# ANTITRUST ECONOMICS 2013

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## REVIEW: MODULE 1 – ECONOMICS OF MARKETS

CPI COMPETITION POLICY INTERNATIONAL

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# Overview



**Module 1**

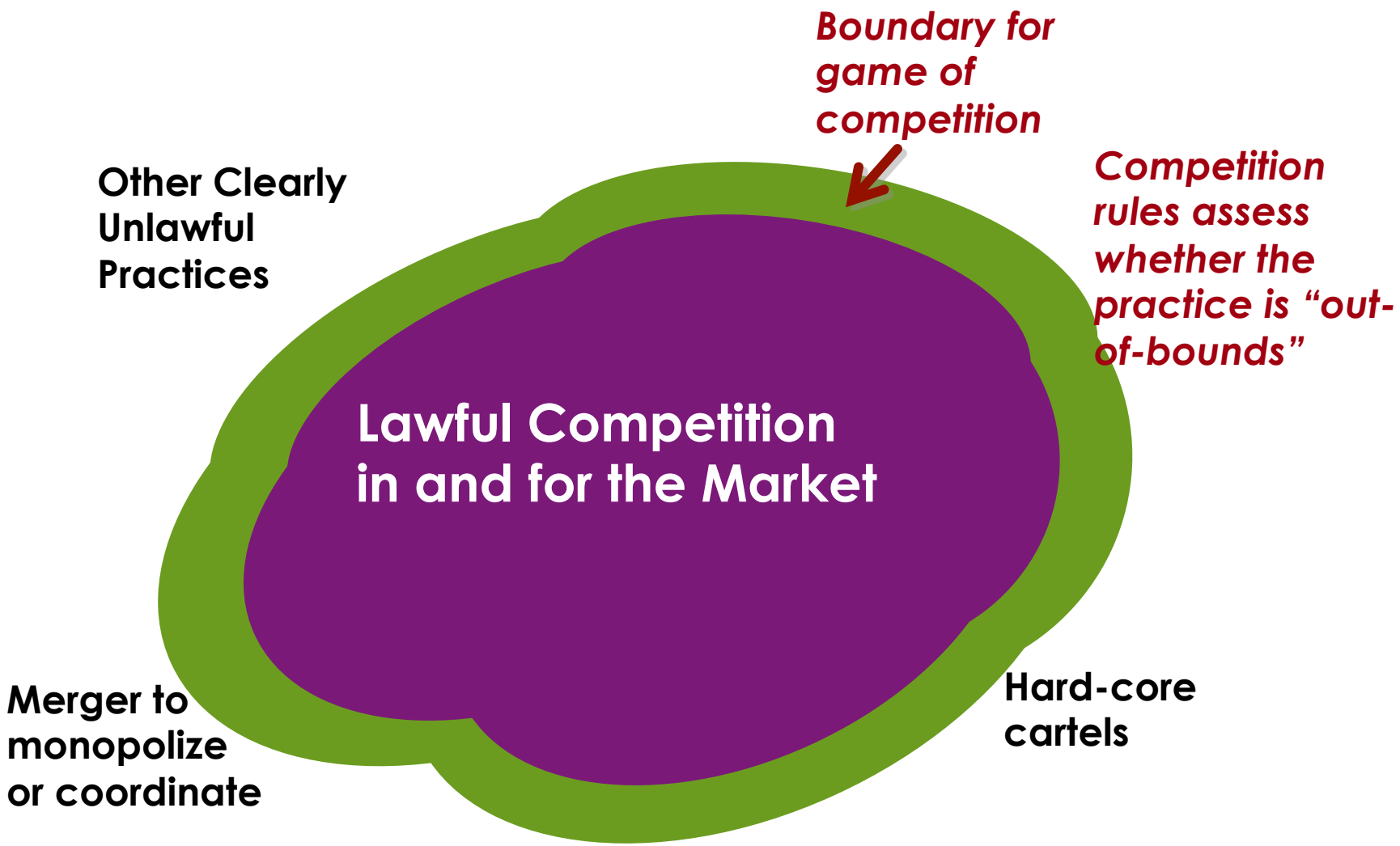
- Economics of Competition Policy
- Market equilibrium and welfare
- Firms and Basic models: Perfect Competition and Monopoly
- Markets & Competition: Relaxing assumptions in Basic Models

# Economics of Competition

Error costs

# Antitrust rules for the game of competition





# A guide to error-cost terminology



| Type I Error | Type II Error |
|---|---|
| False Positive | False Negative |
| Court convicts the innocent | Court lets the guilty off |
| Test says you're pregnant when you aren't | Test says you aren't pregnant when you are |

# Key counterintuitive result of error cost analysis



Tests with modest error rates can have large error costs.

Suppose out of 100, 90% are innocent and10% are guilty

Cost of convicting innocent is $20 and cost of exonerating guilty is also $20

Test has 20% error rate

Cost of convicting innocent is $360 (18 x $20)

If cost of letting guilty go free is less than $45 then it is better to have no prosecutions.

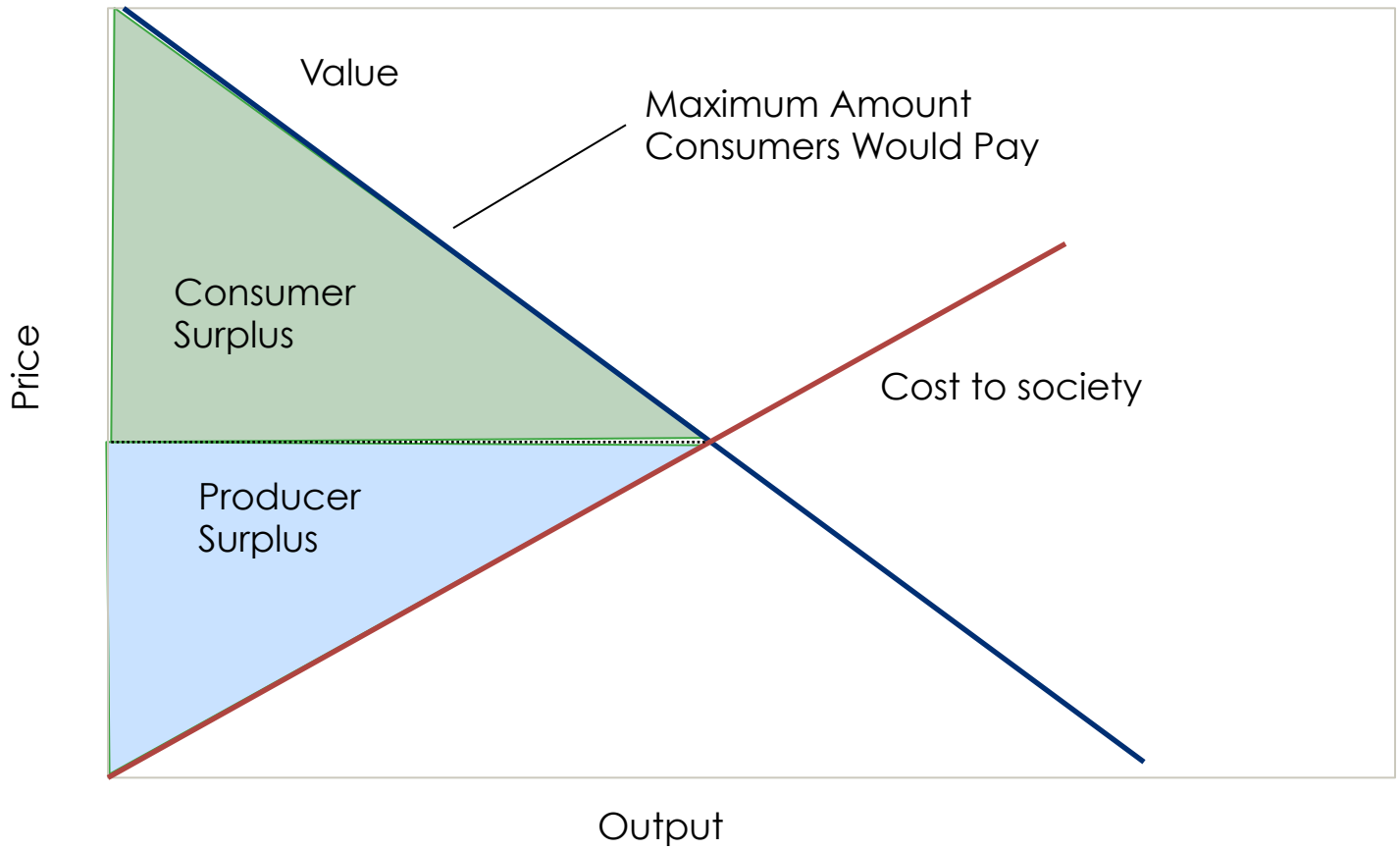
| | Convictions | Acquittals | **Total** |
|---|---|---|---|
| Innocent (90%) | **18** | 72 | 90 |
| Guilty (10%) | 8 | **2** | **10** |
| Total | 26 | **74** | **100** |

Analogy in medical tests: test for inoperable cancer with high error rate; better not to conduct test since psychic cost to healthy outweighs cost of letting sick get their affairs in order.

# Market equilibrium and welfare

# Consumer and producer surplus






Social welfare=Consumer plus Producer Surplus (green plus blue triangles)

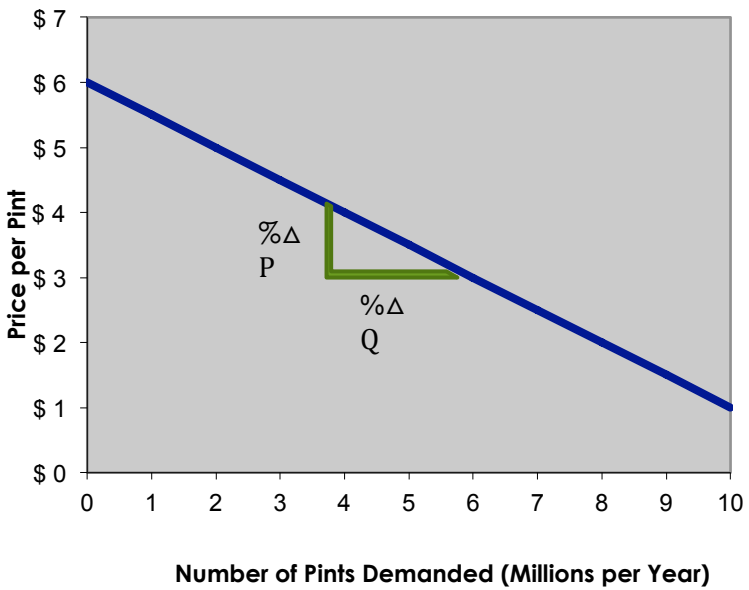
# Demand Elasticity is a key measure



"Elasticity of demand" tells us how responsive consumers are to changes in price

It answers the question: *How much does the quantity demanded decrease when the price increases*

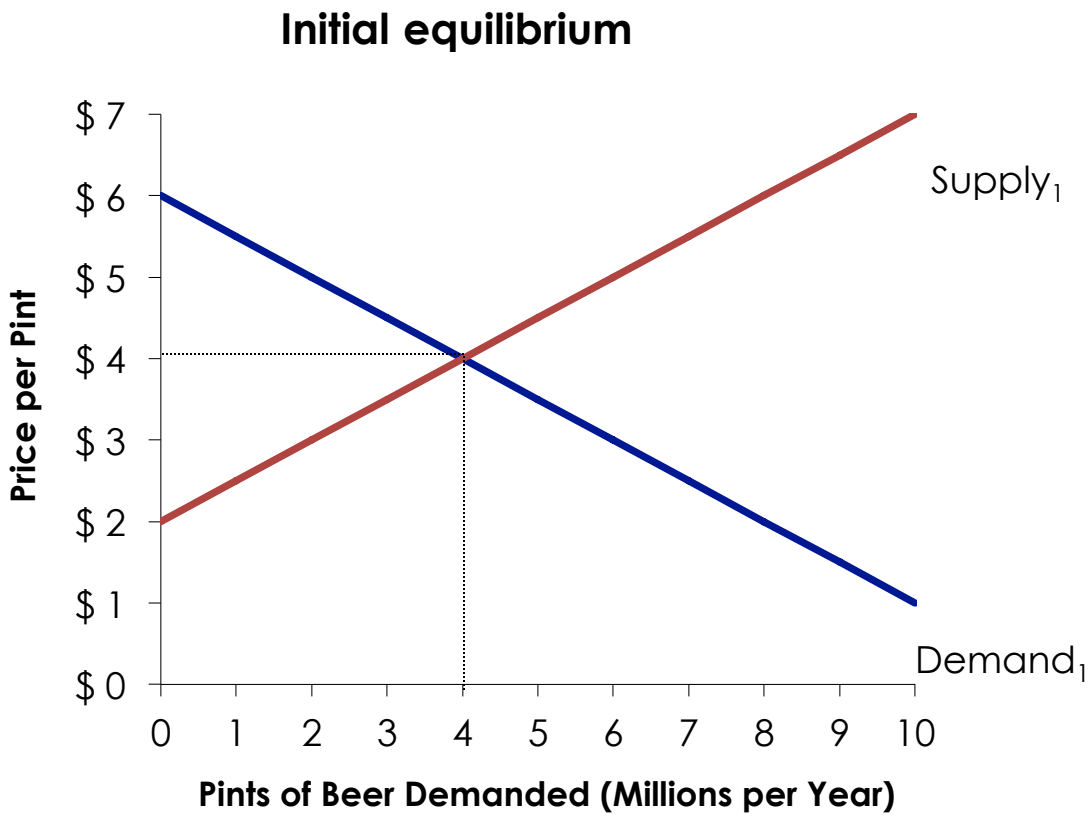
E = Percentage change in Quantity Demanded divided by the percentage change in Price




$$E = \frac{\%\ \text{Change in Quantity Demanded}}{\%\ \text{Change in Price}}$$

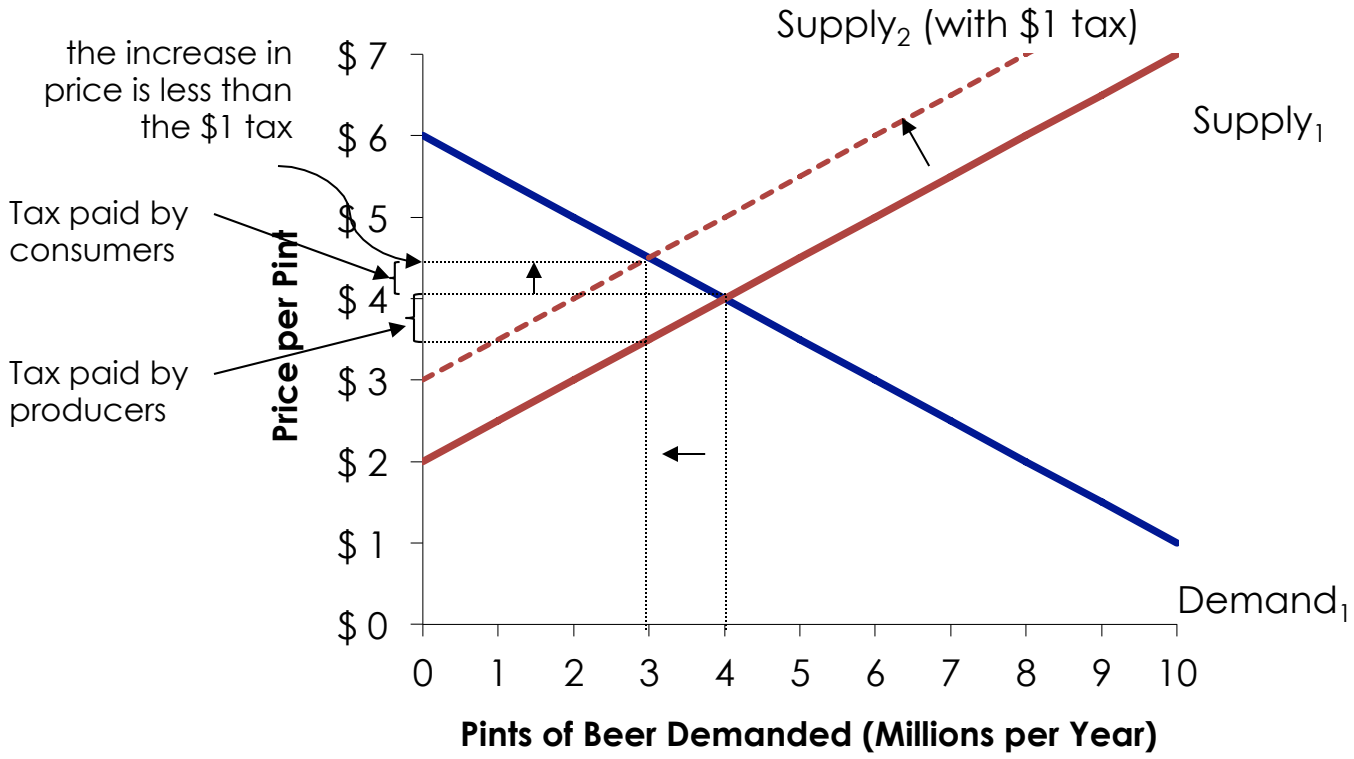
# The effect of a $1 unit tax





# The effect of a $1 unit tax






Results: Price rises but by less than the amount of the $1 tax and ouput falls.

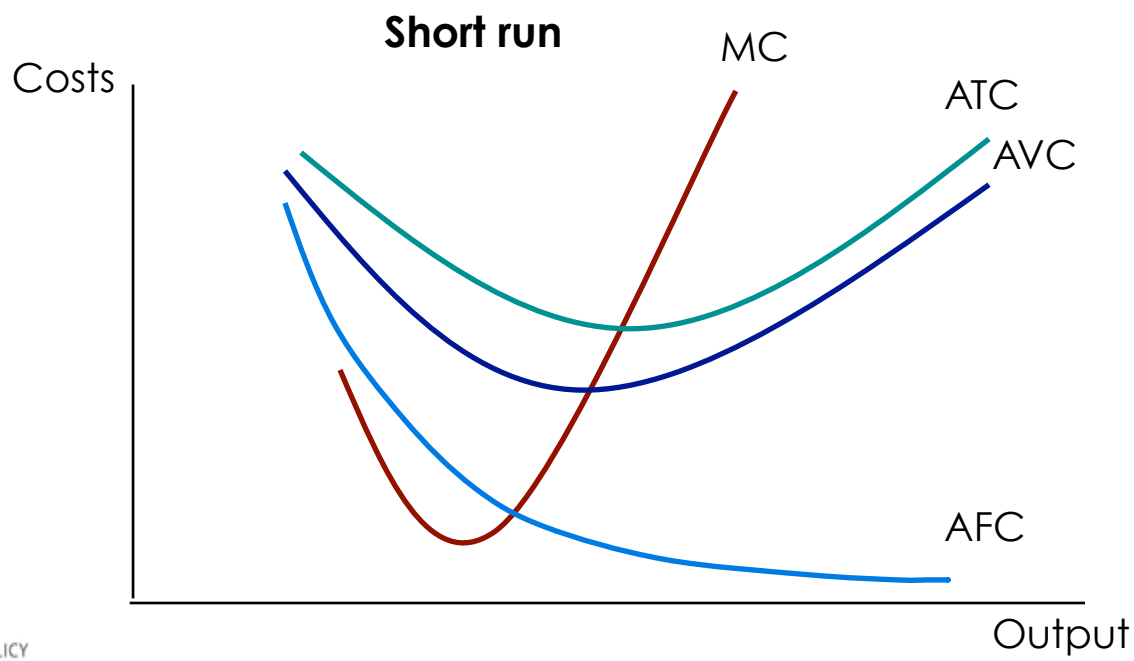
# Firms and basic models

# Typical costs curves



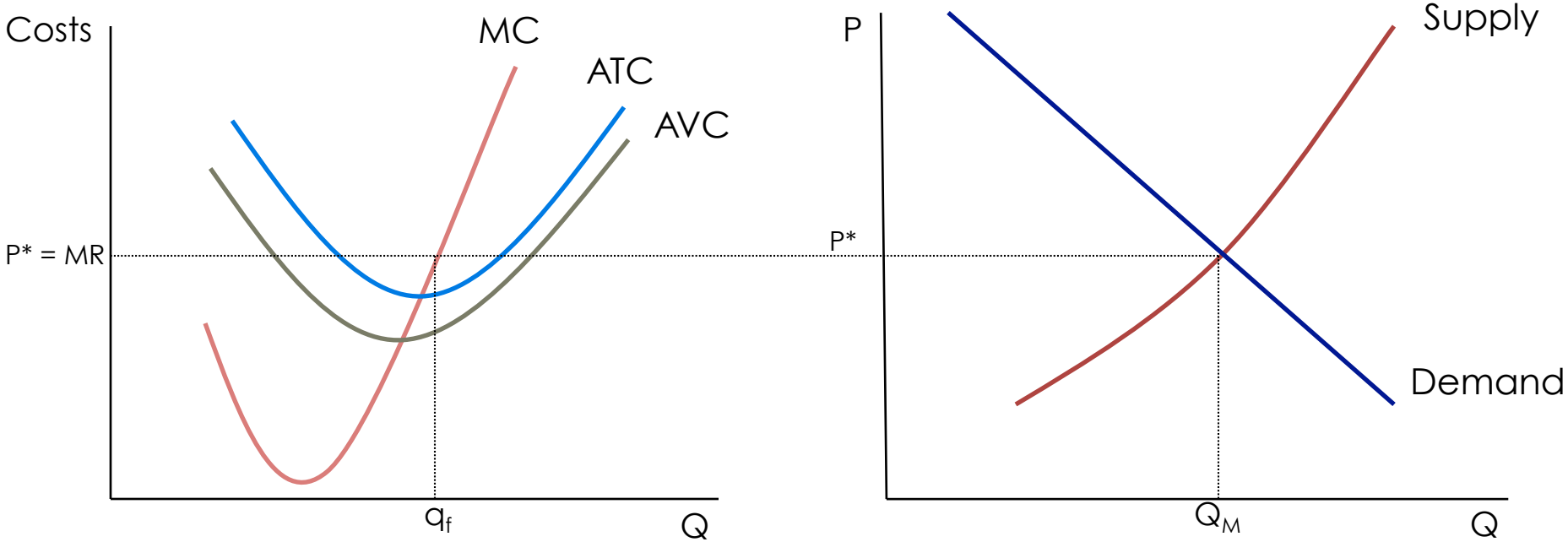
More generally Cost Curves Show "Diminishing returns to Scale" in the short run.

Costs can be represented in a graph. It is important to distinguish the short run and the long run since fixed costs are variable in the long run.



# Typical Firm in the Short Run Equilibrium



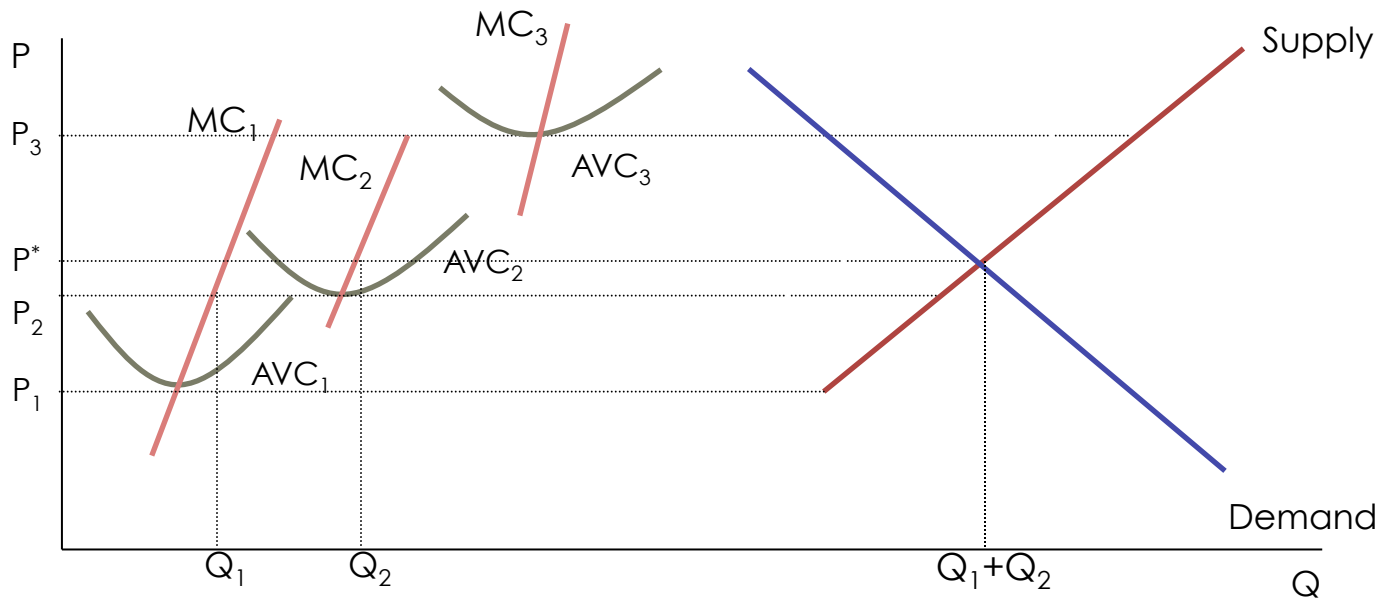



The supply curve is the upward slopping part of the MC curve that lies above the AVC curve.

The firm will not operate on points on the MC curve below the AVC curve since it could have higher profits by shutting down.

# Typical Firm in the Short Run Equilibrium





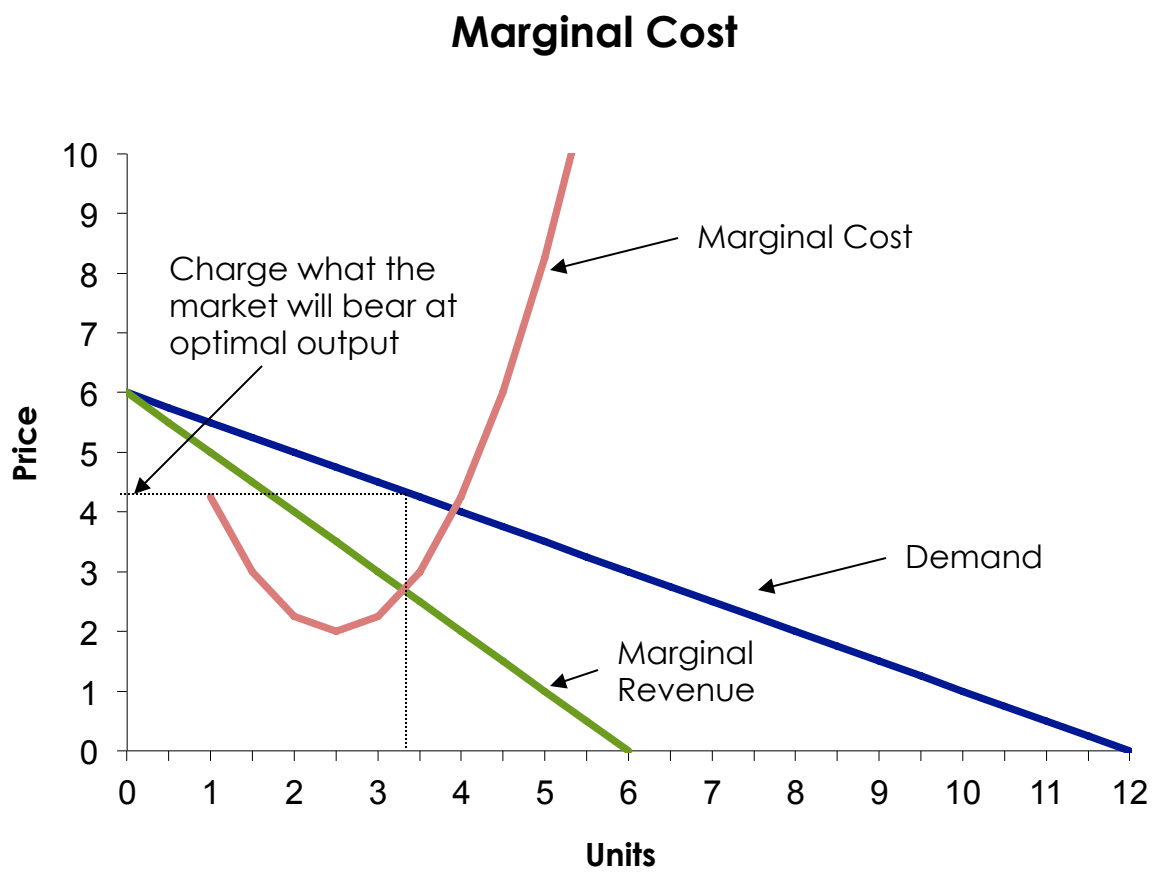

The supply curve is the horizontal sum of the marginal cost curves for those firms that find it profitable to be in the market and produce at those prices (where MC>AVC).

Example of "perfect competition" with three firms that vary in their levels of efficiency.

Entry takes place until price equals marginal cost and the marginal firm just breaks even. Firm 3 is not efficient enough to compete in this market. It would enter at a price of $P_3$

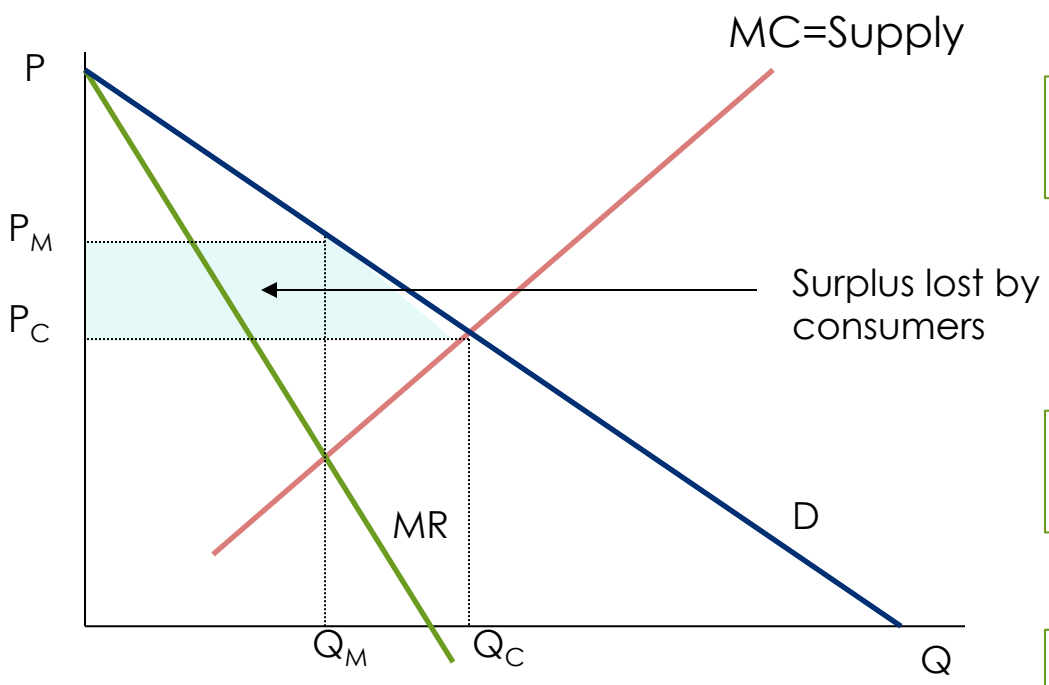
# Maximizing profits – Selecting Optimal Output Level





# Pricing in Competitive and Monopoly Markets






In Perfect Competition, Price is set equal to Marginal Cost, P=MC

Equilibrium Price and Quantities are $P_C$ and $Q_C$

In Perfect Monopoly, a firm produces until its Marginal Revenue equals its Marginal Cost, MR=MC

This determines equilibrium Price and Quantity, $P_M$ and $Q_M$

Price is maximum willingness to pay for those quantities (demand)

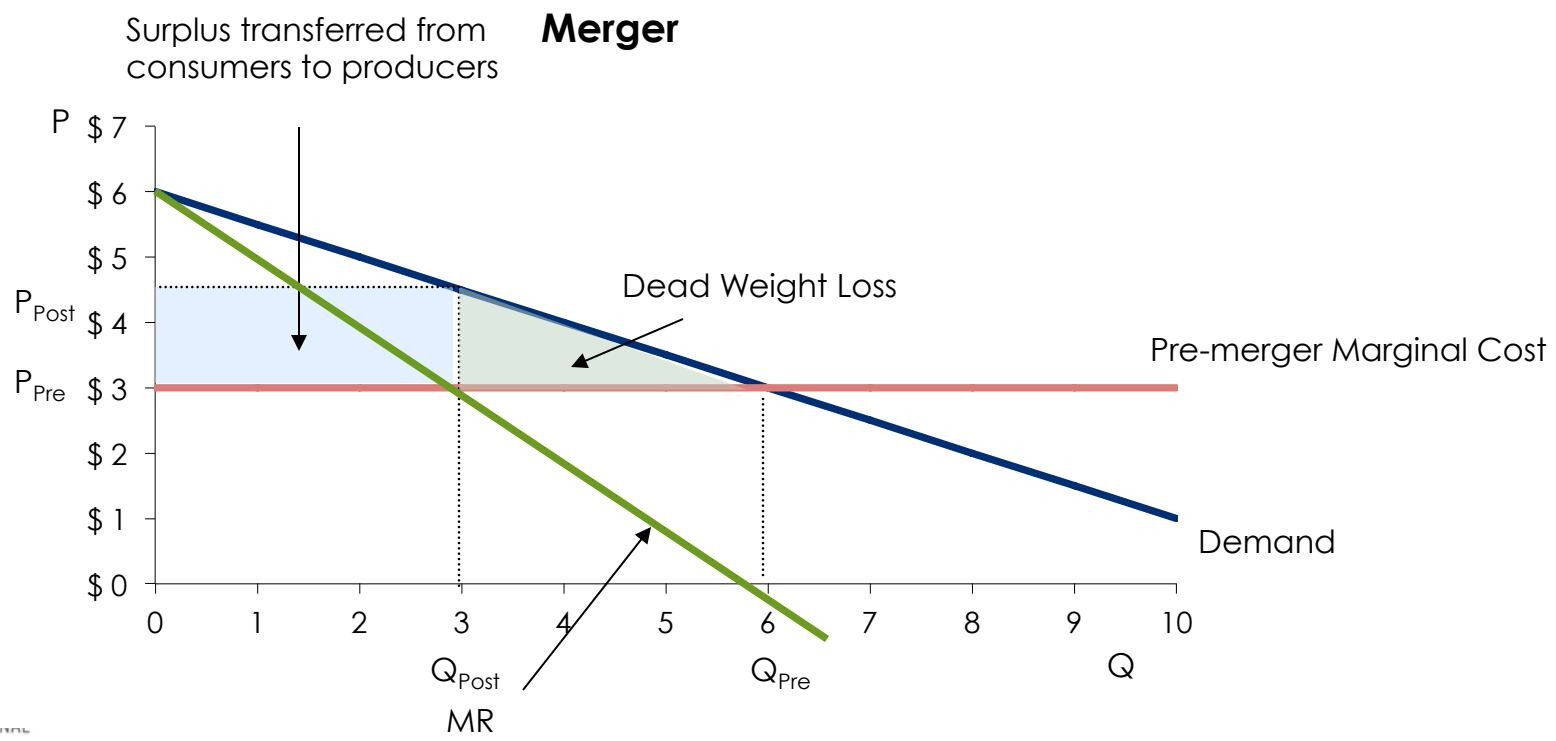
The surplus lost by the consumers is given by the light blue area

# Horizontal merger with no efficiencies



Before the merger the firms are price takers (P = MC)

After the merger, the firm faces a downward sloping demand curve (P>MC)



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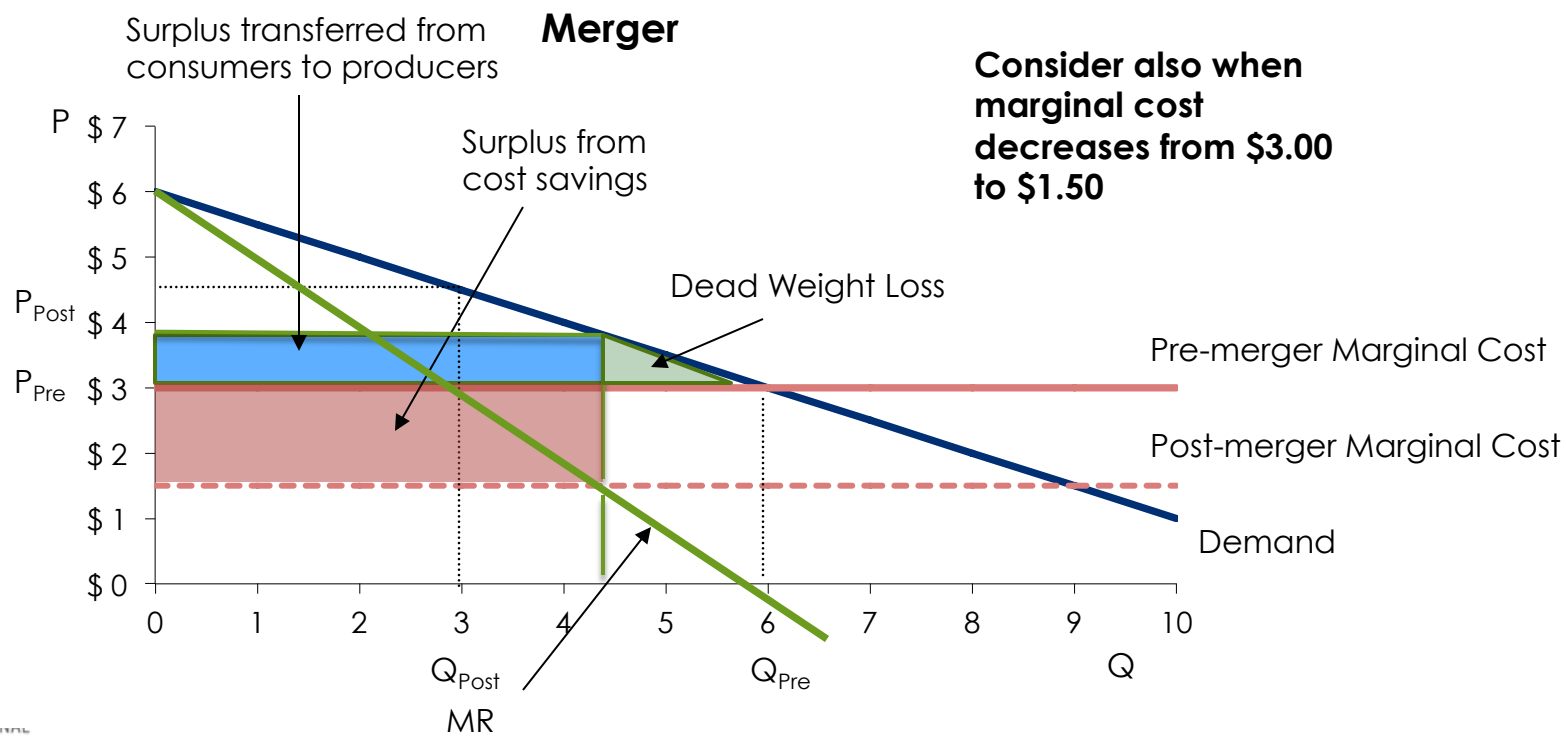
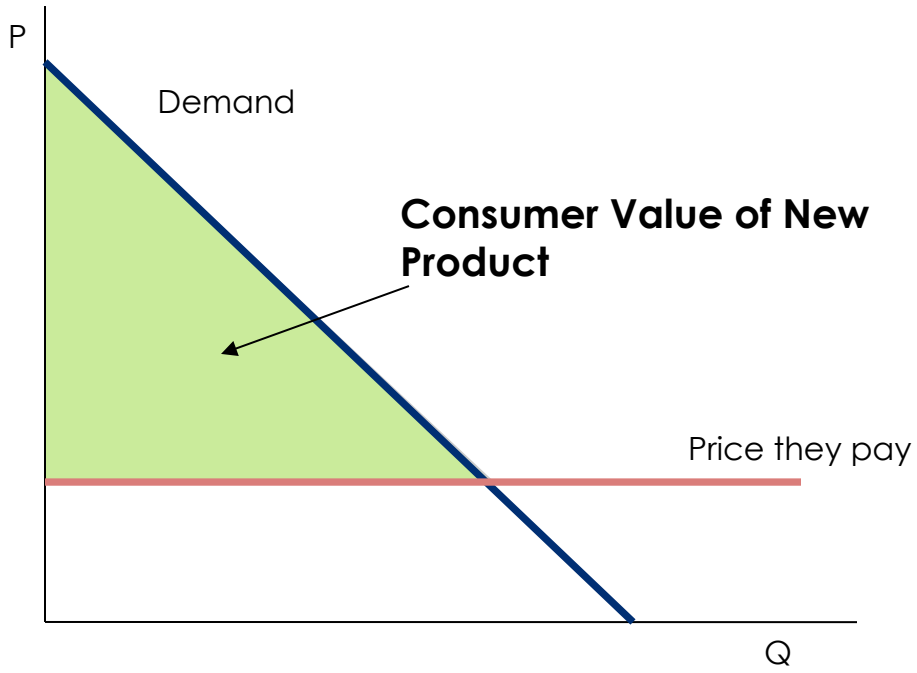


# Markets and Competition

# Economics of "new products"






When a new product is created consumers get the difference between their willingness to pay and the cost: none of which they would have gotten if the product hadn't been created.

# Hotelling Model - Ice cream stand: Competition on the beach



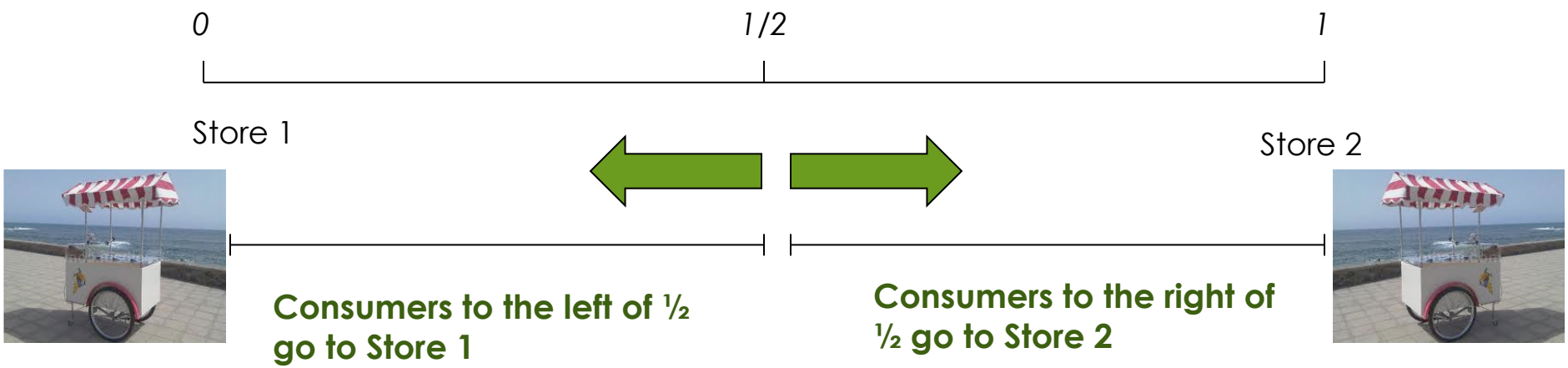
Two competing ice cream stands decide where to locate

- Consumers are evenly distributed along the beach.
- They all like the same kind and amount of ice cream.
- They don't like to walk though.
- Since consumers all want the same kind and amount of ice cream both stores offer the same kind and amount.
- Assume price is given ($1 a scoop)
- The only thing left for stores to decide on is ***where to locate*** to maximize profit.

# Ice cream stand: Location at the end of the beach



- Customers want to minimize the cost of transport.
- Therefore, each consumer will buy from the closest vendor.
- Question: ***Where will the ice cream sellers locate?***
- Suppose the two stands' locations are fixed at the end of the lines.



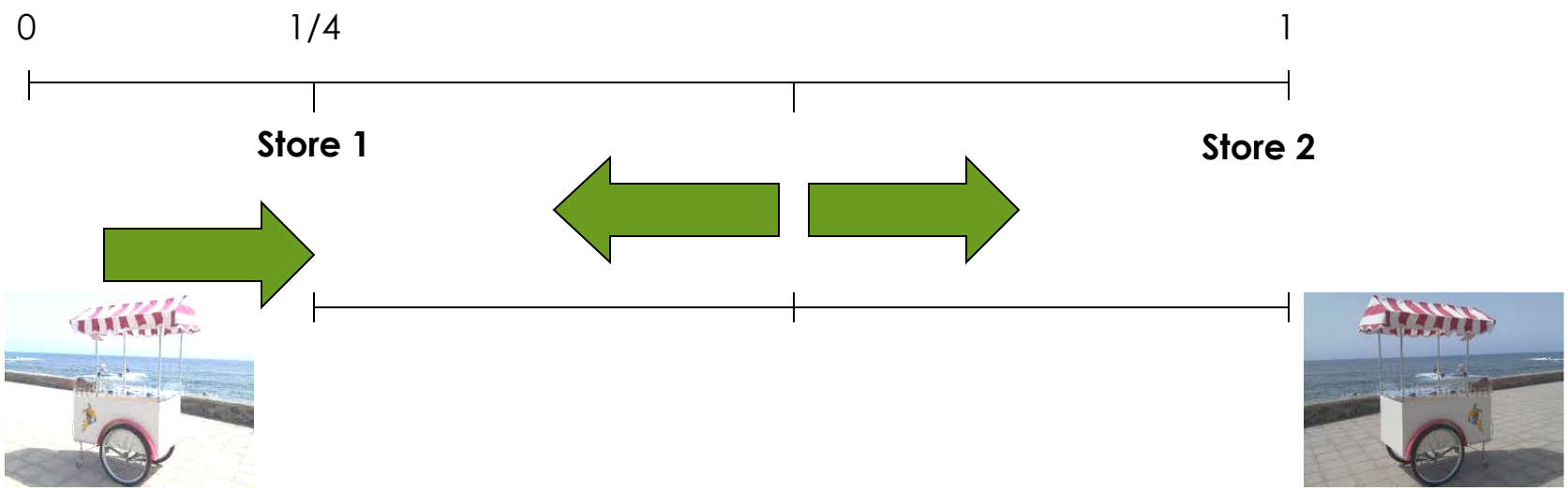
# Ice cream stands can do better by moving closer



Each ice cream stand gets half of the consumers if they locate at either end of the beach.

However, is this situation an **equilibrium** (where nothing more changes)? NO, IT IS NOT.

- Assume Store 1 Moves to the right



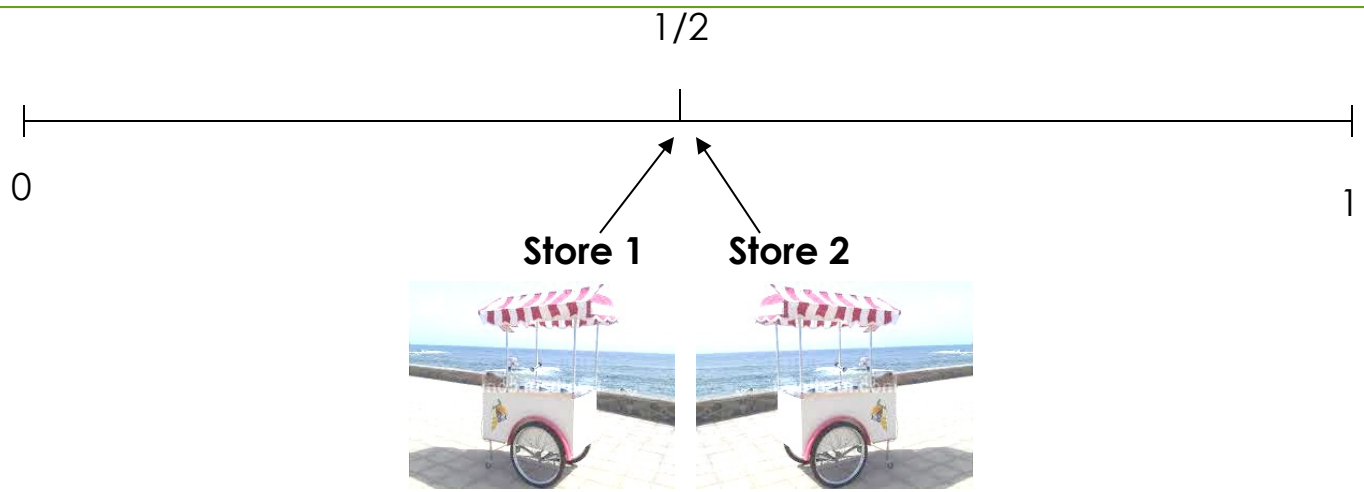

**By moving to the right, Store 1 gets more than half of the consumers**
**Therefore, Store 1 has incentives to move: NOT an equilibrium**

# Stores move to the middle and next to each other



When would neither store have an incentive to move (SO THERE IS AN EQUILIBRIUM)?

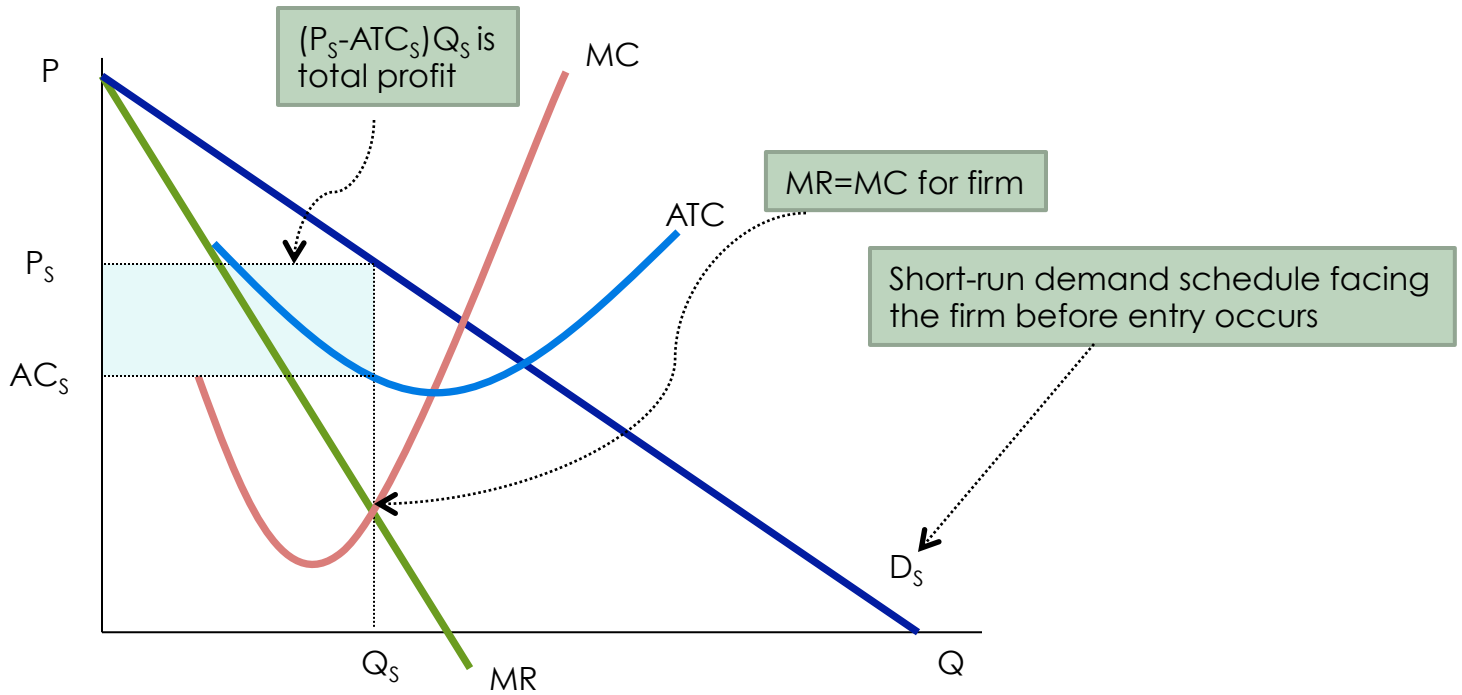
Consider the following location for the ice cream sellers.




**Both sellers get half of the consumers and do NOT have incentives to move. Neither could benefit from a further move: there is an equilibrium.**

# Chamberlain's Model - A firm prices just like a firm with market power in the short run






Output set by MR=MC. Total profit is the price-average cost margin times output, while incremental margin is price minus marginal cost.

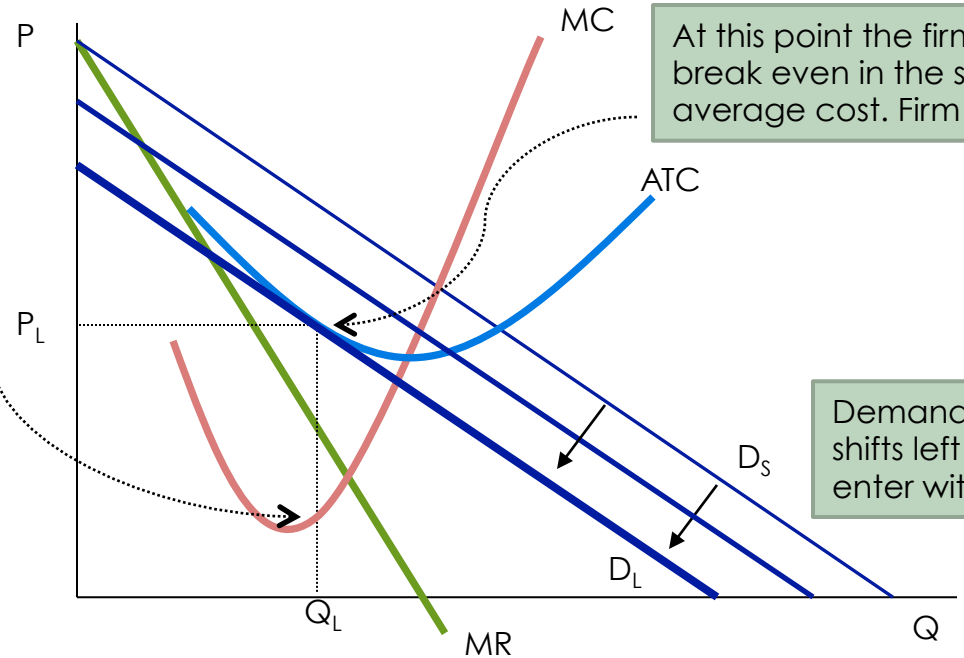
At this point this looks like a typical "monopoly" firm maximizing profit.

# Entry continues until each firm breaks even



Equilibrium price is greater than marginal cost and that margin is used to cover fixed costs.

At this point the firm (and similar firms) just break even in the sense that price equals average cost. Firm recovers its fixed costs.




Demand schedule for a firm shifts left over time as more firms enter with substitute products

Entry of firms shifts the market demand curve $D_S$ to the left as fewer consumers purchase from the firm at any price.

The opportunity for entry continues until firms can't make a profit including covering their total costs. That happens when the demand schedule facing each firm is tangent to the average cost curve.

# Transaction Costs - Markets do not work costlessly



Existence of ***transactions costs due to*** Coase, 1937

Coase points out that there are unavoidable costs of transacting in the market place. These costs are so high so that they justify ***substituting the pricing system for managed coordination***.

Transaction costs refer to the cost of providing some good or service through the market, rather than having it provided from within the firm.

These costs stand separate from, and in addition to, ordinary production costs.

Transaction costs include costs of trade in a market

- Information costs such as costs of locating a supplier, and discovering what the prices are.
- Cost of negotiating the terms of the contracts
- Costs related to the policing and enforcement of contracts
- Risks on contracts being breached

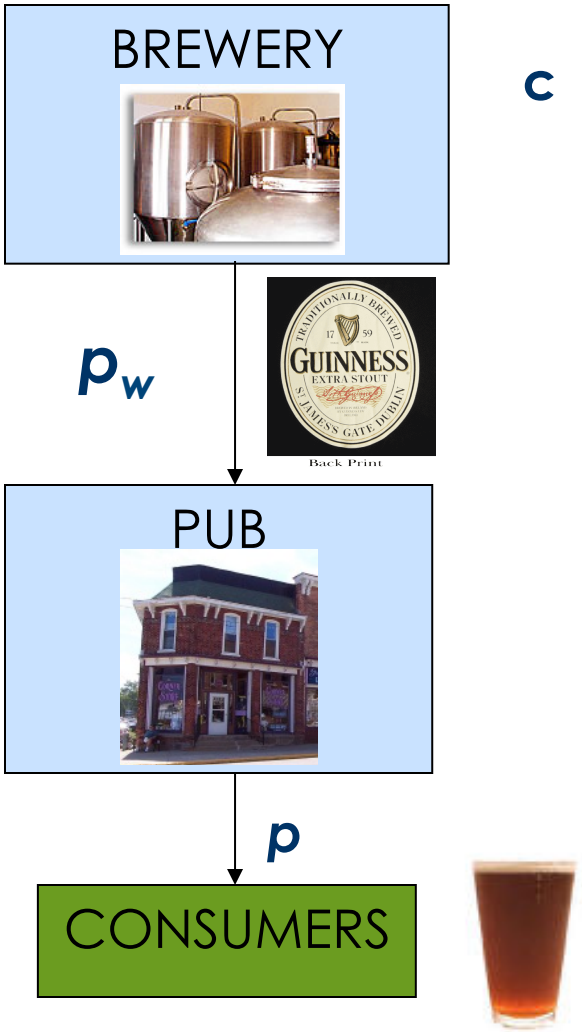
# The adjacent monopoly problem



Single monopolist supplier *(brewery)* produces an intermediate good at cost **c** *(Guinness)*

Sells good to a single monopolist downstream retailer (only pub in a village) at wholesale price $p_w$

Retailer *(Pub)* sells the good to consumers for price **p**



# The two monopolies charge two mark-ups



Manufacturer (brewery) maximizes profit by pricing at MR=MC

Retailer takes this price as its input cost and maximizes profit again.

This is called "double marginalization", "double mark-up", or the "Cournot effect".

Each "markup" reduces demand for the other firm and therefore imposes a negative externality on the other firm.

BREWERY


PUB

CONSUMERS

# An integrated monopolist is more efficient

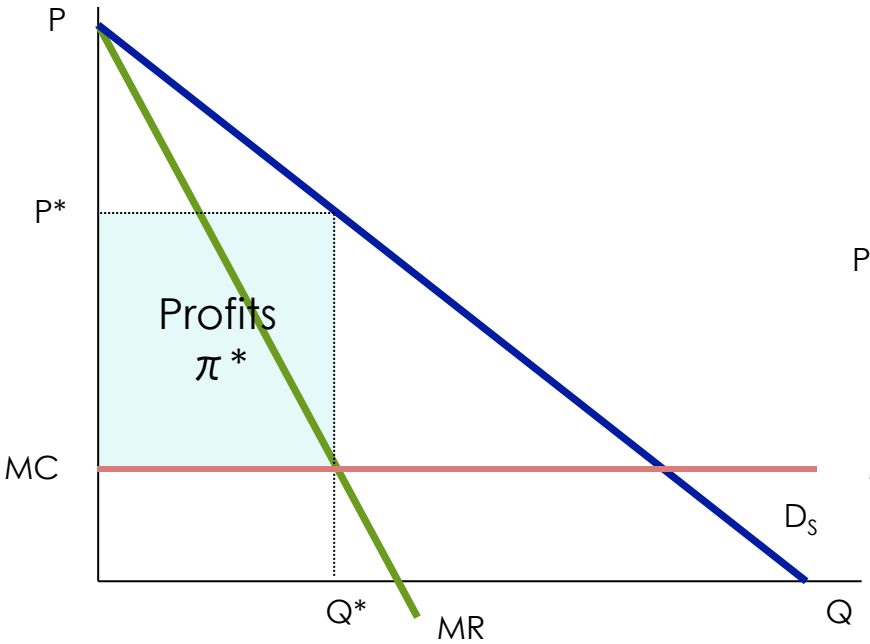


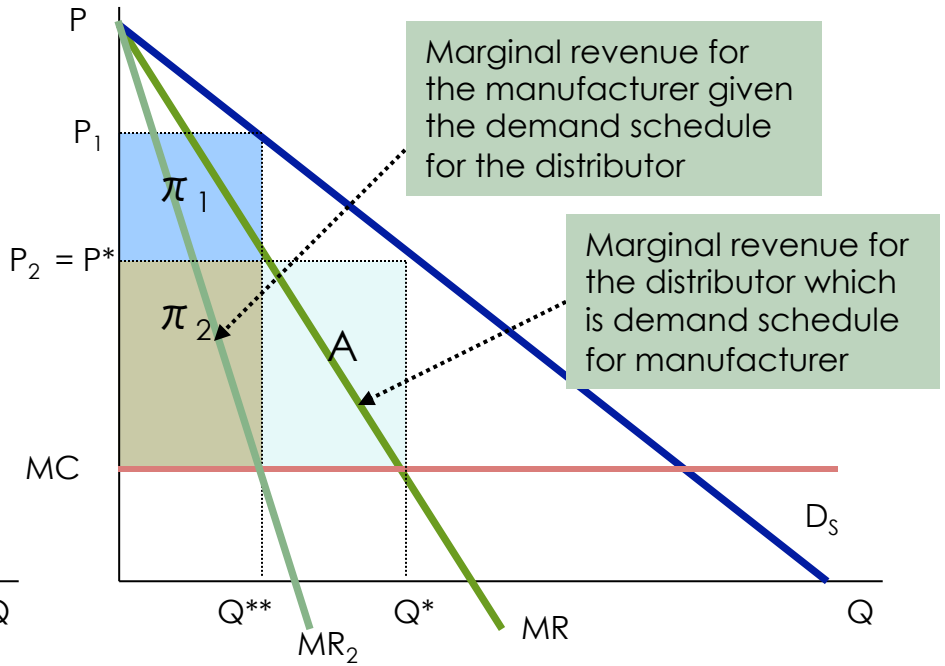
Profits of an integrated manufacturer-distributor

$\pi^* >> \pi_1 + \pi_2$

Profits of separate manufacturer and distributor

$\pi_2$ = Manufacturer's Profits
$\pi_1$ = Retailer's Profits
A = Loss in profits on reduced output




NOTE: manufacturing cost=MC, distribution cost=0 (basic result holds when distribution cost is positive).

# Traditional network effects



An industry is described as a "network industry" if the value of the network to any one consumer depends significantly on the number of other participants on the network.

The network could be a firm, a collection of firms, a technology that links participants, or a standard that all players adhere to.

Traditional examples include telecommunications—which are networks of networks, like social network platforms—transportation systems, such as railroads; information technology, such as fax machine networks; software platforms, and standards like QWERTY.

We will see when we discuss multi-sided platforms that a much larger group of businesses have network effects and these include shopping malls, media, and many other businesses

# Direct and Indirect Network Effects



Direct Network Effect: The value to a user increases if there are more users.

- A user of a word processing package such as Google Docs values the package more if there are more users because there are more people with whom she can exchange compatible documents.

Indirect Network Effect: The value to a participant increases if there are more complementary participants.

- A users of the Android operating system value it more if there are more applications for it, and the developers of applications value the operating system more if there are more users.

# End Review, Next Class Topic 7, Multi-Sided Platforms



**Part 1**

- Economic Background of Two-Sided Platforms
- One-Sided versus Two-Sided Businesses
- Economic Principles

**Part 2**

- Strategies for Multi-Sided Platform Businesses
- Antitrust Issues
- Market Definition for Multi-Sided Industries