6. Entry and Exit

In the 1970s Harlequin had 90% of market share of "romance novels". It was the *incumbent*.

In 1980 it dumped Simon & Shuster, its distributor (to groceries and drugstores), in order to become its own distributor.

S&S and several others entered the market, some using S&S as their distributor. They were the *entrants*.

By 1983 total sales were up by 60%, but Harlequin's sales fell by 28% and its share and profits fell by 50%

Several months before IBM publicly announced the OS/2 operating system, in competition with Microsoft's Windows, Microsoft got wind of the new system.

It was able to design significant improvements into its DOS and Windows systems (or at least credibly announce such improvements), so that OS/2 was only slightly better than Windows.

OS/2 never really caught on.

Entrants — firms that are new to a market — threaten incumbents in two ways:

- they take market share away, reducing an incumbent's share of the profits pie
- their entry often intensifies competition, reducing the size of the profits pie.

The importance of entry and exit.

Structural factors (beyond firms' control) affect entry and exit decisions.

Incumbents' strategies to reduce the threat of entry and/or promote exit by rivals.

Predatory acts: entry-deterring strategies by incumbents that appear to reduce its profits, but which it hopes will add to future profits.

6.1 Some Facts About Entry and Exit

Firm F has entered market M if F introduces a new good or service into M, and

a. F previously did not exit (entry by a *new firm*), or

b. was not doing business in M previously (entry by a *diversifying* firm).

Acquisition of an existing firm or plant by a diversifying conglomerate does not necessarily introduce a new product into the market.
∴ not really entry.

Exit occurs either when a firm ceases to operate altogether, or ceases to operate in the market in question.

6.1.1 U.S. Evidence

Twenty years of U.S. data.

Hypothetical industry in 1996 with 100 firms, and combined annual sales of $100 m: average incumbent has sales of $1 m per year. Then:

1. *Entry and exit will be pervasive.*

   By 2001, 30–40 new firms, with combined sales of $12–20 m in 1996 dollars.

   About ½ diversified, about ½ new firms.

   30–40 existing firms will have left, also about $12–20 m in annual sales.

   About 40% of exiting firms diversified.

   ∴ 30–40% turnover in firms, about 12–20% of volume.

2. *Entrants and exiters tend to be smaller than established firms.*

   Typical entrant about ⅓ of typical incumbent.

   Except entry by diversifying firms that build new plant (5–10% of all entrants); roughly same size as average incumbent.

   Exiting firms about ⅓ size of the average incumbent.

3. *Most entrants don't survive ten years, but survivors grow very quickly.*

   Roughly 60% of new entrants in 1996–2001 will exit by 2006.

   Survivors will nearly double their size between 2001 and 2006.

4. *Entry and exit rates vary across industries.*

   High rates of entry: apparel, lumber, furniture, printing, fabricated metal.

   High rates of exit: apparel, lumber, furniture, printing, leather.

   Little entry: food processing, tobacco, paper, chemicals, primary metals.

   Little exit: tobacco, paper, chemicals, primary metals, petroleum, coal.

Four important implications for strategy:

- Future planning: the unknown competitor: ⅓ of rivals in five years time will be new.
- Because of their size, diversifying competitors who build new plants threaten.
- Most new ventures fail quickly, but have capital available for expansion.
- Know the entry and exit conditions in one's industry: powerful or not?

6.2 Entry & Exit: Basic Concepts

A profit-maximising, risk-neutral firm should enter a market if the NPV of expected post-entry profits > sunk costs of entry.

Possible sunk costs: specialised capital equipment, government licences. See below.

For post-entry profits, assess *post-entry competition*: conduct and performance of firms.

Consider: historical pricing practices, costs, capacity, other markets of incumbents.

What of barriers to entry?

6.2.1 Barriers to Entry

6.2.1.1 Bain's Typology of Entry Conditions:

Barriers to entry: those factors that allow incumbents to earn positive economic profits, while making it unprofitable for new entrants.

Structural barriers: when the incumbent has natural cost advantages, or marketing advantages, or favourable regulations.

They benefit the incumbent even when entry is ignored.

Entry-deterring strategies: barriers from incumbents' explicit actions: capacity expansion, limit pricing, predatory pricing.

Are entry barriers structural or strategic?
Are entry-deterring strategies desirable?

6.2.1.1.1 Blockaded entry

If the incumbent need take no entry-deterring strategies to deter entry.

Because of structural entry barriers, or

because of expected post-entry competition with homogeneous product.

6.2.1.1.2 Accommodated entry

If structural barriers are low, and either

a. entry-deterring strategies will be ineffective, or

b. the costs to the incumbent of trying to deter entry > the benefits it could gain from repelling the entrant.

Typically markets with growing demand or rapid technological change.

6.2.1.1.3 Deterred entry

If the incumbent can keep repel the entrant using entry-deterring strategy. *Predatory acts.*

The cost of the deterrence < additional profits in the less competitive market.

Firms should analyse entry conditions to determine its actions: understand the size of the structural entry barriers, consider the likely consequences of strategic entry barriers.

6.2.1.2 Structural Entry Barriers

- control of essential resources,
- economies of scale and scope,
- marketing advantages of incumbent.

6.2.1.2.1 Control of essential resources

Risks to acquiring key inputs in order to gain monopoly status:

1. New sources of input may emerge, encouraged by the high returns to owners.
2. Existing owners may hold out for high prices before selling to the would-be monopolist.
3. It may be illegal: incumbents with dominant market share may be forbidden from preventing competitors' access to key inputs.

Mining rights provide a legal entry barrier: only a single firm has the right to mine in a particular location for a particular resource.

Patents provide a legal entry barrier: when the incumbent has invented a novel and non-obvious product or production process.

How, when, and for how long varies with jurisdiction.

Sleeping patents: patents to products the patent holder has no intention of selling: by stopping competitors from using, to the holder's cost.

Patents may be ineffective: can be "invented around" — is it a new product or an imitation of a protected product?

Incumbents may file patent protection suits against entrants whose products are apparently different from the incumbent's.

But incumbents may rely on secrecy, not patents, to protect specialised know-how: Coca-Cola exited India rather than tell the government its syrup formula.

Case: Patent Protection in the Pharmaceutical Industry

Pharmaceuticals: an expensive and risky venture to invent and develop new drugs: long R&D times, long approval times, uncertain demand. Without patent protection, no incentive.

In the late 1960s, Eli Lilly introduced Keflin; in 1971 Keflex: distinct chemical structures, so separate patents.

In the '70s and '80s top selling prescription drugs in the U.S., but others developed distinct chemical structures and patents too: Merck.

SmithKline's Tagamet anti-ulcer drug in 1978 a best seller, followed by Glaxo's Zantac in 1984.

When their patents expire soon, both should see a 50% drop in sales as generics compete.

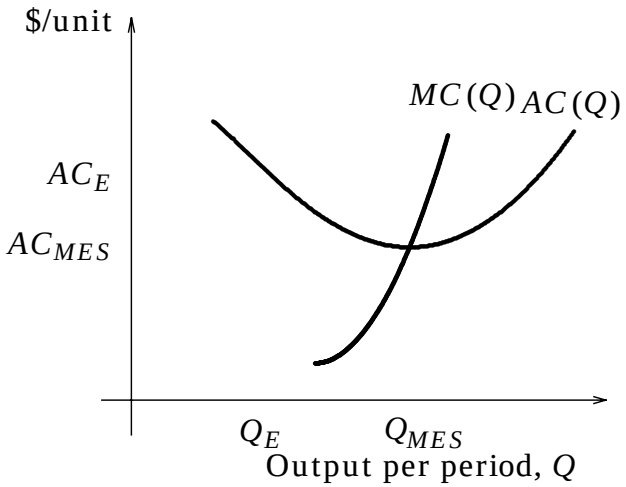
High returns on patented drugs that treat common Western diseases with few substitutes.

The U.S. F.D.A.'s regulatory requirements meant a race: patent too soon and the years of effective monopoly after final approval are reduced, but patent too late and you might get beaten to the legal gun by another firm.

The law can provide longer effective protection , but simplify testing requirements, and lead to greater competition.

6.2.1.2.2 Economies of Scale and Scope

When EOS are significant, incumbents operating at or beyond the MES will have a cost advantage over smaller entrants



An incumbent will operate at a scale such that any $P > AC_{MES}$ will be profitable.

But if an entrant can only attain a much smaller scale, then its $AC_E > AC_{MES}$, and only if $P > AC_E$ will entry be profitable.

The entrant might enter at a larger scale:

- by spending heavily on advertising before entering: e.g. Optus' "*Yes*"
- by investing in the creation of a large sales force

But there are two costs:

- the direct costs of advertising and employing and training the sellers;
- when the incumbents lose market share to the entrant, their *MC*s will fall, → a fall in market *P*.

  The entrant's dilemma: to overcome its cost disadvantage, it must increase its market share; but, if successful, price competition will increase.

  Only if there is collusion would the *P* not fall with the entrant's arrival.

Large-scale entry into capital-intensive industries often → fierce *P* competition:

- sometimes the increased rivalry of more incumbents
- sometimes *predatory pricing* by incumbents to repel entrants by pricing below *MC* (see below).

Incumbents may also derive a cost advantage from economies of scope:

- EOS in production, from the flexibility in materials handling and scheduling from having multiple production lines under the same roof;

- EOS in marketing, from the substantial up-front expenditures on advertising for a new entrant to establish a minimum level of brand awareness.

  An incumbent has already obtained brand-name awareness, and may be able to use existing production and distribution facilities for the new product.

EOS and economies of scope force a minimum scale or product variety on new entrants to achieve *AC* parity with incumbents.

This is a barrier to the extent that the up-front entry costs become sunk.

If they were not sunk, we could see "hit-and-run" entry HARE: an entrant comes in at a large scale, undercuts incumbents' prices, and if they retaliate it exits and recovers its entry costs — leaves incumbents vulnerable to entry even if MES implied only a single firm in the market.

Such a situation is rare, and usually significant sunk up-front commitments necessary to achieve cost competitiveness with incumbents means that entry is unattractive to potential entrants, even though incumbent firms may be profitable.

6.2.1.2.3 Marketing Advantages of Incumbency

Umbrella pricing, when a firm sells different products under the same brand name, is a special case of economies of scope.

Reduces an incumbent's sunk costs of a new product introduction, because less need to advertise and product promote to develop credibility in the eyes of consumers, retailers, and distributors.

But would not protect against a "lemon" of a new product: few repeat purchases, and fewer first purchases, after adverse reputation.

Risk that a lemon new product might:

- lead to lower quality perception for the incumbent's existing range of products;
- lead rival managers to see the failure of the new venture as a sign of the incumbent's weakness.

The umbrella effect might also help with the vertical chain of distributors and retailers, and of suppliers.

Both incumbents and new entrants alike may face high entry barriers when introducing new experience goods (Lecture 5-43). To get wary consumers to sample their wares:

- set low introductory prices,
- dispense free samples,
- distribute money-saving coupons
- invest heavily in brand identity

If a product is high quality, then firms expect much repeat business, which will repay the costs of heavy introductory advertising.

Thus consumers are more willing to sample new products extensively advertised, correctly perceiving them to be of higher quality.

Case: The Japanese Brewing Industry

Highly concentrated: four firms have 98% of the market, and after-tax returns on assets of 3–4%, which is good in Japan with low infration.

Entry barriers in Japan, as in the U.S. and Australia, are the strong brand identities.

Until 1994, a further barrier to entry was government requirement that a new brewery produce at least 2 m litres annually.

After a reduction in the minimum to 60 k litres/year in 1994, many microbreweries have opened.

Will cut the big four's shares and profits, as will changes in retailing practices:

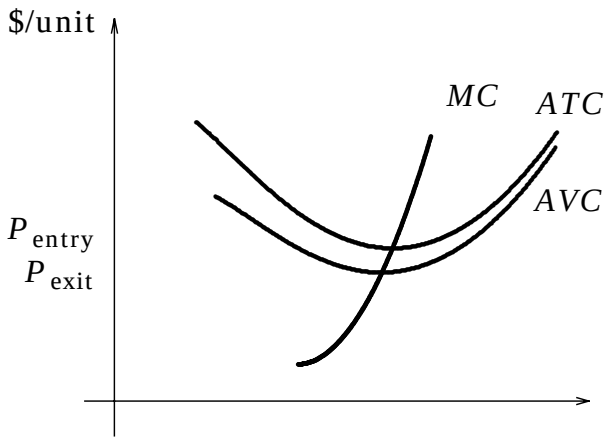
- half of the beer is sold in bars and restaurants, with loyalty
- most remaining sales in corner bottle shops
- recently, discount liquor shops have cut prices by 25% below corner shops, and have also stocked imported beers, at ⅔ the cost of domestics
- entry by imports, and the growth of new retail channels, will → the big four to lower prices, lose share, or both

6.2.2 Barriers to Exit

Exit means ceasing production and redeploying or selling off its assets, not a change in ownership.

A risk-neutral, profit-maximising firm will exit if the opportunity cost (Lecture 1-x) of its assets exceeds the PV of remaining in the market.

But exit barriers can restrain exit, even when, had it foreseen the prevailing conditions, the firm would not have entered.



P_{entry} = min ATC, is the price at which the entrant is indifferent between entering or staying out.

P_{exit} = min AVC, is the price below which the incumbent would either liquidate its assets or redeploy them to another market.

$P_{entry} - P_{exit}$ = exit costs.

Exit barriers:

- Obligations that they must meet whether or not they cease operations:
  - — labour agreements (incl. superannuation)
  - — commitments to purchase raw materials — especially for a diversified firm considering exit of a single market.
- Relationship-specific assets, with a low resale value.
- government restrictions — environmental rehabilitation, etc.

6.3 Entry-Deterring Strategies

Two necessary conditions:

- The incumbent can raise price after it achieves monopoly status.
- The strategy must alter entrants' expectations about post-entry competition.
  Lest they ignore the strategy.

If a monopolist cannot raise price above *MC*, the market is *perfectly contestable*.

Contestability requires "hit-and-run entry" (above): if a monopolist raises price above *MC*, then a HAREntrant rapidly enters the market, undercuts the price, reaps short-term profits, and exits just as the incumbent retaliates.

If sunk entry costs are zero (at an extreme), then HARE is always profitable: $P = AC$ and $\pi = 0$, even with only one incumbent.

More usually, the HAREntrant prospers so long as it can set a price high enough, and for long enough, to recover its sunk entry costs.

Contestability shows how the threat of entry can restrain monopolists. But which industries?

With airlines, the threat of entry leads to a monopolist to moderate its prices, but not to *AC*: not perfectly contestable.

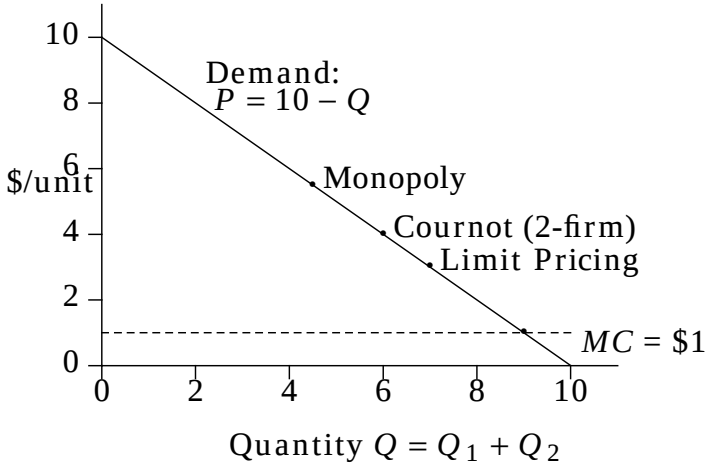
In most markets, incumbents can adjust prices rapidly, when entry threatens, so contestability is limited.

How can an incumbent monopolist deter entrants?

- Limit pricing (charging a low price before entry)
- Predatory pricing (charging a low price to drive others out of business)
- Excess capacity (shaping entrants' expectations of post-entry competition)

6.3.1 Limit Pricing

The would-be entrant observes the low price set by the incumbent, infers that the post-entry price would be at least as low, and walks away.



Assume sunk *FC* of \$8.50 per year.

Incumbent firm N with no threat of entry would charge the monopoly price P_M \$5.50/unit, sell 4.5 units/year, and make $4.50 \times 4.5 - 8.50 = \$11.75$, or \$23.50 undiscounted over two years.

Firm E also has the technology. What is the nature of the post-entry competition?

If E sees N charging \$5.50 in Year 1 and concludes that N is unlikely to be an aggressive competitor, with Cournot equilibrium in Year 2 (at P_C = \$4/unit, and $Q = 3 + 3 = 6$, and with each $\pi = 3 \times 3 - 8.50 = 50¢$).

If N believed that Year 2 would be Cournot, then its total $\pi = 11.75 + 0.50 = \$12.25$ over two years.

Firm N:

> "If we set a low Year 1 price, perhaps E will expect a low post-entry price sufficiently low to deter it, and we can earn monopoly profits in Year 2"

If Firm N chooses a Year 1 P_L = \$3/unit, then Firm E:

> "If N charges \$3 as a monopolist, with competition it would price lower. Suppose we enter; even if *P* remains \$3, and we sell ½ of 7 units, our $\pi = 2 \times 3.5 - 8.50 = -\$1.50$. ∴ Do not enter."

If N charges \$3 in Year 1, successfully deters E, and charges \$5.50 in Year 2, its two-year profit is \$5.50 + \$11.75 = \$17.25, > \$12.25.

6.3.1.1 The Flawed logic of Limit Pricing

Two flaws:

- It doesn't end after two years
- It relies on an equilibrium that is not subgame perfect (Lecture 1-40).

Only if N has a cost advantage over E could N deter E *indefinitely*, by setting $P <$ min *AC* of E.

Case: Limit Pricing by Xerox

Xerox faced competition from electrofax, but Xerox was 1¢ per copy cheaper, and ½¢ per copy better quality.

Xerox machines were dearer to manufacture, however.

Did Xerox limit price?

Xerox' monopoly price about 10¢/page, > *AC* of electrofax.

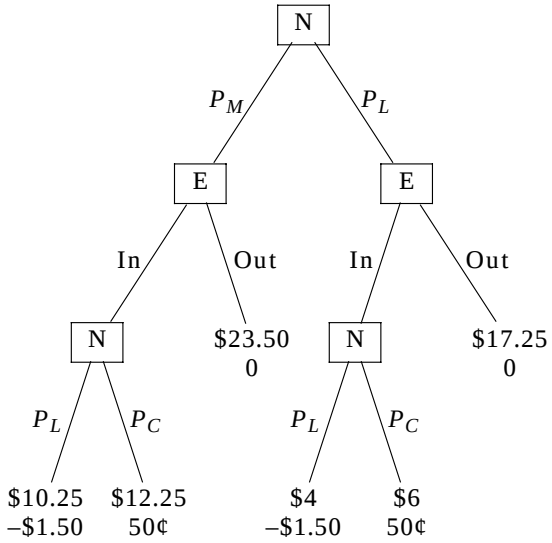
For small customers (1,000 pages/month), Xerox charged close to monopoly, which gave electrofax a profitable opening (→ 25 rival firms).

For large customers (> 2,000 pages/month), Xerox charged only 5¢/page: consistent with limit pricing, while still covering its *AC* (only 10 electrofax rivals).

By 1978, others were using its technology; Xerox share of new copiers down to 40%, and prices/page down 30%, but Xerox still very profitable: implies substantial profits even when limit pricing.

Subgame Perfect Equilibrium

E's expectations about N's post-entry pricing are irrational:



Solve this game tree using *backwards induction* (Lecture 1-41).

If E enters, then N is *always* better off with P_C than with limit price P_L; E looks forward and reasons back to realise this, and Enters.

Since N realises it cannot credibly deter entry, it prices P_M in Year 1.

The incumbent's threat to price P_L even after Entry is *non-credible*.

6.3.1.2 So When does Limit Pricing Make Sense?

If limit pricing occurs, do firms set prices irrationally?

Or two types of uncertainty:

- about the incumbent's objectives (see Predatory Pricing below);
- about the incumbent's costs or the level of market demand.

  Then the post-entry price forecasts can be influenced by the incumbent's pricing strategy.

Limit pricing may enable the incumbent to influence the entrant's estimate of its costs, and so the entrant's expectations of post-entry profitability.

Incumbent MC of \$1 $\rightarrow$ post-entry Cournot entrant π = \$5.

Incumbent MC of 50¢ $\rightarrow$ post-entry Cournot entrant π of –\$10.60.

If the entrant knows the incumbent is not acting strategically, then the entrant can infer the incumbent's MC from its price:

P_M = \$5.50 $\rightarrow$ MC = \$1, and entry profitable

P_M = \$5.25 $\rightarrow$ MC = 50¢, entry unprofitable

An incumbent with MC = \$1, may reason strategically:

> "If we set P = \$5.25, then the entrant will not know whether we are low or high MC and might not enter."

Because a high-MC incumbent can disguise this, a low-MC firm would have to price sufficiently below \$5.25 that an entrant would know that only a low-MC firm could price so low: a credible signal.

But then a high-MC firm cannot disguise itself, and should price at P_M and accept entry.

If the entrant is uncertain about the level of demand as well as the incumbent's MC, then an equilibrium:

a. the incumbent's $P < P_M$ and

b. the lower the incumbent's MC, the lower its P — signals that MC and/or market demand may be low: either sufficient to deter entry.

6.3.2 Predatory Pricing

The preying firm sets its P below cost (AC or short-run MC) in order to drive out others and reap higher profits at higher P after they've gone.

6.3.2.1 The Chain-Store Paradox

The intuition that an incumbent that prices below cost in one market can deter entry in other markets in the future is wrong.

Using backwards induction, there is no further entry to deter in the last market, and so the incumbent will not engage in predatory pricing.

Looking forward and reasoning backwards, the entrant will enter, regardless of previous price cuts.

Similarly, now, in the second-last market, and so on.

In a world in which all entrants could accurately predict the future course of pricing, predatory pricing would not deter entry, and would therefore be irrational.

Experiments with student subjects: no price slashing.

Yet many firms are seen as slashing prices to deter entry. Why?

Again: consider uncertainty.

If the entrant is uncertain about

- the incumbent's toughness
- the incumbent's costs

then the incumbent will want to signal its toughness by pricing low and deterring entry.

A sufficiently low price will also signal low costs, again deterring entry.

Even if the costs are known, a *reputation for toughness* can effectively deter:

- by going for market share instead of profits
- by willingness to fiercely compete on price
- by announcing a goal of attaining dominant market share

Case: Coffee Wars

In 1970 GF's Maxwell House was best seller in the Eastern U.S.; P&G's Folger's in the West.

To increase sales of Folger's in Cleveland, P&G started: TV advertising, retailer's promotions, coupons, in-pack gifts, and mailed free samples.

GF responded with: mailed and in-pack coupons, and retailers' promotional incentives

But Folger's share grew to 15% after a year.

GF adopted its "defend now" strategy to limit Folger's to 10% in the East:

- heavy price discounting, "but $P \geq AVC$"
- and its "fighting brand," Horizon

Evidence in the FTC's investigation that both sold with $P < AVC$.

Clearly, GF wanted to signal to P&G its aggressive defence.

In 1976 the FTC charged GF with attempted monopolisation, unfair competition, and price discrimination.

But in 1984 GF exonerated: the relevant market was the whole U.S., in which GF did not possess market power:

> "MH did not come dangerously close to gaining monopoly power as a result of any of its challenged conduct in any of the *alleged markets*. [my emphasis] As a result, its actions were output-enhancing and pro-competitive — the kind of conduct the antitrust laws seek to promote."

6.3.3 Excess Capacity

Firms hold more capacity than they use for several reasons:

- lumpiness of adding increments of capacity, (market forces)
- downturns in demand (market forces), and
- to blockade entry by altering entrants' forecasts of post-entry competition (strategic).

Holding excess capacity may signal the incumbent's willingness to slash prices if entry occurs

Indeed, this signal, if effective, may mean that prices are never cut, and so the risk of antitrust action in response to limit or predatory pricing never occurs.

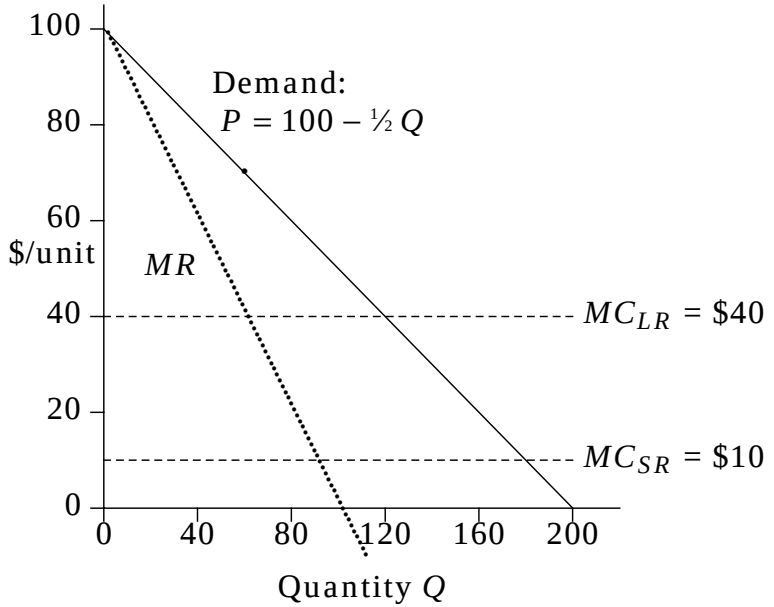
Excess capacity may deter an entrant with full information about the incumbent's costs and strategic direction.

The incumbent's excess capacity can affect the entrant's forecasts of post-entry competition, which depend on each firm's costs and capabilities.

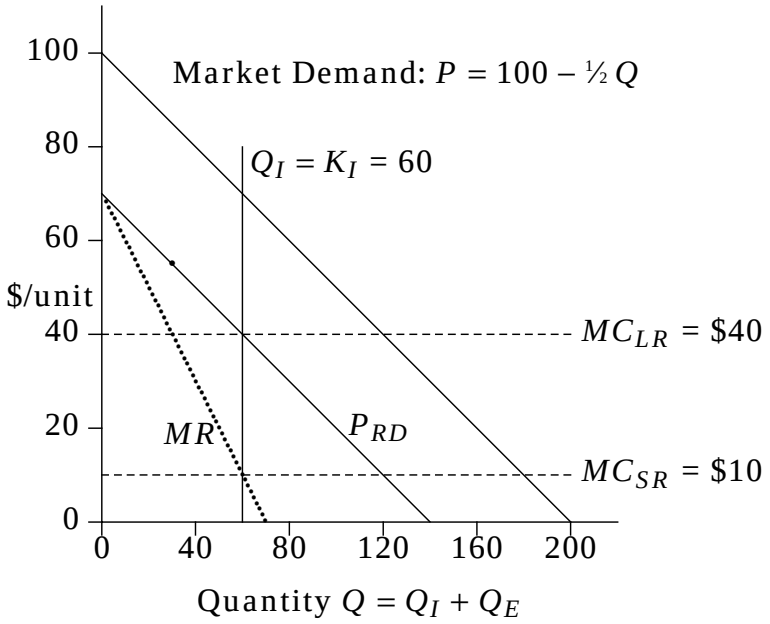
6.3.3.1 Entry-Deterring Excess Capacity

Assume a single market in which an incumbent is threatened by a single firm, with Bertrand post-entry competition (Lecture 3-32) and with fixed capacity, so that:

- Consumers buy from the lowest-price seller, and
- Each firm expects the other to keep its price fixed, even if undercut, which gives the incentive to price cut until $P = MC$.



P_M = \$70 and Q_I = 60, when capacity costs \$30/unit and each unit produced costs another \$10: the long-run MC is \$40/unit, and the short-run \$10/unit.



The figure shows the entrant's residual demand curve ($P_{RD} = 70 - \frac{1}{2} Q_E$), after it realises that that the incumbent will cut price to produce Q_I at capacity K_I.

Here $Q_I = K_I = 60$, which results in $Q_E = 30$ at $P =$ \$55/unit.

Besanko's Table 11.2 shows how the entrant's optimal capacity Q_E, the market quantity Q, the price P, and the two firm's profits vary with the incumbent's capacity K_I.

With sufficient capacity the incumbent may deter entry: with K_I =100, the entrant stays out lest it make a loss of \$50. Besanko's Table 11.1 shows that $Q_I = 90$ and $\Pi_I =$ \$950.

Investment in additional capacity can be a *credible commitment* to deter entry.

Critical that the capacity investment is sunk: if the incumbent could sell its capacity for the full purchase price, then, once entry had occurred, better off selling any capacity above 60.

The entrant, looking forward and reasoning backwards, would realise this and enter no matter how much capacity the incumbent held.

6.3.3.2 Judo Economics and the Puppy-Dog Ploy.

Suppose an entrant could credibly commit to limiting its output, so that P remained high: *judo economics* or the "puppy-dog ploy" (Lecture 4-26).

In the above example, so long as the incumbent is convinced that the entrant will produce no more than 10, and so does not expand capacity, then Π_I = \$1,400 at $Q_I = K_I = 60$ and P = \$65 with entry, instead of Π_I = \$950 at $K_I = 100$ and $Q_I = 90$ without entry.

The new Braniff Airlines announced that it would restrict its flights to a small number of cities and only about 3% the passengers of AA, but AA still triggered a price war that did for Braniff.

Why?

- Perhaps AA was setting a predatory price to deter later entry by others.
- Perhaps Braniff's promise was not credible.

The puppy dog may not be able to convince others of its commitment to stay small: it will meet aggression.

6.4 Exit-Promoting Strategies

During price wars firms sometimes argue that their rivals are trying to drive them from the market in order to exercise market power later.

Complaints of "unfairly low prices" occur in international trade disputes, when foreign firms are sometimes accused of *dumping*: of selling at prices below cost.

Case: How Standard Oil Drove Out its Competitors

John D. Rockefeller's Standard Oil grew by exploiting scale and scope economies in refining, distribution, and purchasing; careful organisation of the vertical chain; and a series of shrewd steps to destroy rivals.

"Drawbacks" meant that S.O. (Esso!) was paid a fee by the rails for every barrel of oil sent to NY by a rival: subsidised by its rivals.

S.O. had near monopsony power in oil refining and distribution.

S.O. came to dominate refining by predatory pricing: by cutting prices until a recalcitrant refiner was driven from business. Owned 90% of U.S. refining, and then squeezed profits out of the vertical chain.

S.O. aggressively built long-distance pipelines from the fields to the refineries.

S.O. was a trust, and hence immune to state anti-competitive actions.

Eventually broken up by the "antitrust" Sherman Act of 1890.

Was it predation if the end was acquisition?

- Could have been a signal to future rivals, as well as softening the targets.
- Fear of an all-out war of attrition might have led to lower prices.

A successful predation strategy can be extremely costly.

6.4.1 Wars of attrition

Price wars — wars of attrition — hurt all firms in the market.

Larger firms with greater sales may be harmed more, even if they have greater capacity to sustain losses ("deeper pockets") than do smaller firms.

In a war of attrition the eventual survivor claims its reward of higher profits, while the loser gets nothing and wishes it had never participated.

e.g. Burns, Philp's herbs and spices division against McCormick Spices.

If long and bloody enough, it may be only a pyrrhic victory for the survivor.

No firm sustains a price war in the belief that it will lose: the more convinced it is that it will survive, the more willing to enter and endure.

$\therefore$ A role for signalling its capacity for endurance to its rivals: via lower costs, greater earnings, or commitment to winning. To encourage their early exit.

Norman Schwartzkopf: "Show me a good loser, and I'll show you a loser."

Exit barriers will enhance a firm's position in a war of attrition: committed to paying for inputs, compared to firms who can adjust their input costs.

6.5 Effects of Diversification on Entry and Exit Decisions

Diversification may affect the entry costs, post-entry profitability, and the nature of post-entry competition.

6.5.1 Diversification and entry costs

Entry by diversified firms: larger plants (three times, on average) than startups', and more likely to succeed — U.S. evidence.

Several advantages of diversified firms:

- Larger, and hence smaller risks to lenders — lower cost of credit;
  new venture capitalists have reduced the need for startups to turn to exiting firms for capital.
- Economies of scope in production, distribution, and marketing.

6.5.2 Diversification, entry, and coordinated pricing

A diversified firm entering a new market may choose a pricing strategy different from a new firm's.

A natural-monopoly market with room for only one hamburger vendor: two possible entrants:

1. the incumbent, with a pizza joint already, and
2. a startup firm.

Who has the stronger incentive to enter the hamburger market?

Depends :

- Can the incumbent benefit by coordinating the pricing of the two products?
  Yes.
- Will the incumbent be as willing as the entrant to fight for supremacy?
  No, if the products are substitutes; yes, if complements.

6.5.2.1 The Efficiency Effect

In general pizzas and hamburgers are substitutes (Lecture 3-7).

With no hamburger outlet, the incumbent sets P_Z to maximise pizza profits.

If a new entrant opens a hamburger outlet, the demand for pizzas will shift left and so the profit-maximising price will fall.

The new entrant would be willing to pay up to its weekly profit to enter.

But the incumbent would be willing to pay more, since it could coordinate prices in the two markets to avoid cannibalising its existing pizza business.

If the two products were complements instead of substitutes, similar analysis would follow, but the incumbent would lower prices to boost demand across both markets, and the incumbent would have more to gain than a new entrant.

The *efficiency effect*: "Because competition destroys industry profits, an incumbent has more incentive to deter entry than an entrant has to enter."

In effect the incumbent *preempts* entry to maintain its monopoly status.

6.5.2.2 Is Preemption Credible?

What if the entrant follows the incumbent into the hamburger market?

A price war erupts, which cuts demand for pizzas too: the incumbent has more to lose, and so may exit from the hamburger market first.

With two substitutes, the incumbent should consider this eventuality before entering the hamburger market.

For complements, however, the incumbent would benefit from lower prices in both markets, up to a point, and outlast the new entrant.

6.6 Evidence on Entry-Deterring Behaviour

Apart from antitrust cases, little evidence of firms pursuing entry-deterring strategies, successful or not.

Scant evidence because:

- strategic entry deterrence may be commercially sensitive information, and may be illegal;
- to determine whether a firm was pricing below its short-term P_M necessary to know the firm's MC, its demand curves, the degree of industry competition, and the availability of substitutes — outside antitrust cases difficult to obtain;
- what would the rate of entry have been, absent the predatory acts? Difficult to say.

Case: DuPont's Use of Excess Capacity to Control the Market for Titanium dioxide

While rivals used the sulphate process, DuPont used the chloride process to produce TiO_2 from ilmenite, and also low-cost rutile.

New pollution laws ended use of sulphate process plants, which DuPont foresaw.

It predicted a rise in demand for TiO_2, and it preempted its rivals by adding 500,000 t of new capacity.

DuPont estimated its costs were 22% lower than its rivals, so they wouldn't go head to head over capacity and share.

During the construction, DuPont was vulnerable, but signalled its rivals not to start capacity expansion:

- announce the scale of its planned expansion
- falsely announced the start of construction of a new plant
- and limit priced ($P < ATC$), which its rivals refused to match

Since DuPont lacked capacity to supply the whole market, the two-tier pricing structure persisted, until demand slackened and the rivals caved lest they lose the market to DuPont.

After reconsideration, DuPont scaled back its capacity expansion.

6.6.1 Survey data on entry deterrence

A survey asked major-consumer-product-maker managers about their use of entry-deterring strategies:

1. aggressive price reductions to move down the learning curve (Lecture 2-21) to obtain a cost advantage;
2. intensive advertising to create brand loyalty;
3. acquiring patents for variants of a product;
4. enhancing reputation for predation through announcements;
5. limit pricing;
6. holding excess capacity.

1–3 create high entry costs; 4–6 alter the entrant's forecasts of post-entry competition.

Besanko's Table 11.3 gives the results.

Over half: at least one frequently; almost all occasional use of one or more.

1–3 much more popular than 4–6.

More likely for new products than for existing product, which were often in intense competition anyway: entry was blockaded.

6.6.2 Other evidence

Strategic use of capacity would suggest expansion unrelated to growth in demand, but no evidence of this in the U.S. chemical products industries.

Some evidence of occasional limit pricing in other industries, but no evidence of strategic use of excess capacity.

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