LECTURE 9: MONOPOLY

Today’s Topics: Market Power

1. Why Monopolies? resources, governments, economies of scale → natural monopolies.


4. Inefficient Too: Deadweight Loss, profiteering?

WHY MONOPOLIES?

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2. The government has given the firm exclusive rights.
3. The high $FC$ (and $\therefore$ falling $ATC$) make a single producer more efficient than a large number of producers.
MONOPOLY RESOURCES

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For historical reasons, different uses in Melbourne (residential) and Sydney (industrial). Different price elasticities? in the SR and the LR?
GOVERNMENT-CREATED MONOPOLIES

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Examples?
NATURAL MONOPOLIES

Cable TV: high _FC_, the cable. Other reticulation networks, as service (more households) grows, the _FC_ are shared by many more users, so there are _economies of scale_, falling _AC_ (or IRTS).

Demand occurs with falling _AC_: cheaper for a single supplier than for two or more.
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Examples?

Less concerned about new entrants. Why?
MONOPOLY v. COMPETITION

A competitive firm is a *price taker*: sees a horizontal demand curve at the going price $P$. 
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A *monopolist*: sees a downwards-sloping demand curve — if it cuts production, it can sell at a higher price: can squeeze the market.

A firm facing a downwards-sloping demand curve has *market power*. 
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Chooses $y^*$ so that $MR(y^*) = MC(y^*)$. But where is this?
### A MONOPOLY’S REVENUE

<table>
<thead>
<tr>
<th>Quantity of output $y$</th>
<th>Price $P$</th>
<th>TR $= P \cdot y$</th>
<th>AR $= \frac{TR}{y}$</th>
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This assumes a single price for all units sold. (Later, we allow price discrimination and market segmentation.)
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If Bill’s *MC* is zero, where should he operate as a monopoly? 5.5 units. His price? $5/unit → $27.50 profit.
PROFIT MAXIMISATION

Output \( y/\text{hr} \)

$$/y$

Demand or \( AR \)

\( S = MC = \$4 = AC \)
PROFIT MAXIMISATION

Output ($y/\text{hr}$)

Demand or $AR$

$S=MC=S4=AC$
PROFIT MAXIMISATION

$S = MC = \$4 = AC$

Output $y/hr$

$\$/y

$10$
$8$
$6$
$4$
$2$
$0$
$-2$
$-4$

Demand or $AR$

$MR$
If the firm is CRTS, then \( AC = MC = $4 \) is a horizontal line.
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PRICE-TAKING v. MONOPOLY

Diagram of demand (D) and supply (S) curves intersecting at point Qc, with price Pc.
So lower output \((Q_M < Q_C)\), and higher price \((P_M > P_C)\).
BOB’S BAGELS, AGAIN

Price & Costs, $/unit

Output y/hr

\[ D = AR \]

\[ MC \]
BOB’S BAGELS, AGAIN

Price & Costs, $/unit

$0$ $0.5$ $1$ $1.5$ $2$ $2.5$ $3$

Output $y$/hr

$0$ $2$ $4$ $6$ $8$ $10$ $12$ $14$

$MC = S$

$D = AR$

$PC$

$D = AR$

$MC = S$
Acting as a price-taker, Bob would choose 8.5 units at the market-clearing price of $1.20.
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A MONOPOLY’S PROFIT

In the Appendix we derive the monopolist’s \( \pi \)-maximising mark-up:

\[
MC(y^*) = MR(y^*) = P \left(1 - \frac{1}{|\eta|}\right), \quad |\eta| > 0
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\[\therefore MC = MR \leq P\]
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When demand is perfectly elastic, the demand curve is horizontal, and the mark-up \( \frac{P}{MC} - 1 = \frac{1}{|\eta| - 1} \) is zero.
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When demand is perfectly elastic, the demand curve is horizontal, and the mark-up $\frac{P}{MC} - 1 = \frac{1}{|\eta|-1}$ is zero.

The less elastic the demand (up to unitary elasticity), the higher the price mark-up.
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The monopolist only chooses to sell when demand is elastic \((|\eta| > 1)\). (That is, price on the upper half of the linear demand curve.)
BOB’S BAGELS, AGAIN, AGAIN

![Graph showing Price & Costs, $/unit versus Output y/hr]

- **MC**
- **ATC**
- **D = AR**
BOB’S BAGELS, AGAIN, AGAIN

![Diagram of Price & Costs, $/unit vs. Output y/hr]

Price & Costs, $/unit

Output y/hr

MC
ATC
MR
D = AR
Bob’s monopoly profit is shown by the red rectangle. His average profit = $1.75 – $1 = $0.75/unit, and he sells 5.6 units. ∴ his profit is $4.20 with this demand (up from 8.5 • 0.20 = $1.70).
PRICE DISCRIMINATION

When a seller charges different prices for essentially the same product. If \( \frac{P_2}{P_1} \neq \frac{MC_2}{MC_1} \).

The monopolist wants to segment the market according to the price elasticity of demand \( \eta \) and charge higher prices for those consumers with lower elasticities of demand, according to the mark-up formula.

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Need to prevent arbitrage.
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Other examples?
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Another way of extracting consumer surplus:
  • charge an up-front fee $T$ (for membership or entrance or connection or a “monthly service fee”) and then
  • charge a further per-unit price $P$ for usage (for use or rides or phone calls or water litres).
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THE DWL OF MONOPOLIES
Rise in Producers Surplus = areas A − D.
Fall in Consumers Surplus = areas A + B.

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Rise in Producers Surplus = areas A − D.
(Profit $\pi = \text{Producers Surplus} − \text{Fixed Costs}$.)
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To what extent do the dynamic incentives of patents and copyrights mitigate these?
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ALWAYS WITH US

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*Advertising:* create a brand image, which results in (some) market power.
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*Advertising:* create a brand image, which results in (some) market power.

*M & A:* buying up competitors.
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*Buying suppliers*: to squeeze one’s competitors.

*Colluding*: forming cartels to support price or restrict output.
THE MORAL

You’re gouging on your prices if
You charge more than the rest.
But it’s unfair competition if
You think you can charge less.
A second point that we would make
To help avoid confusion:
Don’t try to charge the same amount—
Since that would be collusion!
You must compete. But not too much,
For if you did, you see,
The total market would be yours,
And that’s monopolee!

SUMMARY

1. Reasons for monopolies (governments, economics).

2. How monopolies squeeze the market to push up price. The less elastic the demand, the higher the price.

3. Ways in which monopolies segment the market and price discriminate.

4. The costs (efficiency and equity) of monopolies.

5. How governments respond.
APPENDIX: MARK-UPS

(Not for exam.)
Profit $\pi = P \cdot y - TC(y)$
Differentiating totally:
\[ \therefore \frac{d\pi}{dy} = P + \frac{dP}{dy} y - MC(y) \]
(the monopolist can vary price and quantity, along the demand curve)
\[ = 0 \text{ when } P(1 - \frac{1}{|\eta|}) = MC(y^*), \text{ (i.e. } MR = MC), \]
(the necessary condition for $y^*$ to maximise profit $\pi$),
where $|\eta|$ is the price elasticity of demand (+ve).

So $P > MC(y^*) = MR(y^*)$ when $|\eta| > 1$ (or elastic demand).

When demand is perfectly elastic ($|\eta| = \infty$), $P = MR = MC$, the competitive solution (horizontal demand).

The \textit{monopoly mark-up} $= \frac{P}{MC} - 1 = \frac{1}{|\eta| - 1}$ is positive.

The monopolist will only operate where demand is elastic, or $|\eta| > 1$. 