UN1105 Principles of Economics

Recitation 2: Supply and Demand, continued

Sean Hyland

Columbia University

Fall 2020

Outline

- Introduction
- Review of Concepts
- Analytical Questions
  - Q1: The Market for Denim
  - Q2: K&W Problem 3.02
- Short-answer Questions
  - Q3: K&W Problem 3.19

Outline

- Introduction
- Review of Concepts
- Analytical Questions
  - Q1: The Market for Denim
  - Q2: K&W Problem 3.02
- Short-answer Questions
  - Q3: K&W Problem 3.19

Introduction

Recitation structure:

- Will not review previous problem set.
- Retrospective focus on prior week's material:
  - This week: supply and demand (again),
  - Next week: elasticity and consumer theory.

Outline

- Introduction
- Review of Concepts
- Analytical Questions
  - Q1: The Market for Denim
  - Q2: K&W Problem 3.02
- Short-answer Questions
  - Q3: K&W Problem 3.19

Review of Concepts

1. Demand and Supply Model
   (i) What type of market are we focusing on?
   (ii) Demand-side
      - Law of demand.
      - Distinguish between movements along, and shifts of, the curve.
      - What factors shift the demand curve?
      - Normal v inferior goods.
      - Market demand v individual demand.
   (iii) Supply-side
      - No law of supply, but usually upward sloping.
      - Distinguish between movements along, and shifts of, the curve.
      - What factors shift the demand curve?
      - Market supply v individual supply.
   (iv) Equilibrium
      - Why does a competitive market move towards this point; surpluses and shortages.
      - Comparative statics following an increase in demand/supply.

Outline

- Introduction
- Review of Concepts
- Analytical Questions
  - Q1: The Market for Denim
  - Q2: K&W Problem 3.02
- Short-answer Questions
  - Q3: K&W Problem 3.19

Outline

- Introduction
- Review of Concepts
- Analytical Questions
  - Q1: The Market for Denim
  - Q2: K&W Problem 3.02
- Short-answer Questions
  - Q3: K&W Problem 3.19

Analytical Questions, Q1: The Market for Denim

Demand for jeans is given by $Q_D = 60 - 10P$. Supply is given by $Q_S = 10P$.

Analytical Questions, Q1: The Market for Denim

Demand for jeans is given by $Q_D = 60 - 10P$. Supply is given by $Q_S = 10P$.

(a) Use algebra to find the equilibrium quantity and price for jeans.

Analytical Questions, Q1: The Market for Denim

Demand for jeans is given by $Q_D = 60 - 10P$. Supply is given by $Q_S = 10P$.

(a) Use algebra to find the equilibrium quantity and price for jeans.

To find the equilibrium price, we set quantity demanded equal to quantity supplied, and then solve for the implied price.

$$Q_D(P^*) = 60 - 10P^* = 10P^* = Q_S(P^*)$$
$$\Rightarrow 60 = 20P^*$$
$$\Rightarrow P^* = 3$$

To find the equilibrium quantity, we substitute the equilibrium price into either the demand or supply function. (It doesn't matter which one, why?)

$$Q^* = Q_S(P^*) = 10 \times 3 = 30$$

Analytical Questions, Q1: The Market for Denim

Demand for jeans is given by $Q_D = 60 - 10P$. Supply is given by $Q_S = 10P$.

(a) Use algebra to find the equilibrium quantity and price for jeans.

To find the equilibrium price, we set quantity demanded equal to quantity supplied, and then solve for the implied price.

$$Q_D(P^*) = 60 - 10P^* = 10P^* = Q_S(P^*)$$
$$\Rightarrow 60 = 20P^*$$
$$\Rightarrow P^* = 3$$

To find the equilibrium quantity, we substitute the equilibrium price into either the demand or supply function. (It doesn't matter which one, why?)

$$Q^* = Q_S(P^*) = 10 \times 3 = 30$$

(b) Draw the demand and supply curves on a diagram. Label the equilibrium price and quantity.

Analytical Questions, Q1: The Market for Denim

Demand for jeans is given by $Q_D = 60 - 10P$. Supply is given by $Q_S = 10P$.

(a) Use algebra to find the equilibrium quantity and price for jeans.

To find the equilibrium price, we set quantity demanded equal to quantity supplied, and then solve for the implied price.

$$Q_D(P^*) = 60 - 10P^* = 10P^* = Q_S(P^*)$$
$$\Rightarrow 60 = 20P^*$$
$$\Rightarrow P^* = 3$$

To find the equilibrium quantity, we substitute the equilibrium price into either the demand or supply function. (It doesn't matter which one, why?)

$$Q^* = Q_S(P^*) = 10 \times 3 = 30$$

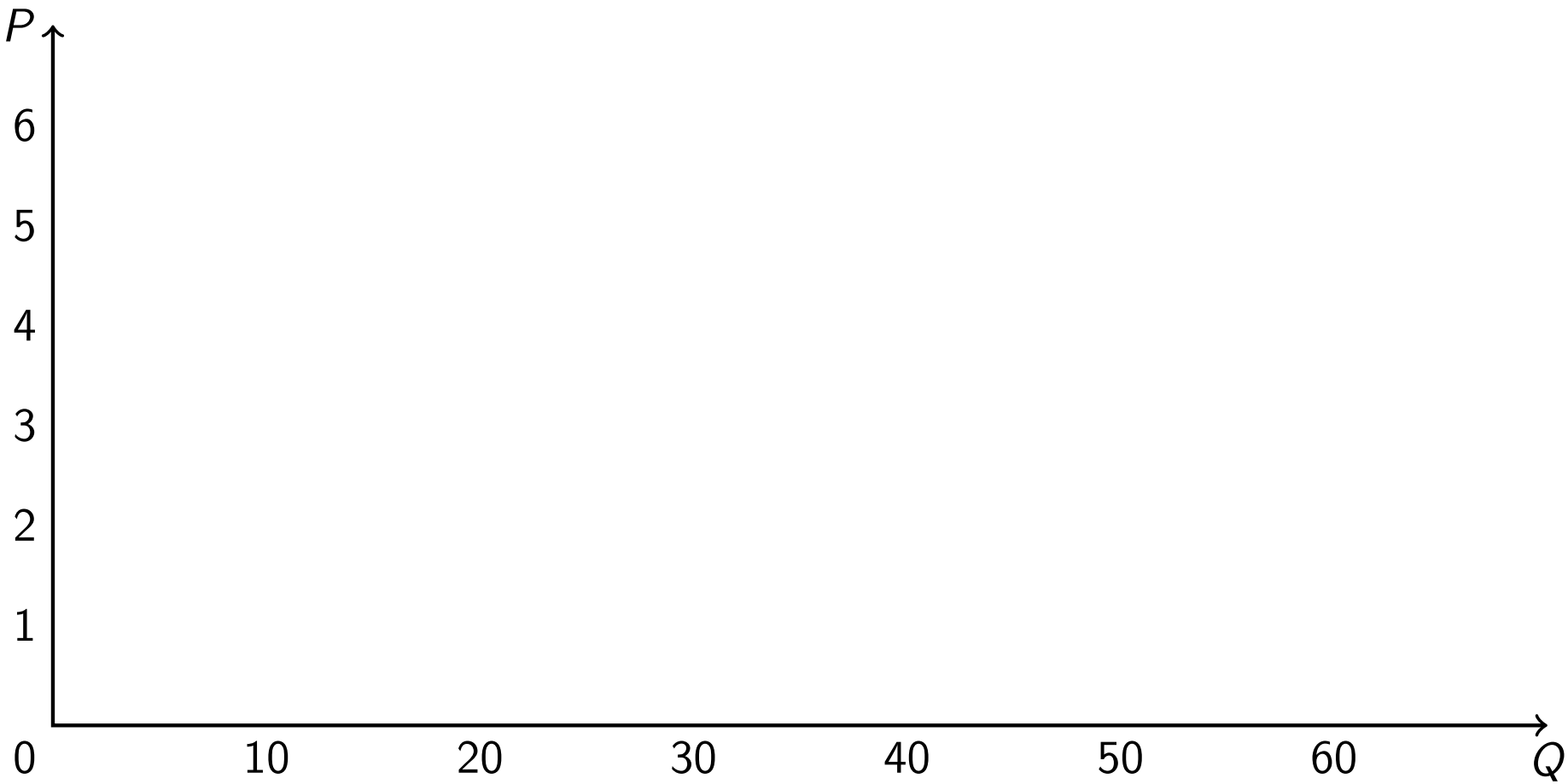
(b) Draw the demand and supply curves on a diagram. Label the equilibrium price and quantity.

Because price is on the y-axis of a D-S graph, we need to find and then plot the *inverse* demand and supply functions.

$$Q_D = 60 - 10P \Rightarrow 10P_D = 60 - Q \Rightarrow P_D = 6 - 0.1Q$$
$$Q_S = 10P \Rightarrow P_S = 0.1Q$$

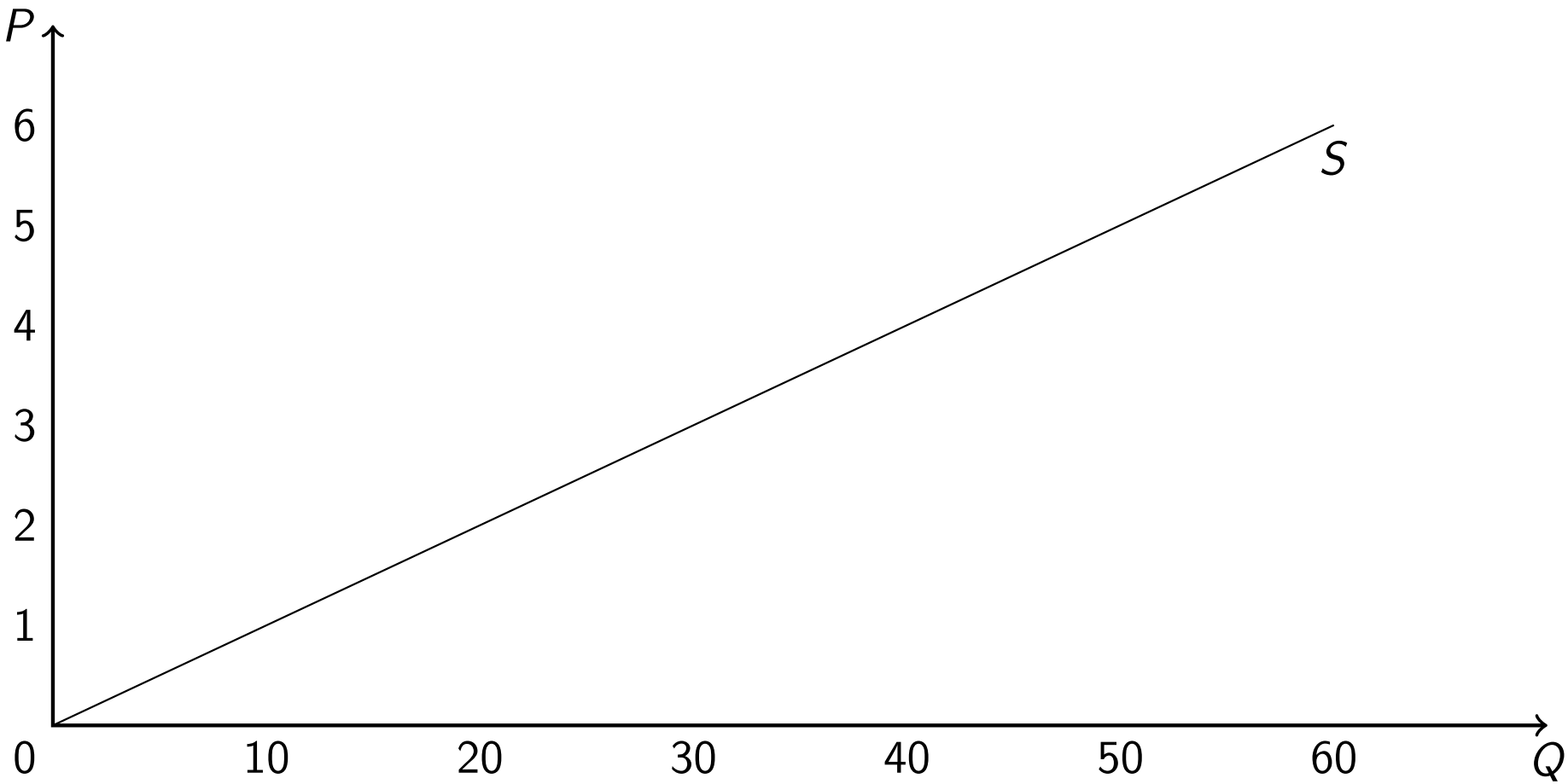
Analytical Questions, Q1: The Market for Denim, (ii)

Figure 1: Market for Denim



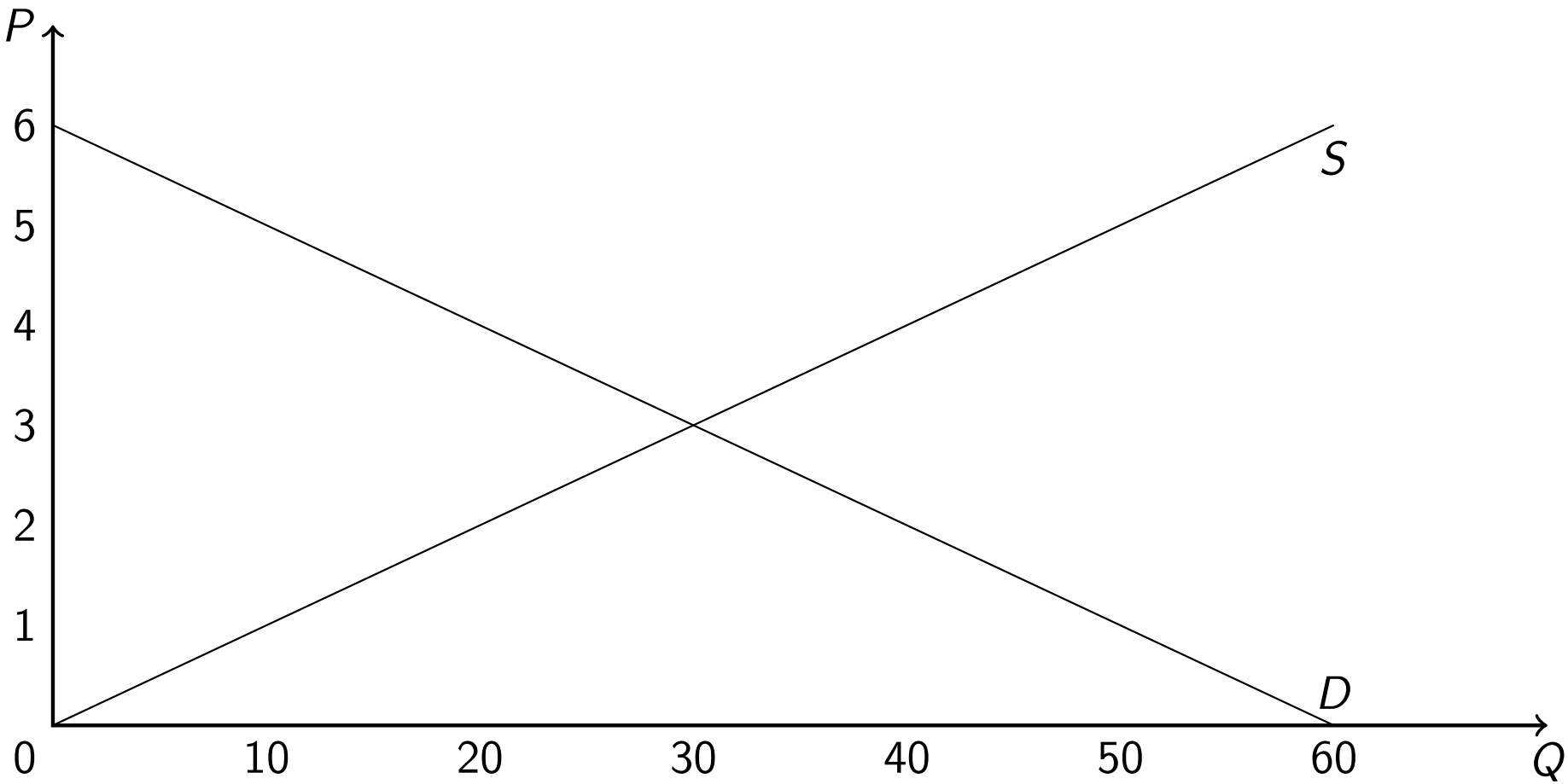
Analytical Questions, Q1: The Market for Denim, (ii)

Figure 1: Market for Denim



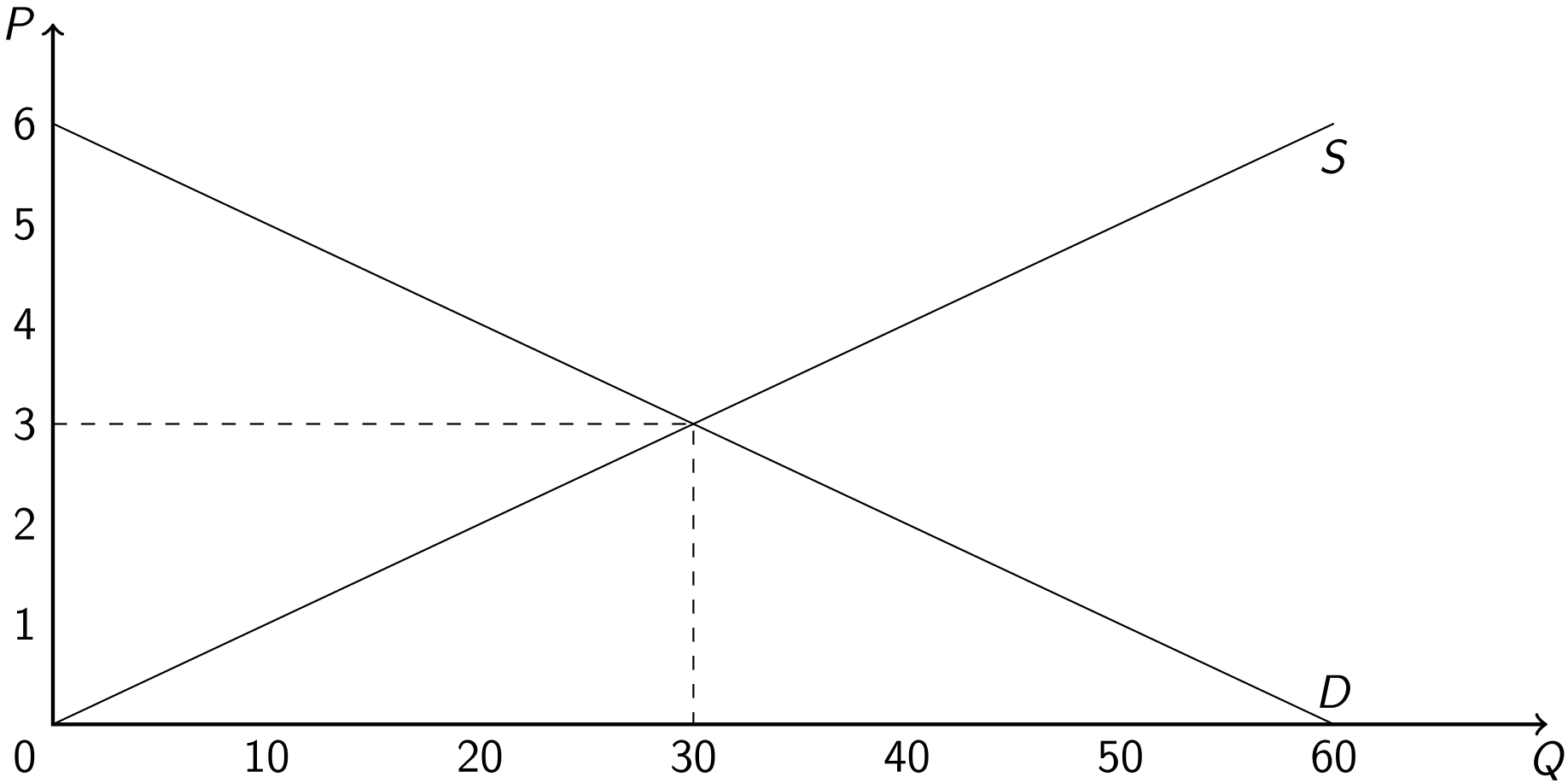
Analytical Questions, Q1: The Market for Denim, (ii)

Figure 1: Market for Denim



Analytical Questions, Q1: The Market for Denim, (ii)

Figure 1: Market for Denim



Analytical Questions, Q1: The Market for Denim, (iii)

(c) The price of cotton falls. What happens to the equilibrium price and quantity?

Analytical Questions, Q1: The Market for Denim, (iii)

(c) The price of cotton falls. What happens to the equilibrium price and quantity?

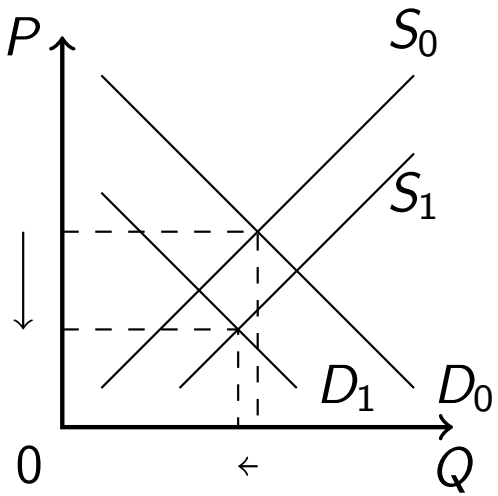
- Cotton is a input to denim manufacturing, and as the price of an input falls we expect supply to shift to the right.
- However, cotton is also an input in the manufacturing of substitute clothing, and as the price of a substitute falls the demand for denim shifts to the left.
- The overall effect is an unambiguously lower equilibrium price, but the change in quantity is dependent on whether the supply or demand effect is greater.

Analytical Questions, Q1: The Market for Denim, (iii)

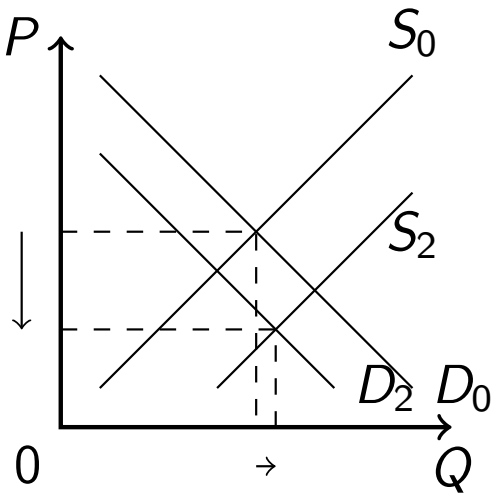
(c) The price of cotton falls. What happens to the equilibrium price and quantity?

- Cotton is a input to denim manufacturing, and as the price of an input falls we expect supply to shift to the right.
- However, cotton is also an input in the manufacturing of substitute clothing, and as the price of a substitute falls the demand for denim shifts to the left.
- The overall effect is an unambiguously lower equilibrium price, but the change in quantity is dependent on whether the supply or demand effect is greater.

(a) Larger decrease in demand



(b) Larger increase in supply



Outline

- Introduction
- Review of Concepts
- Analytical Questions
  - Q1: The Market for Denim
  - Q2: K&W Problem 3.02
- Short-answer Questions
  - Q3: K&W Problem 3.19

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
2. All hamburger sellers raise the price of their french fries.

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
2. All hamburger sellers raise the price of their french fries.
   Complements, so $P_{Fries} \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
2. All hamburger sellers raise the price of their french fries.
   Complements, so $P_{Fries} \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$
3. Income falls in town. Assume that hamburgers are a *normal* good for most people.

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
2. All hamburger sellers raise the price of their french fries.
   Complements, so $P_{Fries} \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$
3. Income falls in town. Assume that hamburgers are a *normal* good for most people.
   Normal good, so $Income \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
2. All hamburger sellers raise the price of their french fries.
   Complements, so $P_{Fries} \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$
3. Income falls in town. Assume that hamburgers are a *normal* good for most people.
   Normal good, so $Income \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
4. Income falls in town. Assume that hamburgers are an *inferior* good for most people.

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
2. All hamburger sellers raise the price of their french fries.
   Complements, so $P_{Fries} \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$
3. Income falls in town. Assume that hamburgers are a *normal* good for most people.
   Normal good, so $Income \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
4. Income falls in town. Assume that hamburgers are an *inferior* good for most people.
   Inferior good, so $Income \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
2. All hamburger sellers raise the price of their french fries.
   Complements, so $P_{Fries} \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$
3. Income falls in town. Assume that hamburgers are a *normal* good for most people.
   Normal good, so $Income \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
4. Income falls in town. Assume that hamburgers are an *inferior* good for most people.
   Inferior good, so $Income \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$
5. Hot dog stands cut the price of hot dogs.

Analytical Questions, Q2: K&W Problem 3.02

In a supply and demand diagram, draw the shift of the demand curve for hamburgers in your hometown due to the following events. In each case, show the effect on equilibrium price and quantity.

Recall from last week: because supply is upward-sloping when demand shifts right (left) both equilibrium quantity and price increase (decrease).

1. The price of tacos increases.
   Substitutes, so $P_{Taco} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
2. All hamburger sellers raise the price of their french fries.
   Complements, so $P_{Fries} \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$
3. Income falls in town. Assume that hamburgers are a *normal* good for most people.
   Normal good, so $Income \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$
4. Income falls in town. Assume that hamburgers are an *inferior* good for most people.
   Inferior good, so $Income \uparrow \Rightarrow D_{Burger} \downarrow \Rightarrow Q^*_{Burger} \downarrow, P^*_{Burger} \downarrow$
5. Hot dog stands cut the price of hot dogs.
   Substitutes, so $P_{HotDog} \uparrow \Rightarrow D_{Burger} \uparrow \Rightarrow Q^*_{Burger} \uparrow, P^*_{Burger} \uparrow$

Outline

- Introduction
- Review of Concepts
- Analytical Questions
  - Q1: The Market for Denim
  - Q2: K&W Problem 3.02
- Short-answer Questions
  - Q3: K&W Problem 3.19

Outline

- Introduction
- Review of Concepts
- Analytical Questions
  - Q1: The Market for Denim
  - Q2: K&W Problem 3.02
- Short-answer Questions
  - Q3: K&W Problem 3.19

Short-answer Questions, Q3: K&W Problem 3.19

In each of the following, what is the mistake that underlies the statement? Explain the mistake in terms of supply and demand and the factors that influence them.

Short-answer Questions, Q3: K&W Problem 3.19

In each of the following, what is the mistake that underlies the statement? Explain the mistake in terms of supply and demand and the factors that influence them.

1. Consumers are illogical because they are buying more Starbucks beverages in 2016 despite the fact that Starbucks has raised prices from 10 to 30 cents per drink.

Short-answer Questions, Q3: K&W Problem 3.19

In each of the following, what is the mistake that underlies the statement? Explain the mistake in terms of supply and demand and the factors that influence them.

1. Consumers are illogical because they are buying more Starbucks beverages in 2016 despite the fact that Starbucks has raised prices from 10 to 30 cents per drink.
   This statement ignores the possibility that consumers are buying more Starbucks beverages despite higher prices because (i) their incomes went up; or ii) the price of a substitute good has gone up.

Short-answer Questions, Q3: K&W Problem 3.19

In each of the following, what is the mistake that underlies the statement? Explain the mistake in terms of supply and demand and the factors that influence them.

1. Consumers are illogical because they are buying more Starbucks beverages in 2016 despite the fact that Starbucks has raised prices from 10 to 30 cents per drink.
   This statement ignores the possibility that consumers are buying more Starbucks beverages despite higher prices because (i) their incomes went up; or ii) the price of a substitute good has gone up.
2. Consumers are illogical because they buy less at Cost-U-Less Warehouse Superstore when their incomes go up.

Short-answer Questions, Q3: K&W Problem 3.19

In each of the following, what is the mistake that underlies the statement? Explain the mistake in terms of supply and demand and the factors that influence them.

1. Consumers are illogical because they are buying more Starbucks beverages in 2016 despite the fact that Starbucks has raised prices from 10 to 30 cents per drink.
   This statement ignores the possibility that consumers are buying more Starbucks beverages despite higher prices because (i) their incomes went up; or ii) the price of a substitute good has gone up.
2. Consumers are illogical because they buy less at Cost-U-Less Warehouse Superstore when their incomes go up.
   This statement ignores the fact that consumers are likely to consider items at Cost-U-Less Warehouse Superstore as inferior goods.

Short-answer Questions, Q3: K&W Problem 3.19

In each of the following, what is the mistake that underlies the statement? Explain the mistake in terms of supply and demand and the factors that influence them.

1. Consumers are illogical because they are buying more Starbucks beverages in 2016 despite the fact that Starbucks has raised prices from 10 to 30 cents per drink.
   This statement ignores the possibility that consumers are buying more Starbucks beverages despite higher prices because (i) their incomes went up; or ii) the price of a substitute good has gone up.
2. Consumers are illogical because they buy less at Cost-U-Less Warehouse Superstore when their incomes go up.
   This statement ignores the fact that consumers are likely to consider items at Cost-U-Less Warehouse Superstore as inferior goods.
3. Consumers are illogical for buying an iPhone 7 when an iPhone 5 costs less.

Short-answer Questions, Q3: K&W Problem 3.19

In each of the following, what is the mistake that underlies the statement? Explain the mistake in terms of supply and demand and the factors that influence them.

1. Consumers are illogical because they are buying more Starbucks beverages in 2016 despite the fact that Starbucks has raised prices from 10 to 30 cents per drink.
   This statement ignores the possibility that consumers are buying more Starbucks beverages despite higher prices because (i) their incomes went up; or ii) the price of a substitute good has gone up.
2. Consumers are illogical because they buy less at Cost-U-Less Warehouse Superstore when their incomes go up.
   This statement ignores the fact that consumers are likely to consider items at Cost-U-Less Warehouse Superstore as inferior goods.
3. Consumers are illogical for buying an iPhone 7 when an iPhone 5 costs less.
   This statement is based on the erroneous assumption that an iPhone 5 is a perfect substitute for an iPhone 7. Consumers are willing to spend more for an iPhone 7 because it has increased capabilities over an iPhone 5.