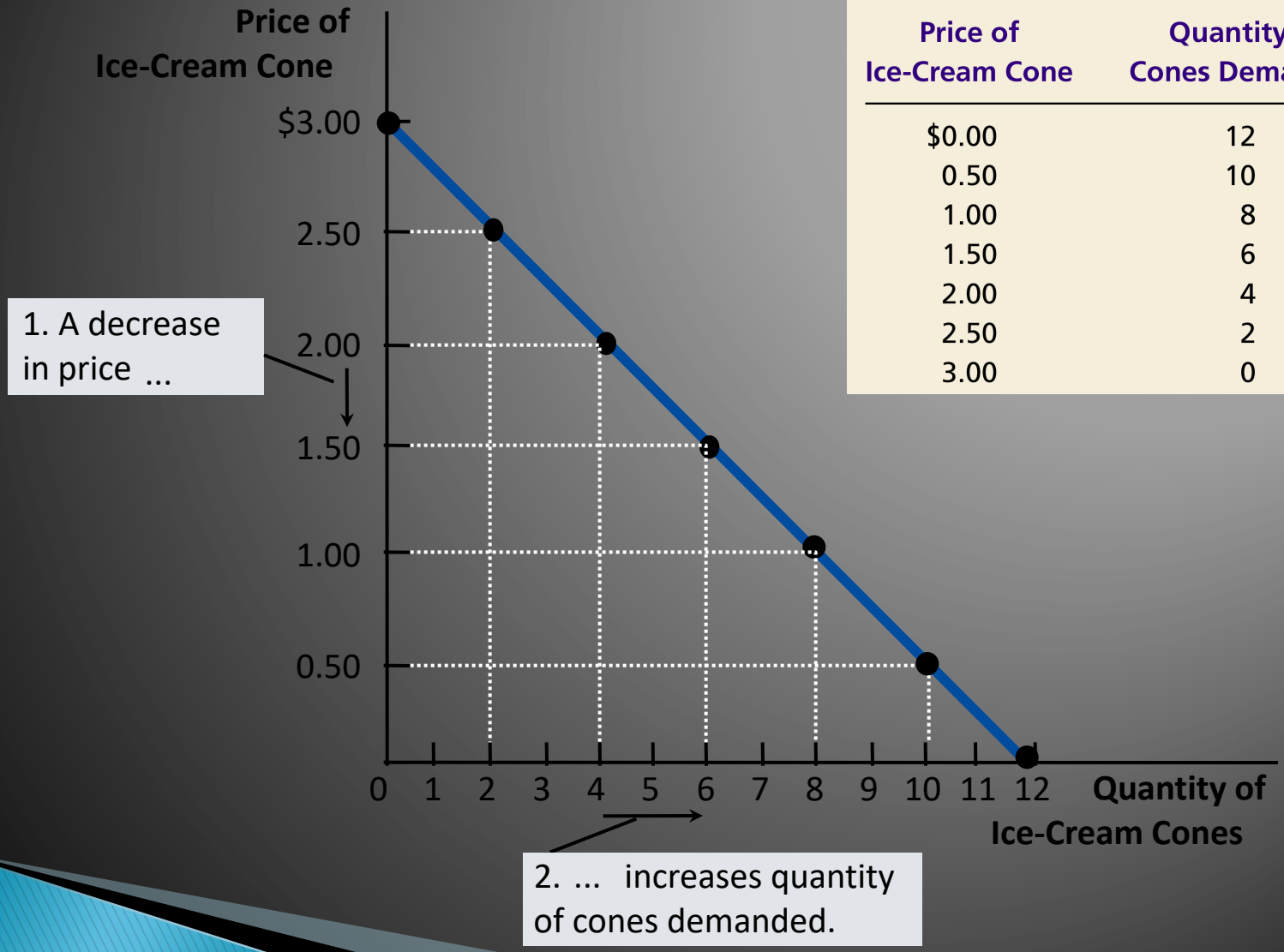
Demand and Supply

Demand

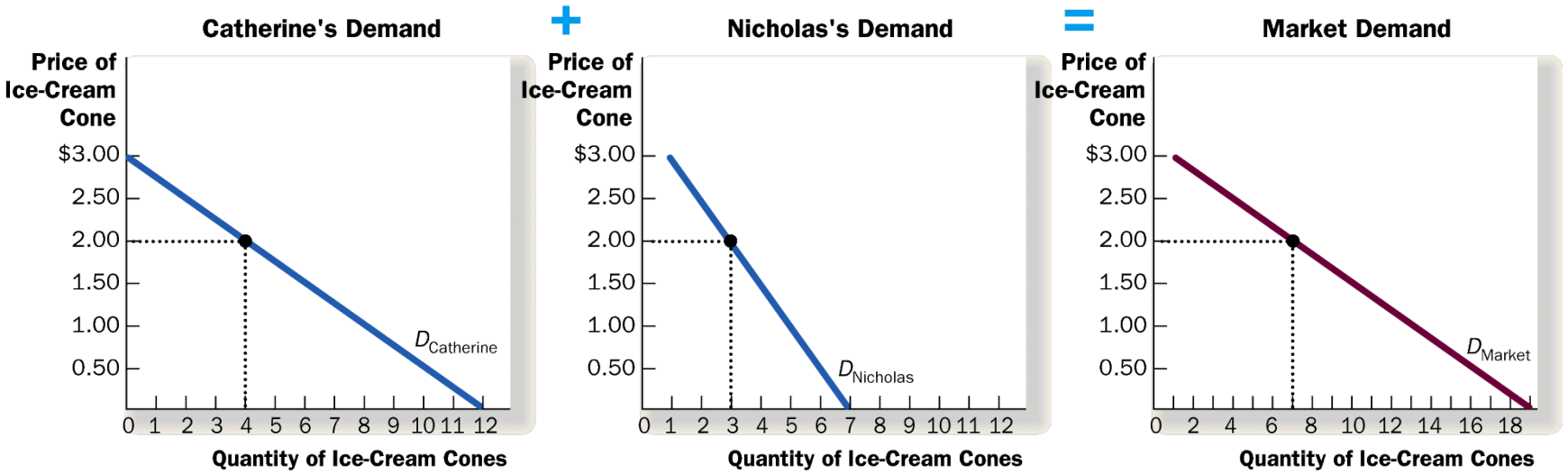
- **Quantity demanded** is the amount of a good that buyers are willing and able to purchase
- **Demand** is a full description of how the quantity demanded changes as the price of the good changes.

Catherine's Demand Schedule and Demand Curve



Price of Ice-Cream Cone	Quantity of Cones Demanded
$0.00	12
0.50	10
1.00	8
1.50	6
2.00	4
2.50	2
3.00	0

Market Demand is the Sum of Individual Demands



Law of Demand

- The law of demand states that
  - **the quantity demanded of a good falls when the price of the good rises**, and vice versa, provided all other factors that affect buyers' decisions are unchanged

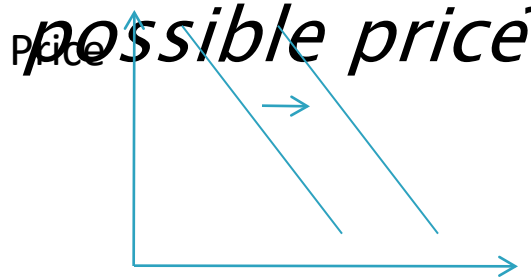
"provided all other factors … are unchanged"

- That's an important phrase in the wording of the Law of Demand
- The quantity demanded of a consumer good such as ice cream depends on
  - The price of ice cream
  - The prices of related goods
  - Consumers' incomes
  - Consumers' tastes
  - Consumers' expectations about future prices and incomes
  - Number of buyers, etc
- The Law of Demand says that the quantity demanded of a good is inversely related to its price, *provided* all other factors are unchanged

Why Might Demand Increase?

	Quantity Demanded	
Price	Situation *A*	Situation *B*
0.00	12	20
0.50	10	16
1.00	8	12
1.50	6	8
2.00	4	6
2.50	2	4
3.00	0	2

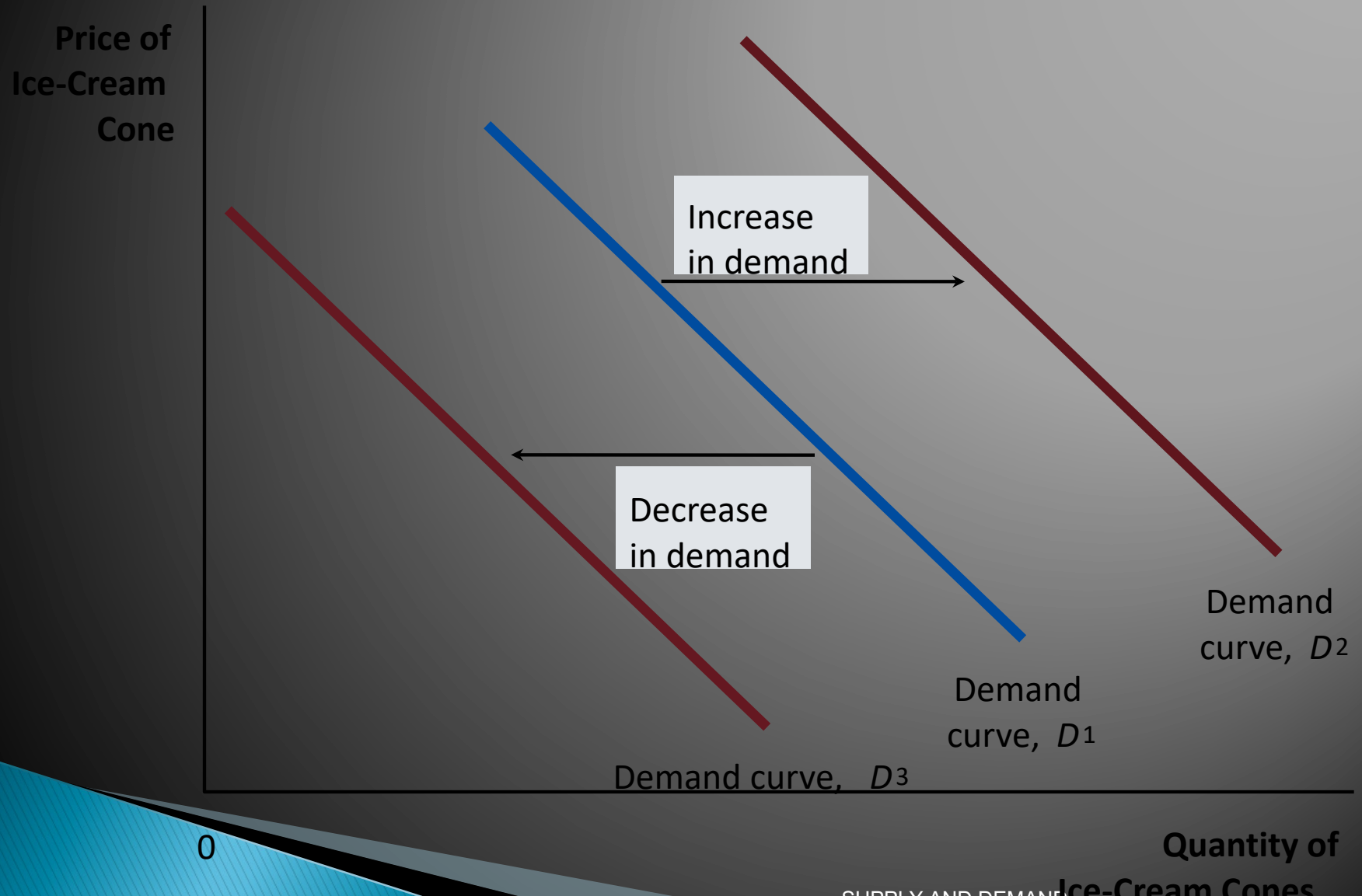
- How can we explain the difference in Catherine's behavior in situations *A* and *B*?
- Why does she consume more in situation *B at every possible price*?



Shifts in the Market Demand Curve

- … are caused by changes in:
  - Consumer income
  - Prices of related goods
  - Tastes
  - Expectations, say, about future prices and prospects
  - Number of buyers

Shifts in the Demand Curve



Shifts in the Demand Curve

- Consumer Income
  - As income increases the demand for a *normal good* will increase
  - As income increases the demand for an *inferior good* will decrease
- Prices of Related Goods
  - When a fall in the price of one good reduces the demand for another good, the two goods are called *substitutes*
  - When a fall in the price of one good increases the demand for another good, the two goods are called *complements*

The Law of Demand—Explanations

- There are two ways to explain the Law of Demand
  - Substitution effect
  - Income effect

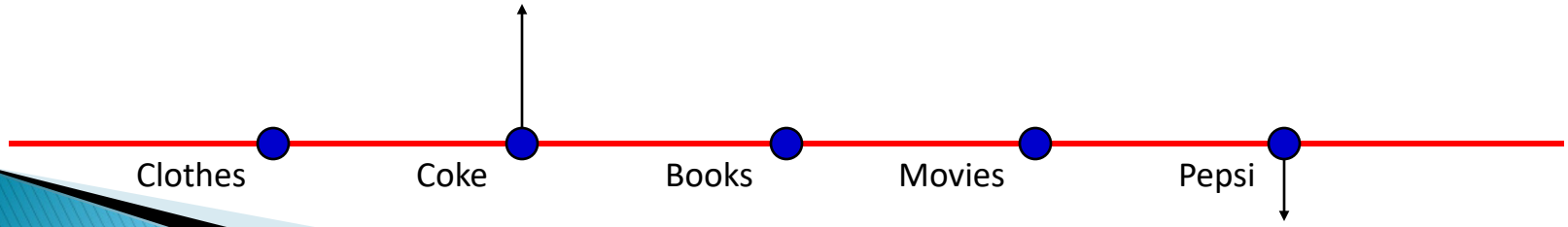
Substitution Effect

- When the price of a good decreases, consumers substitute that good instead of other competing (substitute) goods

1. When the price of Coke decreases…

2. Consumption of Pepsi decreases…

3. Consumption of Coke increases



Income Effect

- A decrease in the price of a commodity is essentially equivalent to an increase in consumers' income

Lower Prices = Higher Income

Situation *A*	
Price of an Apple	$1.00
Price of an Orange	$2.00
Income	$10.00

If prices fall, Situation *A* becomes Situation *C*.

Situation *C*	
Price of an Apple	$0.50
Price of an Orange	$1.00
Income	$10.00

If income rises, Situation *A* becomes Situation *B*.

Situation *B*	
Price of an Apple	$1.00
Price of an Orange	$2.00
Income	$20.00

Q: Which change is better?

A: They are both equally desirable. **A fall in prices is equivalent to an increase in income.**

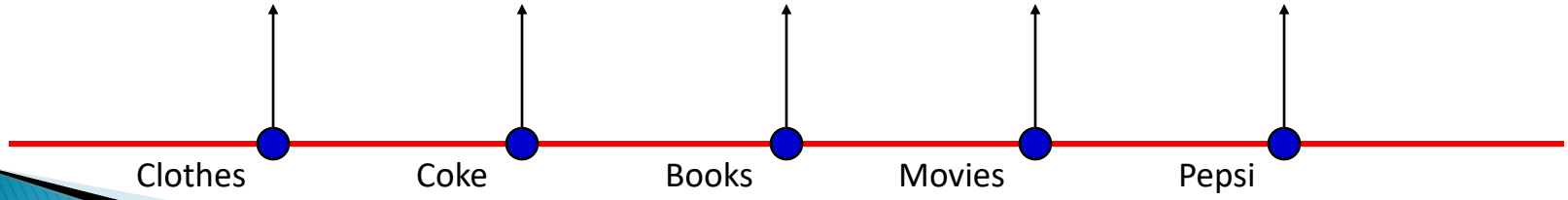
Income Effect

- Consumers respond to a decrease in the price of a commodity as they would to an increase in income
- They increase their consumption of a wide range of goods, including the good that had a price decrease

1. When the price of Coke decreases…

2. Consumers feel richer…

3. Consumption of Coke and other goods increases



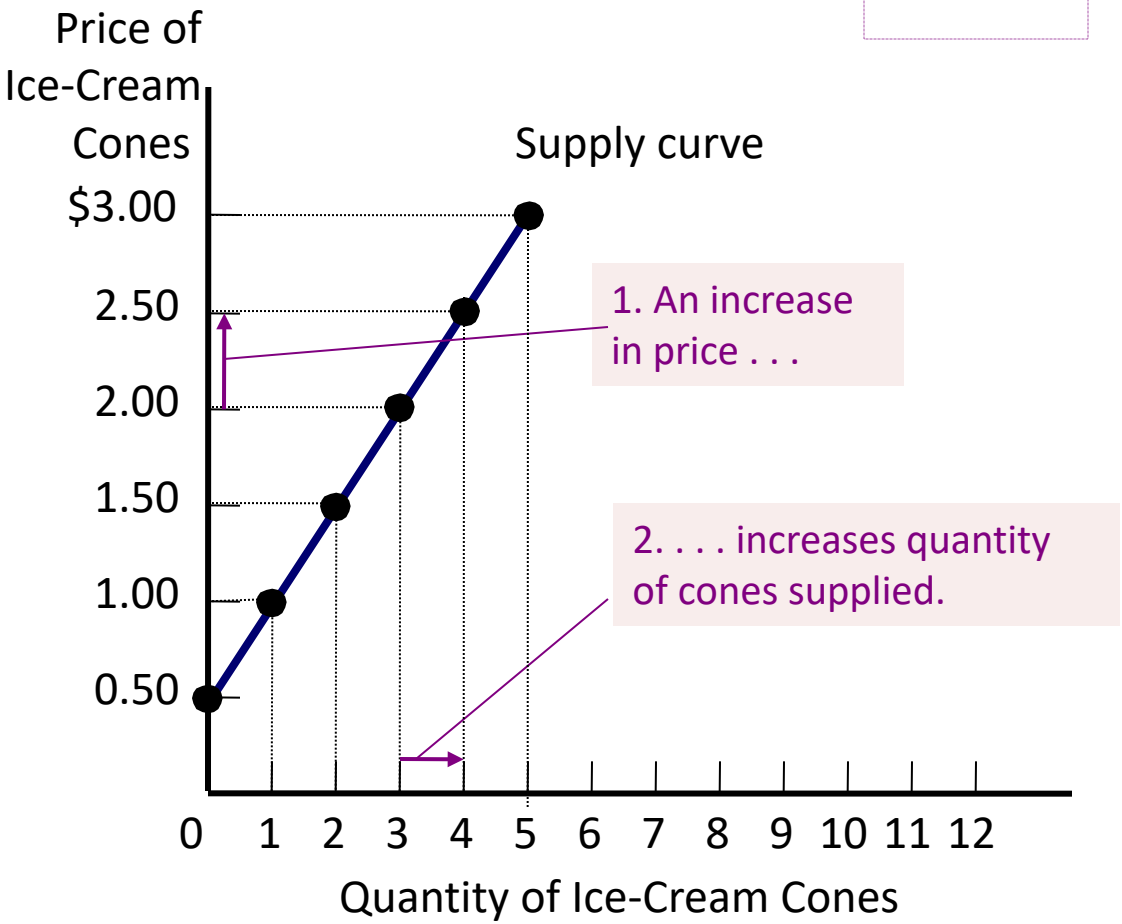
supply

SUPPLY

- *Quantity supplied* is the amount of a good that sellers are willing and able to sell
- *Supply* is a full description of how the quantity supplied of a commodity responds to changes in its price

Ben's supply schedule and supply curve

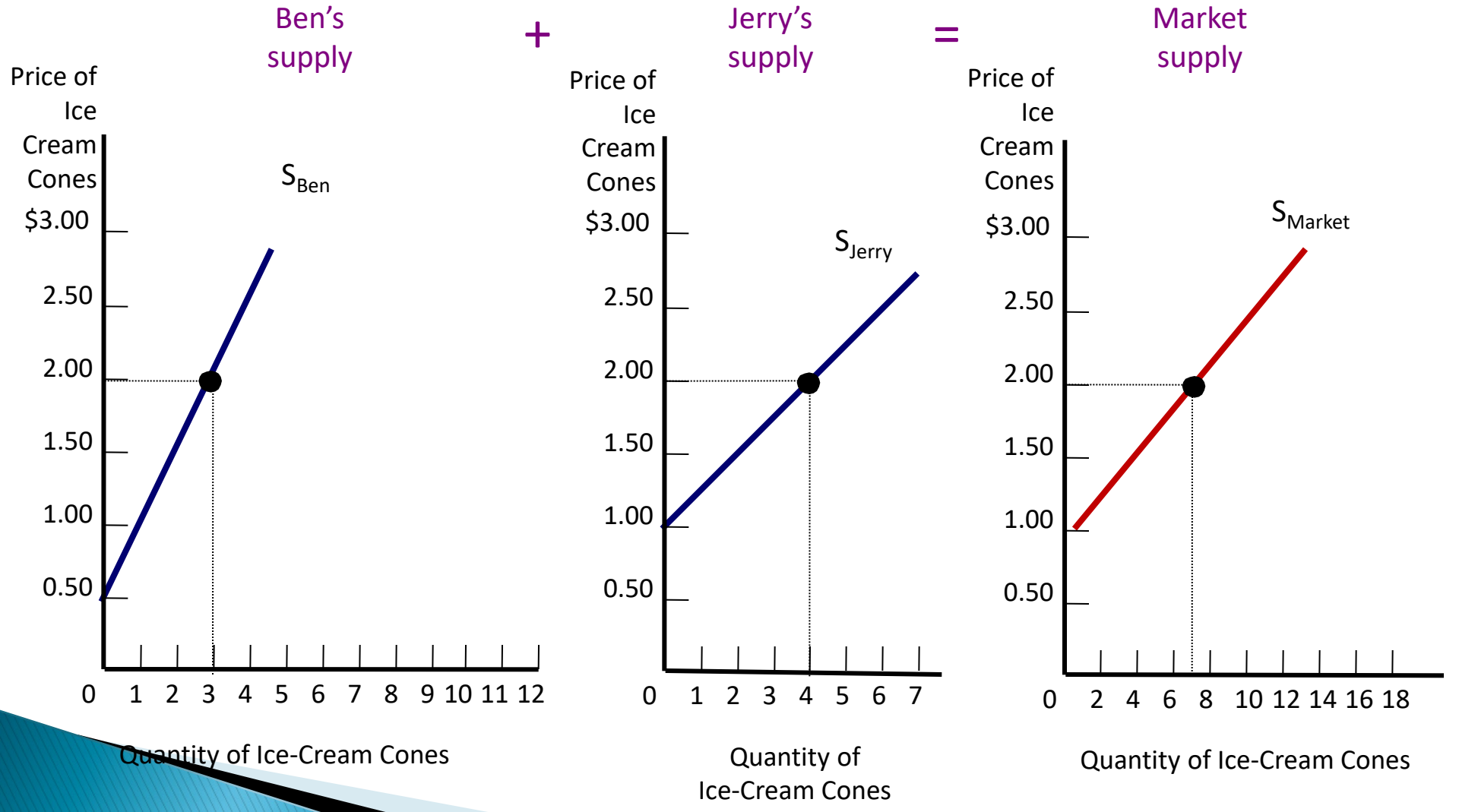
Price of Ice-cream cone	Quantity of Cones supplied
$0.00	0 cones
0.50	0
1.00	1
1.50	2
2.00	3
2.50	4
3.00	5



Market supply and individual supplies

Price of ice-cream cone	Ben		Jerry		Market
$0.00	0	+	0	=	0
0.50	0		0		0
1.00	1		0		1
1.50	2		2		4
2.00	3		4		7
2.50	4		6		10
3.00	5		8		13

Market supply and individual supplies



Law of Supply

- The *law of supply* states that, **the quantity supplied of a good rises when the price of the good rises**, as long as all other factors that affect suppliers' decisions are unchanged

Law of Supply—Explanation

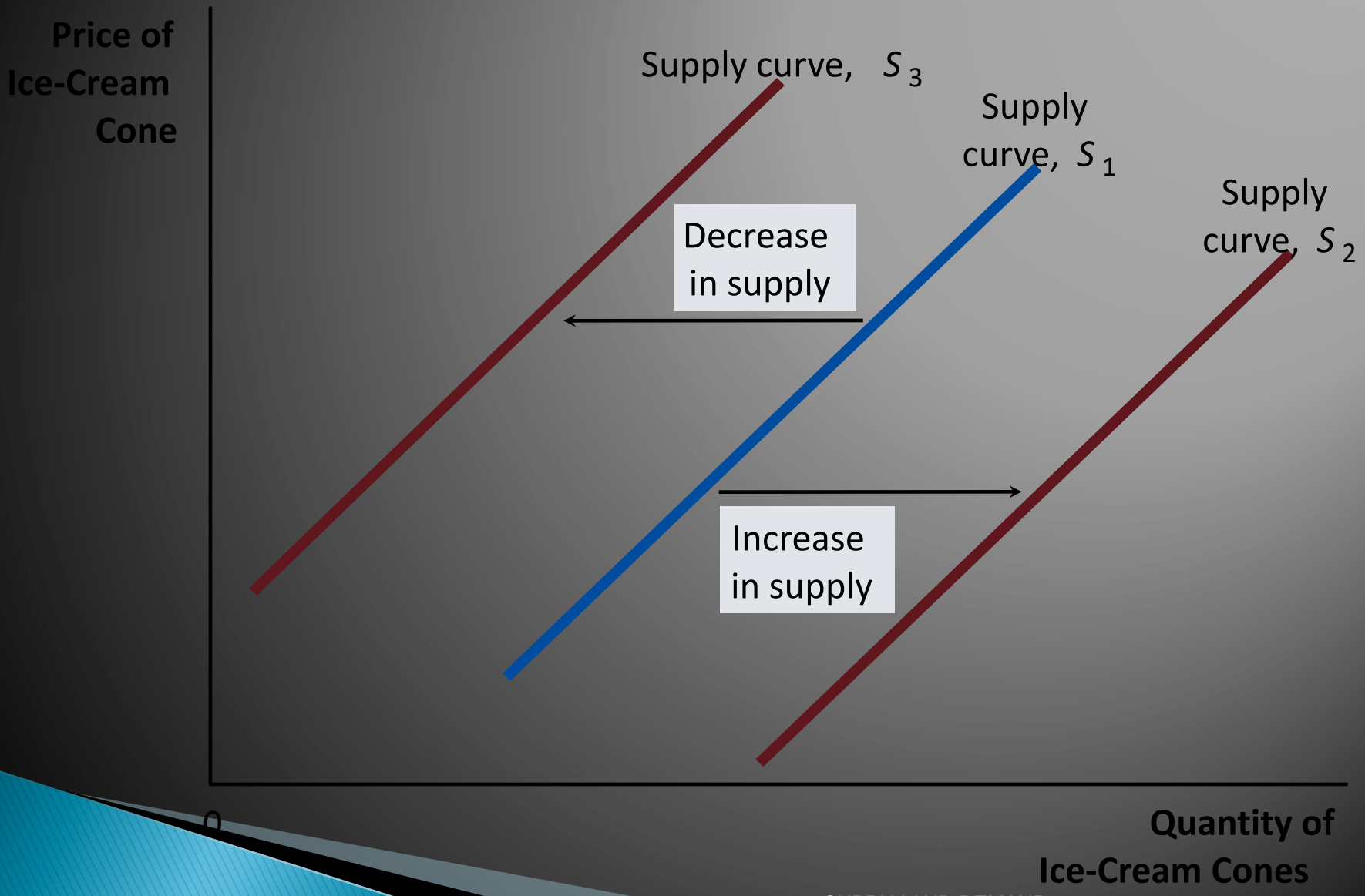
- How can we make sense of the numbers in Ben's supply schedule?
- The best guess is that his costs must be something like the cost schedule below.

A specific ice-cream cone	It's cost ($)
1st	0.75
2nd	1.35
3rd	1.75
4th	2.30
5th	2.85
6th	3.10

Price of Ice-Cream Cone	Quantity of Cones Supplied
$0.00	0 cones
0.50	0
1.00	1
1.50	2
2.00	3
2.50	4
3.00	5

In this way, the Law of Supply follows from the assumption of Increasing Costs (or, Diminishing Returns)

Shifts in the Supply Curve: What causes them?



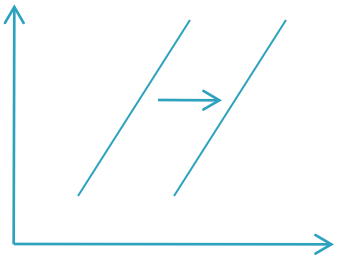
Supply Shift

- How could Ben's supply have increased?

Ice-cream cone	It's cost ($)	
	Before	After
1st	0.75	0.45
2nd	1.35	0.85
3rd	1.75	1.45
4th	2.30	1.95
5th	2.85	2.45
6th	3.10	2.90

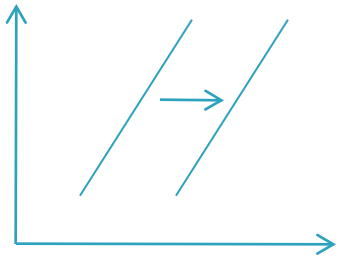
Ben's Supply Schedule		
Price ($)	Quantity Supplied	
	Before	After
0.00	0	0
0.50	0	1
1.00	1	2
1.50	2	3
2.00	3	4
2.50	4	5
3.00	5	6

Anything that reduces production costs, shifts supply to the right.



Shifts in the Supply Curve…

- … are caused by changes in
  - Input prices
  - Technology
  - Number of sellers (short run)
- The market supply will shift right if
  - Raw materials or labor becomes cheaper
  - The technology becomes more efficient
  - Number of sellers increases



equilibrium

Interaction of demand and supply

- We have seen what demand and supply are
- We have seen why demand and supply may shift
- Now it is time to say something about how buyers and sellers collectively determine the market outcome
- To do this, we assume **equilibrium**

Equilibrium

- We assume that the price will automatically reach a level at which the quantity demanded equals the quantity supplied

SUPPLY AND DEMAND TOGETHER

Demand Schedule

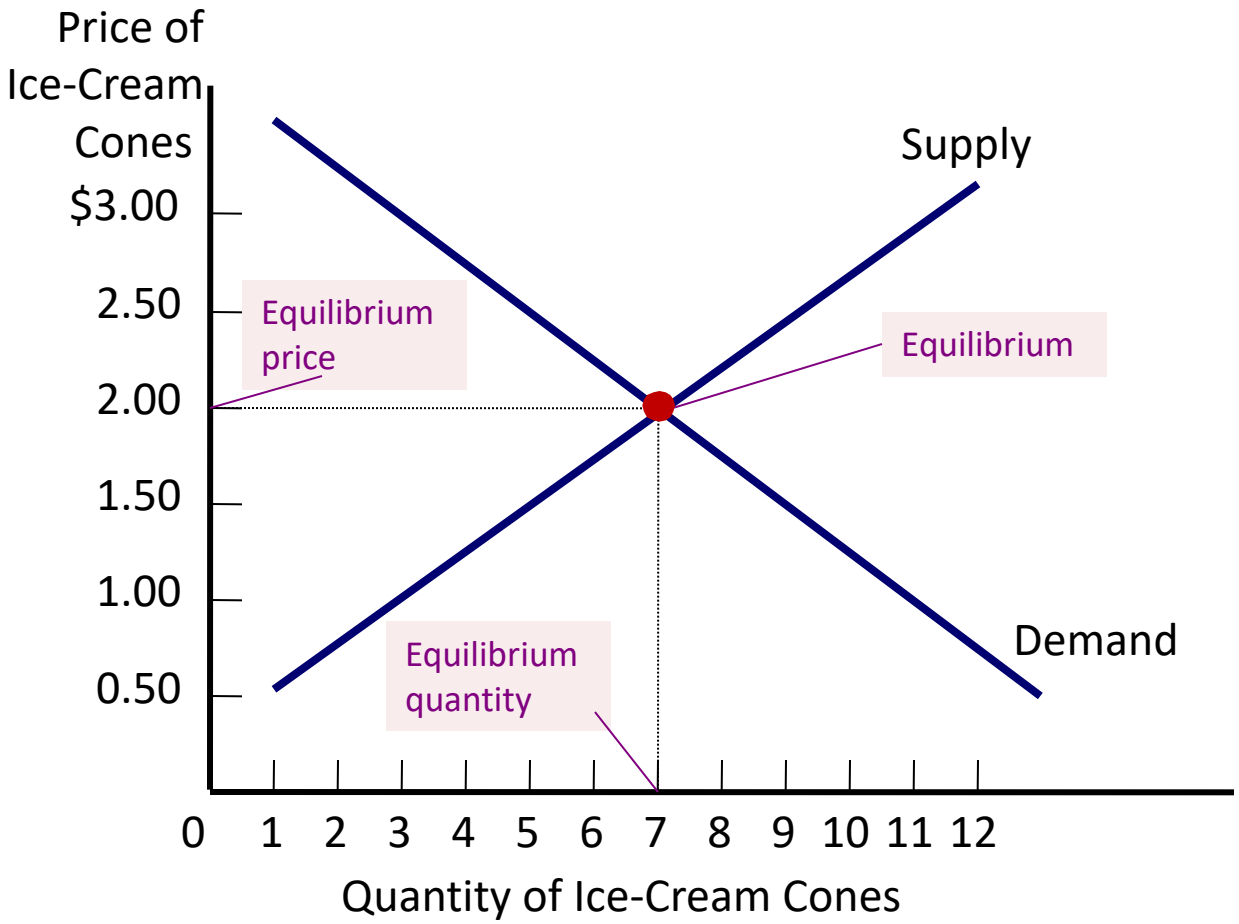
Price of Ice-Cream Cone	Market
$0.00	19
0.50	16
1.00	13
1.50	10
2.00	7
2.50	4
3.00	1

Supply Schedule

Price of Ice-Cream Cone	Market
$0.00	0
0.50	0
1.00	1
1.50	4
2.00	7
2.50	10
3.00	13

At $2.00, the quantity demanded is equal to the quantity supplied!

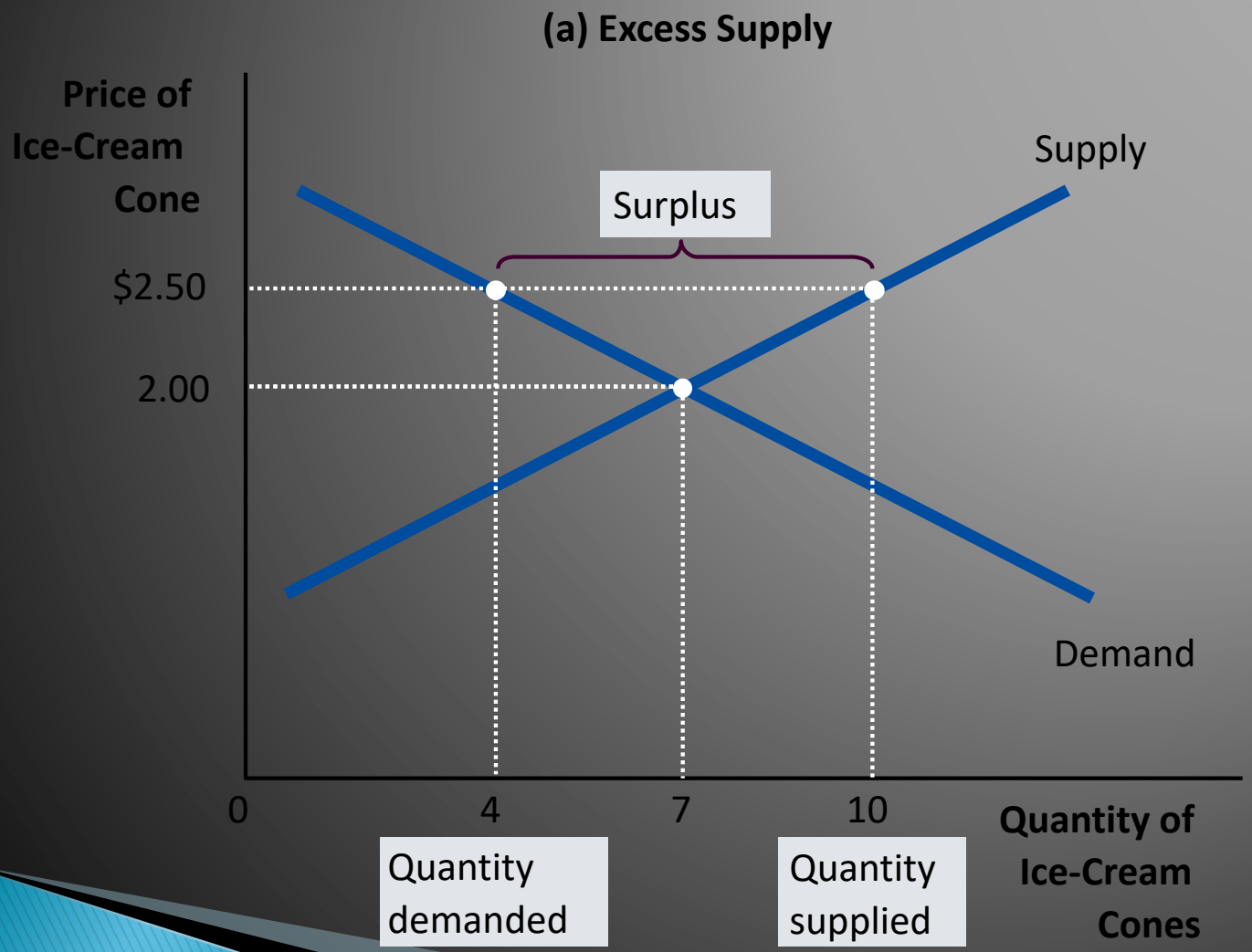
Equilibrium of supply and demand



Equilibrium

- Can we justify the assumption of equilibrium?

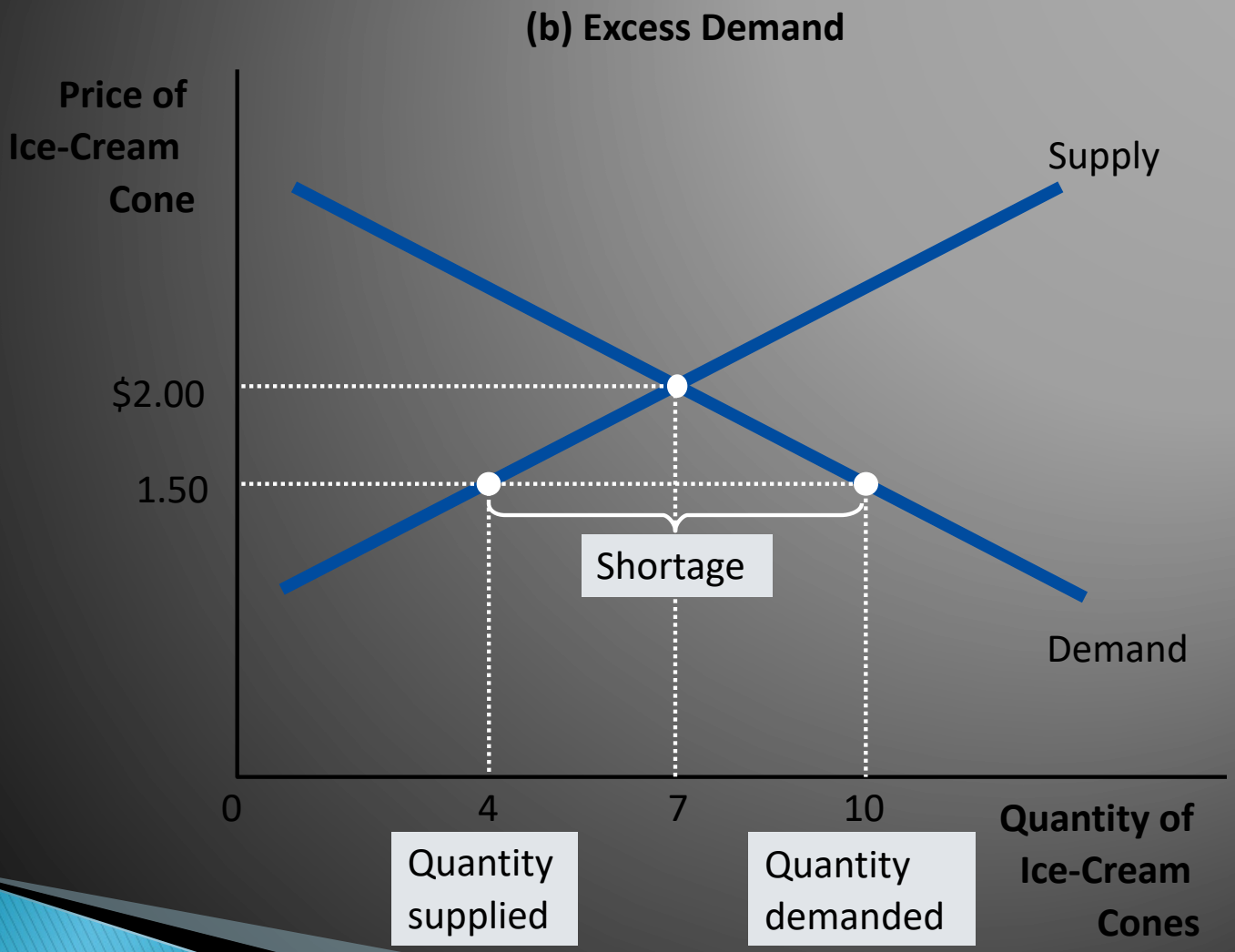
Markets Not in Equilibrium



Markets Not in Equilibrium

- *Surplus*
  - When price exceeds equilibrium price, then quantity supplied is greater than quantity demanded
    - There is excess supply or a surplus
    - Suppliers will lower the price to increase sales, thereby moving toward equilibrium

Markets Not in Equilibrium



Markets Not in Equilibrium

- *Shortage*
  - When price is less than equilibrium price, then quantity demanded exceeds the quantity supplied
    - There is excess demand or a shortage
    - Suppliers will raise the price due to too many buyers chasing too few goods, thereby moving toward equilibrium

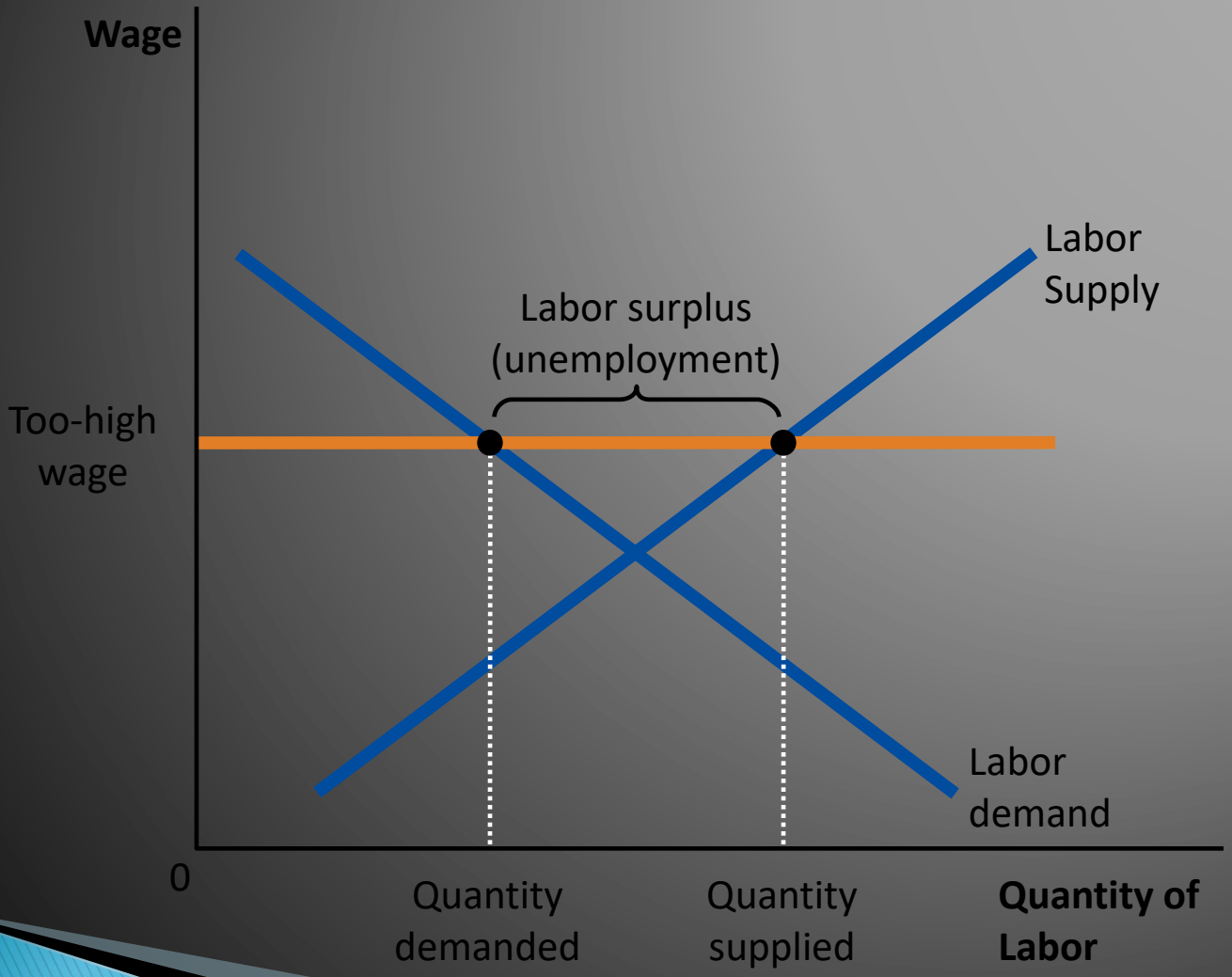
Equilibrium

- *Law of supply and demand*
  - The *price of any good adjusts to bring the quantity supplied and the quantity demanded for that good into balance*

Equilibrium: skepticism required

- Although the Law of Supply and Demand is a good place to start the discussion of prices, it should not be taken to be the gospel truth.
- In some cases the price might get stuck at some other level and quantity supplied and quantity demanded may not be equal.
  - Example: unemployment

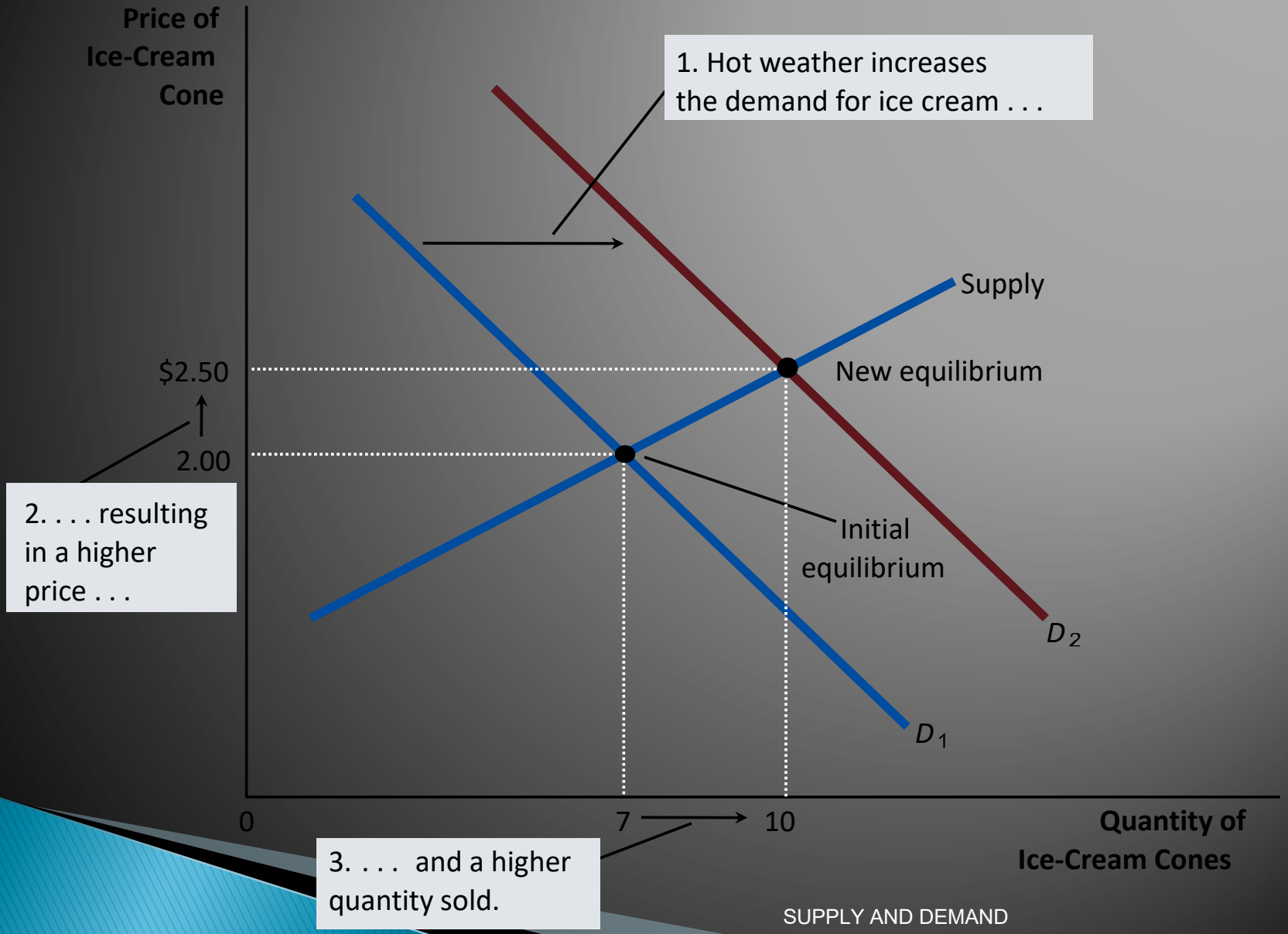
Unemployment: a failure of equilibrium when the wage is *too high* and *stuck*



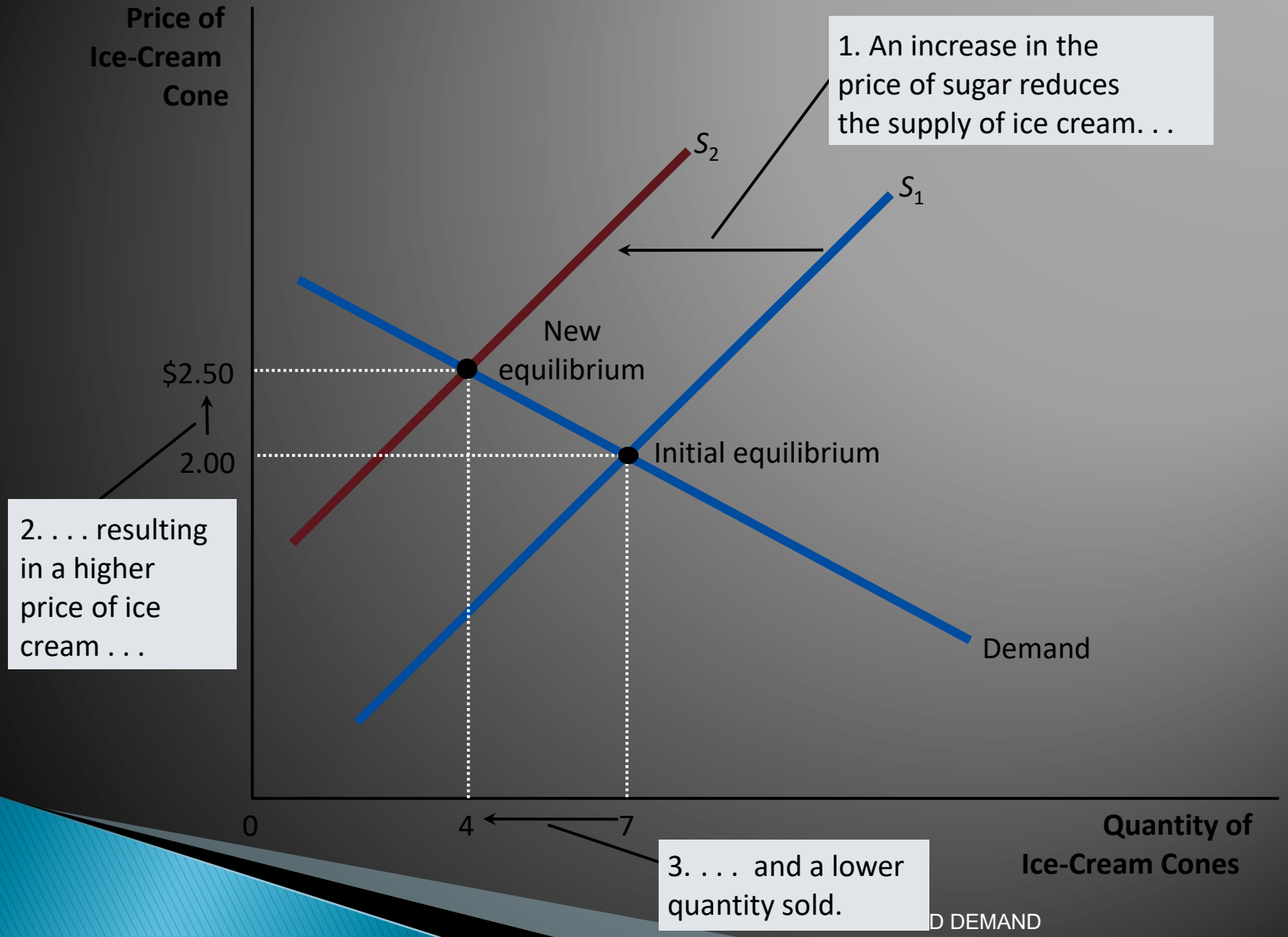
Let's make some predictions

- We can use our understanding of the factors that shift the demand and supply curves to predict the consequences of
  - Alternative policy proposals, and
  - Events outside our control

How an Increase in Demand Affects the Equilibrium



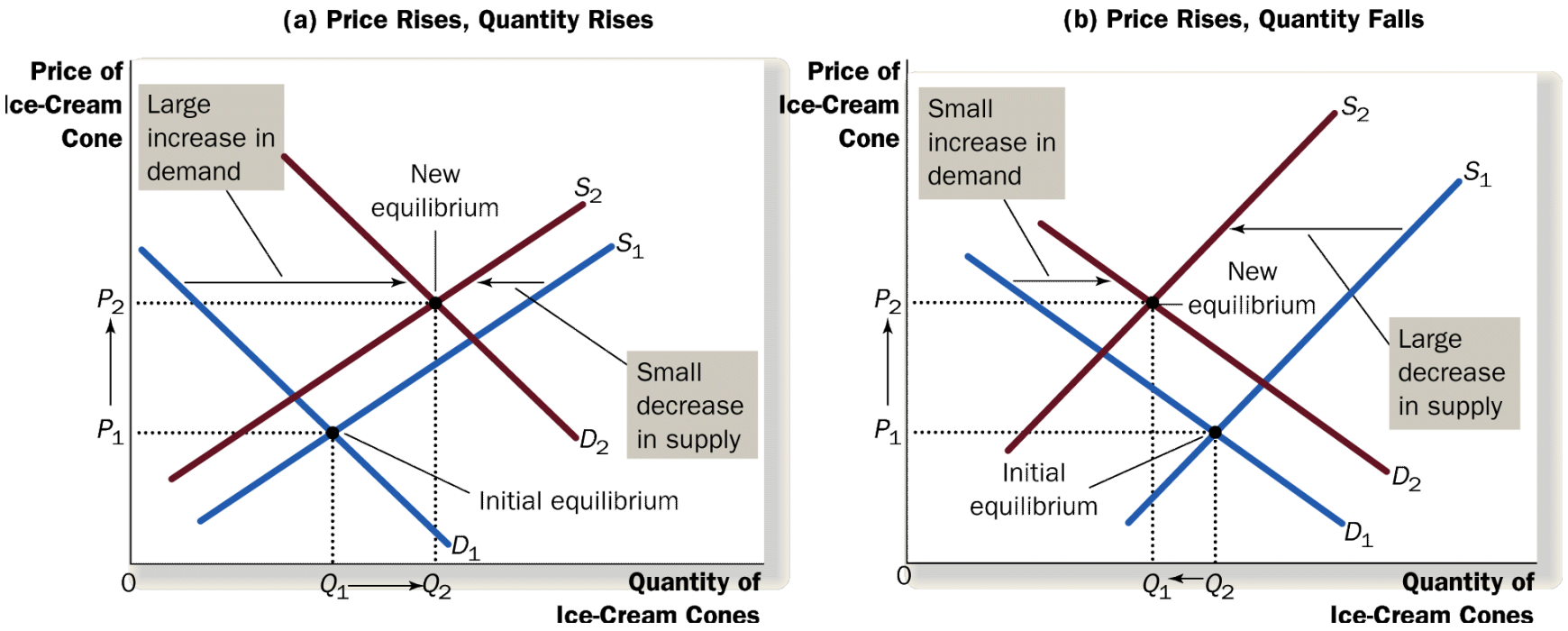
How a Decrease in Supply Affects the Equilibrium



A Shift in *Both* Supply and Demand

Event	Effect on Price	Effect on Quantity
Demand increases	Up	Up
Supply decreases	Up	Down
Both	Up	Ambiguous

A Shift in Both Supply and Demand



Prediction exercises

- Effect of a rise in the price of oil on the market for
  - Hybrid cars
  - Real estate
  - Staple foods (corn, wheat, rice)
- Effect of the development of cheaper and better batteries for electric cars on the market for
  - traditional cars
  - gas

Other kinds of markets

- Factor/resource markets
- Assets markets
- Prediction markets
  - Iowa electronic markets: http://www.biz.uiowa.edu/iem/
  - Intrade prediction markets: http://www.intrade.com/