

11

CHAPTER 11

Monopoly and Market Power

Why one seller can raise its price six-fold when the wheat farmer cannot raise hers by a penny.

What this chapter covers



11.2–11.3 The seller

- Why monopolies arise
- The output decision ($MR = MC$)
- Marginal revenue worked out



11.4–11.6 Welfare & power

- Welfare cost vs. competition
- Markup and elasticity
- Monopsony; natural monopoly



11.7–11.8 Evidence

- Case: EpiPen & De Beers
- Empirical: patents & generics
- Regulation in practice

THE BIG IDEA

Market power is the ability to set price above marginal cost. We study its purest form, monopoly, a market served by a single seller.

11.1

Introduction

- EpiPen: \$94 to over \$600
- De Beers and the price of diamonds
- What sets the monopolist apart

Two sellers who could set their own price



EpiPen, 2007–2016

A two-pack that stops a life-threatening allergic reaction rose from about \$94 to more than \$600, though the device barely changed.



De Beers

For most of the twentieth century one company controlled the world's diamond supply and shaped the price of every engagement ring.

THE PUZZLE

How can one seller raise its price nearly six-fold, or hold prices high for decades, when a wheat farmer cannot? The answer is market power.

11.2

Why Monopolies Arise

- Control of a key resource
- Economies of scale
- Patents & franchises
- Network effects

A monopoly survives only behind a barrier

■ Barriers to entry

A monopoly can persist only if something keeps rivals out. These barriers take several forms, control of a resource, economies of scale, legal protection, or network effects.

THE COMMON THREAD

Without a barrier, the profits a monopolist earns would attract entrants, and the price would be competed back down toward marginal cost.

Five barriers to entry (1–3)

1

1. Key resource

A firm owning the essential input can exclude others, as De Beers did with the world's diamond mines.

2

2. Economies of scale

When average cost falls over the whole market, one firm serves it more cheaply, a natural monopoly (water, electricity).

3

3. Patents & copyrights

Governments grant inventors a temporary legal monopoly to reward innovation, as with a patented drug.

Five barriers to entry (4–5)

4

4. Government franchise

The state may grant one firm the exclusive right to operate, as with many postal services.

5

5. Network effects

A product can grow more valuable as more people use it, making it hard for newcomers to break in, as with some digital platforms.

IN COMMON

Each barrier blocks entry in a different way, but all do the same job: they keep the single seller alone in the market.

11.3

The Monopolist's Output Decision

- Facing the whole demand curve
- Marginal revenue below price
- $MR = MC$, then price above MC
- A numeric example

11.3 THE OUTPUT DECISION

The one decisive difference

■ The monopolist faces the entire market demand curve

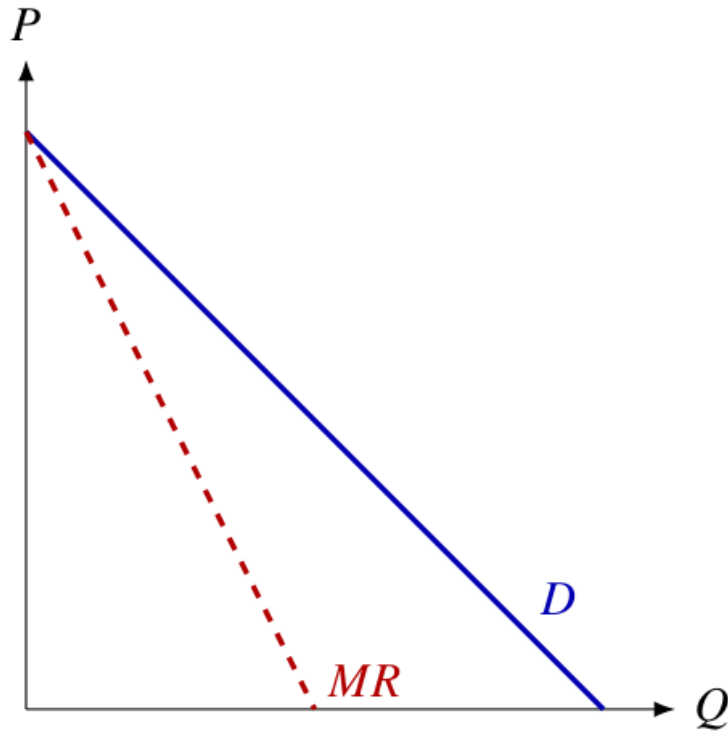
To sell one more unit it must lower its price, not just on that unit, but on every unit it sells.

MARGINAL REVENUE < PRICE

So the extra revenue from one more sale, the marginal revenue, is LESS than the price: the gain from the extra unit is partly offset by the lower price now received on all the others. The MR curve lies below demand.

11.3 THE OUTPUT DECISION

Marginal revenue lies below the demand curve



- Each point on demand shows the price buyers will pay for that quantity.
- MR falls twice as fast as price for a straight-line demand curve.

Figure 11.1 Because the monopolist must cut the price on all units to sell more, marginal revenue lies below the demand curve.

11.3 THE OUTPUT DECISION

The rule: produce where $MR = MC$

■ Profit-maximizing rule (unchanged)

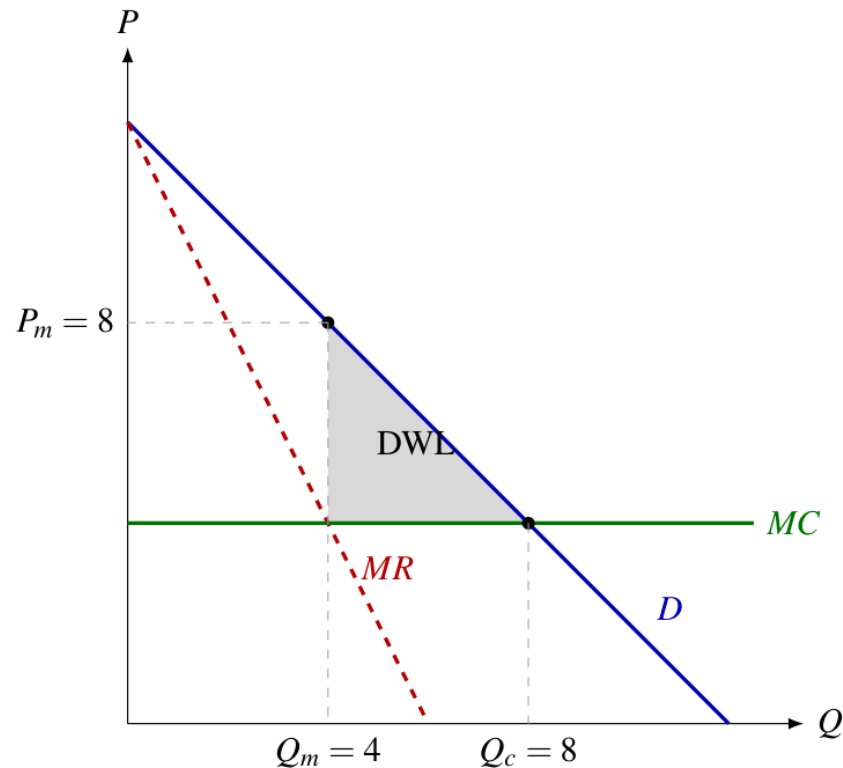
Produce where marginal revenue equals marginal cost. But then charge the highest price the demand curve will bear for that quantity, a price ABOVE marginal cost.

A WORKED CHOICE

Demand $P = 12 - Q$, marginal cost \$4. MR falls twice as fast as price on a straight-line demand, so $MR = 12 - 2Q$. Setting $MR = MC$ gives $Q_m = 4$; demand shows buyers pay $P_m = \$8$, double marginal cost.

11.3 THE OUTPUT DECISION

MR = MC at $Q = 4$, price = \$8



Quantity. $Q_m = 4$, where MR meets the \$4 marginal cost.

Price. $P_m = \$8$, given by the demand curve.

Loss. A deadweight-loss triangle versus the competitive output.

Figure 11.2 The monopolist produces where $MR = MC$ ($Q_m = 4$), charges the price buyers will pay ($P_m = \$8$), and creates a deadweight loss.

11.3.1 MARGINAL REVENUE: A WORKED EXAMPLE

Seeing MR below price in numbers

Quantity Q	Price P	Total revenue TR	Marginal revenue MR
1	\$11	\$11	\$11
2	\$10	\$20	\$9
3	\$9	\$27	\$7
4	\$8	\$32	\$5
5	\$7	\$35	\$3
6	\$6	\$36	\$1

Table 11.1 Along the demand curve $P = 12 - Q$, marginal revenue falls twice as fast as price.

WHY MR < PRICE

Selling 2 units requires cutting the price to \$10 on BOTH, for TR = \$20, so the second unit adds only \$9.

Each new unit adds its own price but subtracts the cut applied to every earlier unit.

11.4

Monopoly versus Competition: The Welfare Cost

- Less output, higher price
- Transfer to the monopolist
- The deadweight loss
- Markup and elasticity

11.4 THE WELFARE COST

Less output, higher price, and a deadweight loss

Outcome	Q	P	CS	PS	W	DWL
Monopoly	4	\$8	\$8	\$16	\$24	\$8
Perfect competition	8	\$4	\$32	\$0	\$32	\$0
Difference	−4	+\$4	−\$24	+\$16	−\$8	+\$8

Table 11.2 Monopoly restricts output from 8 to 4 and raises price from \$4 to \$8. \$16 of consumer surplus is transferred to the monopolist; the remaining \$8 is the deadweight loss.

READING THE TABLE

Consumer surplus falls from \$32 to \$8. Most of that fall, \$16 out of \$24, is a transfer to the monopolist. The last \$8 is the deadweight loss: surplus that neither buyers nor the seller enjoy because the trades never happen.

The harm is two-part



A transfer

Consumers pay more and consume less, so some consumer surplus is transferred to the monopolist as profit, a transfer, not a loss to society.



A deadweight loss

The units between 4 and 8, which buyers value above the \$4 marginal cost, are never produced. Those mutually beneficial trades simply vanish.

WHY IT MATTERS

The deadweight loss is the same kind of loss a tax created in Chapter 4. It is why economists regard unchecked monopoly as inefficient: it restricts output precisely to keep the price high.

Two effects, two different concerns

■ Transfer

By charging above marginal cost, the monopolist takes for itself surplus that under competition went to consumers. Society's total surplus is redistributed, not destroyed, a question of fairness and distribution.

■ Deadweight loss

The units never produced because output is restricted. These are trades buyers valued above their cost; the surplus they would have created vanishes for everyone. This is what economists mean by inefficient.

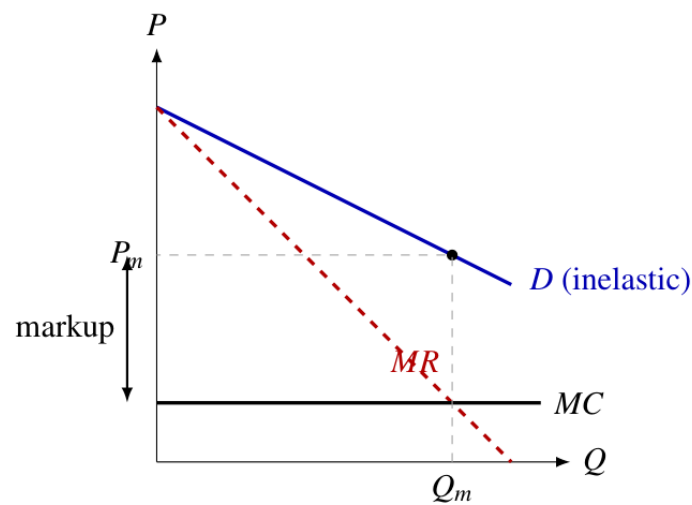
Self-check: the deadweight-loss triangle

SELF-CHECK

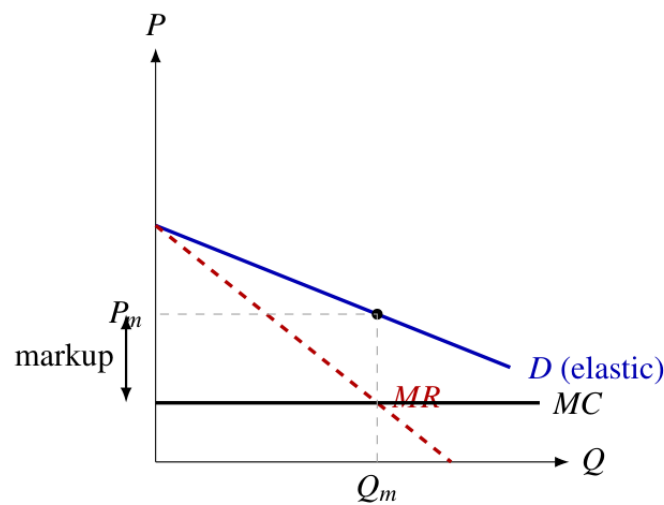
With demand $P = 12 - Q$ and marginal cost \$4, a monopolist sells 4 units at \$8. What would a competitive industry sell, and what is the deadweight loss?

Competition sets price = marginal cost: $12 - Q = 4$ gives $Q = 8$ at \$4. The lost output is the 4 units between 4 and 8, so the deadweight loss is the triangle $\frac{1}{2} \times 4 \times \$4 = \$8$.

Elasticity determines the size of the markup



(a) Inelastic demand: large markup



(b) Elastic demand: small markup

Inelastic demand. Few alternatives, price sits far above marginal cost (the EpiPen).

Elastic demand. Buyers switch easily, the markup must be small.

The spectrum. Perfect competition ($P = MC$) and pure monopoly are the two ends; most firms lie in between.

Figure 11.3 Inelastic demand (a) sustains a large markup; elastic demand (b) forces the price close to marginal cost.

11.5

Monopsony: A Single Buyer

- Mirror image of monopoly
- MCL above the wage
- Hires MCL = MRP; wage given by supply
- Minimum wage can raise employment

11.5 MONOPSONY

Market power can rest with the buyer

■ Monopsony

A market with a single buyer, the only large employer in a small town, or a dominant supermarket chain buying from local farmers.

THE MIRROR IMAGE

The logic mirrors monopoly. Just as a monopolist restricts how much it SELLS to raise the price it receives, a monopsonist restricts how much it BUYS to lower the price it pays.

The mechanism in a labor market

■ Marginal cost of labor (MCL) lies above the wage

A monopsonist faces the entire upward-sloping labor supply curve of the town. To attract one more worker it must post a higher wage, and pay that higher wage to every worker already on payroll. The extra cost of one more worker is therefore ABOVE the wage.

THE HIRING RULE

The firm hires up to $MCL = MRP$ (the value of an extra worker's output) and reads the wage off the labor supply curve at that quantity. The result: fewer workers hired and a lower wage than a competitive labor market would yield.

11.5 MONOPSONY

Why a minimum wage can sometimes raise employment

- Monopsony is one reason economists watch employer concentration in local labor markets: a handful of dominant employers can push wages below the competitive level even without collusion.
- In a competitive labor market (Chapter 4) a binding minimum wage reduces employment.
- In a monopsonized labor market, a minimum wage set just above the monopsony wage can RAISE employment as well as wages, the floor forces the employer to stop suppressing the wage.

EMPIRICAL FOOTPRINT

This is why the work of Card and Krueger on fast-food employment, and follow-up studies of the Seattle and Los Angeles minimum-wage increases, have found only mild disemployment effects, or none at all, from modest minimum-wage rises.

11.6

Natural Monopoly and the Case for Regulation

- Falling average cost over the whole market
- Regulator's dilemma: MC vs. AC pricing
- Bell System and América Móvil

When competition cannot fix the problem

■ Natural monopoly

Arises when a single firm can serve the whole market at lower cost than two or more firms could, because average cost keeps falling over the entire range of demand (Chapter 9).

WHY ONE FIRM

Water pipes, electricity grids, and gas networks are the classic cases: it would be wasteful to lay three competing sets of water mains down a street. The very economies of scale that make one firm efficient also leave it with monopoly power.

Society's two usual responses



Regulate

Cap the price near average cost, so the firm covers its costs without exploiting customers, the model for public utilities in most countries.



Own and operate

The government may run the network itself, replacing the private monopolist entirely.

THE POLICY QUESTION

Natural monopoly is a case where the competitive benchmark of Chapter 10 is simply unavailable. The question becomes how best to restrain a monopoly that cannot be competed away.

The regulator's dilemma: which price?

■ Marginal-cost pricing

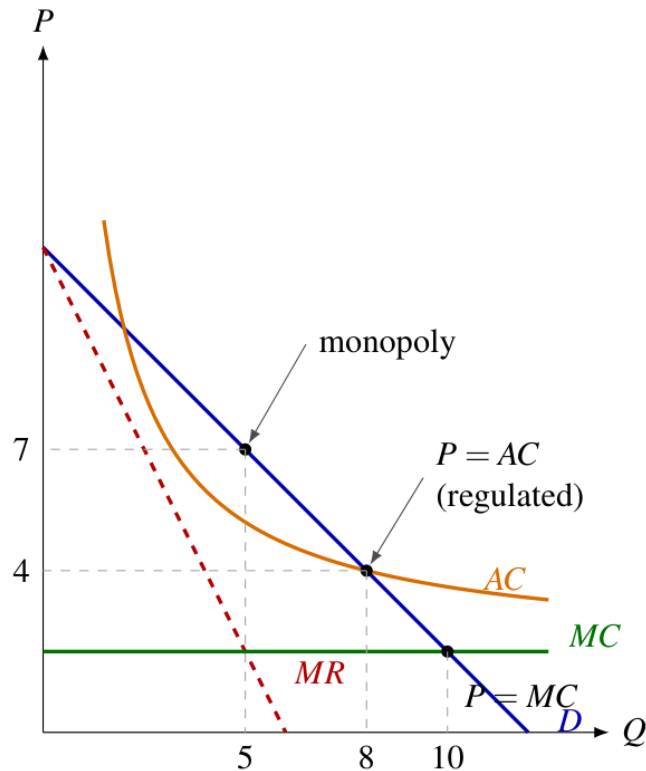
$P = MC$ reaches the efficient competitive output. But because MC lies below average cost throughout, the firm cannot cover its average cost and loses money, it needs a subsidy to survive.

■ Average-cost pricing (the usual compromise)

$P = AC$, so the firm just breaks even (zero economic profit), while output is far closer to the efficient level. This is the principle behind utility rate-setting in most countries.

11.6 NATURAL MONOPOLY

Regulating a natural monopoly



Monopoly. $Q = 5$, $P = \$7$ ($MR = MC$, unregulated).

AC pricing. $Q = 8$, $P = \$4$ (break even).

MC pricing. $Q = 10$, $P = \$2$ (efficient, needs subsidy).

Figure 11.4 MC pricing is efficient ($Q = 10$, $P = \$2$) but loses money; AC pricing ($Q = 8$, $P = \$4$) lets the firm break even; the monopoly outcome is $Q = 5$, $P = \$7$.

11.6.1 REGULATING MONOPOLY

A rich-country case: the Bell System

- For most of the twentieth century, U.S. telephone service was a single regulated monopoly, AT&T, the Bell System.
- In 1974 the Department of Justice sued under the antitrust laws; in 1982 AT&T agreed to break itself up.
- The 1984 settlement split it into a long-distance company (keeping the AT&T name) and seven regional "Baby Bells."

THE RESULT

The breakup carved competition into long-distance service and was followed by a steep fall in long-distance prices, the textbook case of dismantling a monopoly.

11.6.1 REGULATING MONOPOLY

A developing-country case: América Móvil

- After Mexico privatized Telmex in 1990, it and its mobile arm América Móvil (Carlos Slim) came to dominate, ~70–75% of telecom, ~73% of fixed broadband.
- A 2013 constitutional reform created an independent regulator, the IFT, with sharp new powers.
- It named América Móvil a "preponderant economic actor" and required it to share its network and offer free interconnection.

–29%

telecom prices in Mexico
over nine years

73 →
50%

América Móvil's fixed-
broadband share

THE LESSON

A breakup in a rich country, an independent regulator forcing access in a developing one: the tools differ, the goal is the same.

11.7

Case Study: The EpiPen and De Beers

Two monopolies, built on different barriers.

11.7 CASE STUDY

EpiPen: patents and regulatory barriers

- After acquiring the product in 2007, Mylan raised the list price of a two-pack from about \$94 to more than \$600 by 2016.
- Mylan held over 80%, at times near 100%, of the U.S. market for epinephrine auto-injectors.
- Patents and the difficulty of winning regulatory approval kept competitors out.

~550%

price increase, 2007–
2016

80%+

U.S. market share held by
Mylan

WHY IT STUCK

With no close substitute for desperate buyers, demand was highly inelastic and the markup was enormous, exactly the logic of Section 11.4.2.

11.7 CASE STUDY

De Beers: control of a key resource

- From 1888 until around 2000, De Beers controlled an estimated 80–85% of the world's rough-diamond distribution, peaking near 90%.
- It restricted supply, held diamonds off the market in downturns, and its "A Diamond Is Forever" campaign discouraged resale, keeping a second-hand supply from undercutting it.
- When new mines opened in Russia, Canada, and Australia, its share fell to roughly 30% by 2019.

THE TAKEAWAY

De Beers maintained high prices the way the model predicts: by restricting supply.

Once mines opened outside its control, its grip on the price went with its share.

A monopoly lasts only as long as its barrier to entry.

11.8

Empirical Evidence: Patents, Generic Entry, and Drug Prices

A natural experiment every time a drug loses its patent.

11.8 EMPIRICAL EVIDENCE

Patent expiry: monopoly becomes competition

- During the patent, the maker holds a legal monopoly and prices far above marginal cost.
- When the patent expires, generic manufacturers, selling a chemically identical product, are free to enter.
- The market then moves toward the competitive benchmark of Chapter 10, in real time and real dollars.

Drugs About to Lose Their Patent

Upcoming U.S. patent expirations: Merck's Keytruda (2028), Novo Nordisk's Ozempic (2031), Bristol-Myers Squibb / Pfizer's Eliquis (2028), and Regeneron / Bayer's Eylea (composition patent expired in 2023, biosimilars launching in 2024). Each list price during exclusivity ran to tens of thousands of dollars per patient per year.

Prices collapse as generics multiply

Generic competitors	Price vs. original brand
1 (first generic)	about 15–25% lower
Several	roughly half the brand price or less
6 or more	more than 95% lower

FDA data: the more generics enter, the closer price falls toward marginal cost.

THE PROGRESSION

With a single rival, competition is still limited and the price barely moves.

As more generics enter, the price collapses, the journey from monopoly to competition, observed directly.

Key takeaways

1

Why monopolies arise

A barrier to entry keeps rivals out: a key resource, scale, patents, franchise, or network effects.

2

MR below price

Selling more means cutting the price on all units, so $MR < P$; the firm produces where $MR = MC$.

3

The welfare cost

Less output, higher price: a transfer to the monopolist plus a deadweight loss from trades that never happen.

4

The markup

How far price exceeds MC depends on elasticity, inelastic demand sustains large markups (the EpiPen).

5

Monopsony

A single buyer hires $MCL = MRP$; a minimum wage above the monopsony wage can raise both wages and employment.

6

Natural monopoly

Falling AC over the whole market; regulators use average-cost pricing to let the firm break even.

7

Evidence

EpiPen and De Beers; Bell System and América Móvil; drug prices fall 95%+ as generics enter.