Understanding Supply and Demand

Lecture notes · Principles of Economics I · Module 1: Markets, demand and supply

Learning objectives

O1	Explain what a market is, and who the buyers and sellers are.
O2	Describe demand and supply using tables and graphs.
O3	Find the equilibrium price, and explain shortages and surpluses.
O4	Predict how prices and quantities change when demand or supply shifts.

Prerequisites: Reading a simple table; reading a line graph (both explained in the notes).

Contents: 1. Markets, buyers and sellers · 2. Demand · 3. Supply · 4. Equilibrium, shortages and surpluses · 5. Movements along a curve versus shifts · 6. Price controls · Worked examples · Summary · References

1. Markets, buyers and sellers

A market is any place or system where buyers and sellers meet to exchange something: a street market, a website or a phone call between two firms.

Buyers are called consumers: they want goods and services they value. Sellers are called producers or suppliers: they want to earn money from what they provide.

Nobody sets most market prices centrally. Prices emerge from many people's decisions to buy, sell, wait or walk away. Supply and demand is the model economists use to explain how.

2. Demand

Demand describes the buyers' side: at each possible price, how much buyers want to buy in a given period. The amount at one particular price is the quantity demanded.

A demand schedule lists these amounts; a demand curve plots them, with price on the vertical axis and quantity on the horizontal axis (an economics convention).

The law of demand: other things being equal, when the price rises the quantity demanded falls. Two reasons: people buy less when something costs more, and they switch to substitutes.

3. Supply

Supply describes the sellers' side: at each possible price, how much sellers are willing to offer. The amount at one particular price is the quantity supplied.

The law of supply: other things being equal, a higher price leads to a larger quantity supplied, because selling becomes more profitable and new sellers are attracted in.

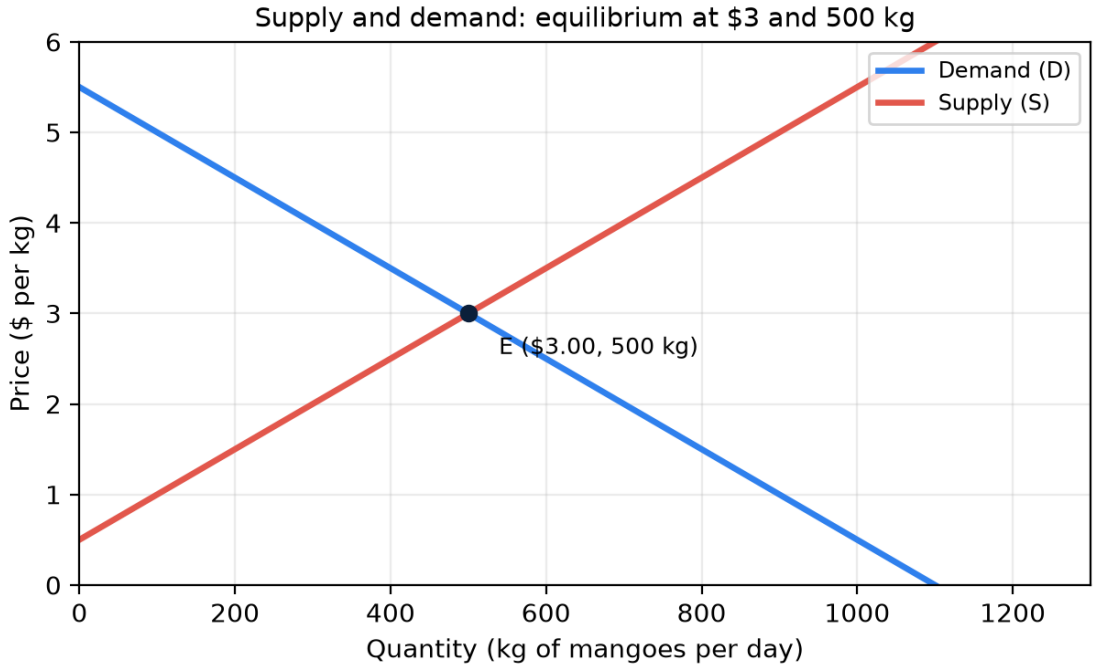
4. Equilibrium, shortages and surpluses

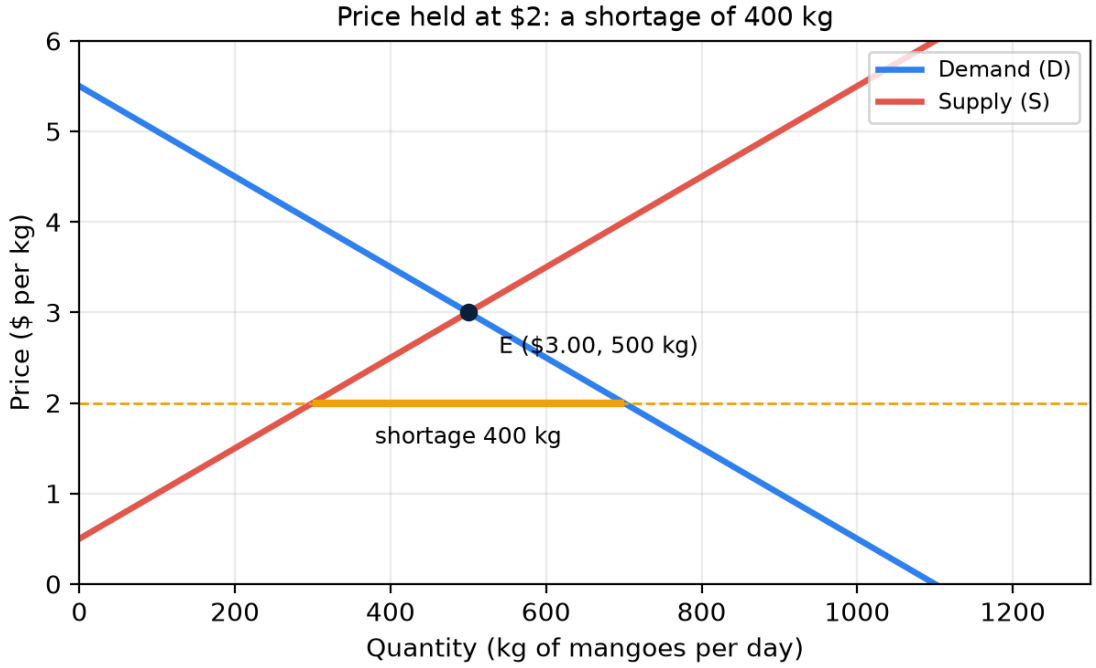
Equilibrium is the price at which the quantity demanded equals the quantity supplied. On a graph it is where the two curves cross.

Below the equilibrium price there is a shortage (excess demand): buyers want more than sellers offer, and the price tends to rise.

Above the equilibrium price there is a surplus (excess supply): sellers offer more than buyers want, and the price tends to fall.

Equilibrium is not a 'fair' or 'best' price. It is the price at which buyers' and sellers' plans match, so there is no pressure for the price to change.





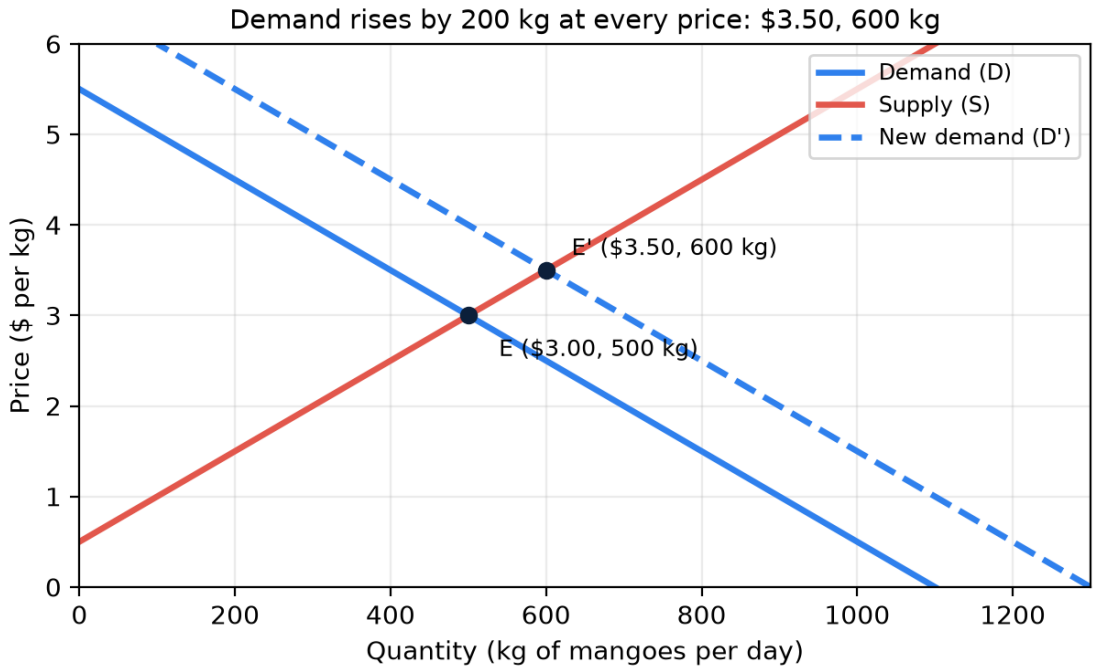
5. Movements along a curve versus shifts

A change in the good's own price moves along the existing curve: the quantity demanded (or supplied) changes, not demand (or supply).

Demand shifts when something else changes buyers' willingness to buy at every price: incomes, tastes, prices of related goods, the number of buyers, expectations.

Supply shifts when something else changes sellers' willingness to sell at every price: costs of production, technology, weather (for crops), the number of sellers.

Economists change one thing at a time and hold the rest constant: ceteris paribus, 'other things being equal'.



6. Price controls

A price ceiling is a legal maximum price. Set below equilibrium, it keeps a shortage in place.

A price floor is a legal minimum price. Set above equilibrium, it keeps a surplus in place.

The model does not say whether a control is good policy; it shows the side effects a government has to plan for.

Going deeper: the algebra of any straight-line market

Write demand as Qd = a - bP and supply as Qs = c + dP, where a, b, c and d are positive numbers fixed by the market (c may be negative: no seller offers anything at very low prices).

At equilibrium Qd = Qs, so a - bP = c + dP. Collecting terms gives the general results P* = (a - c) / (b + d) and Q* = a - bP*. For the mango market a = 1100, b = 200, c = -100, d = 200, so P* = 1200 / 400 = 3 and Q* = 500, as in the video.

The formula shows two things at a glance: anything that raises a (more demand) raises the price, and anything that raises c (more supply) lowers it. The size of the change depends on b + d, how strongly buyers and sellers respond to price, which is the idea of elasticity in the next lesson.

Why the demand curve slopes down: two effects

Substitution effect: when mangoes become dearer compared with bananas or oranges, some buyers switch to the relatively cheaper fruit.

Income effect: a higher price means a buyer's money buys less overall, so they tend to buy less of most things, mangoes included.

Both effects normally push in the same direction, which is why the law of demand holds for almost all everyday goods.

Common mistakes to avoid

Saying 'demand fell' when only the price rose: that is a fall in quantity demanded, a movement along the curve.

Shifting the wrong curve: a change in production costs or technology moves supply, not demand; a change in incomes or tastes moves demand, not supply.

Reading a graph with the axes swapped: price is on the vertical axis by convention.

Treating the equilibrium as fair or ideal: it is only the price at which plans match.

Applying the model: rental housing (qualitative)

In a growing city, more people want to rent (demand shifts right) while the number of flats changes slowly (supply responds little in the short run). The model predicts rising rents with only a small rise in the number of flats rented.

Over several years new building can shift supply right, which tends to moderate rents. Real housing markets also involve regulation, location and financing, so the model is a starting point, not the whole answer.

Worked examples

Worked example 1: finding equilibrium from equations

In the lesson's mango market, Qd = 1100 - 200P and Qs = -100 + 200P (P in dollars per kg, Q in kg per day). Find the equilibrium.

Step 1. At equilibrium Qd = Qs, so 1100 - 200P = -100 + 200P.

Step 2. Add 200P to both sides and add 100: 1200 = 400P.

Step 3. P = 1200 / 400 = $3.00 per kg.

Step 4. Substitute back: Qd = 1100 - 200 x 3 = 500 kg per day (check: Qs = -100 + 600 = 500).

Step 5. Equilibrium: $3.00 per kg and 500 kg per day.

Worked example 2: a shortage below equilibrium

The price is held at $2 per kg. Is there a shortage or a surplus, and how large is it?

Step 1. Quantity demanded at $2: Qd = 1100 - 400 = 700 kg.

Step 2. Quantity supplied at $2: Qs = -100 + 400 = 300 kg.

Step 3. Demand exceeds supply, so there is a shortage of 400 kg per day. Without a legal limit, the price tends to rise towards $3.00.

Worked example 3: a shift in demand

A health programme makes mangoes more popular: buyers want 200 kg more at every price, so Qd' = 1300 - 200P. Find the new equilibrium.

Step 1. This changes buyers' tastes, so demand shifts to the right (supply is unchanged).

Step 2. Set 1300 - 200P = -100 + 200P, so 1400 = 400P.

Step 3. P = $3.50 per kg and Q = 600 kg per day.

Step 4. Both price and quantity rise (from $3.00 and 500 kg).

Summary

• The law of demand: as price rises, quantity demanded falls.

• The law of supply: as price rises, quantity supplied rises.

• Equilibrium: where the curves cross and plans match.

• Below equilibrium: shortage, price tends to rise. Above: surplus, price tends to fall.

• A change in the good's own price moves along a curve; any other change shifts the curve.

References

References: KN-UGR-ECO-C01-M01-T01-L01

OpenStax, Principles of Economics 3e, ch. 3 "Demand and Supply" (3.1 definitions of demand, supply, equilibrium, shortage/excess demand, surplus/excess supply; 3.2 shifts; 3.3 four-step process; ceteris paribus). Cited only; no OpenStax text or figures are reproduced (their licence is CC BY-NC-SA).

All references were consulted for accuracy; no text or figures from them are reproduced in the video. Verify links before publication.

Numbers in these notes are computed from the same equations as the video and checked automatically. The market is illustrative.