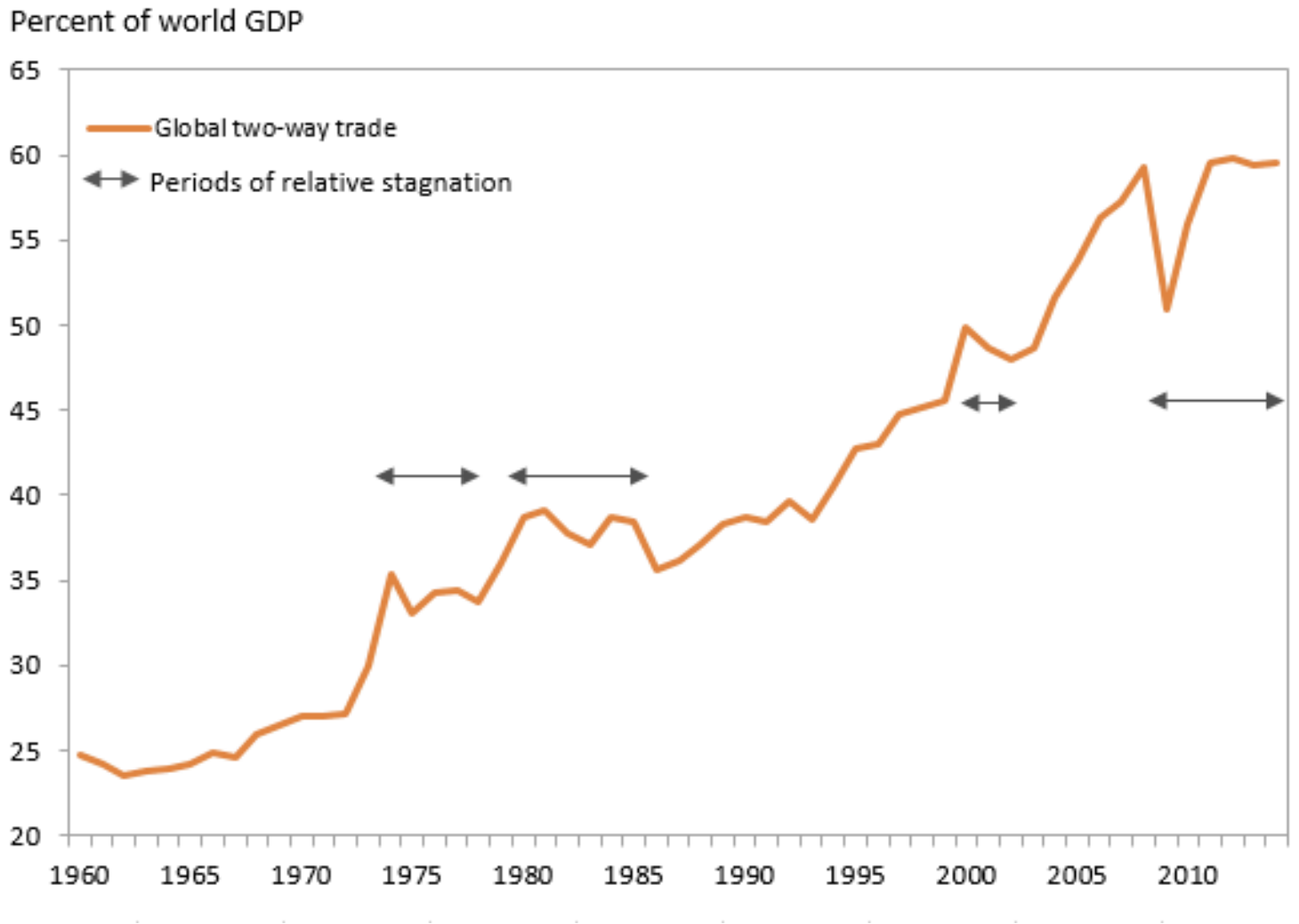
- Gains from trade are the pervasive **force** in free market economies
- The KEY: It is a **positive sum game**
- **Negotiation** can get you a bit more than the other side
- But free market forces are effective because **both sides gain**!

Is Free Trade Good for Everyone?

Suppose Nova Scotia has 55 workers

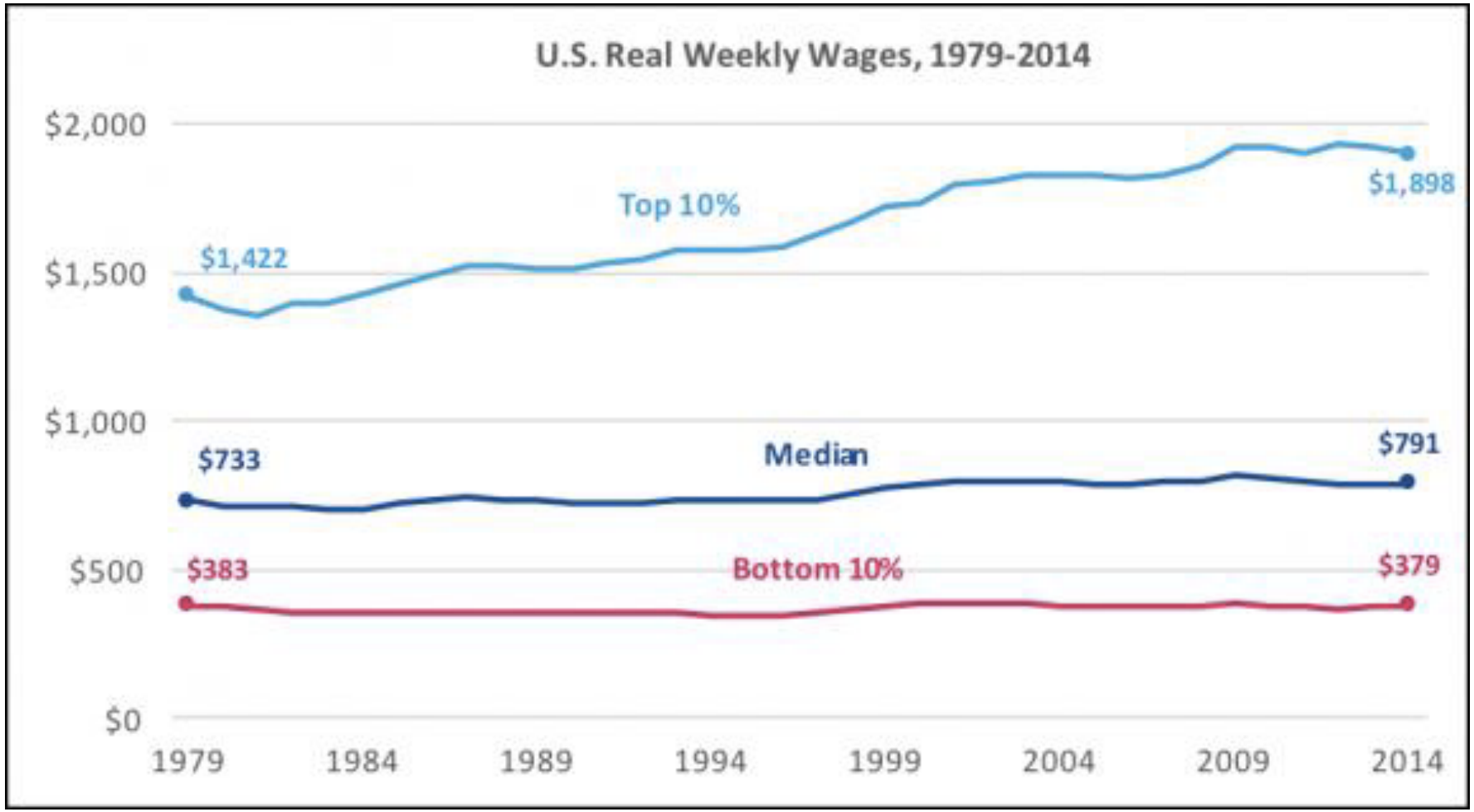
Before Trade	Catfish	Salmon	All Fish
Number produced	50	500	550
Labor input	30	25	55
Number consumed	50	500	550
% employed			100%
# of fish per worker	50/55=0.9	500/55=9.1	550/55=10
# of fish per person	0.9	9.1	10
After Trade	**Catfish**	**Salmon**	**All fish**
Number produced	0	1,000	1,000
Labor input	0	50	50
Number consumed	500	500	1,000
% employed			91%
# of fish per worker	500/50=10	10	1,000/50=20
# of fish per person	500/55=9.1	9.1	1,000/55=18.2

Global Trade of Goods and Services, 1960-2014



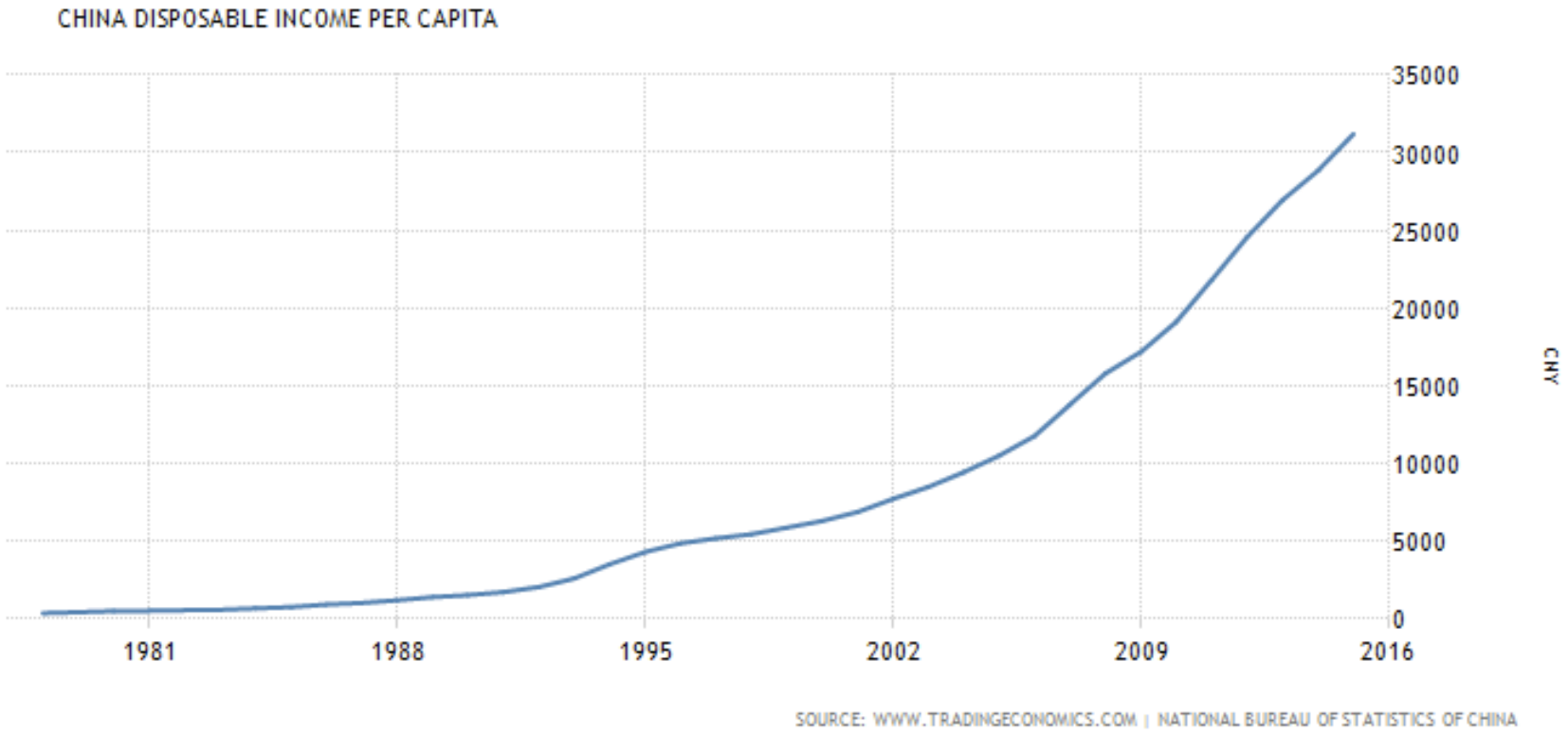
Source: *"Why Has Traded Stopped Growing?"* Peterson Institute for International Economics (3/23/16)

Not All Benefited Equally in the US



What About From A Worldwide Perspective?

- China's export boom created a great increase in income per capita



Dollar Values of Income Per Capita in China

	Renminbi/Dollar	Income per capita (Renminbi)	Income per Capita (Dollars)
1990	4.7	2,600	553
2000	8.3	6,900	831
2010	6.8	16,000	2,353
2016	6.7	32,000	4,805

Questions

- Why trade benefits both parties?
- What determines whether a country is an importer or exporter of a good or service?
- How societies coordinate the activities of their citizens?
- What guarantees that the G&S produced are consumed by those who want them?