2 The Economic Problem

- Production Possibilities and Opportunity Cost
- Using Resources Efficiently
- Economic Coordination
- Gains from Trade

Production Possibilities and Opportunity Cost

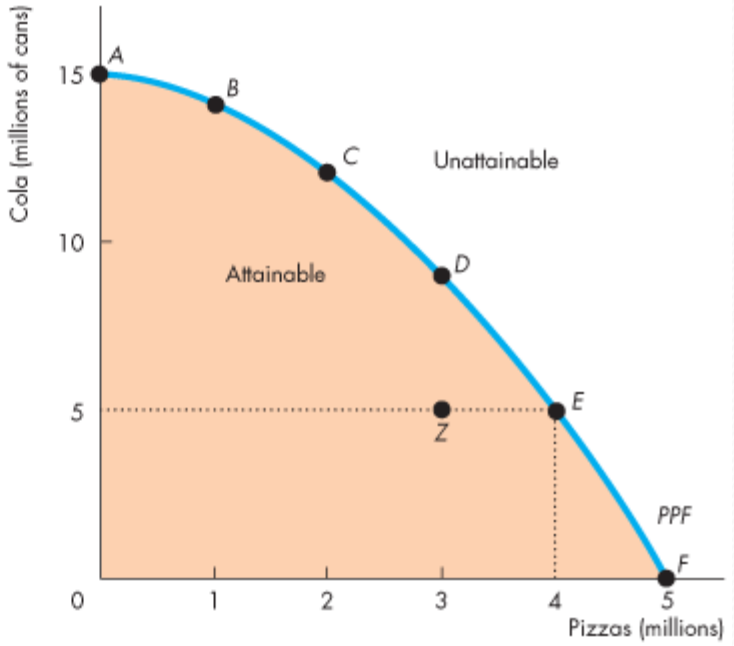
- The **production possibilities frontier** (*PPF*) is the boundary between those combinations of goods and services that can be produced and that cannot.

- To illustrate the *PPF*, we focus on two goods at a time and hold the quantities of all other goods and services constant (*ceteris paribus*) .

Production Possibilities and Opportunity Cost

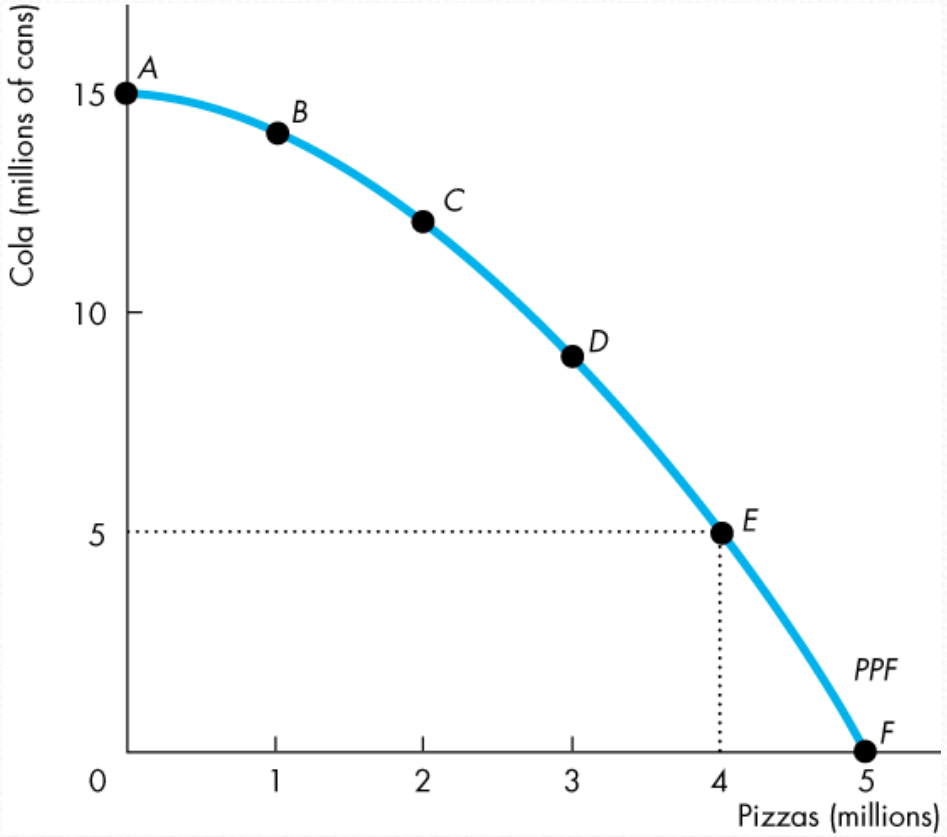
- Any point *on* the frontier such as *E* and any point *inside* the *PPF* such as *Z* are attainable.
- Points outside the *PPF* are unattainable.

Possibility	Pizzas (millions)		Cola (millions of cans)
A	0	and	15
B	1	and	14
C	2	and	12
D	3	and	9
E	4	and	5
F	5	and	0



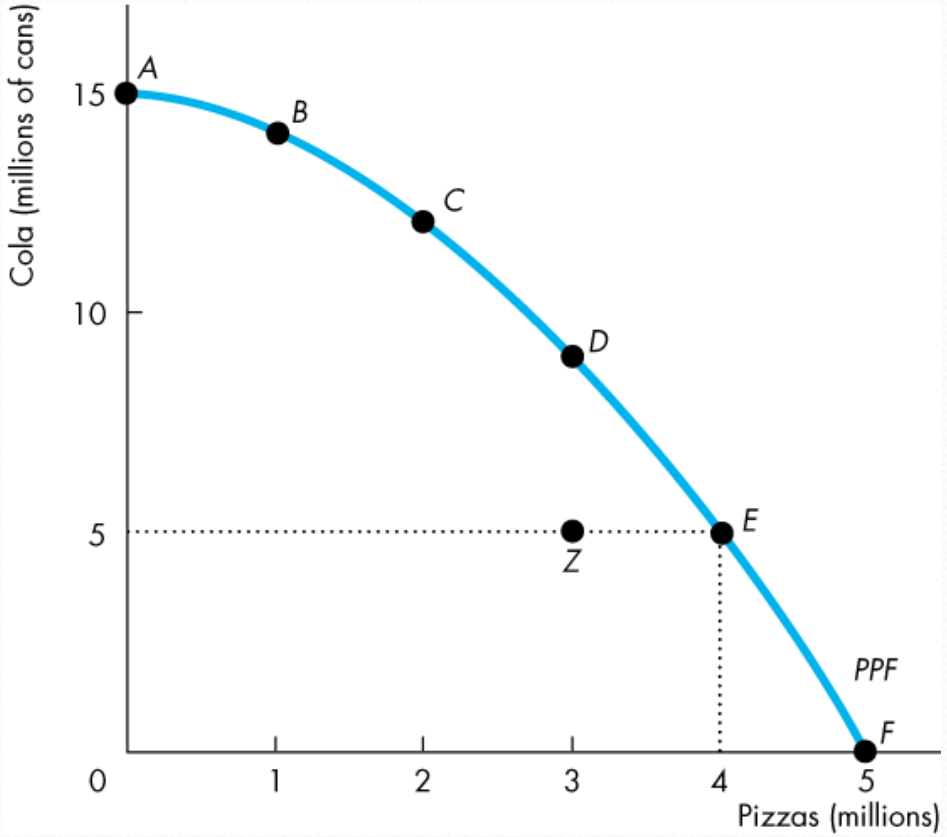
Production Possibilities and Opportunity Cost

- Production Efficiency
  - We achieve **production efficiency** if we cannot produce more of one good without producing less of some other good.
  - Points on the frontier are *efficient*.



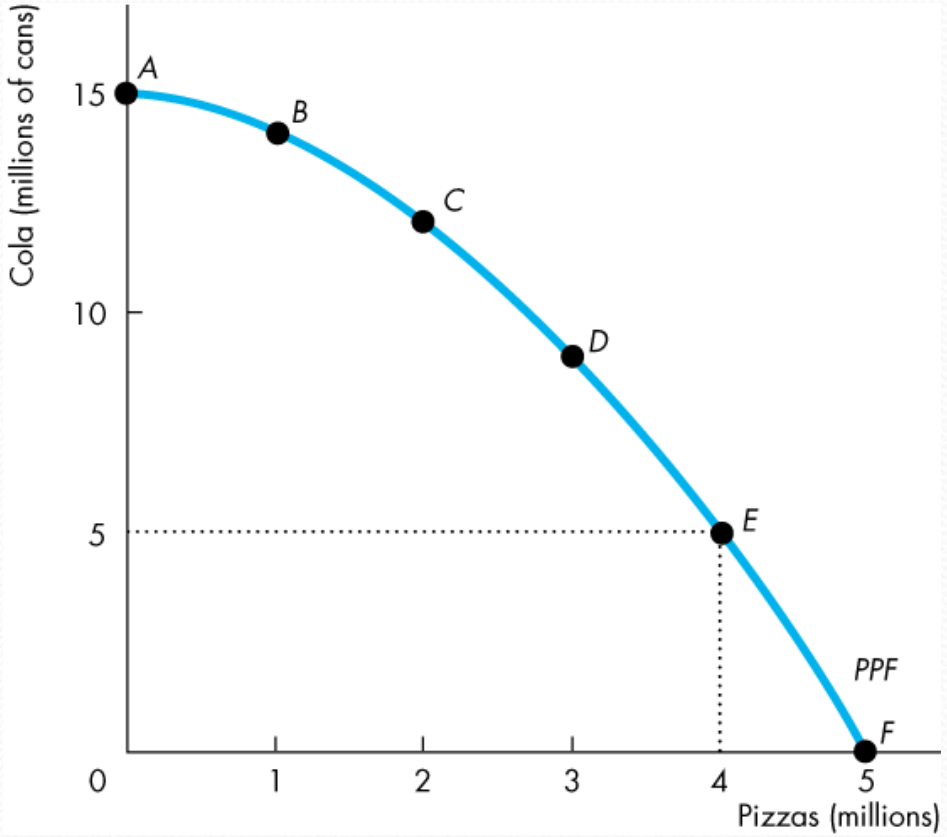
Production Possibilities and Opportunity Cost

- Any point inside the frontier, such as *Z*, is *inefficient*.
- At such a point, it is possible to produce more of one good without producing less of the other good.
- At *Z*, resources are either unemployed or misallocated.



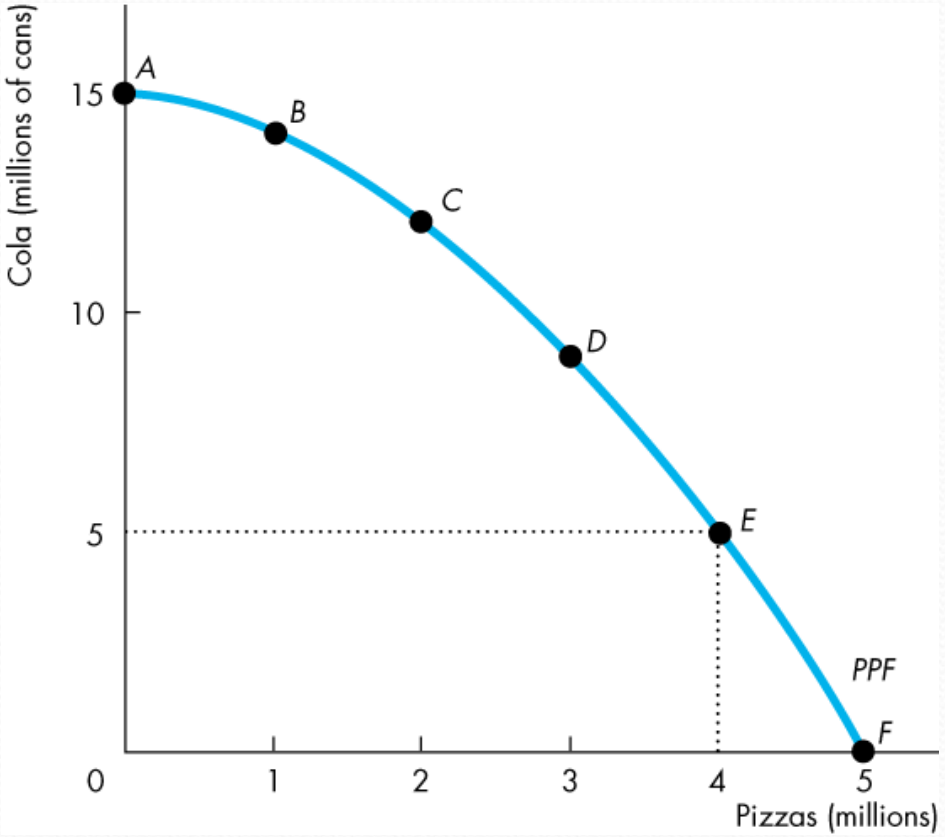
Production Possibilities and Opportunity Cost

- Tradeoff Along the *PPF*
  - Any move along the *PPF* involves a *tradeoff*.
  - On this *PPF*, we must give up some cola to get more pizzas or give up some pizzas to get cola.



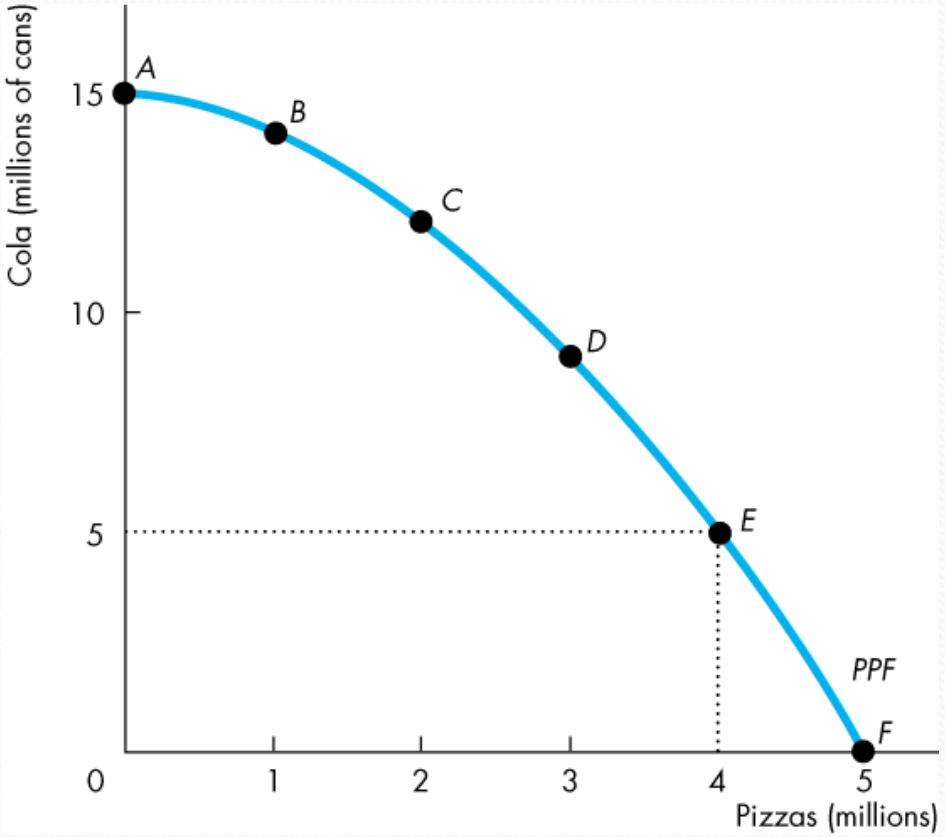
Production Possibilities and Opportunity Cost

- Opportunity Cost
  - As we move down along the *PPF, we* produce more pizzas, but the quantity of cola we can produce decreases.
  - The opportunity cost of a pizza is the cola forgone.



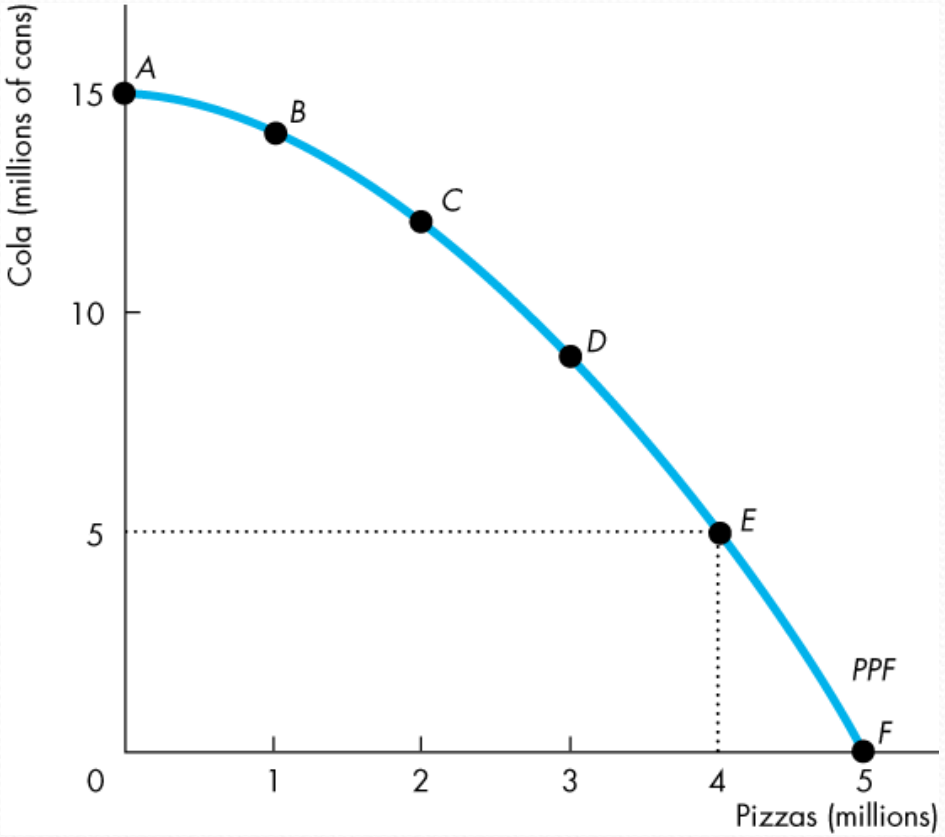
Production Possibilities and Opportunity Cost

- In moving from *E* to *F*, the quantity of pizzas increases by 1 million.
- The quantity of cola decreases by 5 million cans.
- The opportunity cost of the fifth 1 million pizzas is 5 million cans of cola.
- One of these pizzas costs 5 cans of cola.



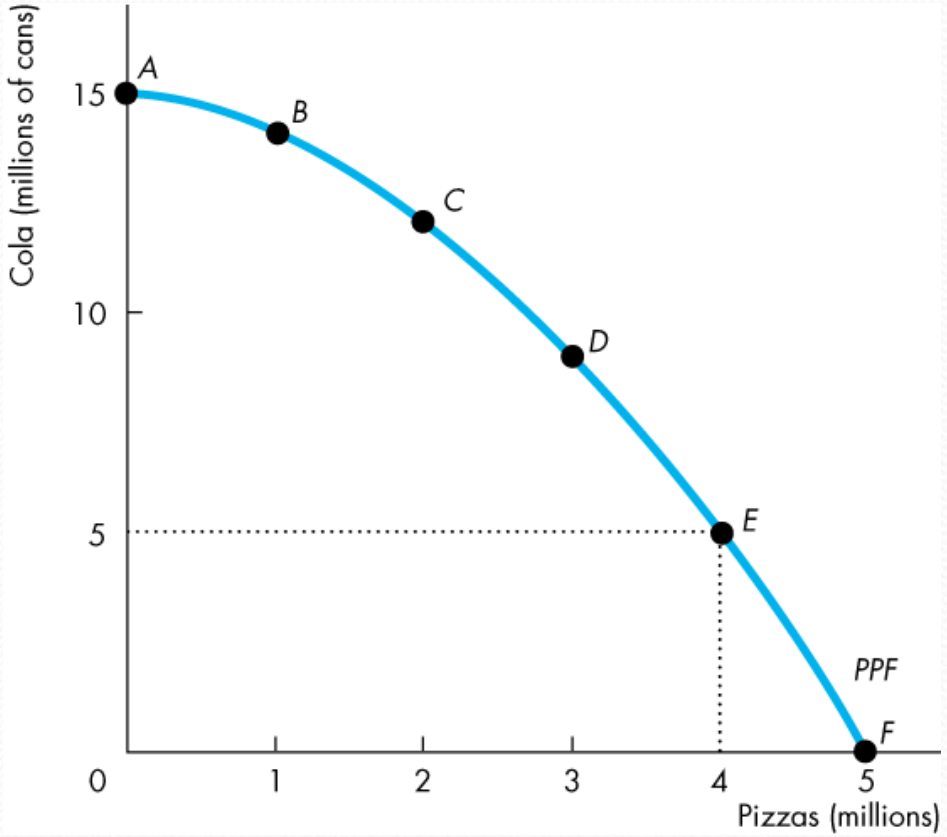
Production Possibilities and Opportunity Cost

- In moving from *F* to *E*, the quantity of cola produced increases by 5 million.
- The quantity of pizzas decreases by 1 million.
- The opportunity cost of the first 5 million cans of cola is 1 million pizzas.
- One of these cans of cola costs 1/5 of a pizza.



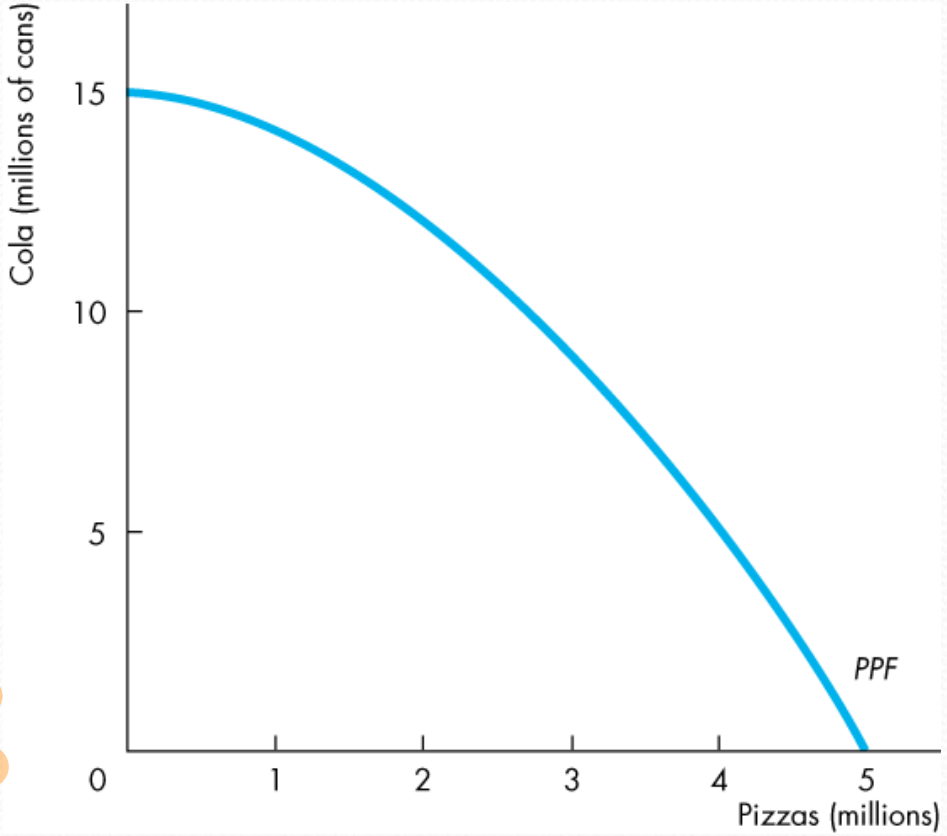
Production Possibilities and Opportunity Cost

- Note that the opportunity cost of a can of cola is the *inverse* of the opportunity cost of a pizza.
- One pizza costs 5 cans of cola.
- One can of cola costs 1/5 of a pizza.



Production Possibilities and Opportunity Cost

- Because resources are not equally productive in all activities, the *PPF* bows outward—is concave.
- The outward bow of the *PPF* means that as the quantity produced of each good increases, so does its opportunity cost.



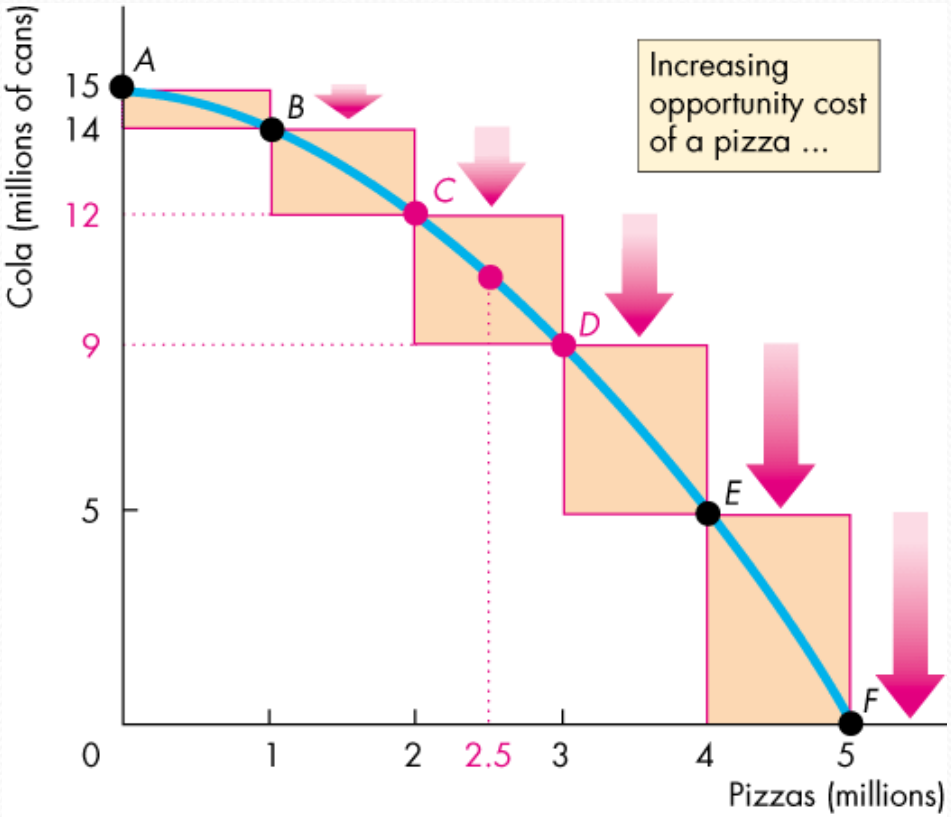
Using Resources Efficiently

- All the points along the *PPF* are efficient.
- To determine which of the alternative efficient quantities to produce, we compare costs and benefits.

- The *PPF* and Marginal Cost
  - The *PPF* determines opportunity cost.
  - The **marginal cost** of a good or service is the opportunity cost of producing *one more unit* of it.

Using Resources Efficiently

- Figure 2.2 illustrates the marginal cost of pizza.
- As we move along the *PPF* in part (a), the opportunity cost of a pizza increases.
- The opportunity cost of producing one more pizza is the marginal cost of a pizza.



(a) *PPF* and opportunity cost

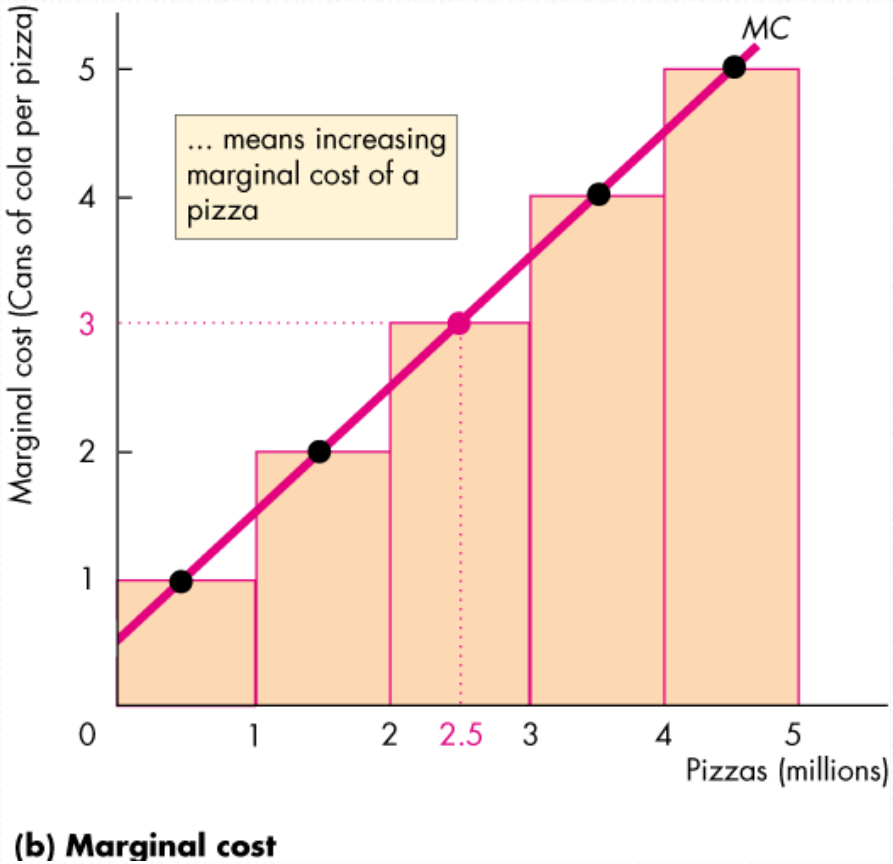
Using Resources Efficiently

- In part (b) of Fig. 2.2, the bars illustrate the increasing opportunity cost of pizza.

The black dots and the line *MC* show the marginal cost of pizza.

The *MC* curve passes through the centre of each bar.

(11S-S01)



(b) Marginal cost

Using Resources Efficiently

- Preferences and Marginal Benefit
  - **Preferences** are a description of a person's likes and dislikes.
  - To describe preferences, economists use the concepts of marginal benefit and the marginal benefit curve.
  - The **marginal benefit** of a good or service is the benefit received from consuming one more unit of it.
  - We measure marginal benefit by the amount that a person is *willing to pay* for an additional unit of a good or service.

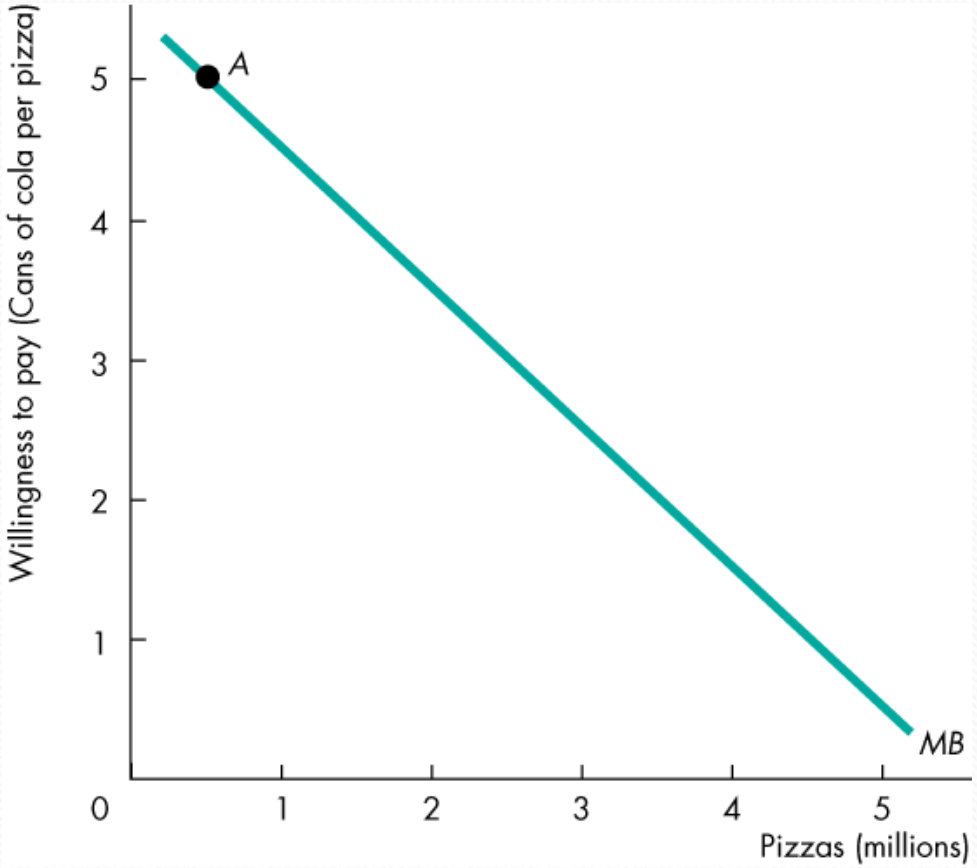
Using Resources Efficiently

- It is a general principle that the more we have of any good, the smaller is its marginal benefit and the less we are willing to pay for an additional unit of it.
- We call this general principle the *principle of decreasing marginal benefit*.
- The **marginal benefit curve** shows the relationship between the marginal benefit of a good and the quantity of that good consumed.

Using Resources Efficiently

- Figure 2.3 shows a marginal benefit curve.
- The curve slopes downward to reflect the principle of decreasing marginal benefit.

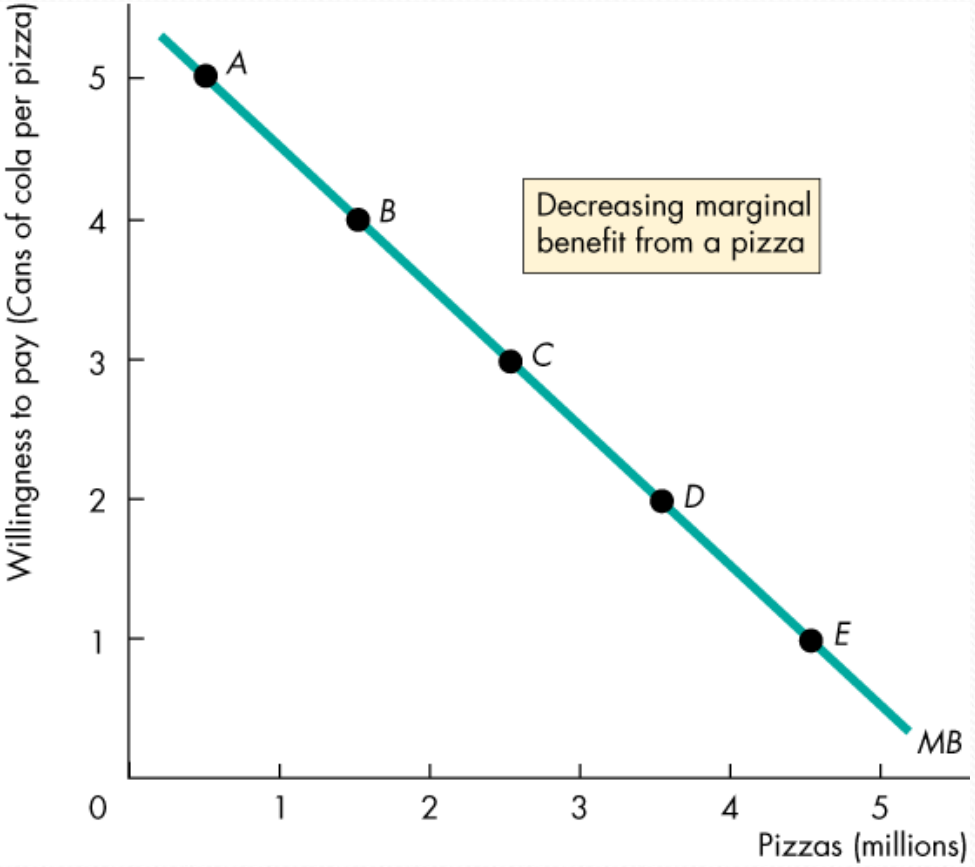
At point *A*, with pizza production at 0.5 million, people are willing to pay 5 cans of cola for a pizza.



Using Resources Efficiently

At point *B*, with pizza production at 1.5 million, people are willing to pay 4 cans of cola for a pizza.

At point *E*, with pizza production at 4.5 million, people are willing to pay 1 can of cola for a pizza.



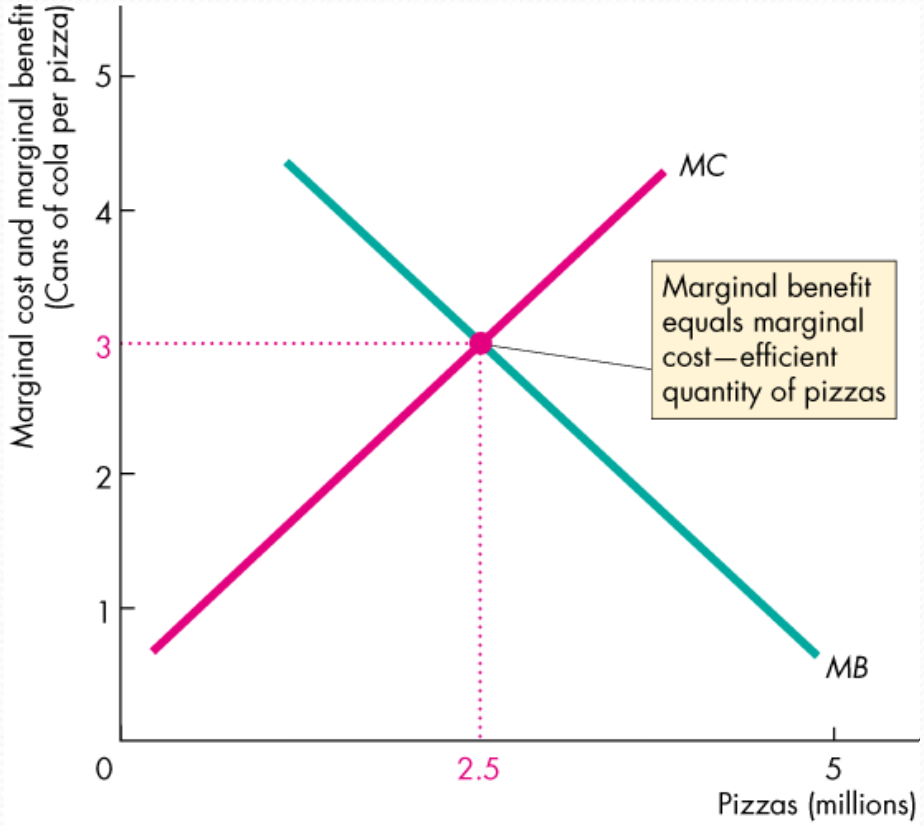
Using Resources Efficiently

- Allocative Efficiency
  - When we cannot produce more of any one good without giving up some other good *that provides greater benefit*, we have achieved **allocative efficiency**.

Using Resources Efficiently

- Figure 2.4 illustrates allocative efficiency.
- The point of allocative efficiency is the point on the *PPF* at which marginal benefit equals marginal cost.

This point is determined by the quantity at which the marginal benefit curve intersects the marginal cost curve.



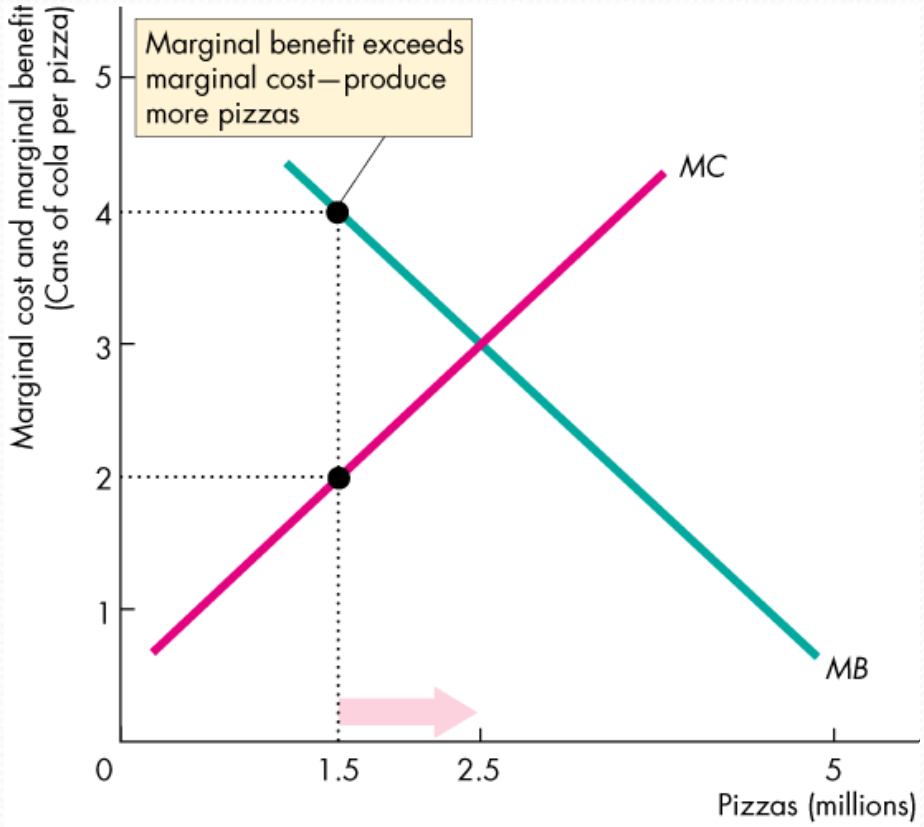
(b) Marginal benefit equals marginal cost

Using Resources Efficiently

If we produce fewer than 2.5 million pizzas, marginal benefit exceeds marginal cost.

We get more value from our resources by producing more pizzas.

On the *PPF* at point B, e.g., we are producing too much cola, and we are better off moving along the *PPF* to produce more pizzas.



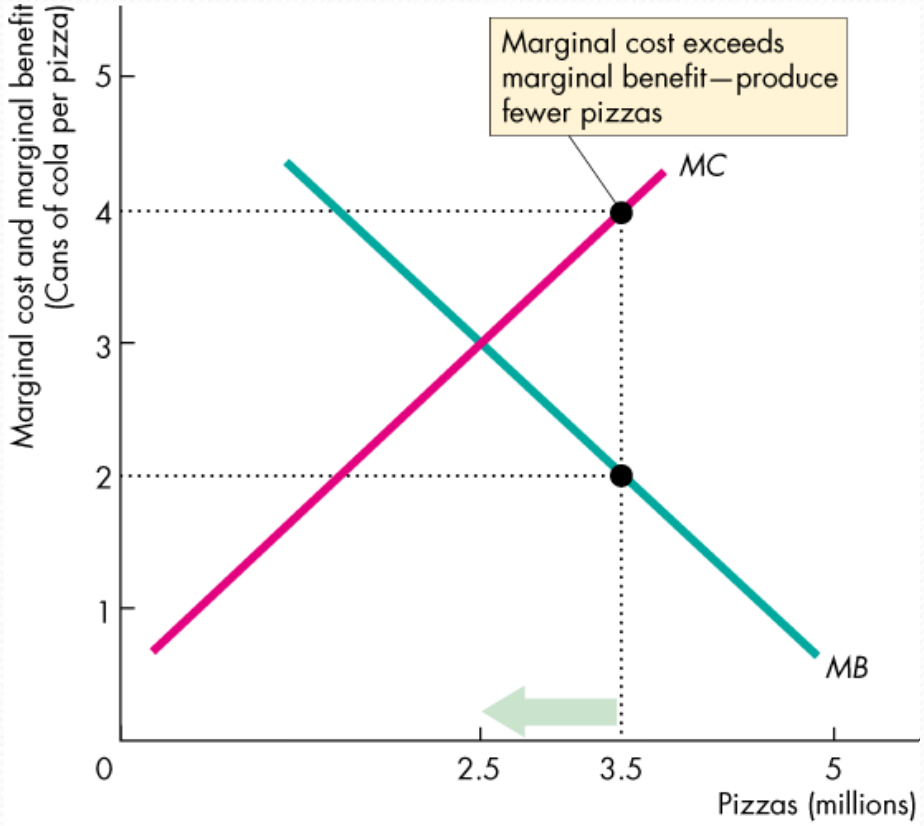
(b) Marginal benefit equals marginal cost

Using Resources Efficiently

If we produce more than 2.5 million pizzas, marginal cost exceeds marginal benefit.

We get more value from our resources by producing fewer pizzas.

On the *PPF* at point E, e.g., we are producing too many pizzas, and we are better off moving along the *PPF* to produce fewer pizzas.



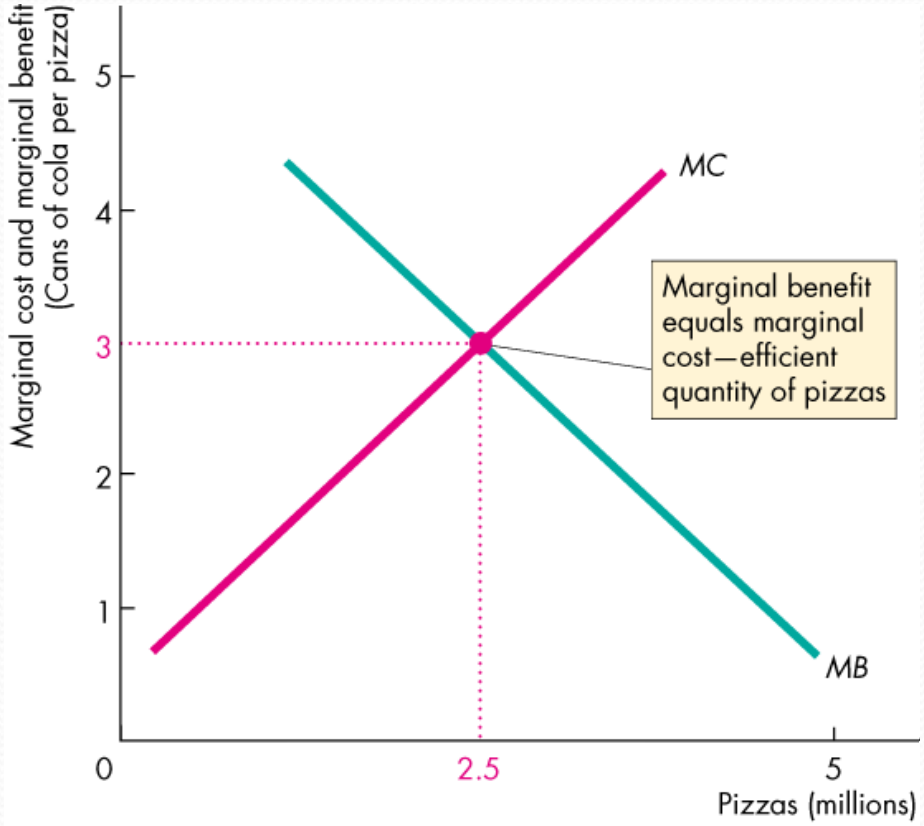
(b) Marginal benefit equals marginal cost

Using Resources Efficiently

If we produce exactly 2.5 million pizzas, marginal cost equals marginal benefit.

We cannot get more value from our resources.

On the *PPF* at the point where pizzas produced is 2.5 mill, we are producing the efficient quantities of cola and pizzas.



(b) Marginal benefit equals marginal cost

Economic Coordination

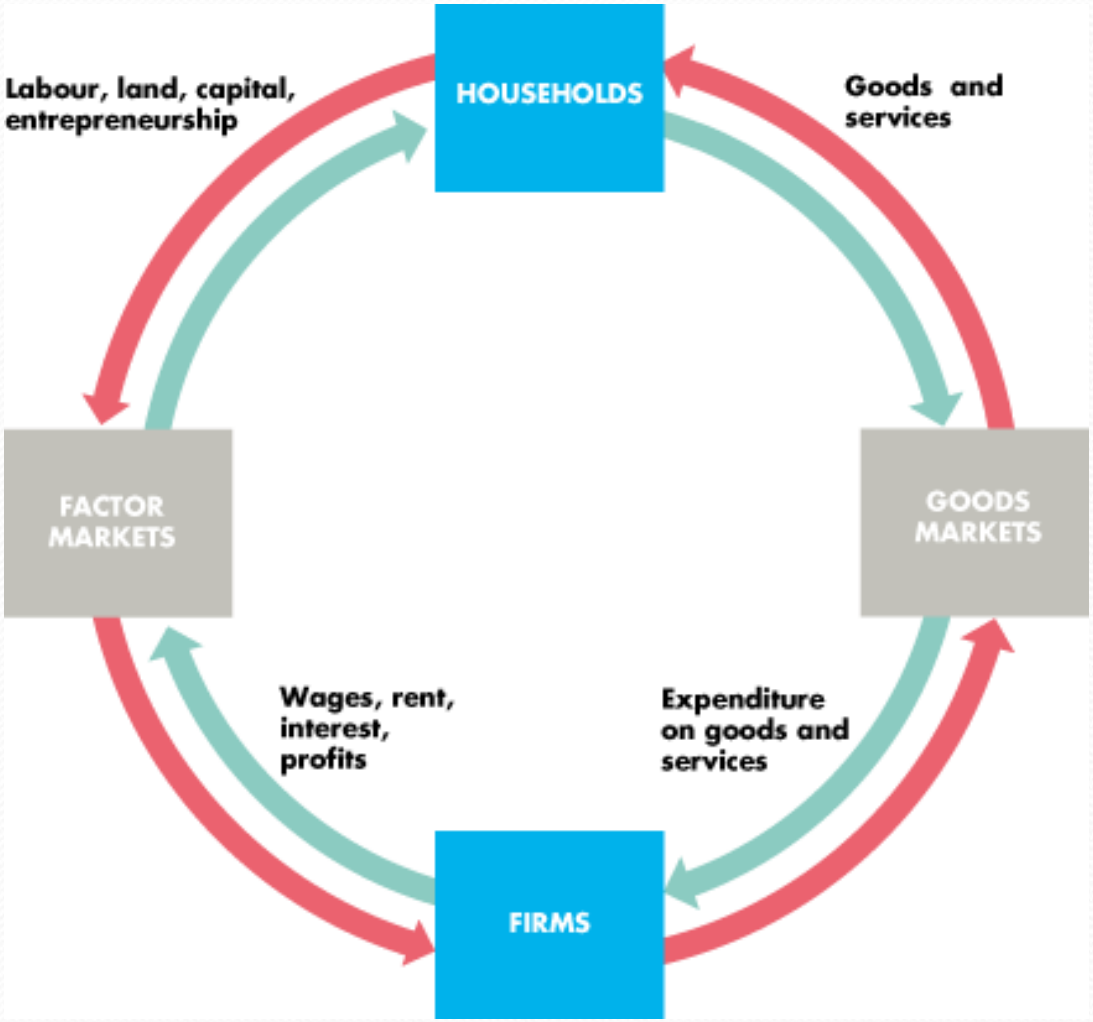
- To make coordination work, four complimentary social institutions have evolved over the centuries:
  - Firms
  - Markets
  - Property rights
  - Money

Economic Coordination

- A **firm** is an economic unit that hires factors of production and organizes those factors to produce and sell goods and services; subsistence economy over
- A **market** is any arrangement that enables buyers and sellers to get information and do business with each other.
- **Property rights** are the social arrangements that govern ownership, use, and disposal of resources, goods or services.
- **Money** is any commodity or token that is generally acceptable as a means of payment.

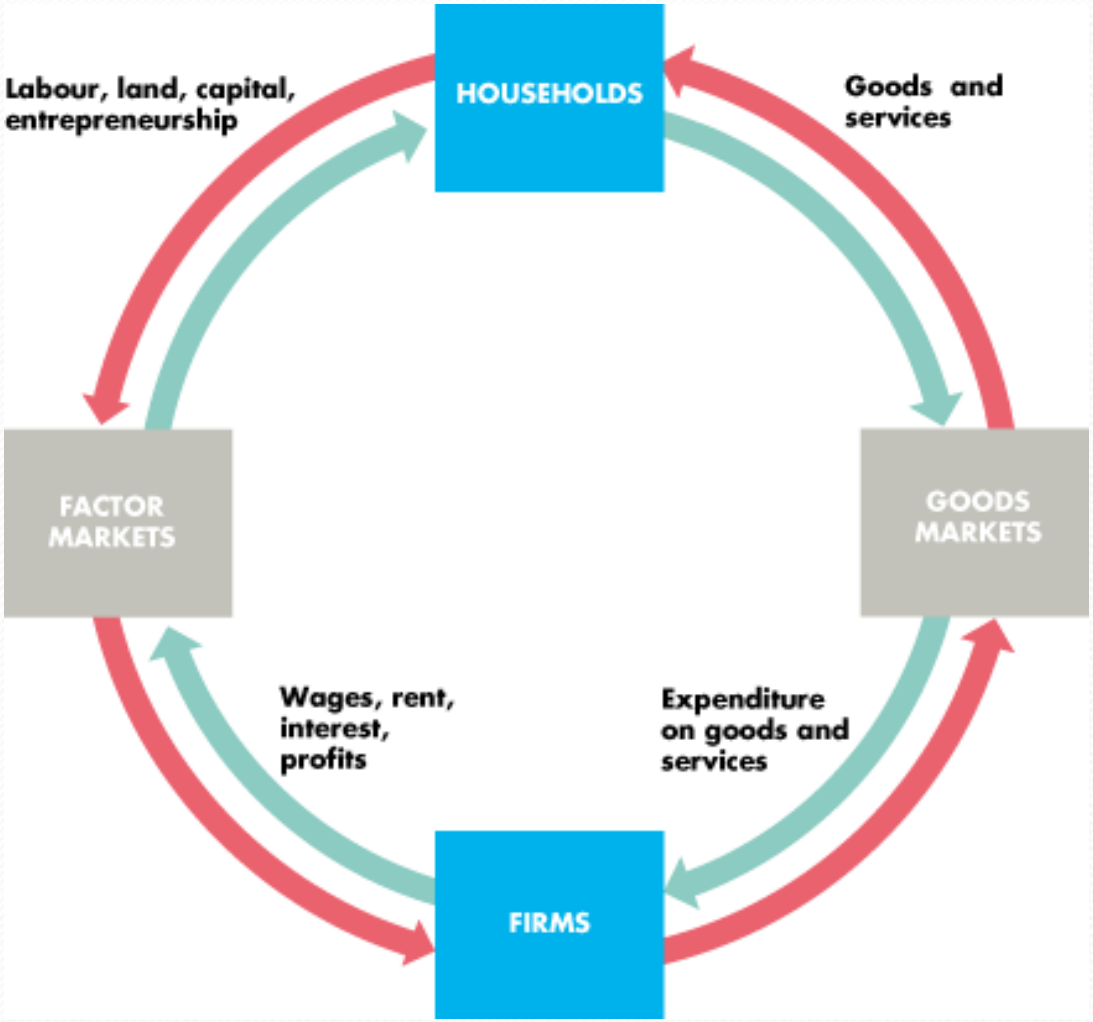
Economic Coordination

- Circular Flows Through Markets
  - Figure 2.7 illustrates how households and firms interact in the market economy.
  - Factors of production and goods and services flow in one direction.
  - Money flows in the opposite direction.



Economic Coordination

- Coordinating Decisions
  - Markets coordinate individual decisions through price adjustments.



Gains from Trade

- Comparative Advantage and Absolute Advantage
  - A person has a **comparative advantage** in an activity if that person can perform the activity at a lower opportunity cost than anyone else.
  - A person has an **absolute advantage** if that person is more productive than others.
  - Absolute advantage involves comparing productivities while comparative advantage involves comparing opportunity costs. (13S-S10)
  - Let's look at Joe and Liz who operate smoothie bars.

Gains from Trade

Joe's Smoothie Bar

In an hour, Joe can produce 6 smoothies or 30 salads.

Joe's opportunity cost of producing 1 smoothie is 5 salads.

TABLE 2.1 Joe's Production Possibilities

Item	Minutes to produce 1	Quantity per hour
Smoothies	10	6
Salads	2	30

Joe's opportunity cost of producing 1 salad is 1/5 smoothie.

Joe spends 10 minutes making salads and 50 minutes making smoothies, so he produces 5 smoothies and 5 salads an hour.

Gains from Trade

Liz's Smoothie Bar

In an hour, Liz can produce 30 smoothies or 30 salads.

Liz's opportunity cost of producing 1 smoothie is 1 salad.

TABLE 2.2 Liz's Production Possibilities

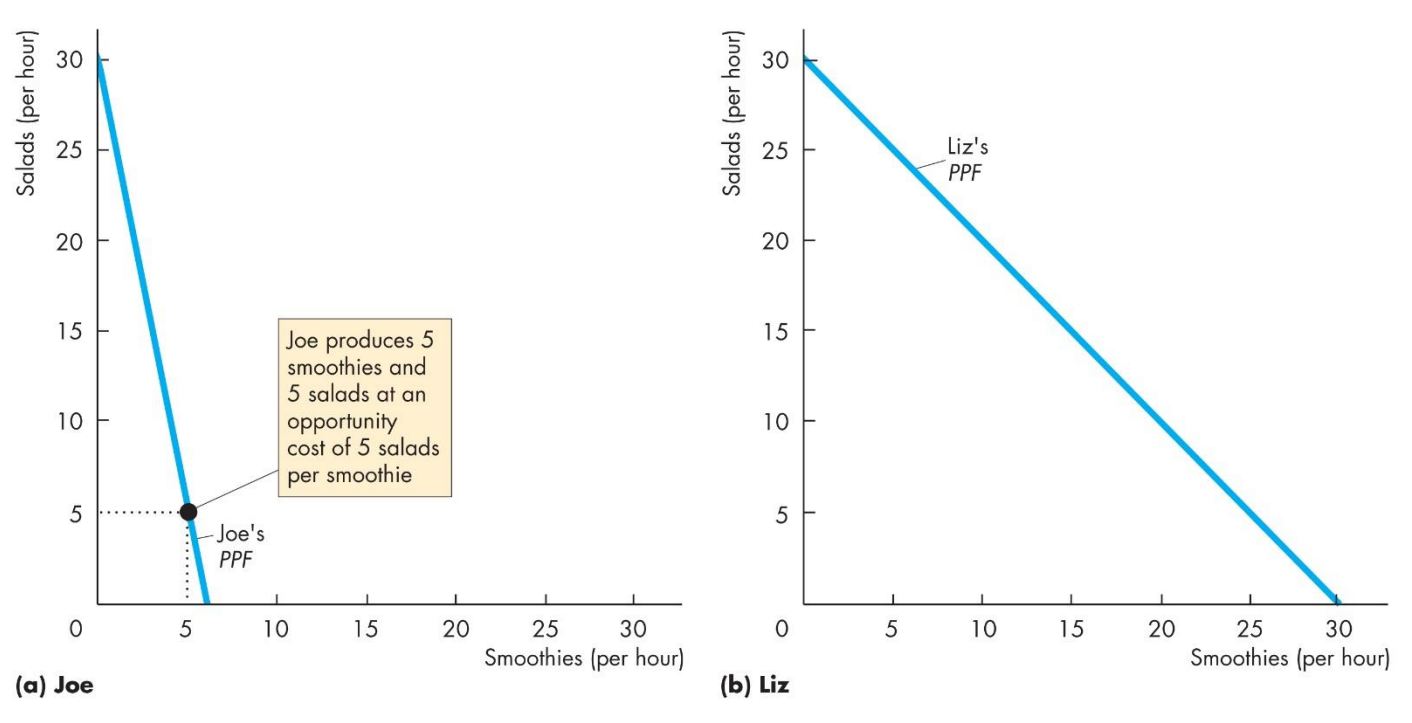
Item	Minutes to produce 1	Quantity per hour
Smoothies	2	30
Salads	2	30

Liz's opportunity cost of producing 1 salad is 1 smoothie.

Liz's customers buy salads and smoothies in equal number, so she produces 15 smoothies and 15 salads an hour.

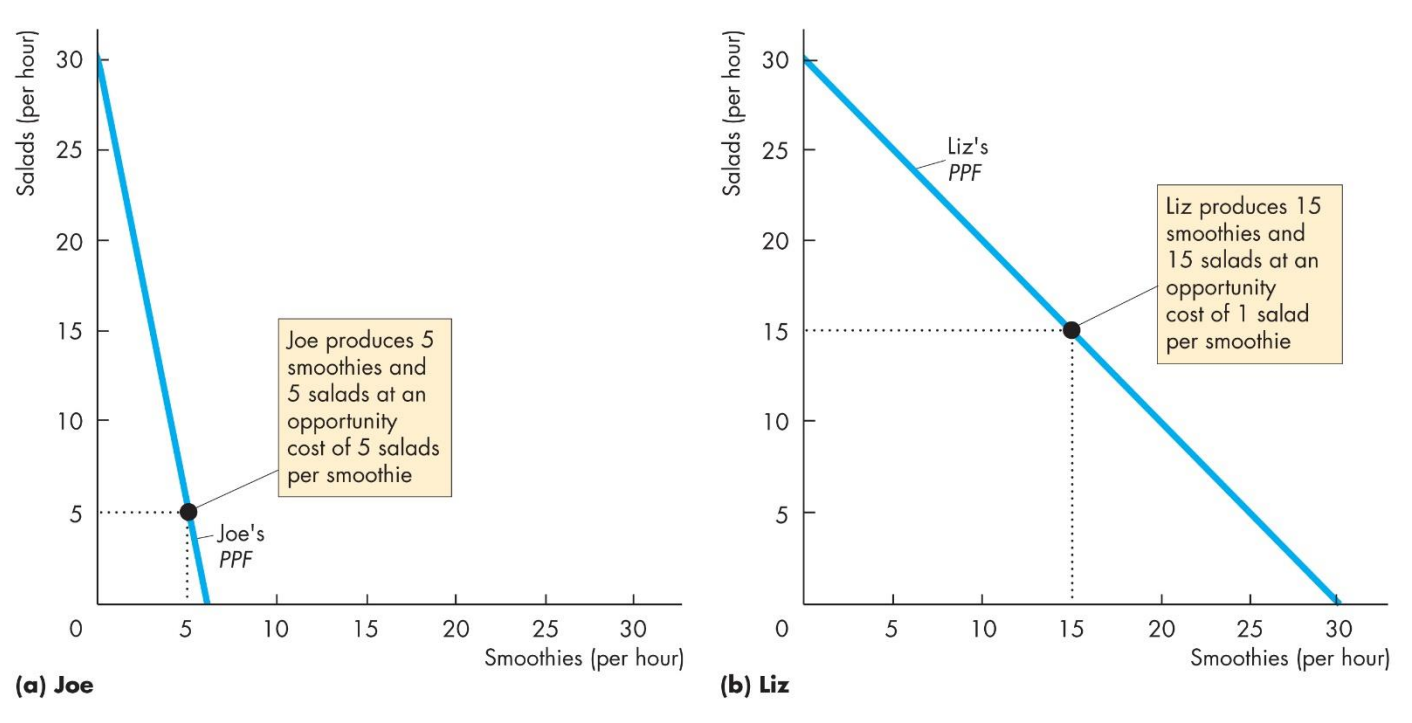
Gains from Trade

- Figure 2.6 shows the production possibility frontiers.
- In part (a), Joe's opportunity cost of a smoothie is 5 salads. Joe produces at point *A* on his *PPF*.



Gains from Trade

- In part (b), Liz's opportunity cost of a smoothie is 1 salad. Liz produces at point *A* on her *PPF*.



Gains from Trade

- Joe's Comparative Advantage
- Joe's opportunity cost of a salad is 1/5 smoothie.
- Liz's opportunity cost of a salad is 1 smoothie.
- Joe's opportunity cost of a salad is less than Liz's.
- So Joe has a comparative advantage in producing salads.

Gains from Trade

- **Liz's Comparative Advantage**
- Liz's opportunity cost of a smoothie is 1 salad.
- Joe's opportunity cost of a smoothie is 5 salads.
- Liz's opportunity cost of a smoothie is less than Joe's.
- So Liz has a comparative advantage in producing smoothies.

Gains from Trade

- Achieving the Gains from Trade
- Liz and Joe produce the good in which they have a comparative advantage:
  - Liz produces 30 smoothies and 0 salads.
  - Joe produces 30 salads and 0 smoothies.

TABLE 2.3 Liz and Joe Gain from Trade

(a) Before trade	Liz	Joe
Smoothies	15	5
Salads	15	5
(b) Specialization	**Liz**	**Joe**
Smoothies	30	0
Salads	0	30

Gains from Trade

- Liz and Joe trade:
  - Liz sells Joe 10 smoothies and buys 20 salads.
  - Joe sells Liz 20 salads and buys 10 smoothies.
- After trade:
  - Liz has 20 smoothies and 20 salads.
  - Joe has 10 smoothies and 10 salads.

TABLE 2.3 Liz and Joe Gain from Trade

(a) Before trade	Liz	Joe
Smoothies	15	5
Salads	15	5
(b) Specialization	**Liz**	**Joe**
Smoothies	30	0
Salads	0	30
(c) Trade	**Liz**	**Joe**
Smoothies	sell 10	buy 10
Salads	buy 20	sell 20
(d) After trade	**Liz**	**Joe**
Smoothies	20	10
Salads	20	10

Gains from Trade

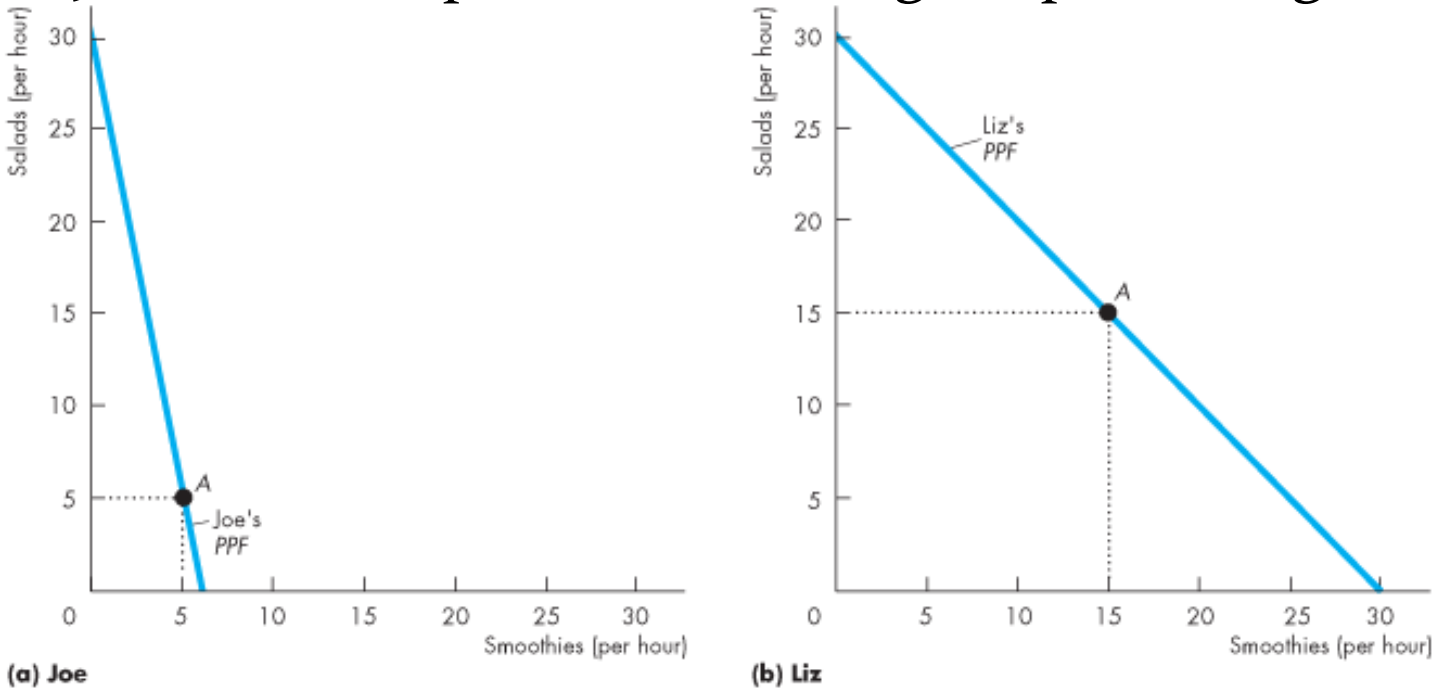
- Gains from trade:
  - Liz gains 5 smoothies and 5 salads an hour
  - Joe gains 5 smoothies and 5 salads an hour

TABLE 2.3 Liz and Joe Gain from Trade

(a) Before trade	Liz	Joe
Smoothies	15	5
Salads	15	5
(b) Specialization	**Liz**	**Joe**
Smoothies	30	0
Salads	0	30
(c) Trade	**Liz**	**Joe**
Smoothies	sell 10	buy 10
Salads	buy 20	sell 20
(d) After trade	**Liz**	**Joe**
Smoothies	20	10
Salads	20	10
(e) Gains from trade	**Liz**	**Joe**
Smoothies	+5	+5
Salads	+5	+5

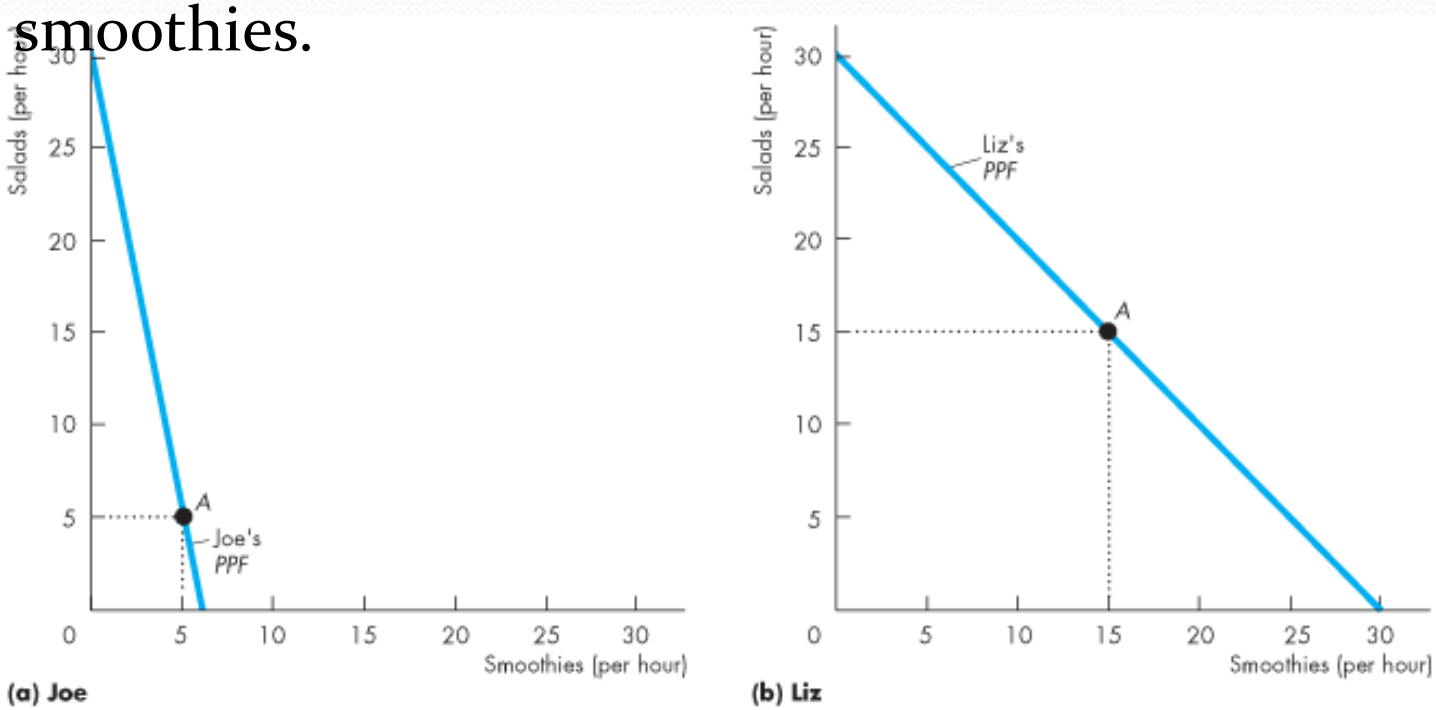
Gains from Trade

- Figure 2.7 shows the gains from trade.
- Joe's opportunity cost of producing a salad is less than Liz's.
- So Joe has a comparative advantage in producing salads.



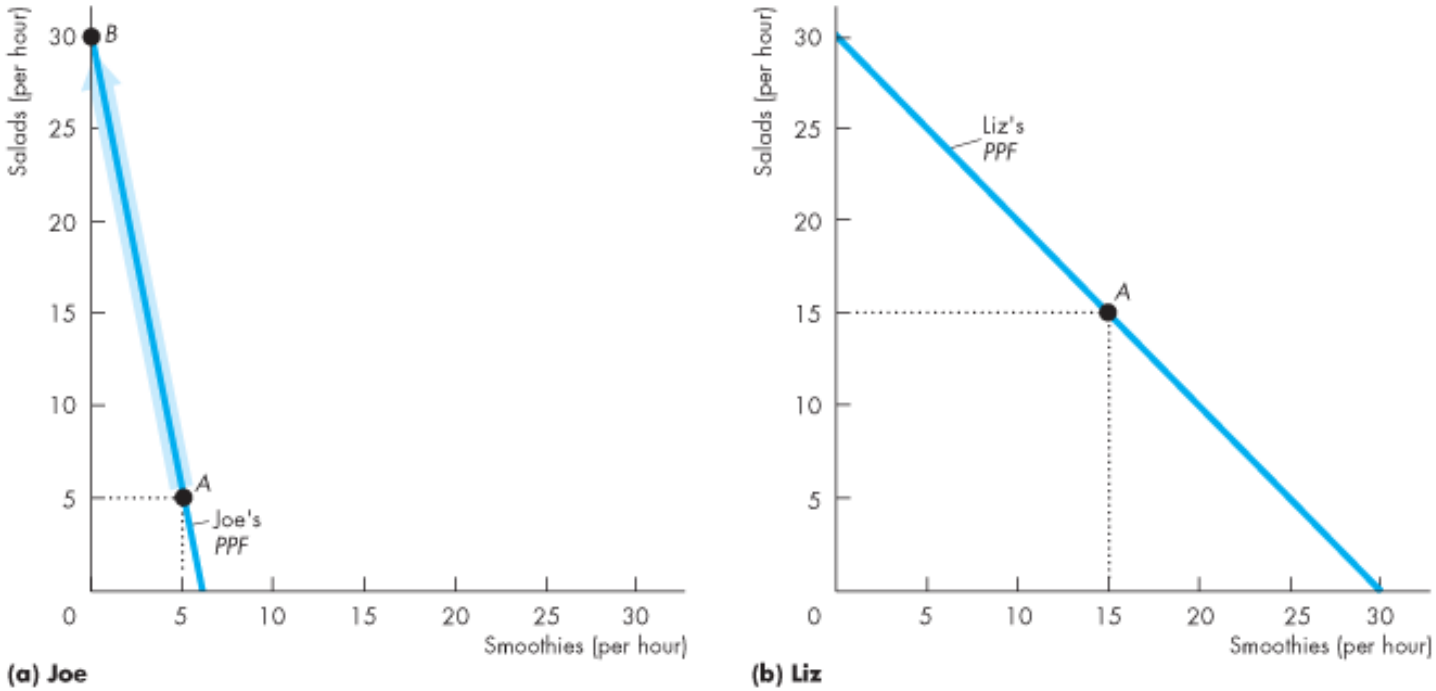
Gains from Trade

- Liz's opportunity cost of producing a smoothie is less than Joe's.
- So Liz has a comparative advantage in producing smoothies.



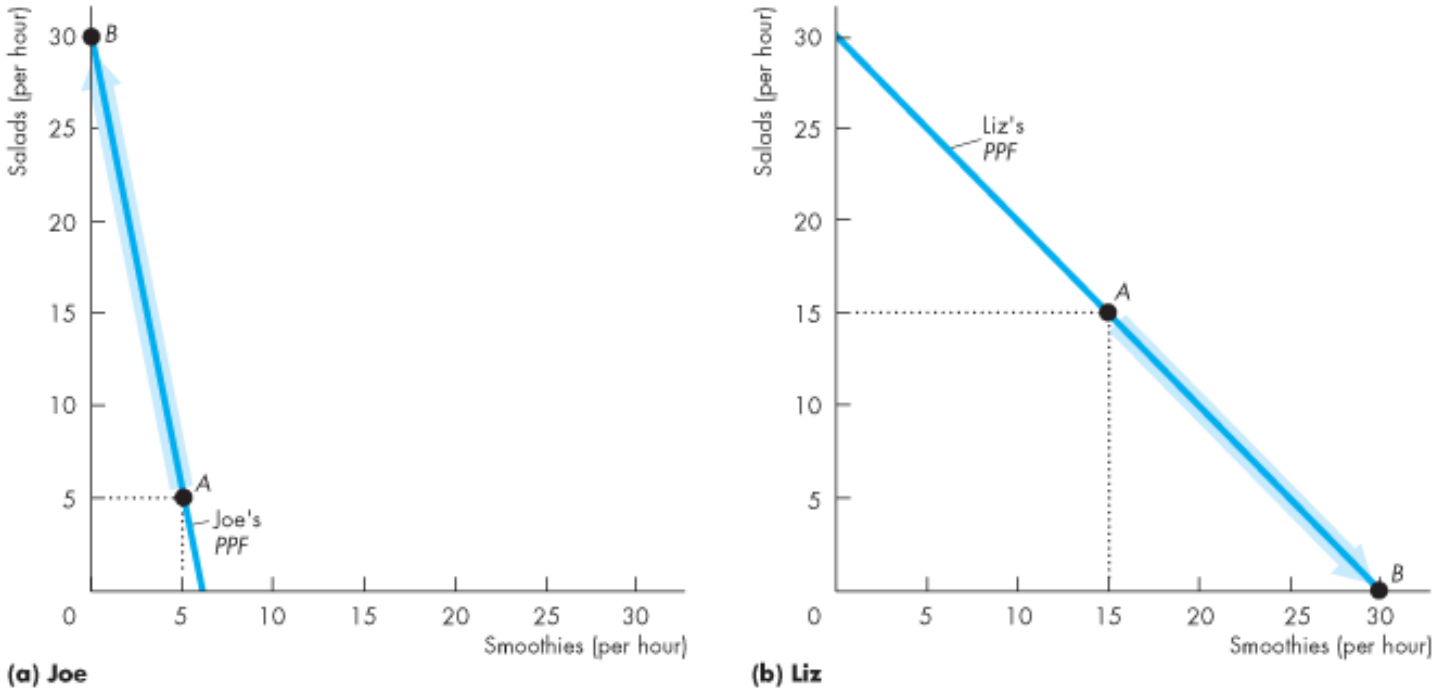
Gains from Trade

- Joe specializes in producing salads and he produces 30 salads an hour at point *B* on his *PPF*.



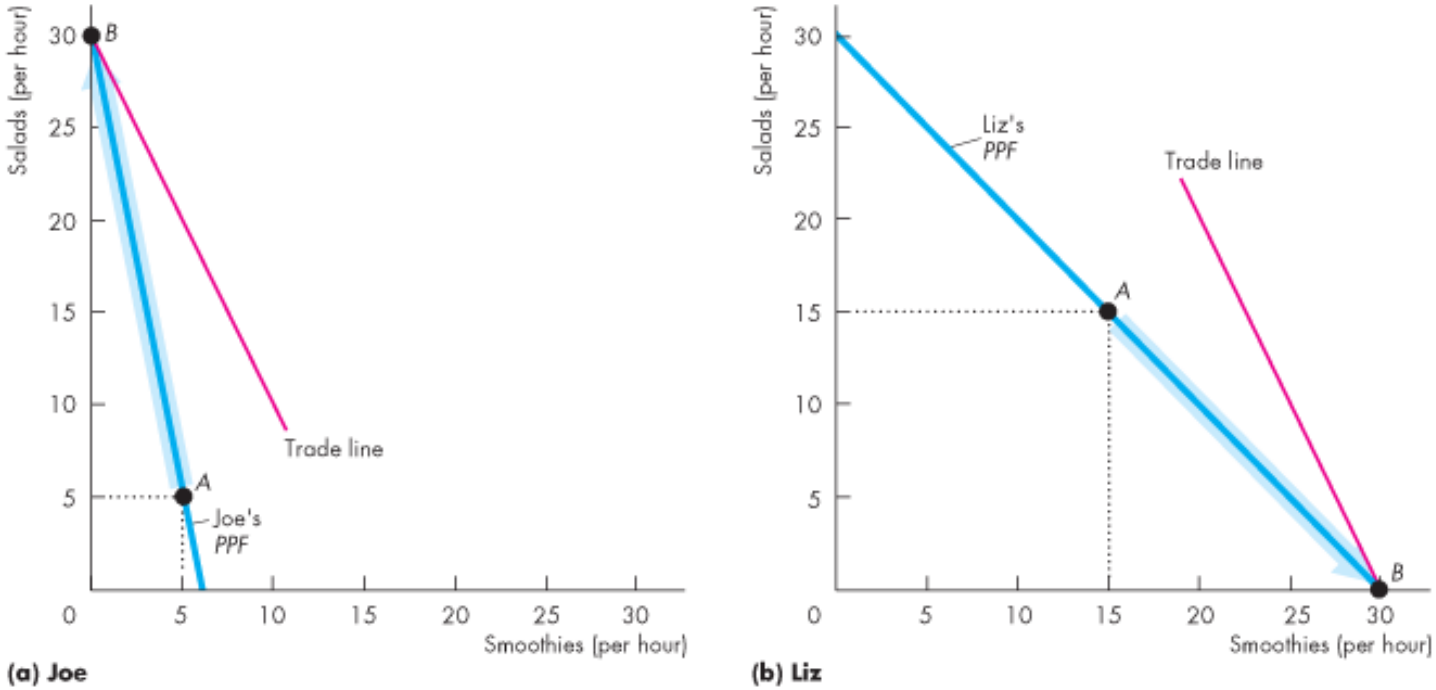
Gains from Trade

- Liz specializes in producing smoothies and produces 30 smoothies an hour at point *B* on her *PPF*.



Gains from Trade

- They trade salads for smoothies along the red "Trade line."
- The price of a salad is 2 smoothies or the price of a smoothie is ½ of a salad.



Gains from Trade

- Joe buys smoothies from Liz and moves to point *C*—a point *outside* his *PPF*.
- Liz buys salads from Joe and moves to point *C*—a point *outside* her *PPF*.