

Regulation

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Introduction

We've seen harms from monopoly, now solutions

- 1 Today cases when monopoly unavoidable or *natural*
- 2 Tuesday cases when we choose to create monopoly

When monopoly natural, regulation and subsidies

- 1 When is monopoly natural or unnatural?
- 2 Ideal solutions to natural monopoly
- 3 Why ideal solutions fail
- 4 Second-best solutions: average cost pricing
- 5 Other causes of average cost pricing
- 6 Problems with average cost pricing
- 7 Selection and average cost pricing
- 8 Distortions from selection
- 9 Empirical applications to insurance
- 10 Other policy issues in insurance markets

Unnatural monopoly

Today we'll focus on natural monopoly, but other causes?

- 1 Intellectual property
 - Either private trade secrets or government protection
 - Focus of our next lecture
- 2 Lobbying and protection
 - Very harmful, both from static and dynamic perspective
 - Try to stop by restrictions on lobbying
- 3 Private/illegal violence
 - Mafia has gained monopoly through intimidation
 - Gambling, other sin industries, etc.
 - Should be solved through law enforcement
- 4 Temporary advantage/first-to-market
 - Resolves itself in time
 - Transparency, low bureaucracy helps aid entry

Natural monopoly

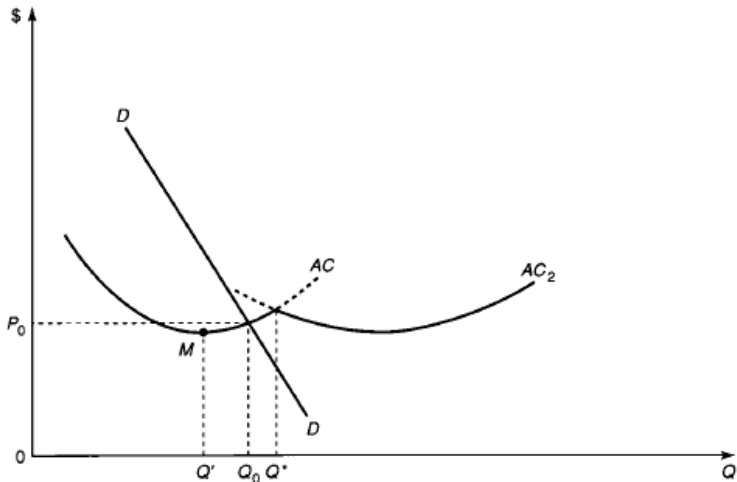
Things are trickier when monopoly inevitable or *natural*?

- 1 Economies of scale through full range sufficient
 - If large firms always more efficient...
 - Then it never makes sense to have more than one
 - Most common case for natural monopoly
- 2 But not necessary: sub-additivity is requirement
 - Any two operations more efficient when combined
 - Can occur without global economies
 - Crucial: size of market relative range of economies
 - If economies only when small, natural only in small market

Some examples of natural monopolies?

- 1 Electrical utilities
- 2 Social or telephone networks (absent interconnection)
- 3 Monitoring income (government supply of public goods)
- 4 Public transportation in many settings

Graphical cost conditions for natural monopoly



Marginal cost pricing

Simplest solution is to mandate price at marginal cost

- However, usually below average cost
 - Follows directly from economies of scale
- Thus marginal cost pricing requires subsidy
- Thus requires not just regulator, but whole government
- Comes from tax on some or all consumer
 - Income tax, sales tax, etc. as from last lecture
 - Operated like a public good, service
- Some examples:
 - Public transportation usually makes losses
 - Postal service often makes losses
 - Most government services (DMV, etc.)

Alternative ideal solutions

Two other ways have been proposed to achieve ideal

1 Perfect price discrimination?

- If firm can perfectly price discriminate, optimum
- Never perfect in practice but some things can get close:
 - 1 Non-linear pricing and two-part tariffs
 - 2 High-quality third-degree discrimination
- If it works well, not so different from (local) income tax

2 Subsidies without regulation?

- Offer optimal Pigouvian subsidy $-P'(q^*)q$
- Marginal consumer surplus from more sales
- Same subsidy issue as with marginal cost regulation

Only major difference from regulation is distribution

- All surplus captured by monopolist as profits
- Can be (partially) solved by bidding for right to operate

Information problems with implementing ideal

However, all of these solutions require lots of information

- 1 Marginal cost regulation
 - Need to know *whole cost curve*
 - Both regulate down to cost, and determine subsidy
 - Raising inframarginal costs doesn't even raise price
 - ⇒ Very little incentive to restrain costs
- 2 Pigouvian subsidies
 - Requires knowing fair bit about demand
 - Not whole curve, but slope over range
- 3 Perfect price discrimination
 - Requires firm knowing each person's WTP
- 4 Extracting via franchise bidding
 - Requires several competitors knowing value
- 5 Worth creating the service at all? More Tuesday

Regulatory capture

Another problem is capture and corruption

- Regulation can quickly become means of corruption
 - Regulators are cozy with the regulated, easy to control
 - Consumers diffuse...same as with licensure
 - Some evidence that this partially happens
 - Organized consumer groups can help balance
 - Happens most when things are opaque
 - Makes it hard for consumers to monitor corruption
 - Is this really different from information problems?
 - Maybe pushes back one level, but same issue
 - If it was transparent, should not be a problem
- ⇒ Key is putting in charge good incentives, information

Average cost regulation in theory

To address concerns, more common to use *average cost*

- Also called *rate of return* or *cost-plus regulation*
 - Profits made by utility capped at some low rate
 - Meant to cover natural return on capital investment
- Simple model of this is price cap at average cost
- Benefits over marginal cost pricing (costs soon?)
 - 1 Doesn't require any external subsidies
 - Helps politically, with all other issues
 - 2 Easier to measure average costs
 - More similar to accounting, marginal cost hard
 - 3 Only need to know average cost at one point
 - 4 If consumers buy at price, worth creating

⇒ Average cost pricing lessens information problem

Implementation of rate-of-return regulation

Rate-of-return regulation on private, or state ownership

- First much more common in most OECD, especially US
- Regulated firm private, for-profit: ComEd in Chicago
 - Like ComEd, often owned by conglomerate of utilities
- Regulatory board (state, local or federal) oversees
- Usually made up of experts: IL Commerce Commission
- Sometimes auctions right to own initially
 - FCC did this with telecommunications spectrum
- Extensive team of auditors to monitor prices, etc.
- Commissions extensive research, studies into economics
- Usually has mix of economic and other political goals?
 - 1 Environmental protection
 - 2 Equity
 - 3 Protection of politically important groups

Examples of average cost regulation

Average cost regulation extremely common in many areas?

- 1 Power, water, heat utilities
 - State regulatory boards determine
 - Overseen (how well?) by consumer advocates
- 2 Public transit and infrastructure
 - Sometimes take subsidies, but often cover costs
 - Even sometimes required to make back fixed costs
- 3 Telecommunications
 - Until mid-1980's (still in other countries) national regulation
 - Local calling was subsidized by higher long-distance
 - ATT broken up in 80's, forced to give access to locals
 - But now competition diminishing again...back to monopoly?
- 4 Abusive pricing and broader regulation
 - Many countries implicitly regulate through laws

Free entry and average cost pricing

Average cost pricing can arise from free entry

- If anyone can come into industry, *free entry*:
 - 1 Must be large number of equally able managers
 - 2 Must have access to capital, industry “not rocket science”
 - 3 No barriers to entry
- In this case, any profits will attract an entrant
- Thus equilibrium must involve zero profits

⇒ Average cost pricing

- Arises from equilibrium without regulation
- Very common assumption in economic models
 - Perhaps not so realistic because of heterogeneity...
 - But often offers useful benchmark, way of looking at things

⇒ Competition sometimes mimics average cost pricing

Contestability and limit pricing

Some (“contestable markets”) claim average cost broader

- *Anytime* firm makes profit, tempts in a competitor
- Thus firms will always *limit price* to avoid entry
- Thus they charge a price at average cost
- This is a bit strange: requires a lot!
 - 1 Competitor can come in easily and grab monopoly
 - 2 Incumbent cannot undercut once he is in market
 - 3 No real fixed costs (entry or exit)
- Contestability implausible most of the time
- However, some of these forces may limit profits
 - ⇒ Average cost pricing useful benchmark when
 - Many possible entrants
 - Entry quick, easy, easy to reverse, etc. (cloud facilitates)
 - Incumbent is committed to price, offer more broadly

Static distortion

$AC \neq MC!$

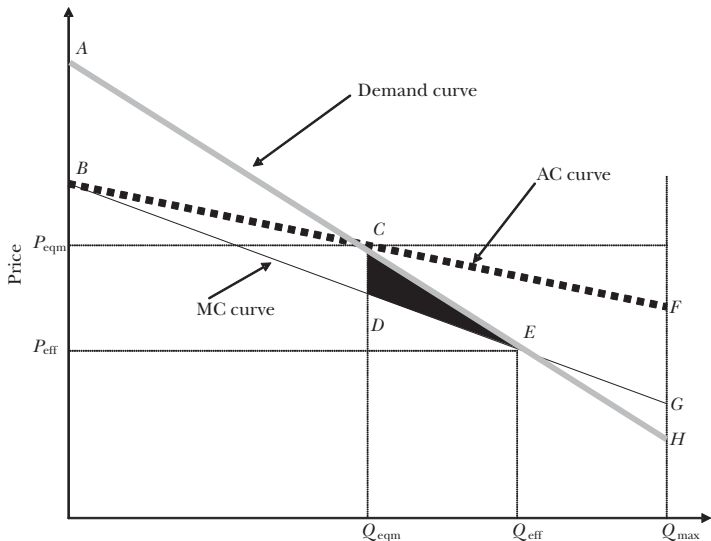
⇒ Average cost pricing is not efficient

- When MC pricing lead to loses, AC above MC
- Thus AC pricing higher than MC pricing

⇒ At AC pricing, too little produced

- Not dissimilar to monopoly distortion, but not a extreme
- Wedge is $AC - MC$; calculate social loss as usual
 - Harberger triangle...
 - $AC - MC = -AC'q \implies$ marginal distortion proportional to
 - 1 Size of the market
 - 2 Slope of average cost curve
- Note: possible to have natural monopoly with $MC > AC$

Graph of distortion from average cost pricing



Long-term effects of cost-plus regulation

At least as important is effect on longer-term incentives

- Companies can easily affect their costs:
 - 1 Making efforts to cut costs, workers
 - 2 Innovating to create more efficient production processes
 - 3 Choosing cheaper over more expensive inputs
- Unless all of these controlled, monitored by regulator...
- Firm has *no incentives* to reduce costs at AC pricing
 - In fact, if regulator learns about cost, you want to increase!
 - Budgeting and my father's story
- Other causes of average cost pricing similar:
 - If when company innovates, others follow...
 - Then no incentive to innovate!
 - This is the topic of Tuesday's lecture

Cost curves and selection

One important source of non-linear costs is selection

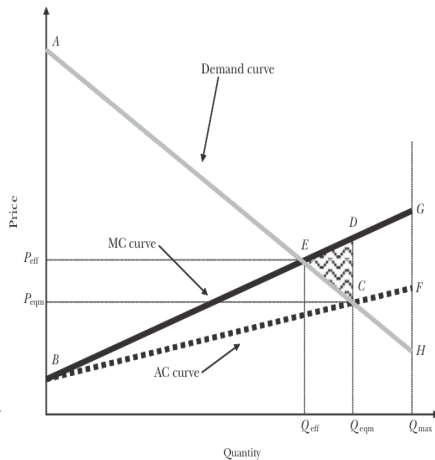
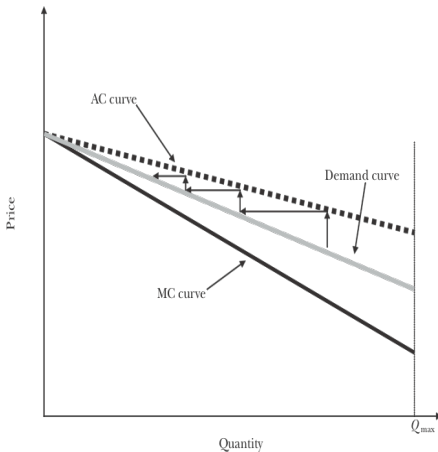
- We talked about this in Lecture 3, but let's review it again
- q = fraction of population covered, p prevailing price
- Cost not linear because people differ in risk
 - 1 Adverse selection if riskiest people first in; slope of curves?
 - Marginal, average cost slope downward
 - 2 *Advantageous* selection if risk-averse, educated first?
 - Marginal, average cost slope upward
 - May be important if uneducated, poor don't get insurance
 - 3 Mixture may also be possible over different ranges
- Note: cost curve of *industry as a whole*
 - *Not* of any individual insurer
 - But insurance social concern, so can think in same terms

Equilibrium in a market with selection

Unless they discriminate, insurer gets representative sample

- Thus (under above conditions) insurer faces *average cost*
- Equilibrium, with free entry, is average cost pricing
 - ⇒ For same reasons as with regulation, inefficiencies
- When selection is advantageous, too much insurance
 - Price to low-cost, steal them from rivals
- When selection is adverse, too little insurance
 - Afraid to wind up with bad people from rivals
 - Extreme case of this is “death spiral”
 - Higher price ⇒ worse clients, repeat; like problem set
 - Gresham’s law: bad money drives out good
 - Major fear motivating mandatory insurance; representation?
 - Simply case when demand between AC and MC
- Problems worst when difference in risk, not preference

Graphs of selection distortions



Measurement of selection

Thus selection= slope of cost curve

- Slope of average cost enough, gives wedge
- This is what Einav et al. (2010) measure
- Large aluminum manufacturer offers two plans
 - 1 First plan very low/minimal coverage
 - 2 Second plan fairly comprehensive
- Individual division managers choose price
 - They claim this is basically random...questionable
 - But if yes, we can see what happens at different q
- They measure average cost of coverage (claims)
- Draws out average and thus marginal cost curve
- Difference between these is marginal distortion
- Total distortion size also depends on demand
 - Harberger triangle length

Einav et al. (2010) data

