Ch 4. The Market Forces of Supply and Demand

Microeconomics for Students of Accounting, Finance, and Digital Applications

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Introduction

Supply and demand are at the heart of how market economies work. . . If one thing separates economists from mere mortals, it is an appreciation of the power of markets as a mechanism for allocating scare resources.

Gregory Mankiw (1998)

Introduction

If you want to make a first-class economist, catch a parrot and teach him to say "supply and demand" in response to every question you ask him. What determines wages? Supply and demand. What determines interest? Supply and demand. What determines the distribution of wealth? Supply and demand.

Anonymous economist

Markets and Competition

What Is a Market?

market group of buyers and sellers of a particular good or service

🌎 global market for agricultural products, national market for agricultural products, local market for agricultural products, global market for wheat, national market for wheat, local market for wheat, the market for soft white wheat in Sofia

⚖ markets are not places, markets are people! markets can be also considered a mechanism for allocating resources and goods, not perfect but probably better than its alternatives in most cases!

What Is Competition?

competitive market a market in which there are many buyers and many sellers so that each has a negligible impact on the market price

🌎 the market for ice cream in Europe

⚖️ clearly, the broader the definition of a market/product, the more competitive the market would be

What Is Perfect Competition?

perfectly competitive market — a market in which the goods offered for sale are exactly the same and there are so many buyers and so many sellers that no single buyer or seller can influence the market price (the buyers and sellers are *price takers*)

🌎 commodities traded at the Chicago Board of Trade

⚖ the perfectly competitive market is a useful theoretical construct that gives us insights and benchmarks applicable to less competitive (and more realistic) markets

What Is Monopoly?

monopoly a market in which there is only one seller and this seller sets the price

 a local utility company

 the extent of the monopoly power depends on the definition of the market (Microsoft is the only provider of the Windows operating system but not the only provider of operating systems for PCs in general)

Introduction

To understand how market economies work, the single most useful tool is the model of supply and demand. When teaching the introductory course, therefore, this model should be developed as fully and consistently as possible.

Gregory Mankiw (2020)

Demand

The Demand Curve

quantity demanded — the amount of a good that buyers are willing and able to purchase for a given time period at a given price

🌎 — at a price of 1 BGN per kilogram, Peter is willing and able to purchase 2 kg of apples per week

⚖ — the ability to distinguish between demand and quantity demanded is crucial for understanding the model of supply and demand!!!

Demand

demand the (functional) relationship between the price of a good and the quantity demanded of this good

🌎 at a price of 1 BGN per kilogram, Peter is willing and able to purchase 5 kg of apples per week, at a price of 2 BGN per kilogram, Peter is willing and able to purchase 4 kg of apples per week, and so forth

⚖ the ability to distinguish between demand and quantity demanded is crucial for understanding the model of supply and demand!!!

The Law of Demand

the law of demand the claim that, other things being equal, the quantity demanded of a good falls when the price of the good rises

🌎 at a price of 1 BGN per kilogram, Peter is willing and able to purchase 5 kg of apples per week, at a price of 4 BGN per kilogram, Peter is willing and able to purchase 1 kg of apples per week, and so forth

⚖ the assumption of other things being equal (*ceteris paribus*) is crucial for the law of demand to hold, but makes the empirical testing of the law (statistical determination of the demand relationship) very difficult, even impossible

The Demand Schedule

demand schedule — a table that shows the relationship between the price of a good and the quantity demanded, holding constant everything else that influences how much of the good consumers want to buy

🌎 — see the next slide

⚖️ — using a table to present the demand relationship makes it easier to identify the exact quantities at different prices, but this approach is not very analytical

The Demand Schedule

	Price of apples (BGN per kg)	Quantity demanded (kg per week)
C	5	1
D	4	2
E	3	3
F	2	?
G	1	5

Table 1: Peter's demand schedule

The Demand Schedule

	Price of apples (BGN per kg)	Quantity demanded (kg per week)
C	5	1
D	4	2
E	3	3
F	2	4
G	1	5

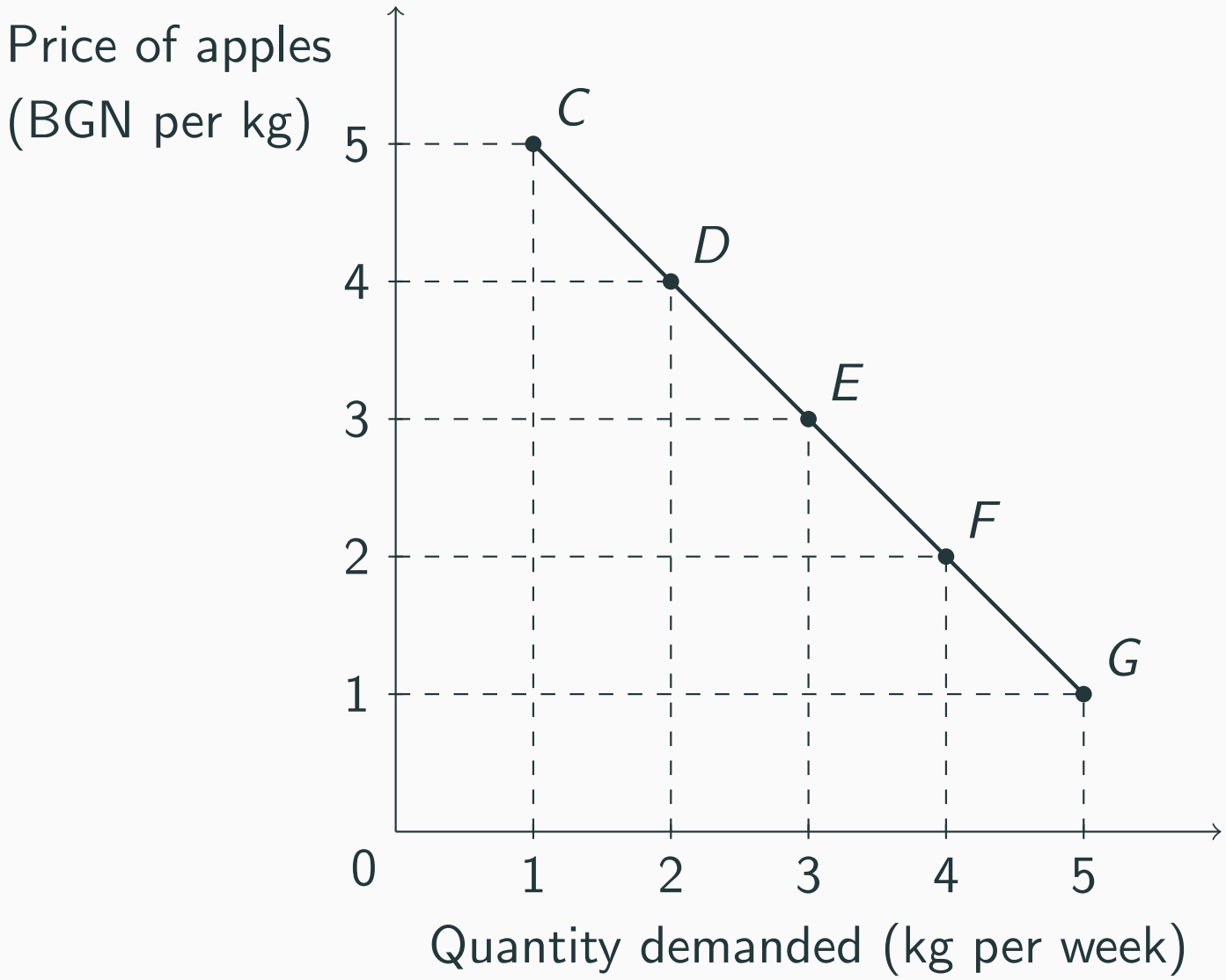
Table 2: Peter's demand schedule

The Demand Curve

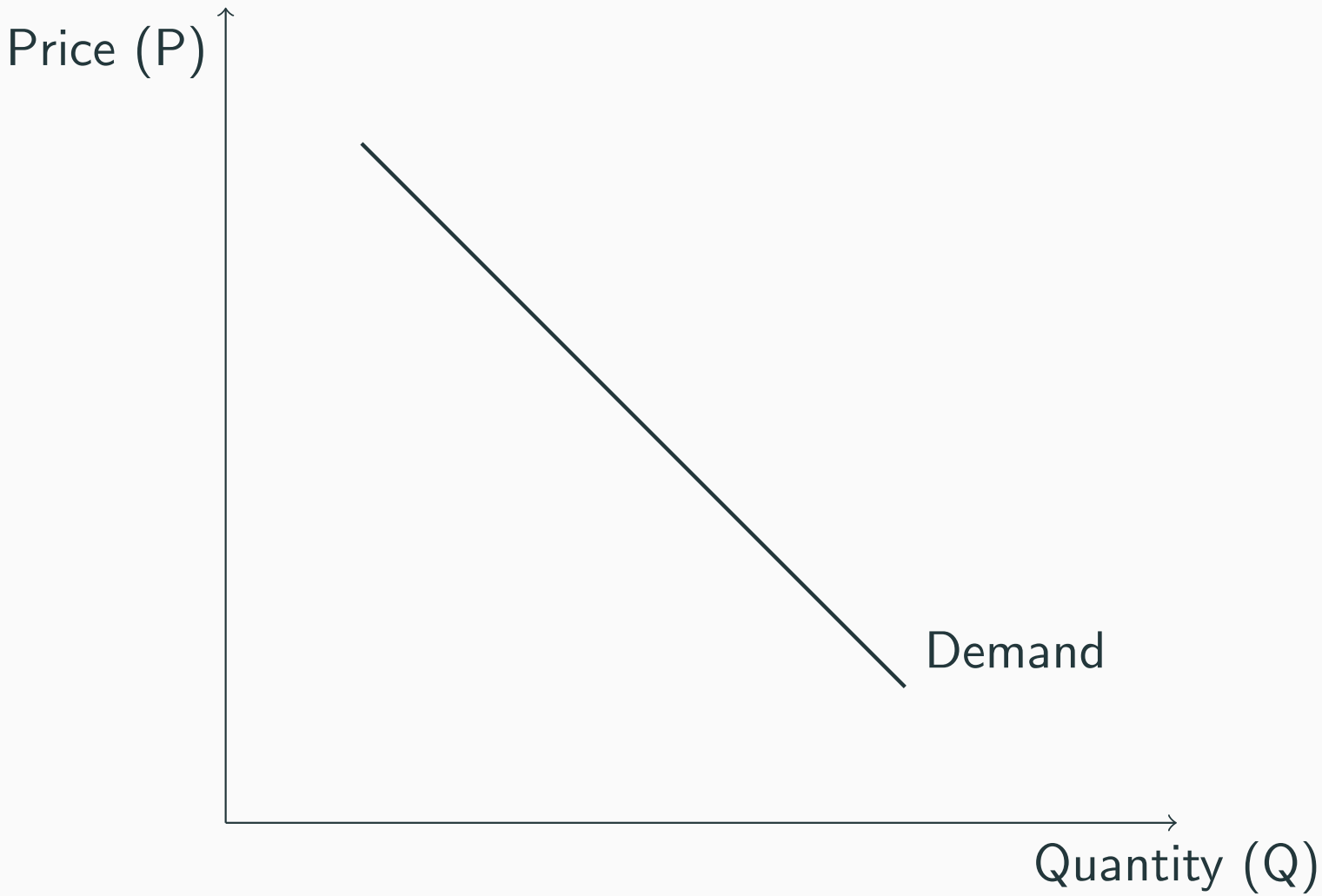
The Demand Curve

demand curve	a graph of the (negative) relationship between the price of a good and the quantity demanded
🌎	see the next slide
⚖	in this course we assume (for pedagogical purposes) that there is a linear relationship between price and quantity demanded (hence the straight-line demand curve)

The Demand Curve



The Demand Curve



Market Demand

Market Demand versus Individual Demand

Price of apples (BGN per kg)	Quantity demanded (Peter)	Quantity demanded (Maria)	Quantity demanded (Market)
5	1	0	?
4	2	0	?
3	3	0	?
2	4	2	?
1	5	4	?

Table 3: Individual demand schedules and the market demand schedule

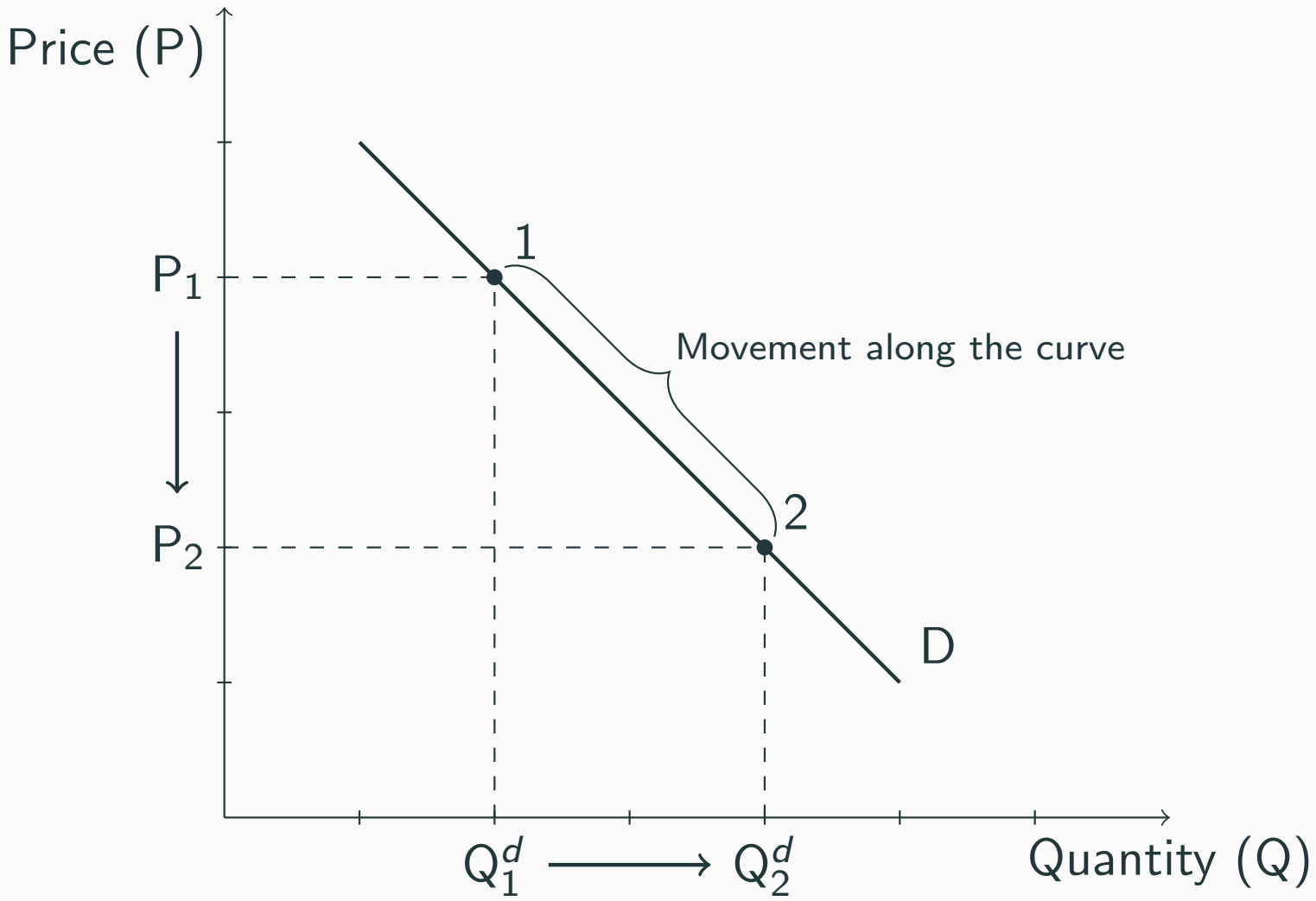
Market Demand versus Individual Demand

Price of apples (BGN per kg)	Quantity demanded (Peter)	Quantity demanded (Maria)	Quantity demanded (Market)
5	1	0	1
4	2	0	2
3	3	0	3
2	4	2	6
1	5	4	9

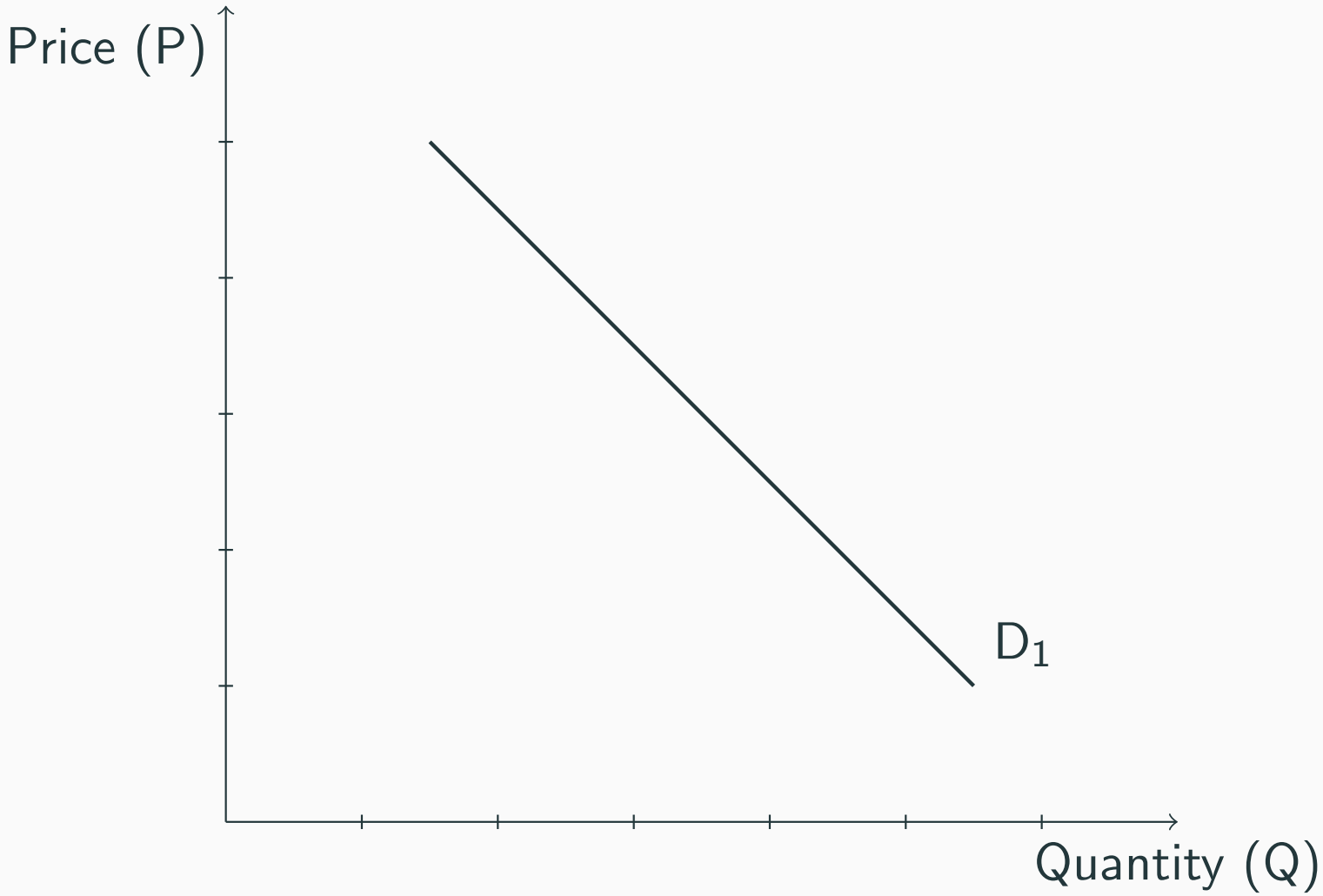
Table 4: Individual demand schedules and the market demand schedule

Movement Along the Demand Curve versus Shifts in the Demand Curve

Movement Along the Demand Curve



Shift of the Demand Curve



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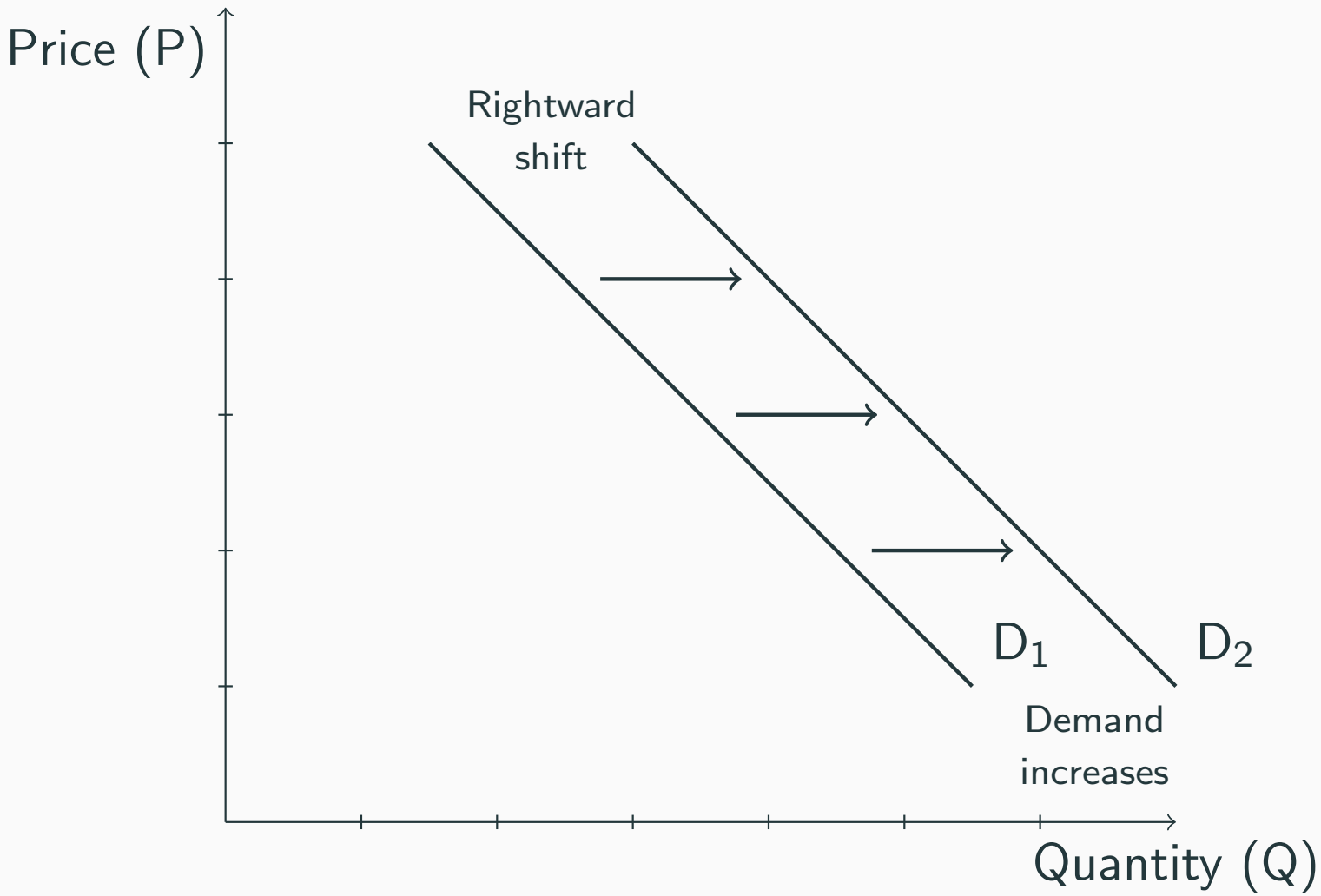
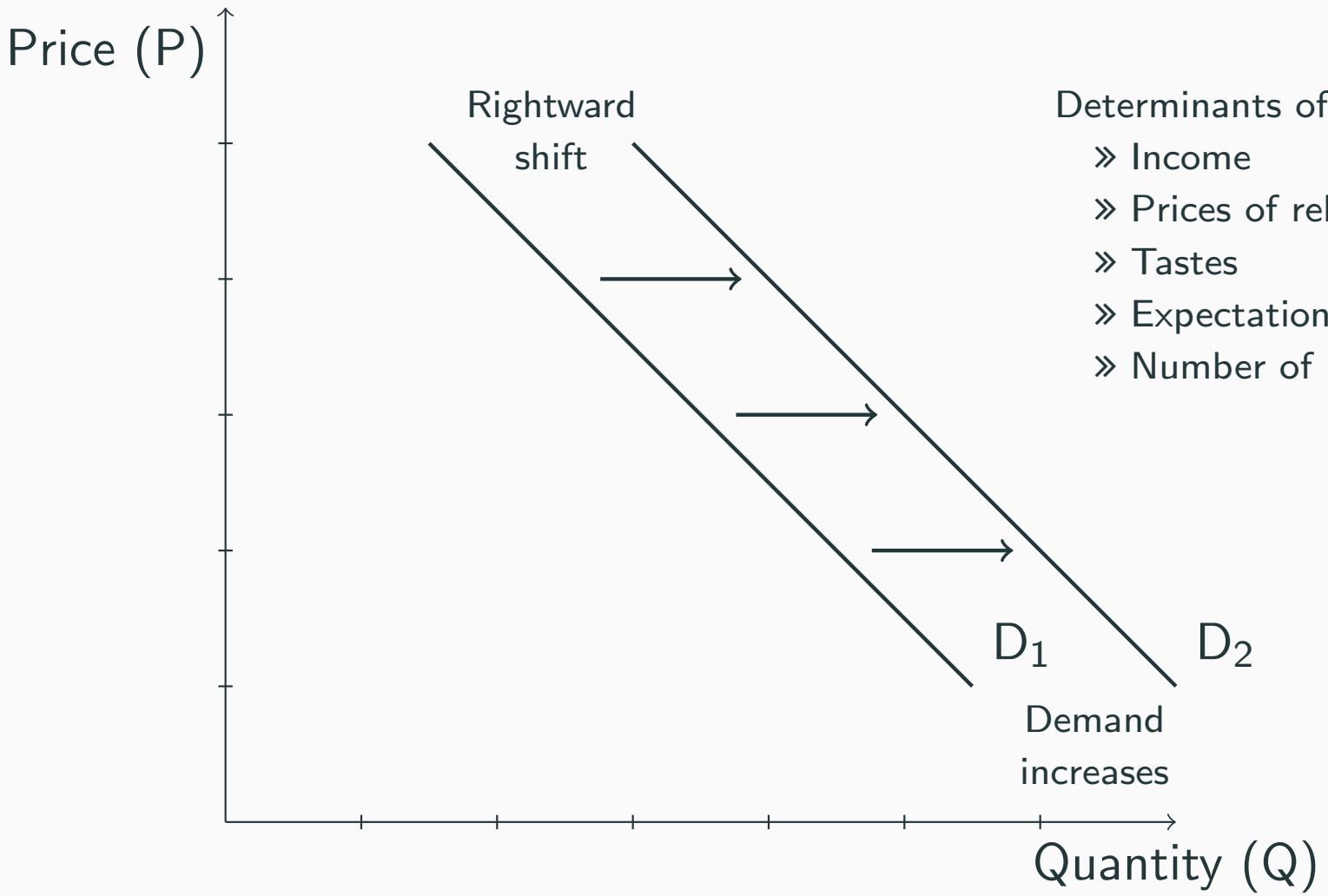


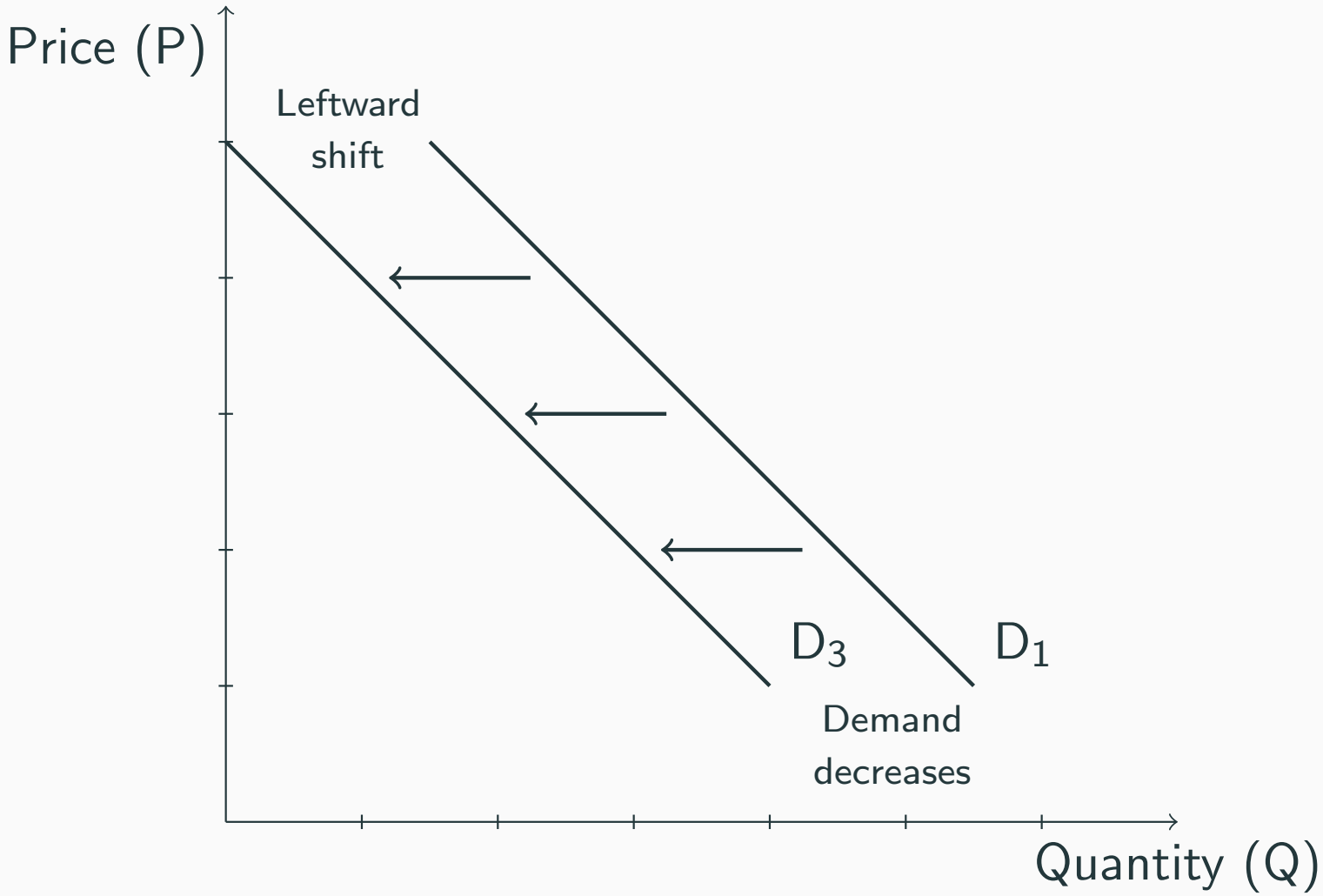
Shift of the Demand Curve



Determinants of demand:

- Income
- Prices of related goods
- Tastes
- Expectations
- Number of buyers

Shift of the Demand Curve



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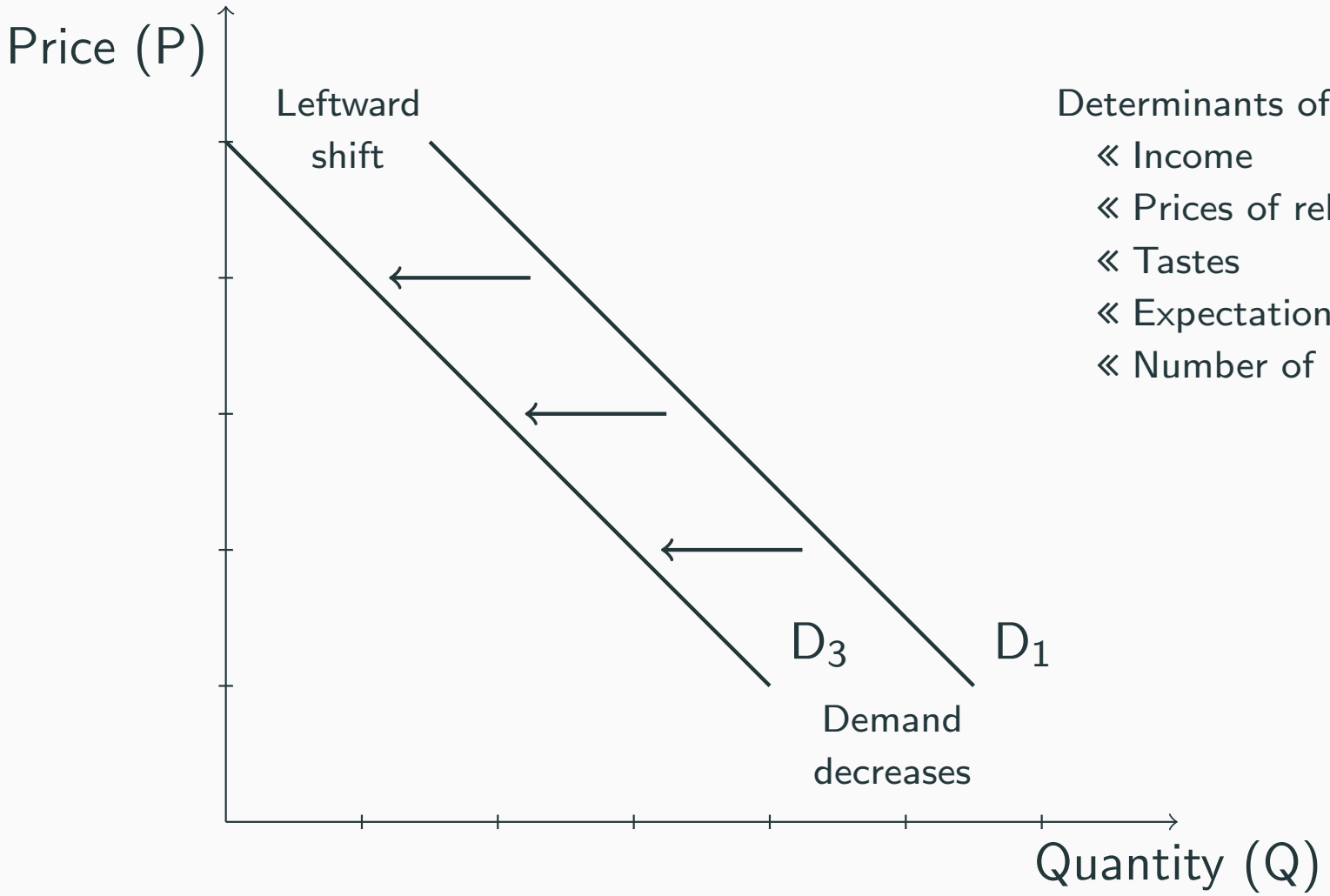


Determinants of demand:

- Income
- Prices of related goods
- Tastes
- Expectations
- Number of buyers

Quick Quiz

If a study by the American Medical Association (AMA) found that brown sugar caused weight loss while white sugar caused weight gain we would see

A. an increase in demand for brown sugar and a decrease in demand for white sugar
B. an increase in demand for white sugar and a decrease in demand for brown sugar
C. an increase in quantity demanded for brown sugar, but no change in the demand for white sugar
D. an increase in quantity demanded for brown sugar and a decrease in quantity demanded for white sugar

Quick Quiz

If a study by the American Medical Association (AMA) found that brown sugar caused weight loss while white sugar caused weight gain we would see

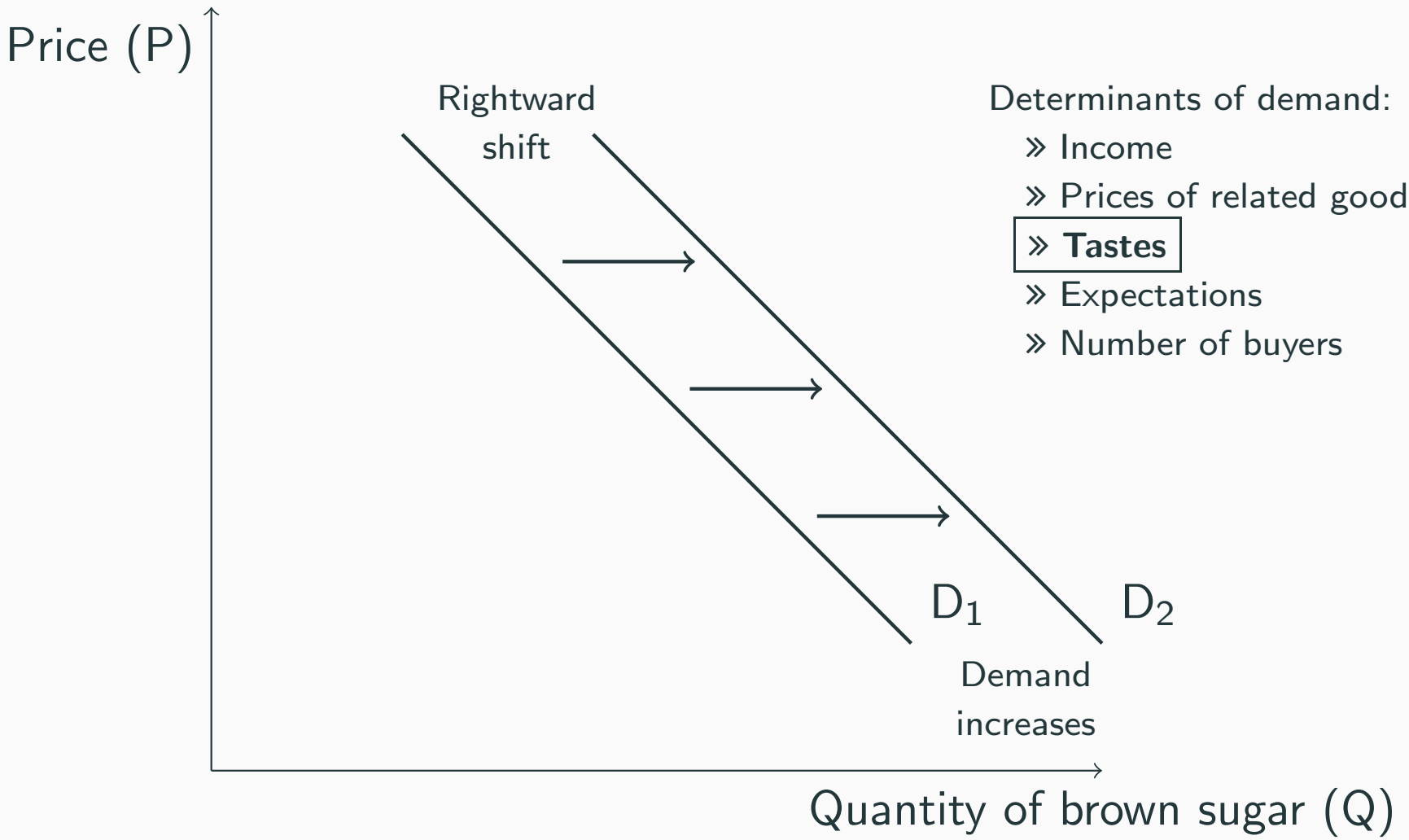
A. an increase in demand for brown sugar and a decrease in demand for white sugar

B. an increase in demand for white sugar and a decrease in demand for brown sugar

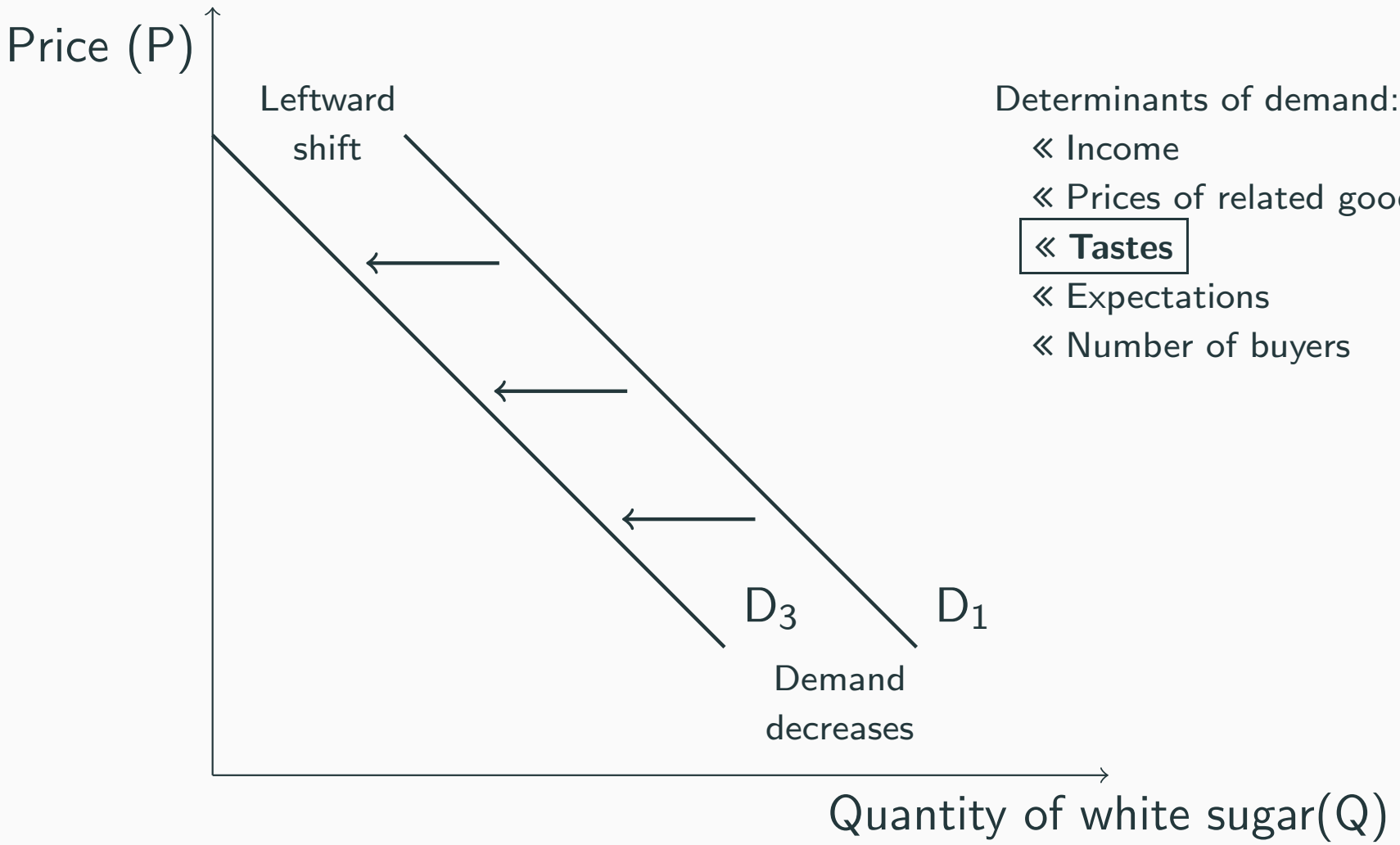
C. an increase in quantity demanded for brown sugar, but no change in the demand for white sugar

D. an increase in quantity demanded for brown sugar and a decrease in quantity demanded for white sugar

Demand for Brown Sugar



Demand for White Sugar



Determinants of demand:

- Income
- Prices of related goods
- **Tastes**
- Expectations
- Number of buyers

Quick Quiz

Barrensburg is a small college town in Minnesota. At the end of August each year, the market demand for fast food in Barrensburg

A. shifts right
B. shifts left
C. remains constant, but moves down the curve
D. remains constant, but moves up the curve

Quick Quiz

Barrensburg is a small college town in Minnesota. At the end of August each year, the market demand for fast food in Barrensburg

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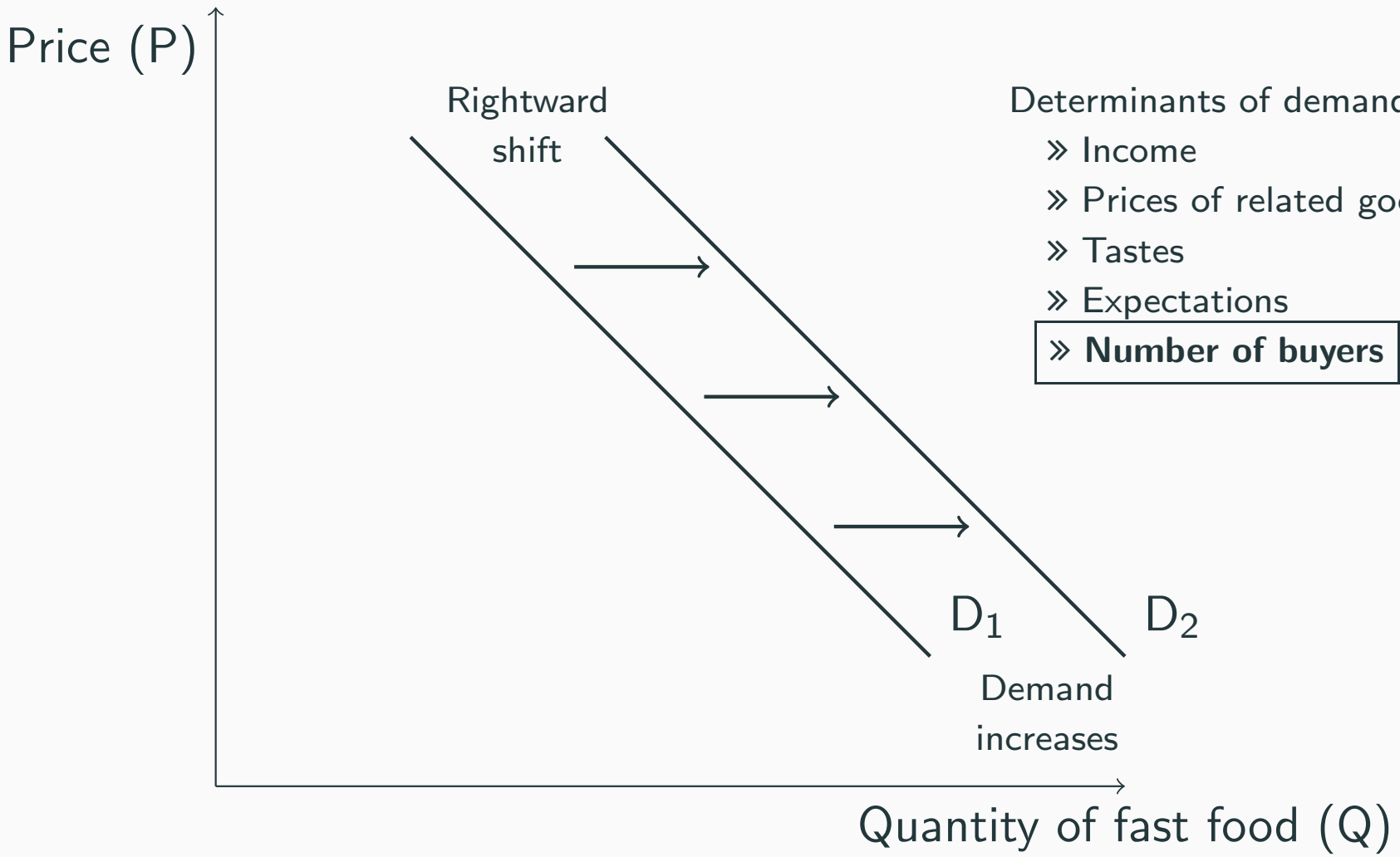
Demand for Fast Food



Determinants of demand:

- Income
- Prices of related goods
- Tastes
- Expectations
- **Number of buyers**

Normal and Inferior Goods

normal good — a good for which, other things being equal, an increase in income leads to an increase in demand

restaurant meals, cinema tickets, vacations

inferior good — a good for which, other things being equal, an increase in income leads to a decrease in demand

bus rides, second-hand clothes, second-hand cars

Quick Question

Suppose that Caitlin receives a pay increase. We would expect

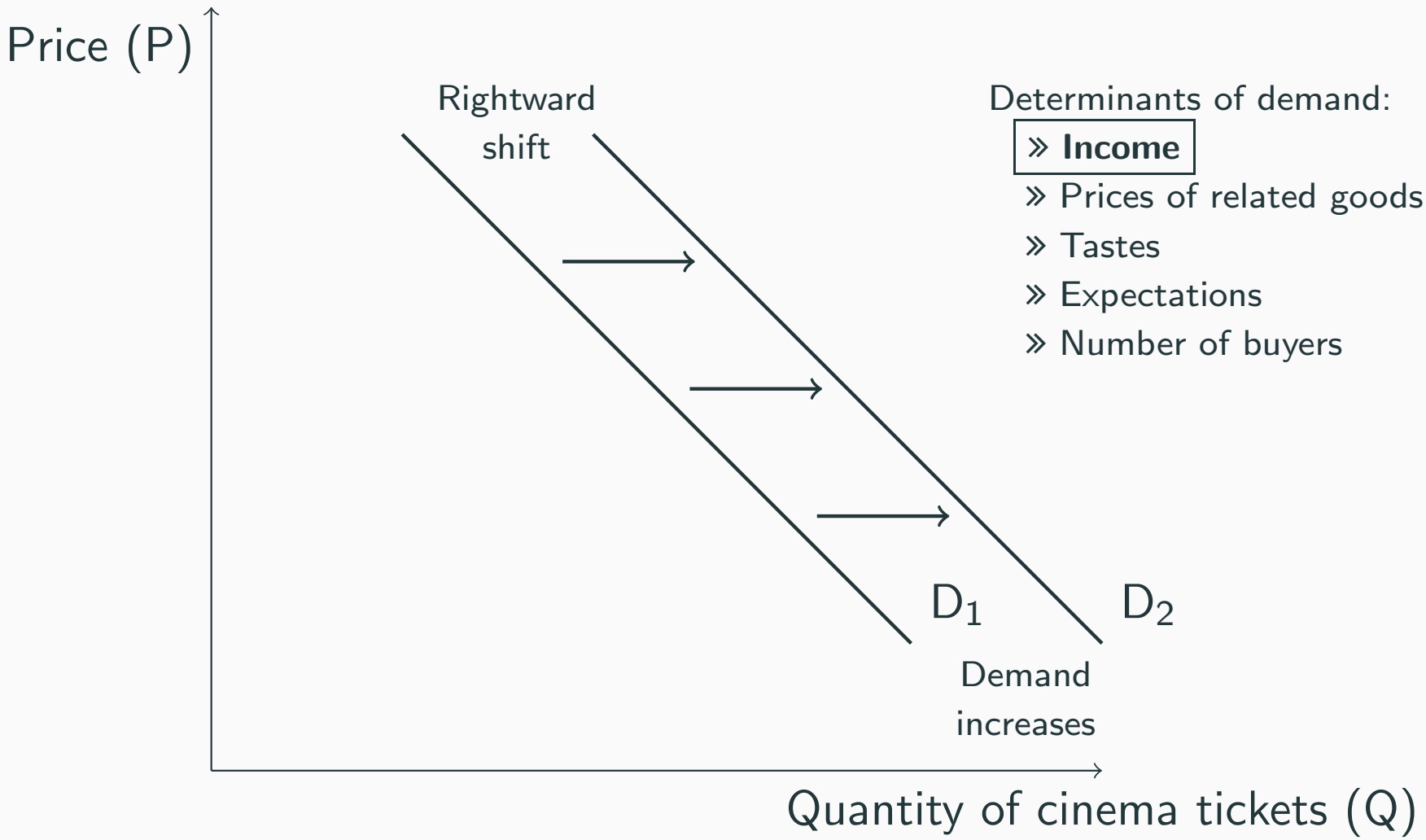
A. Caitlin's demand for restaurant meals to remain unchanged
B. Caitlin's demand for vacations to decrease
C. Caitlin's demand for second-hand clothes to increase
D Caitlin's demand for cinema tickets to increase

Quick Question

Suppose that Caitlin receives a pay increase. We would expect

A. Caitlin's demand for restaurant meals to remain unchanged
B. Caitlin's demand for vacations to decrease
C. Caitlin's demand for second-hand clothes to increase
D. Caitlin's demand for cinema tickets to increase

Caitlin's Demand for Cinema Tickets



Complements and Substitutes

complements two goods for which an increase in the price of one leads to a decrease in the demand for the other

computers and software, mobile phones and apps

substitutes two goods for which an increase in the price of one leads to an increase in the demand for the other

different brands of detergents, Android smartphones

Quick Question

Suppose that the price of Samsung smartphones drops, what would likely happen to the demand for Xiaomi smartphones

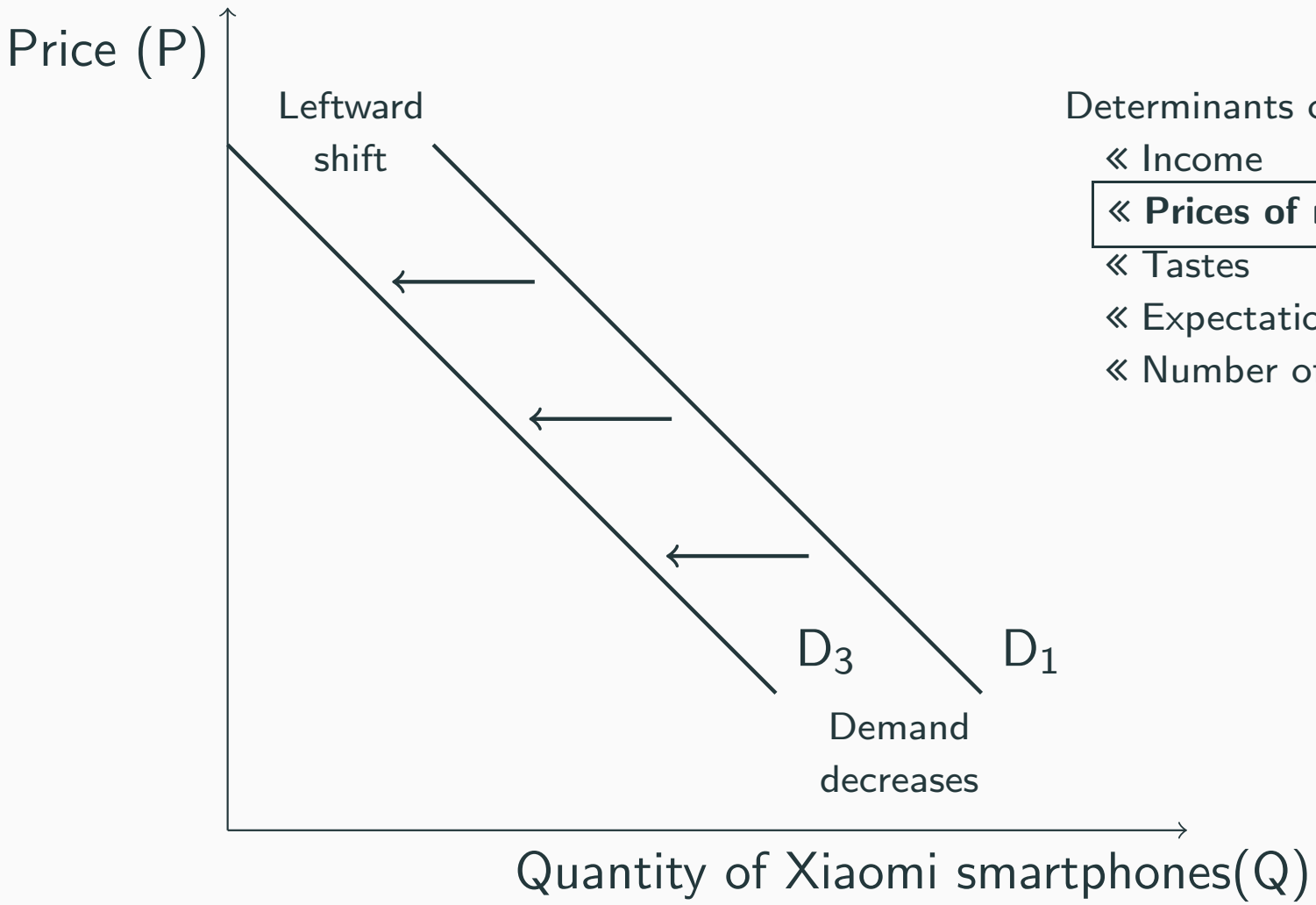
A. decreases
B. increases
C. remains constant, but moves down the curve
D. remains constant, but moves up the curve

Quick Question

Suppose that the price of Samsung smartphones drops, what would likely happen to the demand for Xiaomi smartphones

A. decreases
B. increases
C. remains constant, but moves down the curve
D. remains constant, but moves up the curve

Demand for Xiaomi Smartphones



Determinants of demand:

- Income
- **Prices of related goods**
- Tastes
- Expectations
- Number of buyers

Supply

Quantity Supplied

quantity supplied — the amount of a good that sellers are willing and able to sell for a given time period at a given price

🌎 — at a price of 4 BGN per kilogram, Frankie is willing and able to sell 4 kg of apples per week

⚖️ — the ability to distinguish between supply and quantity supplied is crucial for understanding the model of supply and demand!!!

The Law of Supply

the law of supply — the claim that, other things being equal, the quantity supplied of a good rises when the price of the good rises

🌎 — at a price of 4 BGN per kilogram, Frankie is willing and able to sell 4 kg of apples per week, at a price of 5 BGN per kilogram, Frankie is willing and able to sell 5 kg of apples per week, and so forth

⚖ — the assumption of other things being equal (*ceteris paribus*) is crucial for the law of supply to hold, but makes the empirical testing of the law (statistical determination of the supply relationship) very difficult, even impossible

The Supply Schedule

supply schedule — a table that shows the relationship between the price of a good and the quantity supplied, holding constant everything else that influences how much of the good producers want to sell

🌎 — see the next slide

⚖️ — using a table to present the supply relationship makes it easier to identify the exact quantities at different prices, but this approach is not very analytical

The Supply Schedule

	Price of apples (BGN per kg)	Quantity supplied (kg per week)
C	5	5
D	4	?
E	3	3
F	2	2
G	1	1

Table 5: Frankie's supply schedule

Quick Question

Given the data in the table on the previous slide, what is, most likely, the amount of apples (in kg) that Frankie would be willing and able to sell at price 4 BGN per kg?

A. 6
B. 3.5
C. 4
D. 4.5
E. 2.5

Quick Question

Given the data in the table on the previous slide, what is, most likely, the amount of apples (in kg) that Frankie would be willing and able to sell at price 4 BGN per kg?

A. 6
B. 3.5
C. 4
D. 4.5
E. 2.5

The Supply Schedule

	Price of apples (BGN per kg)	Quantity supplied (kg per week)
C	5	5
D	4	4
E	3	3
F	2	2
G	1	1

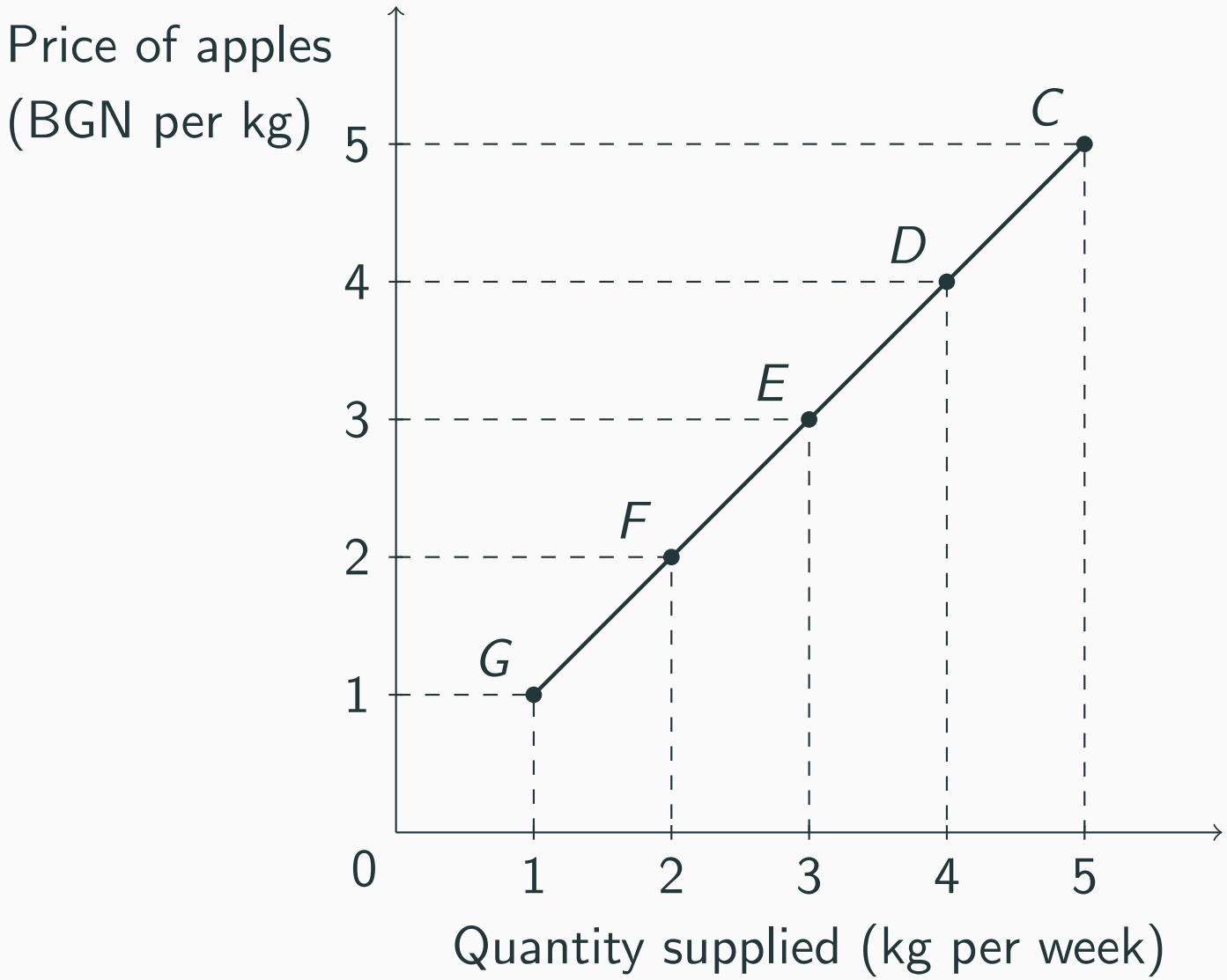
Table 6: Frankie's supply schedule

The Supply Curve

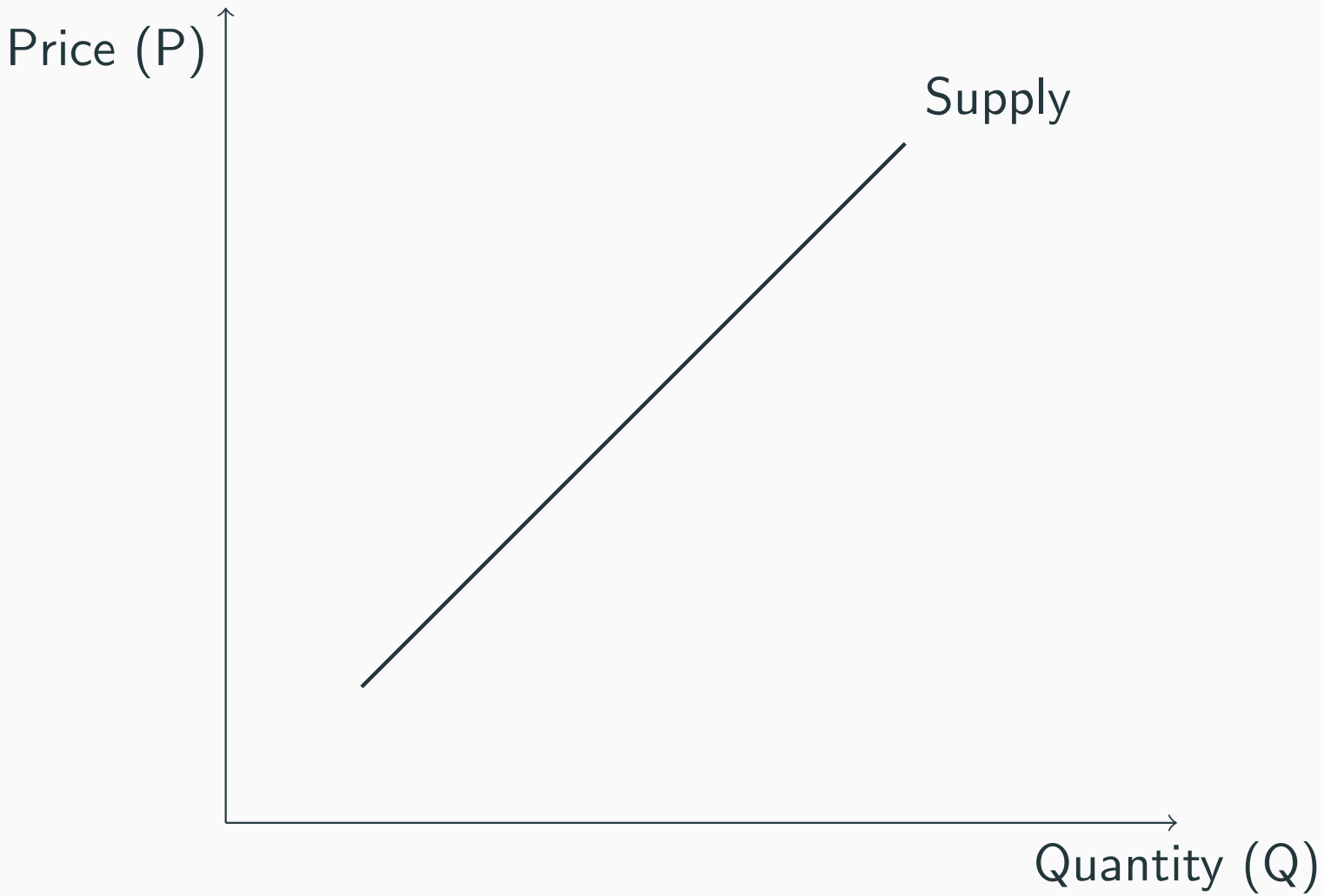
The Supply Curve

supply curve	a graph of the (positive!) relationship between the price of a good and the quantity supplied
🌎	see the next slide
⚖	in this course we assume (for pedagogical purposes) that there is a linear relationship between price and quantity supplied (hence the straight-line supply curve)

The Supply Curve



The Supply Curve



Market Supply

Market Supply versus Individual Supply

Price of apples (BGN per kg)	Quantity supplied (Frankie)	Quantity supplied (Ronnie)	Quantity supplied (Market)
5	5	4	?
4	4	2	6
3	3	0	3
2	2	0	2
1	1	0	1

Table 7: Individual supply schedules and the market supply schedule

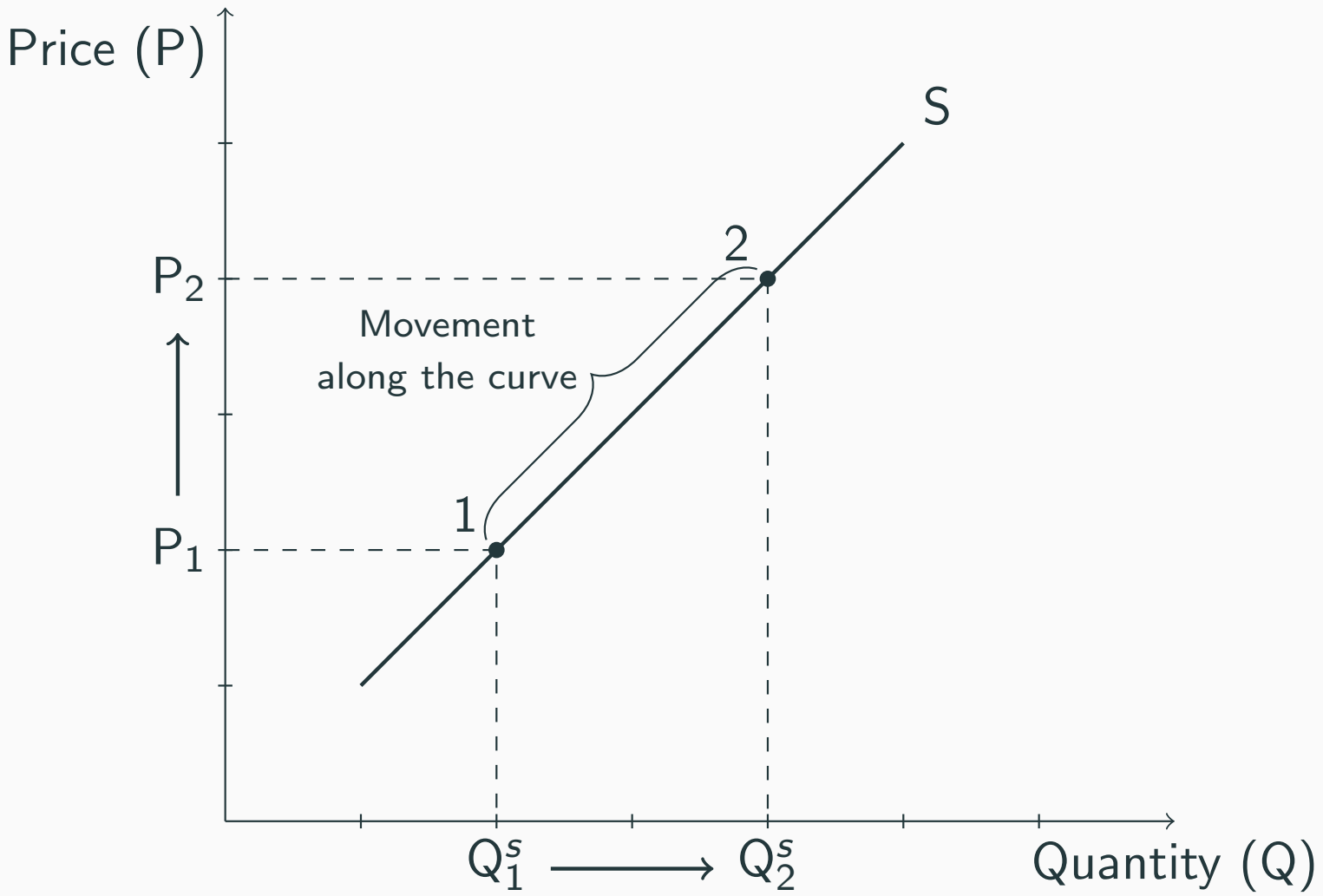
Market Supply versus Individual Supply

Price of apples (BGN per kg)	Quantity supplied (Frankie)	Quantity supplied (Ronnie)	Quantity supplied (Market)
5	5	4	9
4	4	2	6
3	3	0	3
2	2	0	2
1	1	0	1

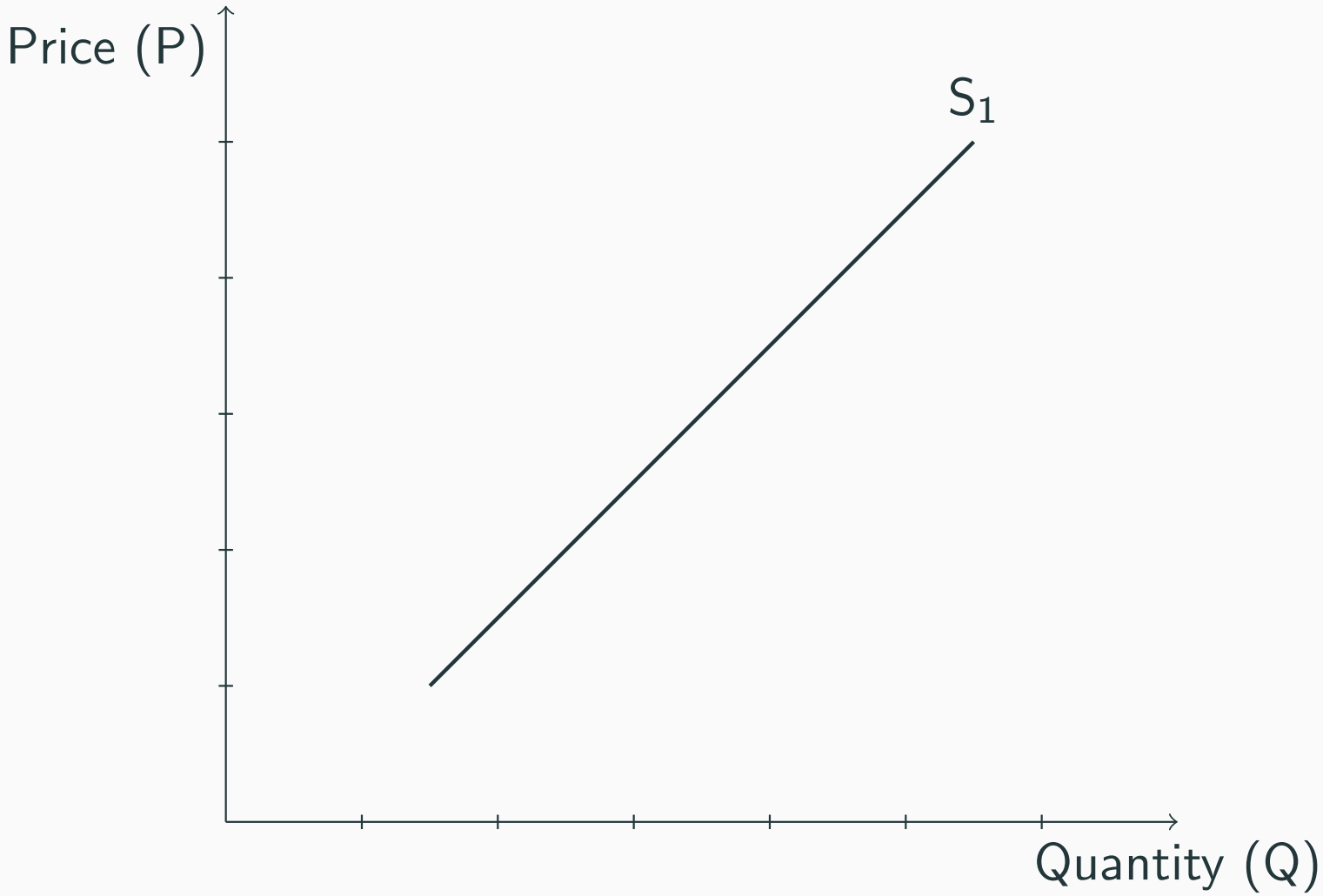
Table 8: Individual supply schedules and the market supply schedule

Movement Along the Supply Curve versus Shifts in the Supply Curve

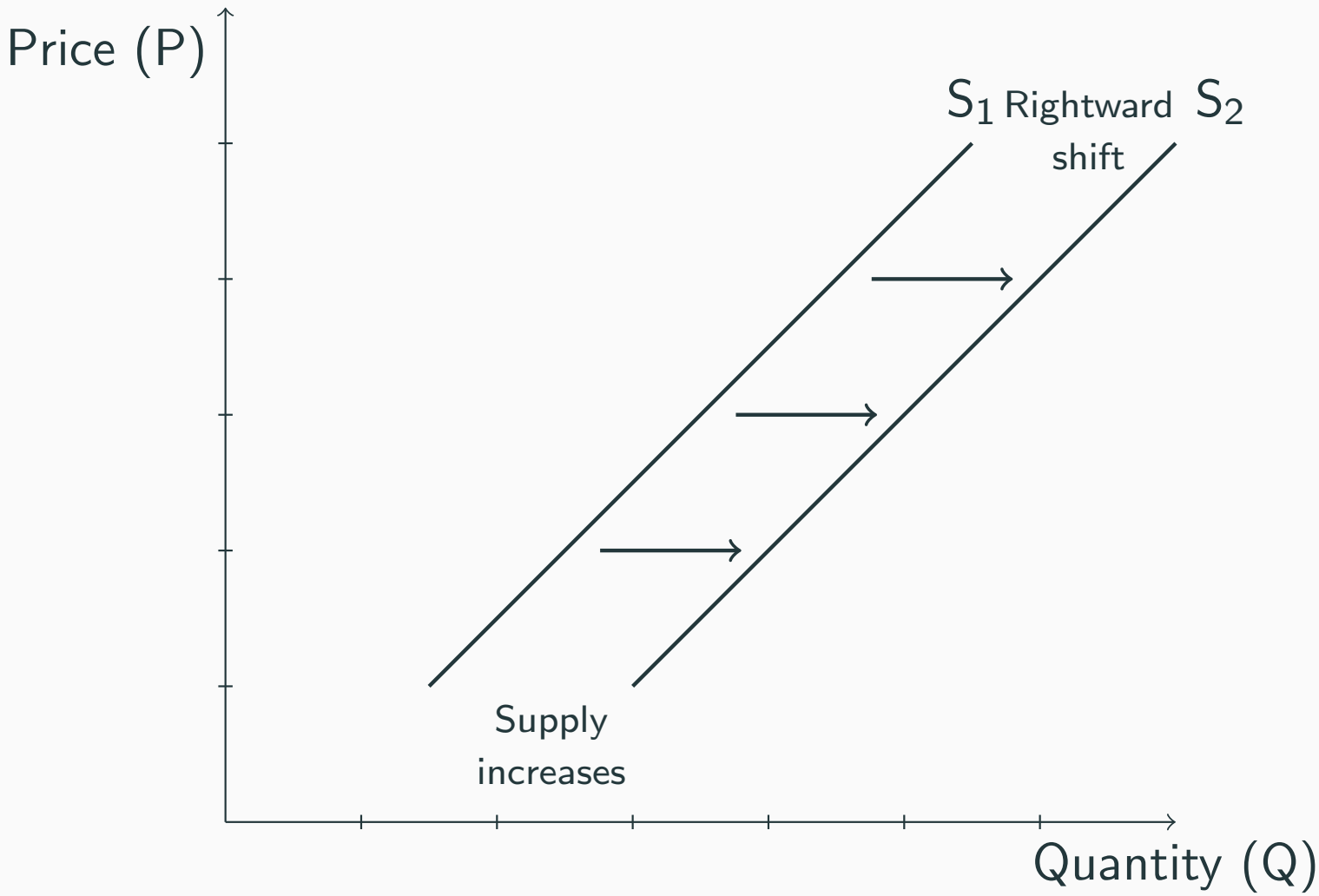
Movement Along the Supply Curve



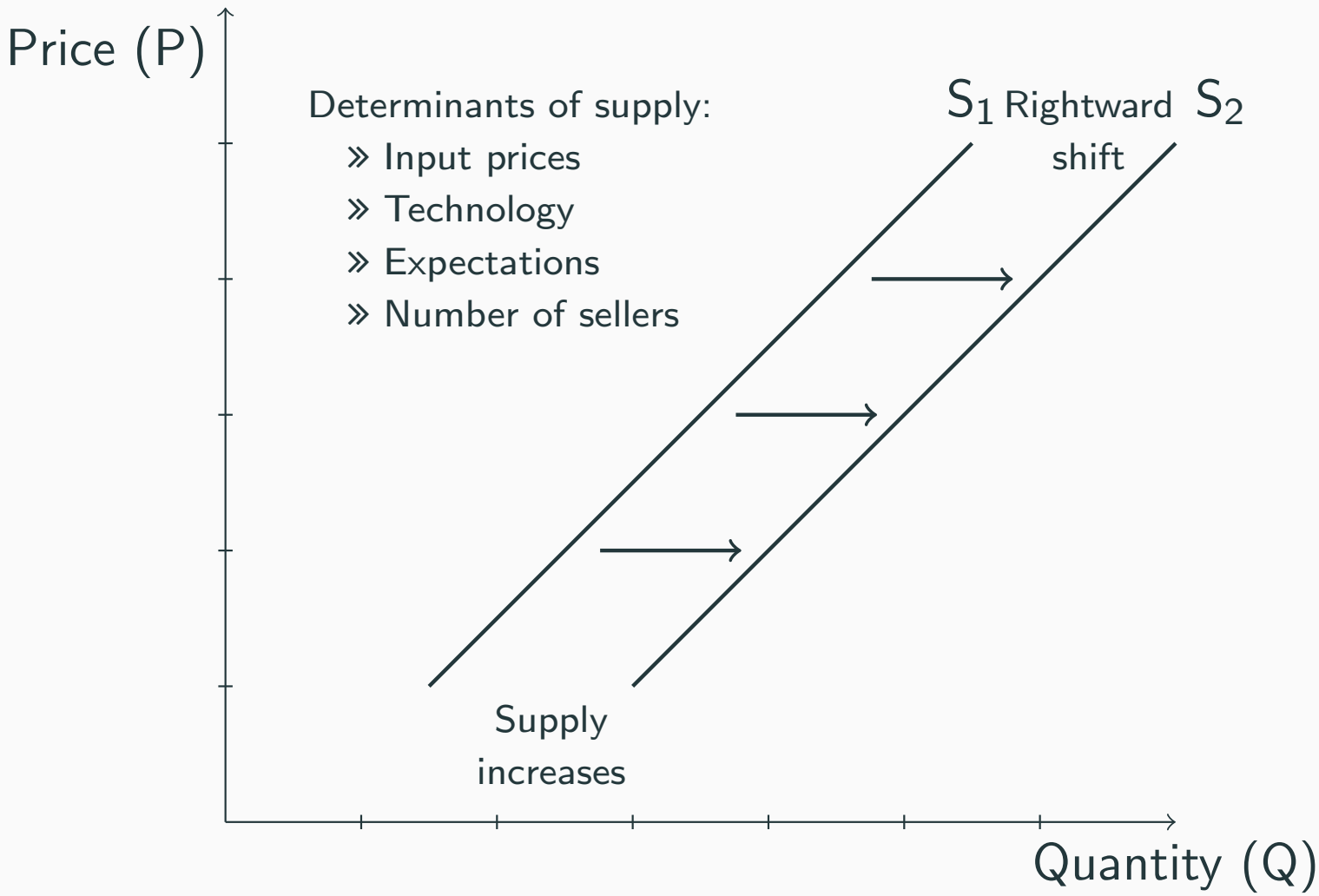
Shifts in the Supply Curve



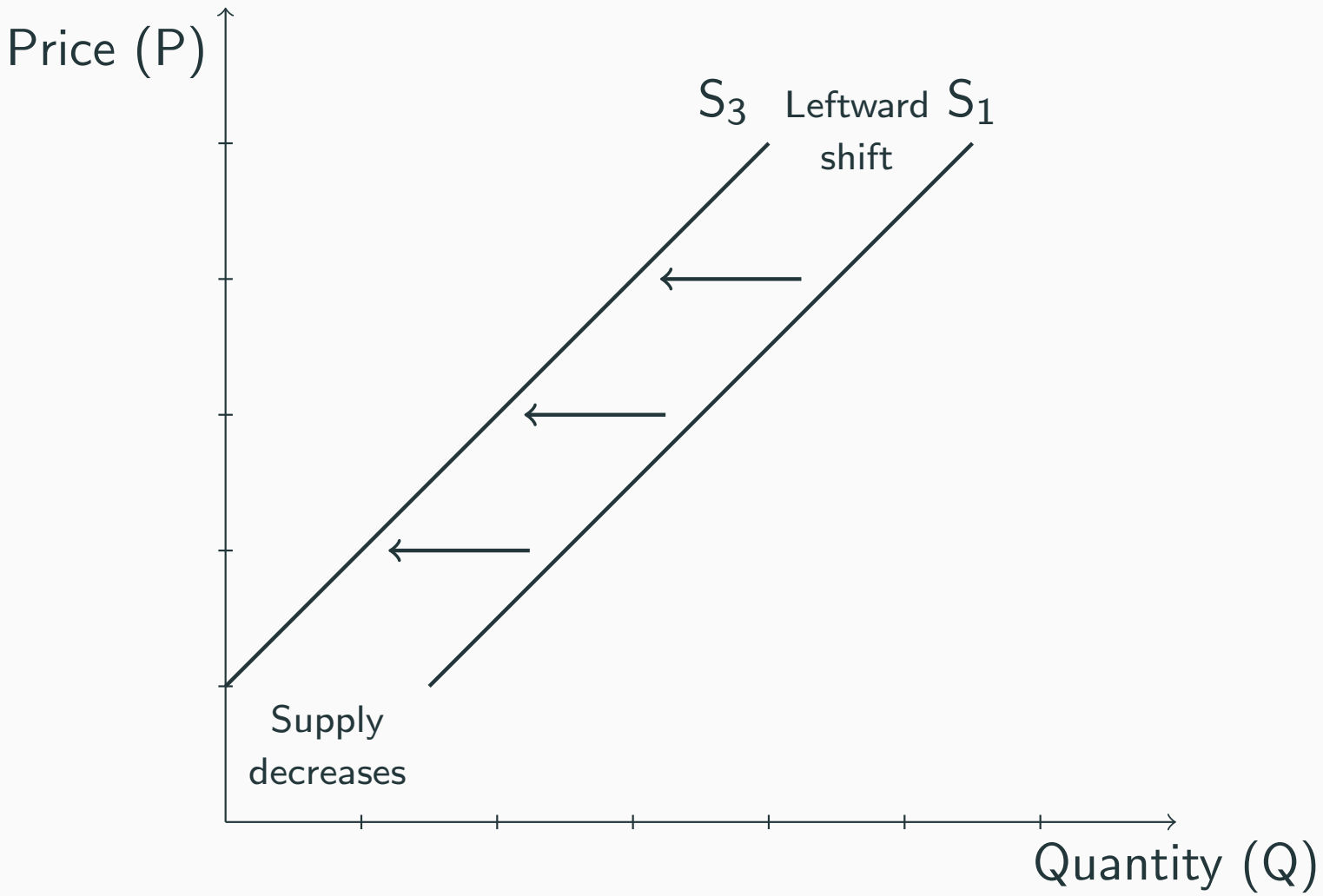
Shifts in the Supply Curve



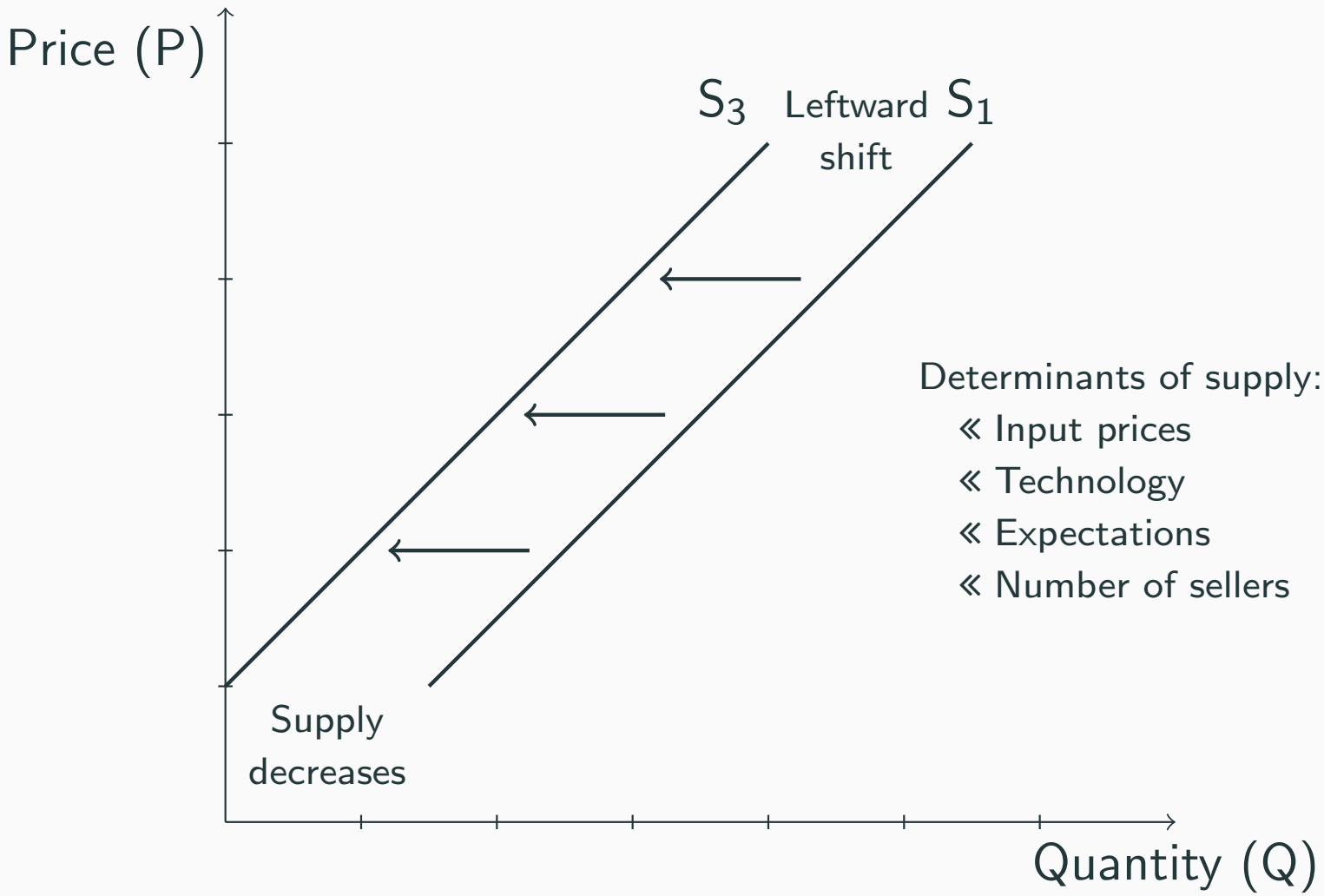
Shifts in the Supply Curve



Shifts in the Supply Curve



Shifts in the Supply Curve



Quick Quiz

Workers at a bicycle assembly plant are currently paid the minimum wage. If the government increases the minimum wage by 100 BGN per month it is likely that the

A. demand for bicycle assembly workers will increase
B. supply curve of bicycles will shift to the right
C. supply of bicycles will shift to the left
D. firm must increase output to maintain profit levels

Quick Quiz

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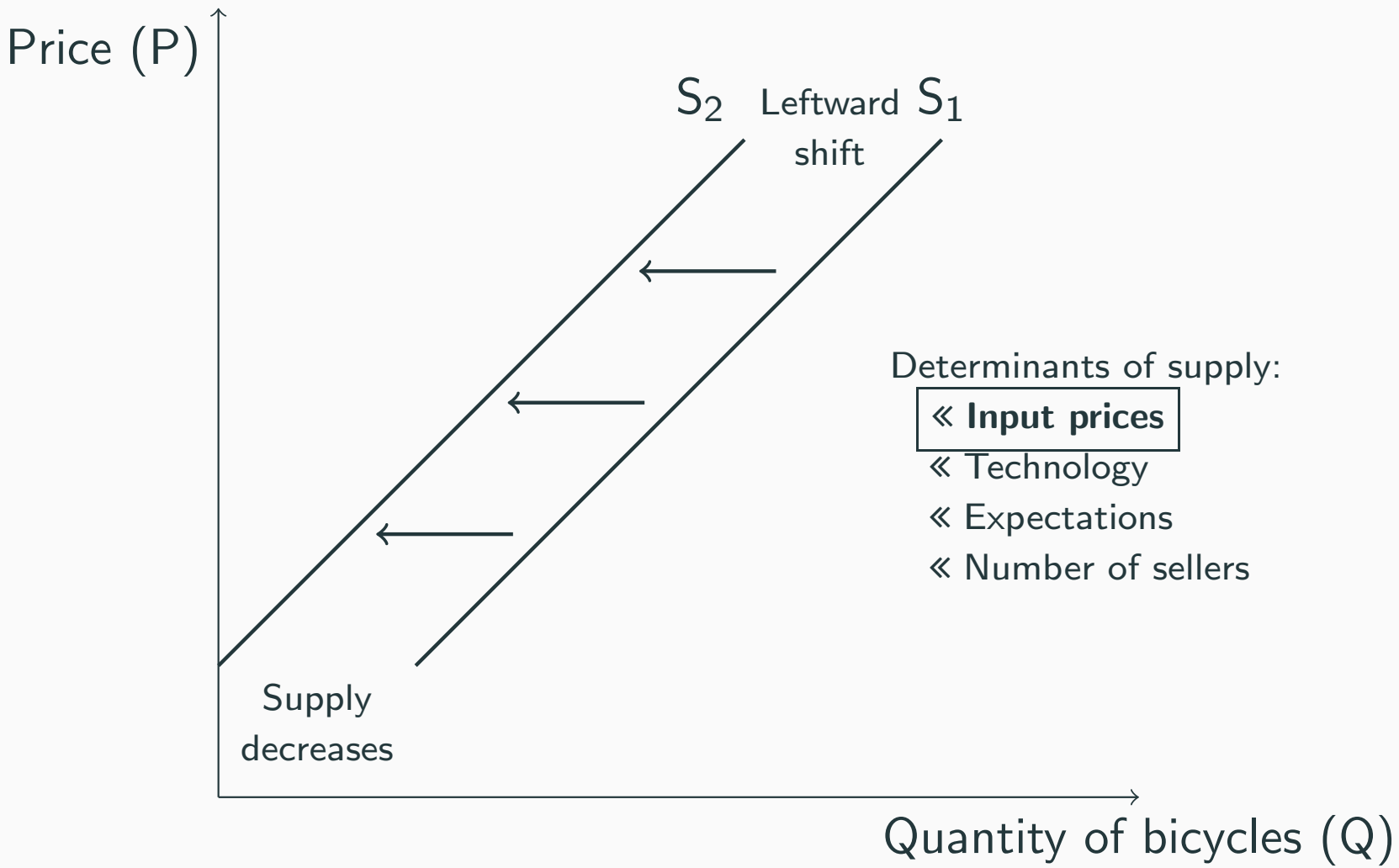
Decrease in the Supply of Bicycles



Quick Quiz

Increases in the production of timber in Stara Planina are expected to cause the price of timber to fall after 6 months. As a result we can expect the supply of timber to

A. increase after 6 months
B. decrease after 6 months when the price goes down
C. fall now
D. increase now
E. increase after 6 months when the price goes down

Quick Quiz

Increases in the production of timber in Stara Planina are expected to cause the price of timber to fall after 6 months. As a result we can expect the supply of timber to

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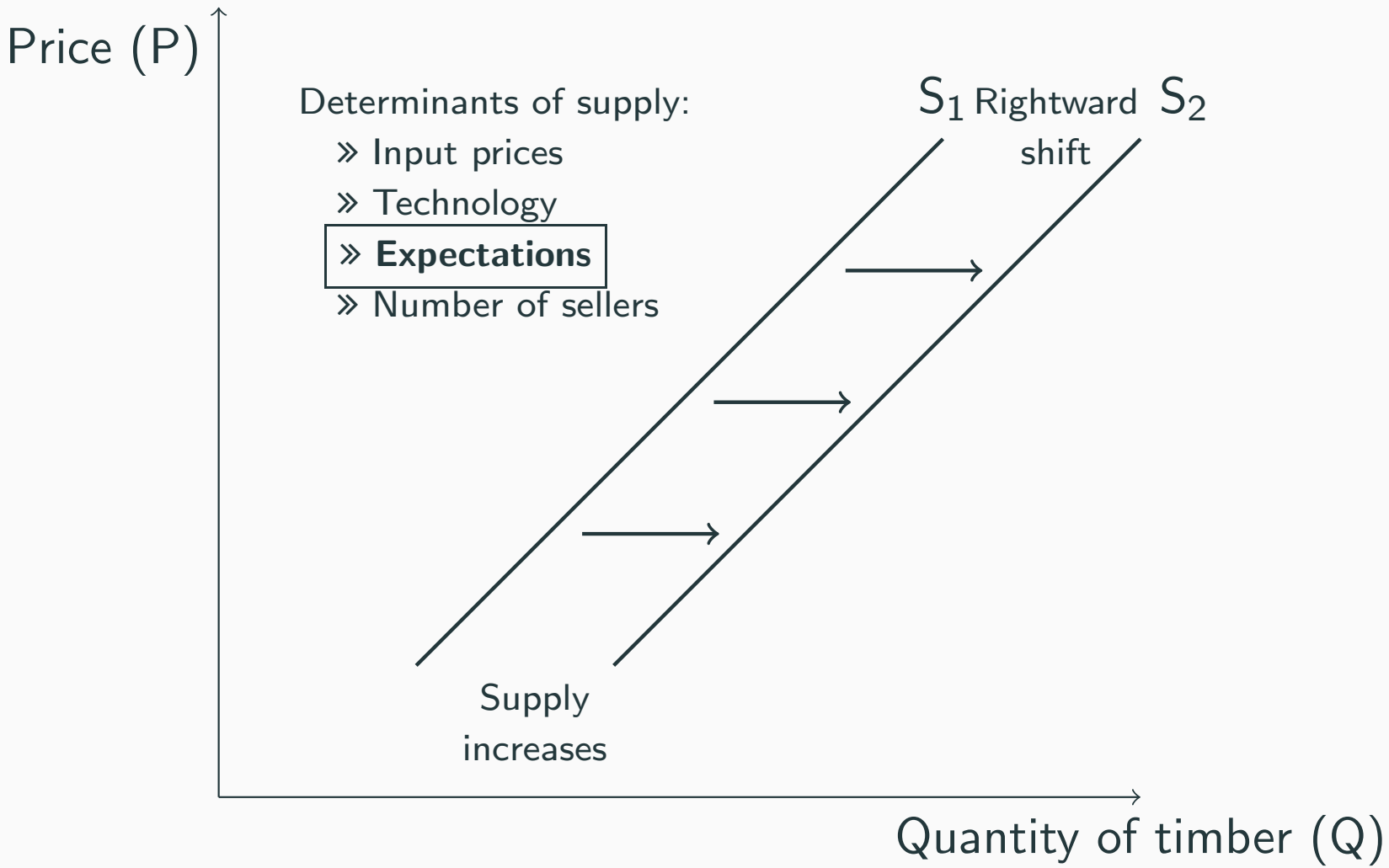
B. decrease after 6 months when the price goes down
C. fall now
D. increase now
E. increase after 6 months when the price goes down

Increase in the Supply of Timber



Quick Quiz

An early frost in the rose fields of the Rose Valley would cause

A. an increase in the demand for roses
B. an increase in the supply of roses
C. a decrease in the demand for roses
D. a decrease in the supply of roses

Quick Quiz

An early frost in the rose fields of the Rose Valley would cause

A. an increase in the demand for roses
B. an increase in the supply of roses
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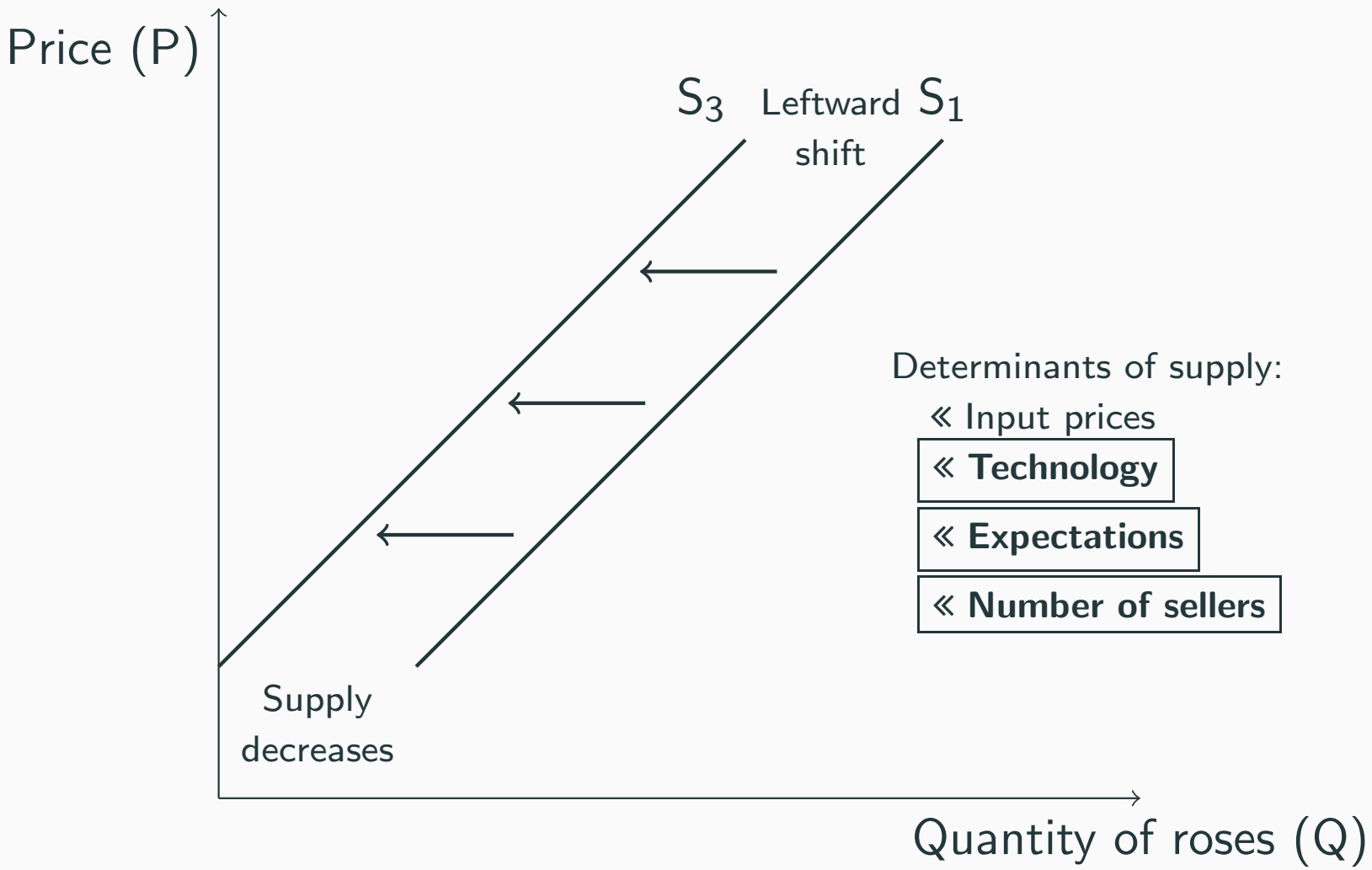
D. a decrease in the supply of roses

Decrease in the Supply of Roses



The Supply and Demand Model

The Marshallian Scissors

We might as reasonably dispute whether it is the upper or the under blade of a pair of scissors that cuts a piece of paper, as whether value is governed by utility or cost of production. It is true that when one blade is held still and the cutting is effected by moving the other, we may say with careless brevity that the cutting is done by the second; but the statement is not strictly accurate, and is to be excused only so long as it claims to be merely a popular and not a strictly scientific account of what happens.

Alfred Marshall (1890)

Market Equilibrium

market equilibrium — a situation in which the market price has reached the level at which quantity supplied equals quantity demanded

🌎 — at price 3 BGN per kg of apples, the quantity demanded in the market is 3 tonnes per month and is equal to the quantity supplied which is also equal to 3 tonnes per month

⚖ — the assumption that markets tend to equilibrium is one of the fundamental assumptions in economics

Market Equilibrium

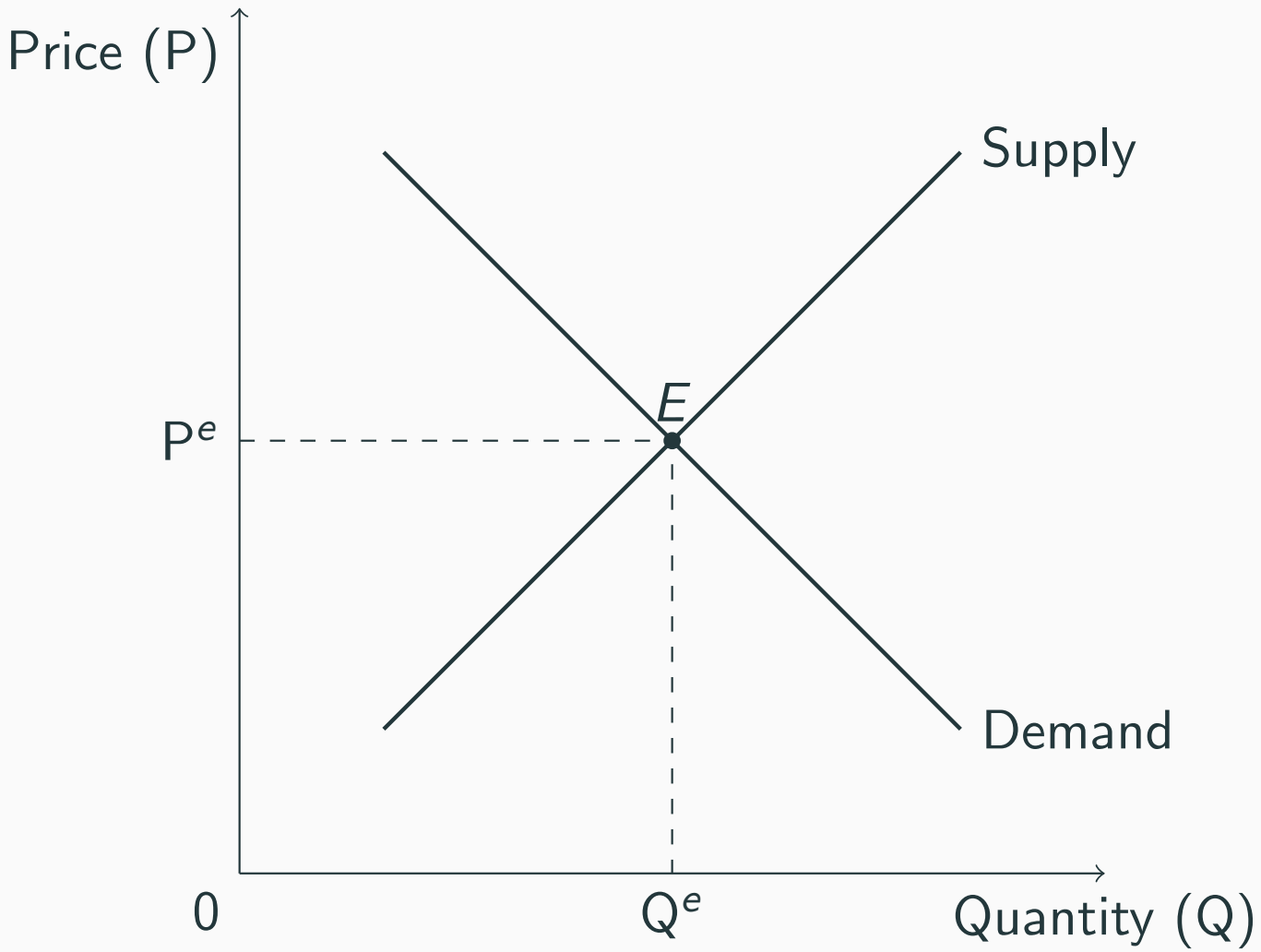
equilibrium price	the price that balances quantity supplied and quantity demanded
equilibrium quantity	the quantity supplied and the quantity demanded at the equilibrium price

Market Equilibrium

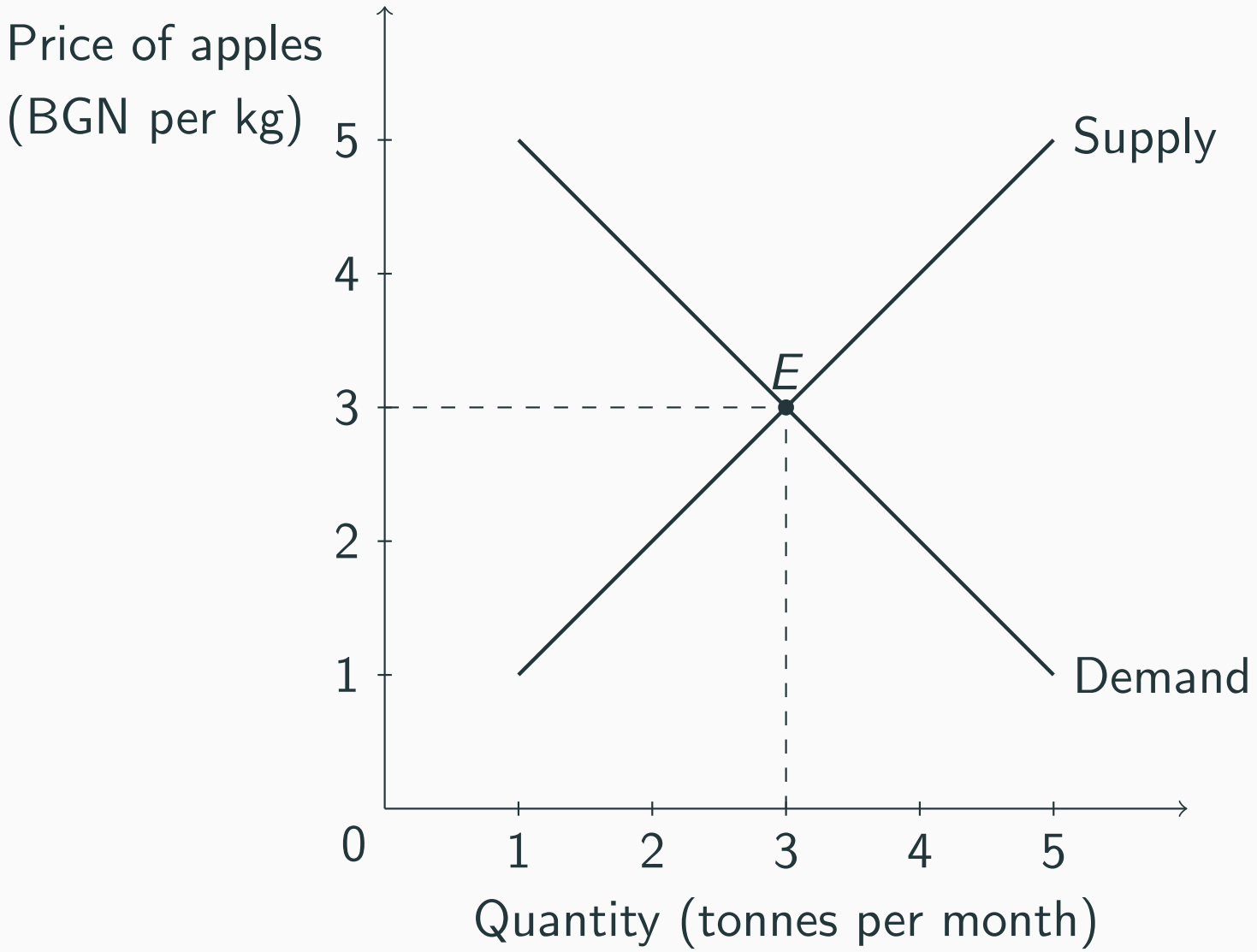
law of supply and demand	the claim that the price of any good adjusts to bring the quantity supplied and the quantity demanded for that good into balance
surplus	a situation in which quantity supplied is greater than quantity demanded
shortage	a situation in which quantity demanded is greater than quantity supplied

Market Equilbrium on a Diagram

Market Equilibrium Diagram



Market Equilibrium Diagram



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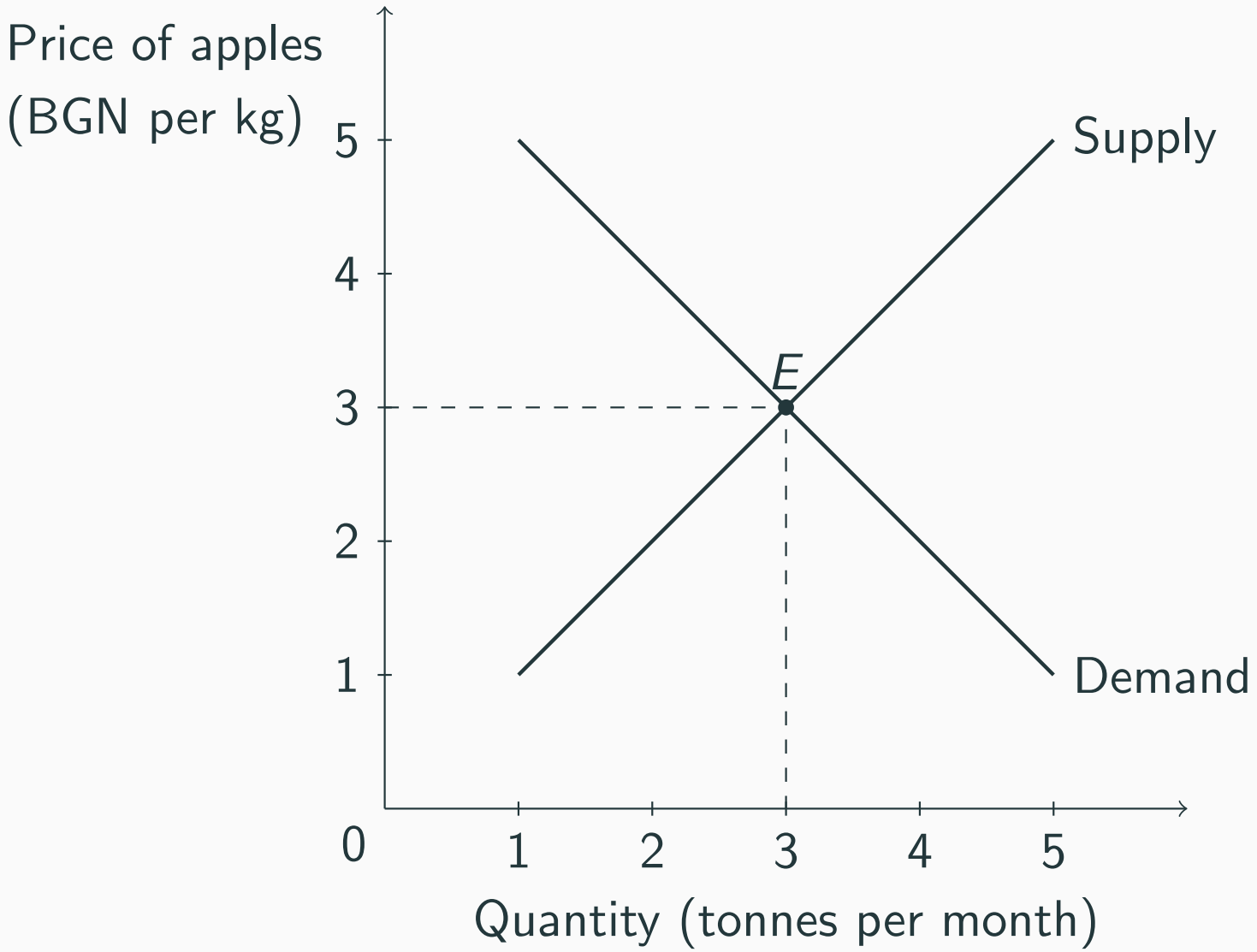
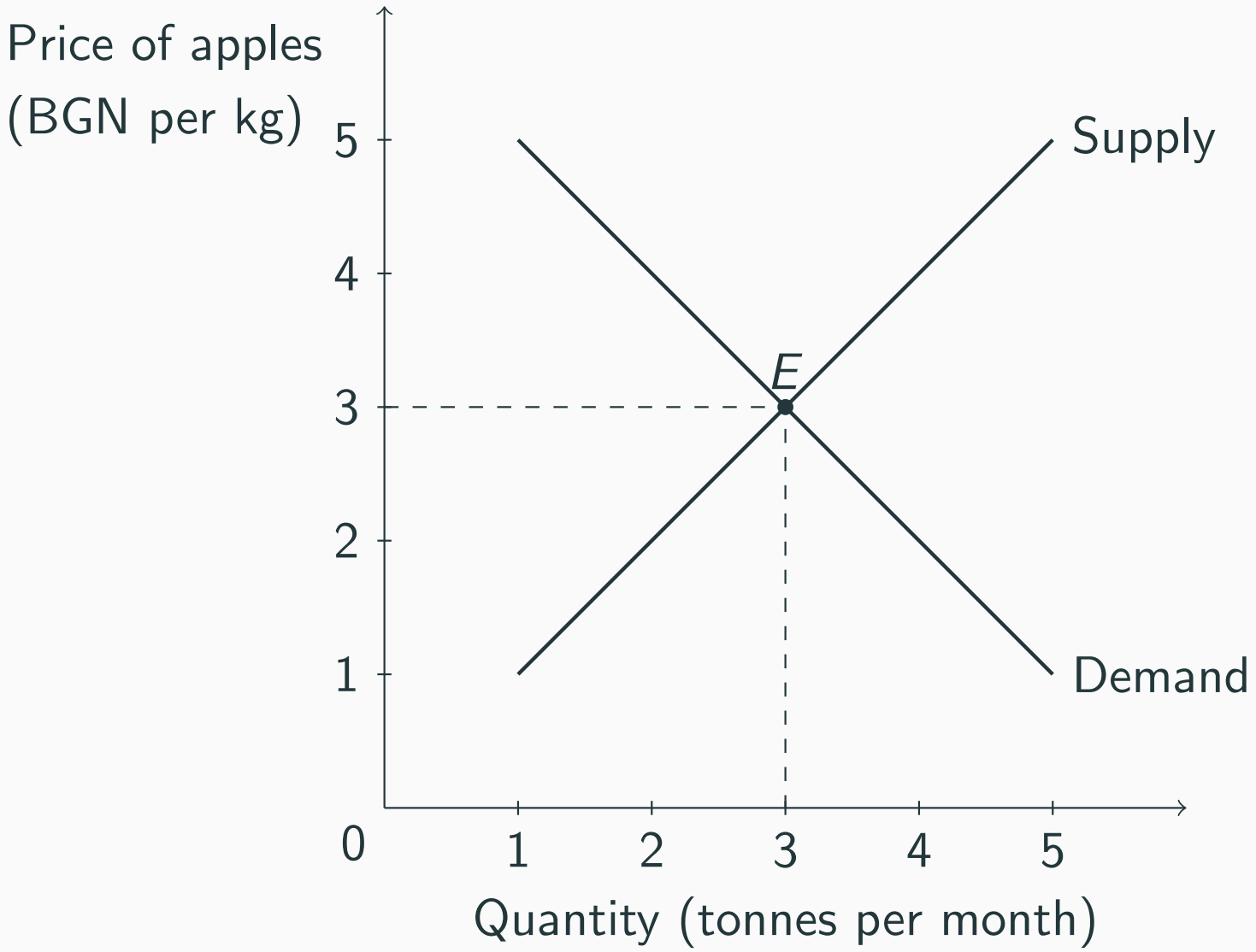
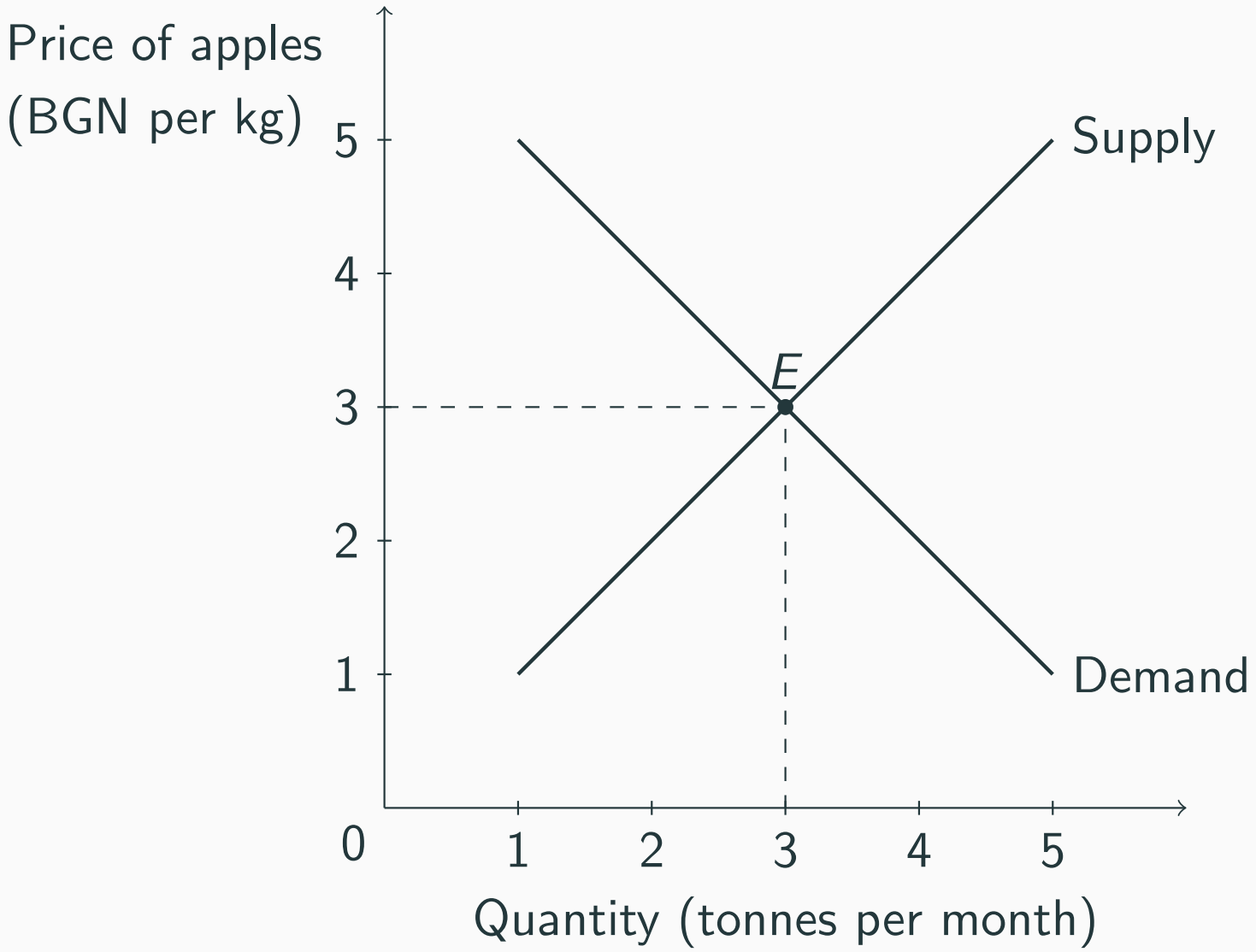


Market Equilibrium Diagram

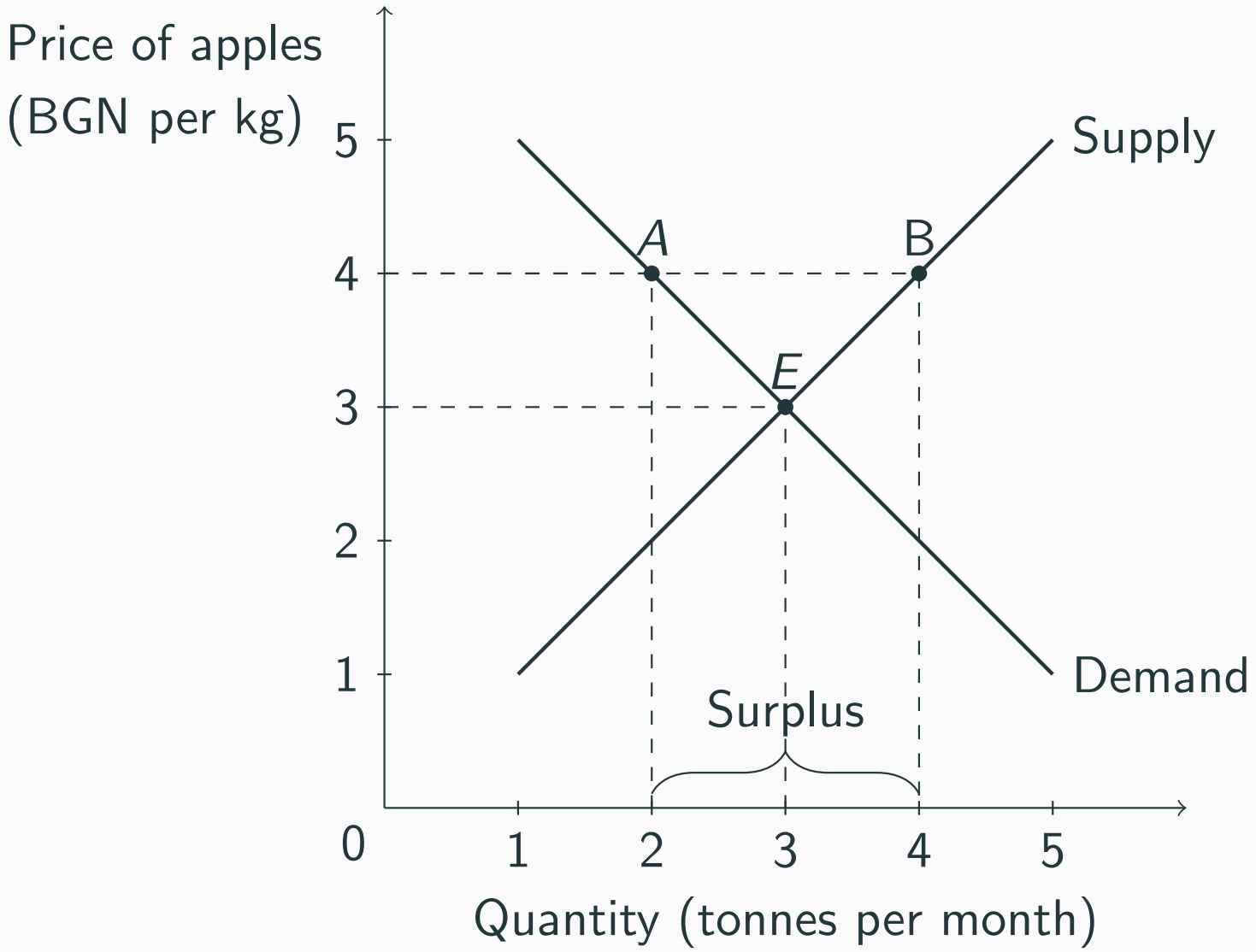


Market Equilibrium Diagram

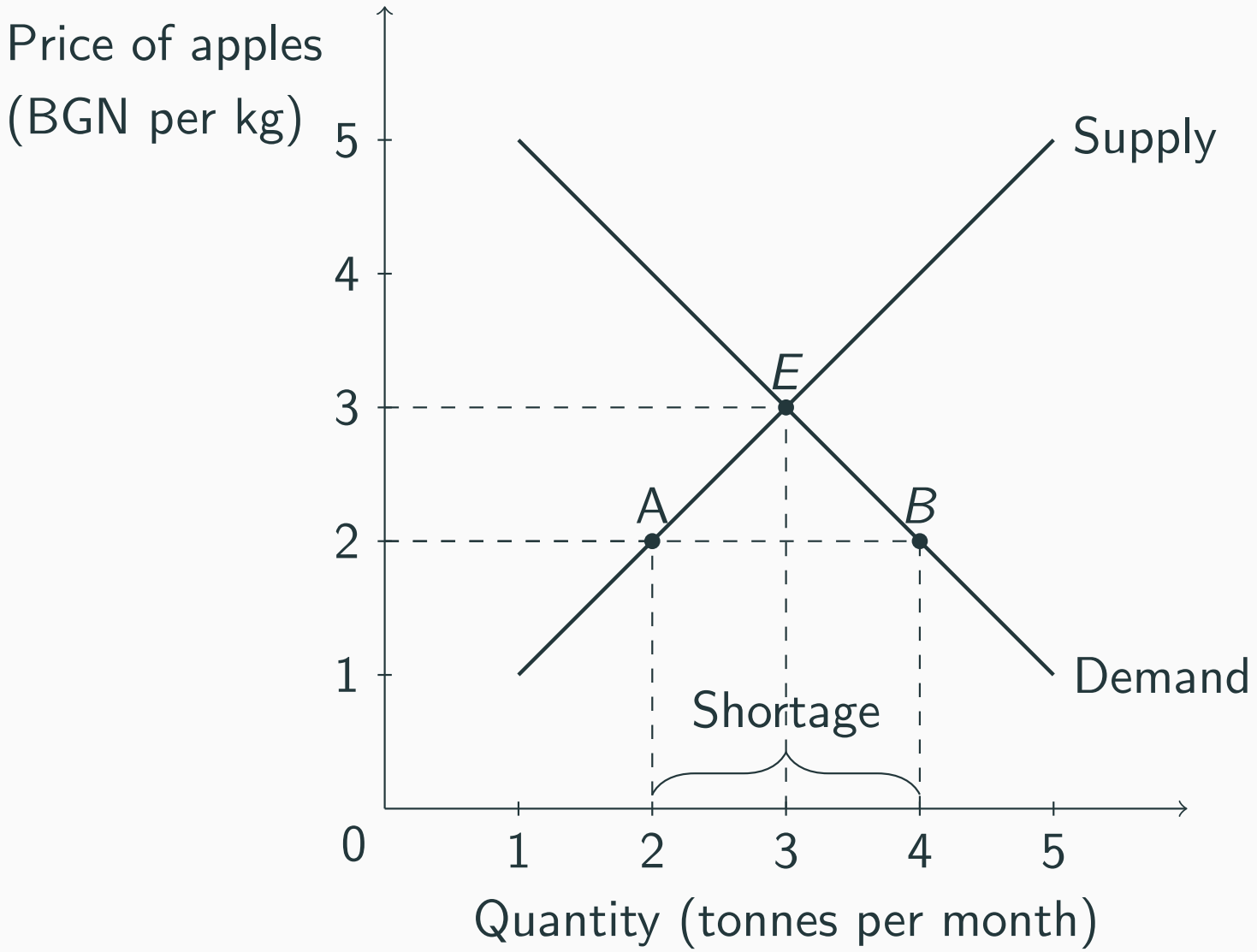


Restoring Equilibrium

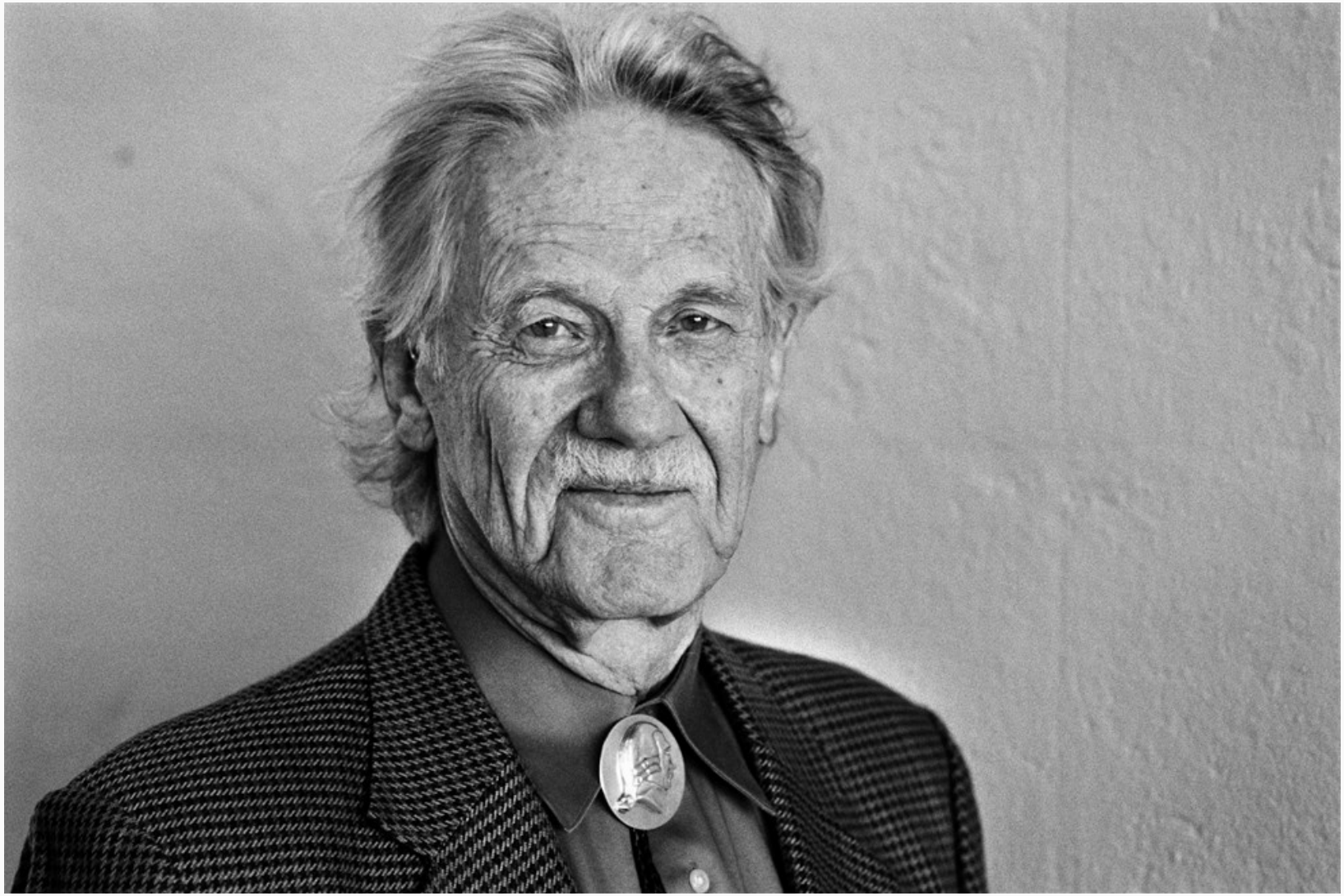
Surplus


Price of apples
(BGN per kg)
5
4
3
2
1
0
A
B
E
Supply
Demand
Surplus
1
2
3
4
5
Quantity (tonnes per month)

Shortage

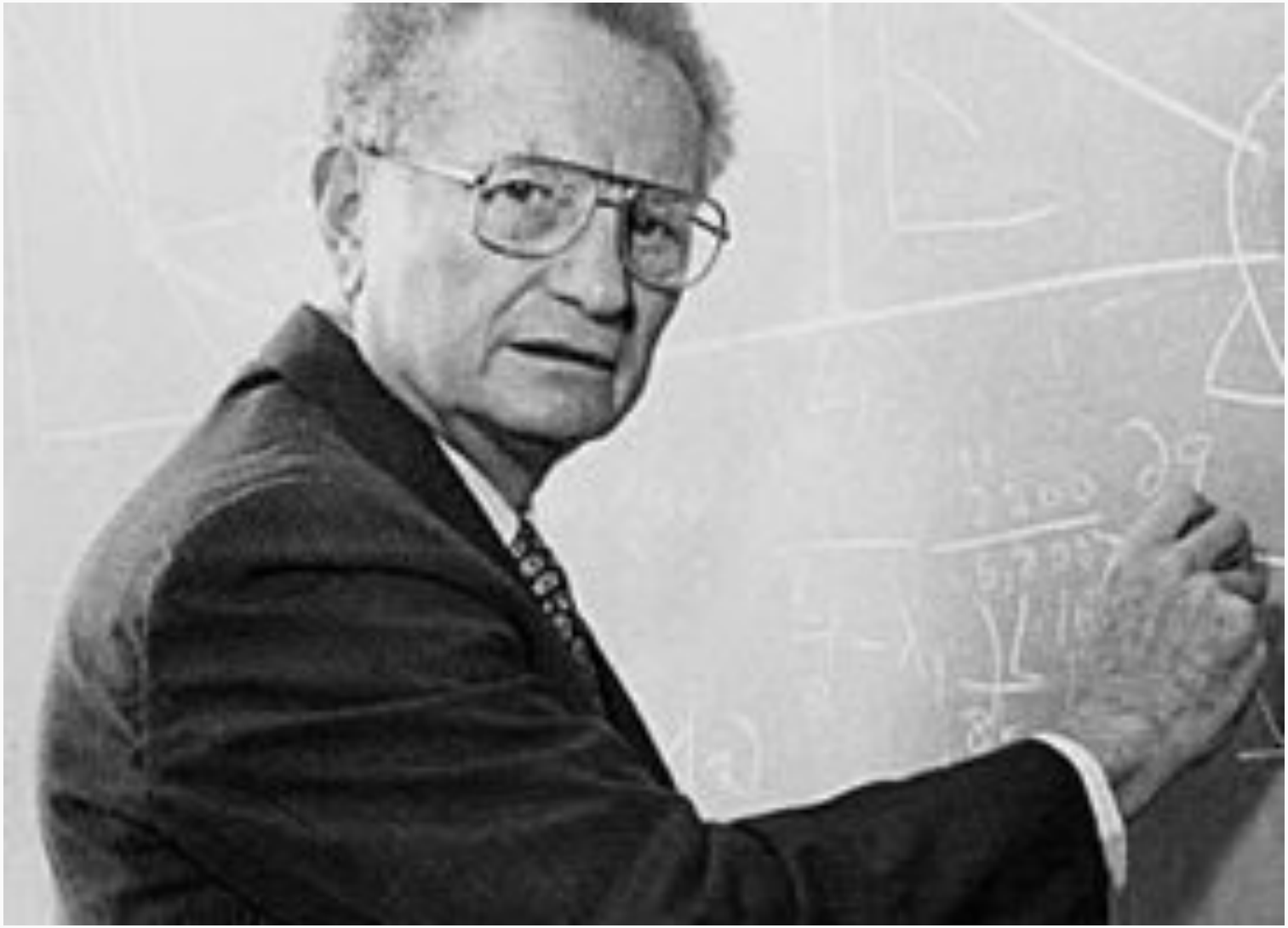

Price of apples
(BGN per kg)
5
4
3
2
1
0
1
2
3
4
5
Supply
Demand
E
A
B
Shortage
Quantity (tonnes per month)

Vernon Smith (1927-)



Comparative Statics

Paul Samuelson (1915-2009)



Analyzing Changes in Equilibrium

1. Decide whether the event shifts the supply or demand curve (or perhaps both).

2. Decide in which direction the curve shifts.

3. Use the supply-and-demand diagram to see how the shift changes the equilibrium price and quantity.

Case Study

An early frost in the rose fields of the Rose Valley would cause

A. an increase in the price of rose oil
B. an increase in the supply of rose oil
C. a decrease in the demand for rose oil
D. a decrease in the price of rose oil

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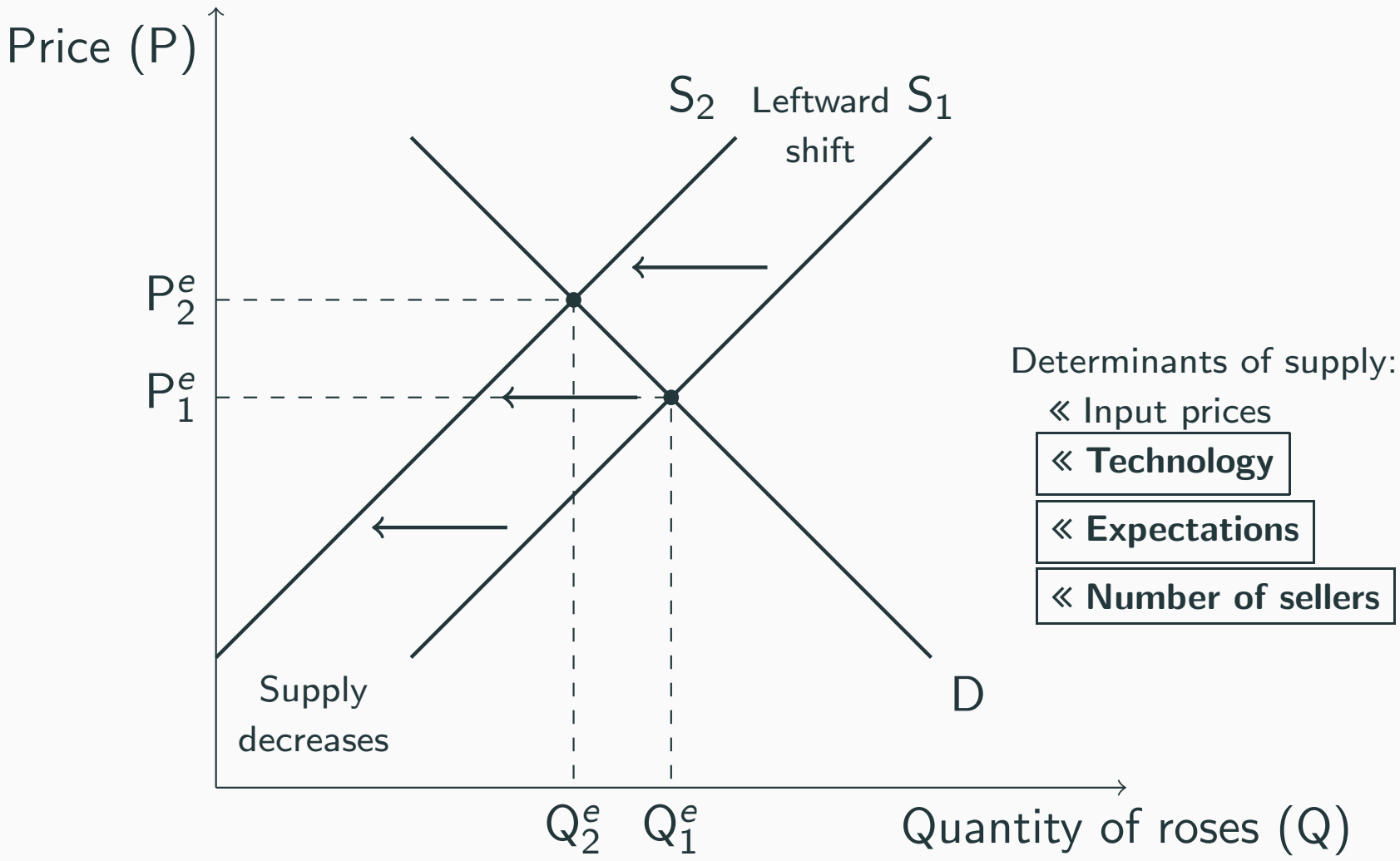
The Market for Roses

Decrease in the Supply of Roses

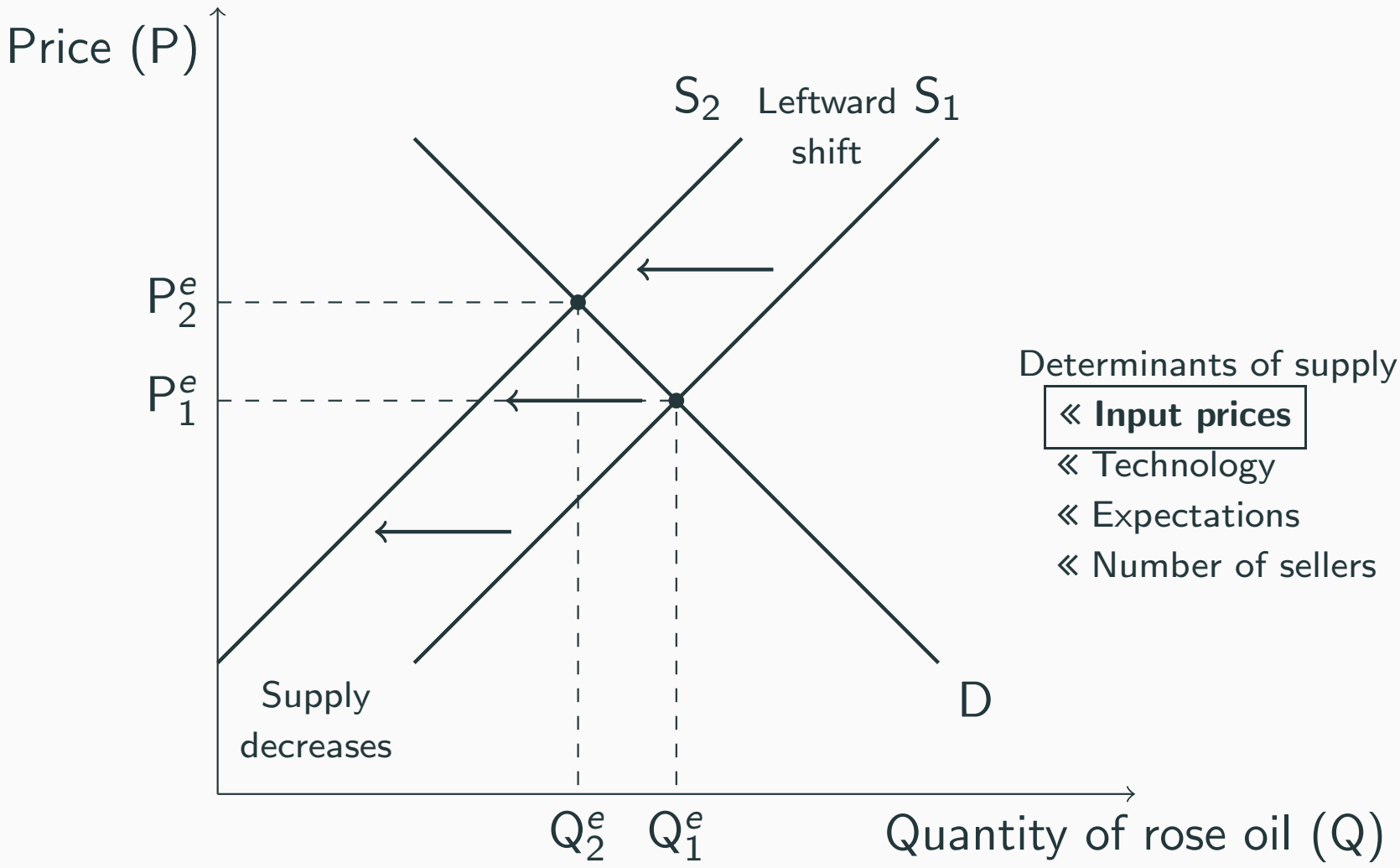


Determinants of supply:

- Input prices
- **Technology**
- **Expectations**
- **Number of sellers**

The Market for Rose Oil

Decrease in the Supply of Rose Oil



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Thank you!