Competition and Innovation: The Microsoft Case

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Office hours by appointment

Introduction and overview

- Competition policy
  - tradition focus on impact of market power on prices and quantities at a point in time
  - innovation is an important determinant of consumer benefit
  - in fast changing markets the market power a firm has today may differ from what it will have tomorrow
  - competition may be *for* the market more than *in* the market

- The case against Microsoft illustrates these issues

Outline

- Lecture 1
  - Summary of key aspects of the case
  - welfare costs of market power
  - the workings of competition policy
    - defining markets
    - evaluating a substantial lessening of competition
  - network effects
  - exclusivity
  - bundling
- Lecture 2
  - the computer industry and the Microsoft case

Summary of key aspects of the case

- US Department of Justice vs Microsoft in 1998
  - For details of the case itself see:
  - http://www.justice.gov/atr/cases/ms_index.htm
  - http://en.wikipedia.org/wiki/United_States_v._Microsoft
- The facts
  - Microsoft bundled Internet Explorer, a web browser, with Microsoft Windows, its operating system
  - Microsoft changed is "application programming interfaces" to favour Internet Explorer over other web browsers
  - insisted on restrictive licensing agreements with original equipment manufacturers

Summary of key aspects of the case

- The DOJ claimed that these activities represented an abused of Microsoft's monopoly power in order to reduce competition in the computer and internet industry

- Microsoft argued that these actions were the results of innovation and part of the normal competitive process, and that consumers benefited from these actions

the computer industry

- some features of the industry favour market power
  - network effects, product worth more as more consumers use it
  - developers of technology *and* users invest sunk costs in the technology, so won't switch unless gains very large

- but, rapid pace of technological change means that computer industry could be quite competitive
  - even if one technology dominates today, a new technology could overtake it tomorrow
  - competition is to have the dominant technology

we need a number of tools to discuss the case

- understanding of welfare costs of market power when firms invest in new technologies
- how competition authorities define markets and evaluate a substantial lessening of competition
- network effects
- exclusivity
- bundling

welfare costs of market power

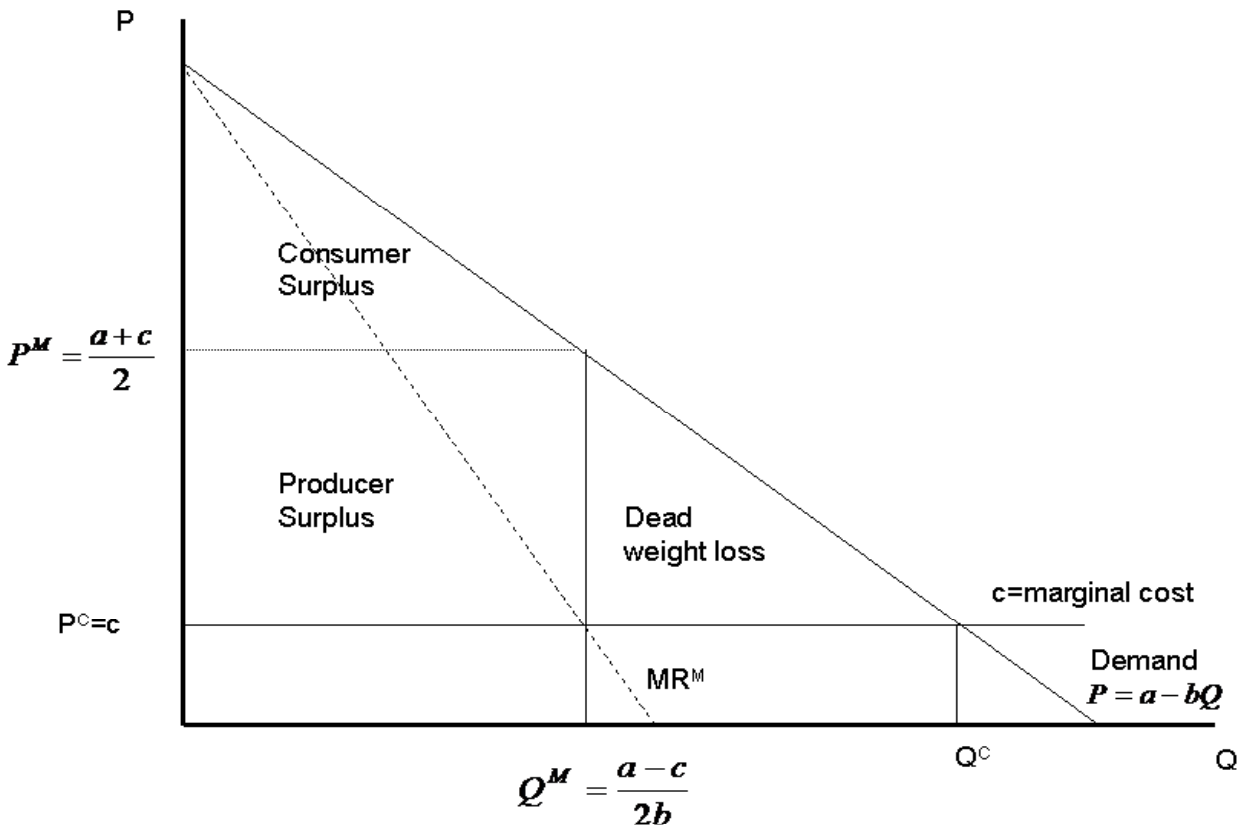
- Monopoly, single period
  - inverse demand curve $$P = a - bQ$$
  - profits $$\Pi = (P - c)Q$$
  - profit maximisation implies

$$Q^M = \frac{a-c}{2b}$$

$$P^M = \frac{a+c}{2}$$

$$\Pi^M = \frac{(a-c)^2}{4b}$$

welfare costs of market power in static monopoly



the workings of competition policy

- Competition regulation (in the US called "anti-trust):
  - in the US: Sherman Act 1890 and Clayton Act 1914
  - in the UK: Competition Act 1998 and Enterprise Act 2002

- in the US the Department of Justice brings a case against the firm, heard in court of law

- in the UK the Office of Fair Trading (OFT) refer cases to the Competition Commission who publish a report on the case, only quasi-judicial
  - there is also an appeals process

the workings of competition policy: market definition

- to evaluation whether a firm has market power, we first need to define the market
  - this is often a crucial determinant of outcome of analysis
- SSNIP test (**s**mall but **s**ignificant **n**on-transitory **i**ncrease in **p**rice), or the hypothetical monopolist test
  - Church and Ware, Chapter 19, The Theory of the Market
  - http://homepages.ucalgary.ca/~jrchurch/page4/page5/files/PostedIOSA.pdf
  - CC3 Market Investigation References: Competition Commission Guidelines June 2003; Part 2: Market definition
  - http://www.competition-commission.org.uk/rep_pub/rules_and_guide/index.htm

Measuring market power

- "The market shares of firms in the market ... can give an indication of the extent of a firm's market power. For instance, a firm with a large market share relative to other firms in the same market may have the ability to raise its price independently of other firms, at least to some extent."
  - from CC3 "Market Investigation References"

the workings of competition policy: evaluating a substantial lessening of competition

- actions by a firm that lead to a substantial lessening of competition are against competition law
  - sometimes actions by a firm with a dominant position can lead to a substantial lessening of competition, while the same action by a firm with a small market share would not

welfare costs of market power in Schumpeterian industries

- is market power always bad?

- Schumpeterian industries
  - industries where innovation and "creative destruction" are important
  - "as important as price competition is to us, a second major and possibly even greater concern is maintaining competition for innovation."

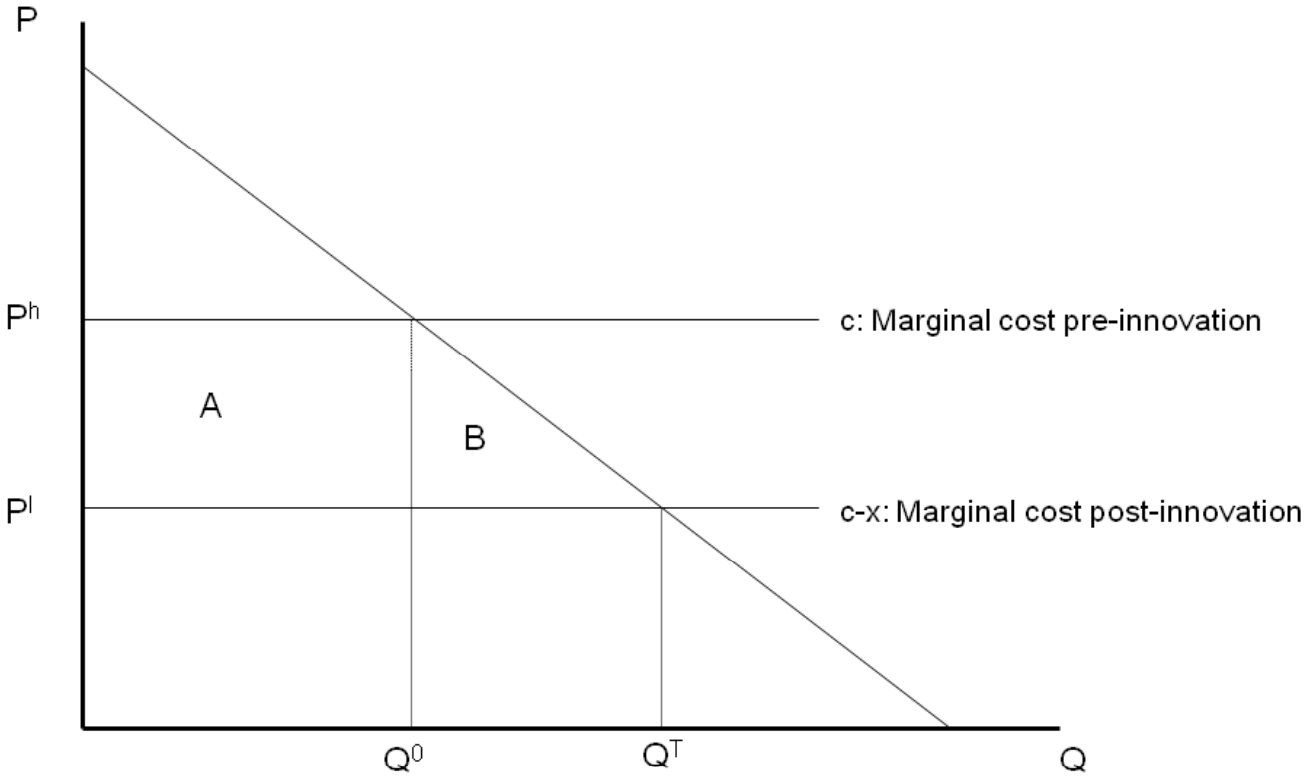
- in Schumpeterian industries some degree of market power may lead to increased consumer welfare

consider firms incentives to invest in cost reducing technology

- it can be hard to appropriate the returns to a good idea
- others can easily copy it
  - exerting property rights on intangible assets is difficult
- this means firms have reduced incentive to invest in new ideas

- patents are a policy response to this problem
  - grant firm a temporary monopoly so they can reap rewards of innovation

patents nicely illustrate the trade off between the static costs of market power and the dynamic gains



firm's problem

- firm earns $$V(x,T)=\sum_{t=0}^{T-1}R^t\pi^m(x,T)=\frac{1-R^T}{1-R}\pi^m(x,T)$$
- T: government grants a patent for T years
- R: discount rate
- x: the amount of R&D, r(x): cost of doing R&D
- firm chooses x to

$$\max_x V(x,T)-r(x)$$

government's problem

- also values consumer surplus after patent expires

$$CS(x,T) = \sum_{T}^{\infty} R^t cs(x,T) = \frac{R^T}{1-R} cs(x,T)$$

- so government chooses T to

$$\max_{T} V(x,T) + CS(x,T) - r(x)$$

competition policy in Schumpeterian industries

- in Schumpeterian industries competition primarily occurs through cycles of innovation, rather than through static price or output competition
- in such markets firms compete for temporary dominance of the market through the introduction of new generations of technology
- focusing on current sales and static price competition may miss the real force behind market performance: innovation
- increased competition brings short-term benefits of lower prices, but it might do so at the expense of innovation that would yield higher payoffs for consumers over time

market definition in Schumpeterian industries

- new technologies mean that the market tomorrow might look very different than the market today

- market shares may provide an indication of current competitive conditions, but future market shares might be very different if technology changes

- some economists have advocated thing about "innovation markets"

network effects

- arise when coordinating on an agreed standard achieves socially increasing returns to scale
  - a product is worth more to me because you also use it
- in markets with network effects there are usually only a small number of technologies active at any one time
- network effects give incumbent firms market power over entrants
- competition takes place *for* the market as opposed to *within* the market

exclusivity

- exclusionary behavior entails denying rivals access to some resource or set of consumers in order to raise the rivals' costs and weaken their ability to compete
- exclusivity can dampen competition
- but exclusivity can also lead to some efficiency gains
  - e.g. when relationship specific investment is important

bundling

- when two separate products are sold together
- bundling can lead to efficiency gains, where both producers and consumers are better off
  - nuts and bolts example

Nuts and bolts example

- Nuts and bolts are complementary products, if you buy a bolt you also want a nut
- Assume demand is given by $$Q = 12 - (P_B + P_N)$$
-
- Assume product by two different firms, inverse demand curves
$$P_B = (12 - P_N) - Q_B$$
$$P_N = (12 - P_B) - Q_N$$
- marginal revenue
$$MR_B = (12 - P_N) - 2Q_B$$
$$MR_N = (12 - P_B) - 2Q_N$$

Nuts and bolts example

- each firm's demand curve depends on the other firms prices; there is an externality from one firm to the other
- profit maximisation means MR=MC (we assume MC=0), and gives us

$$Q_B = (12 - P_N)/2$$
$$Q_N = (12 - P_B)/2$$

- and the best price choices

$$P_B = (12 - P_N)/2$$
$$P_N = (12 - P_B)/2$$

Nuts and bolts example

- substitute in to get

$$P_B = \frac{(12 - P_N)}{2} = \frac{\left(12 - \frac{(12 - P_N)}{2}\right)}{2} = \frac{12}{4} + \frac{P_B}{4}$$

- equilibrium values

$$P_B = P_N = 4$$

$$Q_B = Q_N = 4$$

- with two monopolists selling bundled nuts and bolts

$$PQ = (4 + 4)4 = 32$$

Nuts and bolts example

- Now consider outcome if two firms merged

$$Q = 12 - (P_B + P_N)$$

$$P_B + P_N = 12 - Q$$

$$MR = 12 - 2Q$$

$$P = 6, Q = 6$$

$$PQ = (6)6 = 36$$

potential benefits from bundling

- Nuts and bolts example
  - without bundling the price will be higher and profits lower than with bundling
  - if there is no other impact than both producers and consumers benefit from bundling

- but can also be used by a firm with market power to extend its market power
  - could have long term effects on competition and innovation

Lecture 2

- the computer industry and the Microsoft case