Landline Economics: Is Landline dead?

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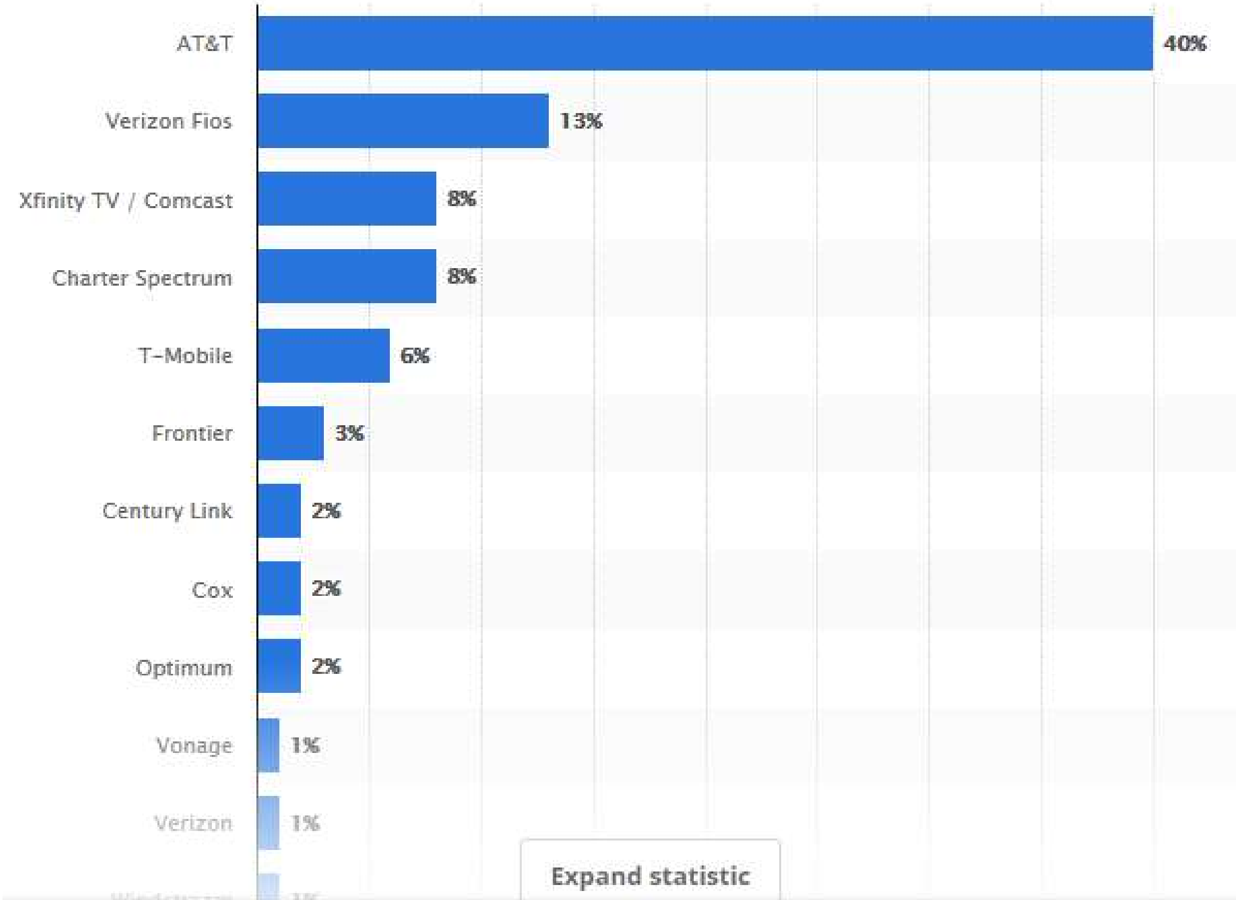
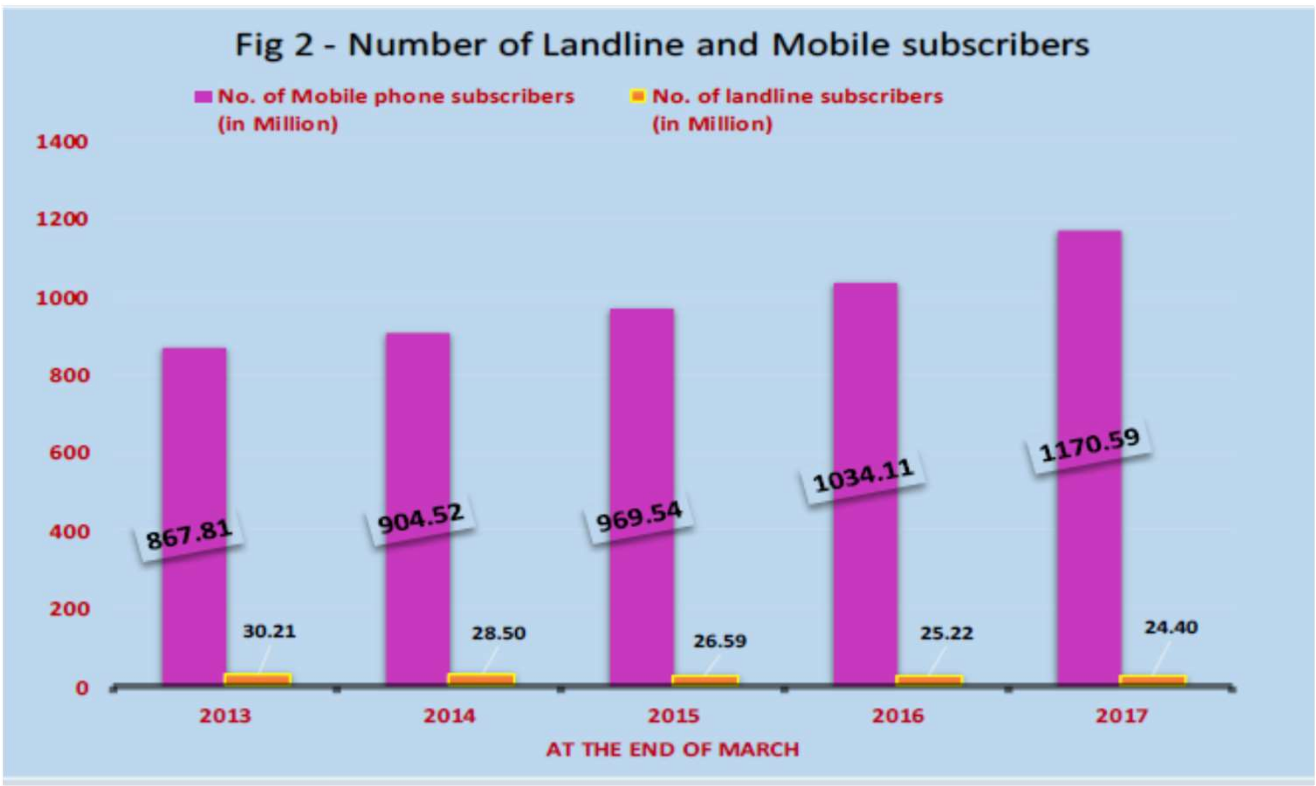
The Context

1. Is the landline dead? What is the economics of VoIP?
2. Why is it economically difficult to provide rural area broadband connectivity?

Share of Landline Subscriptions in the U.S.



India: Landline and Mobile Subscriptions



India: Share of landline business

'BSNL has 65% market share of landline and broadband market'

During the current financial year, the company expects an increase of 25 per cent in broadband connections across the country, he said.

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INDORE: Public sector telecom major BSNL enjoys number one market position with 1.8 crore landline and broadband connections which amounts to 65 per cent market share, a company official said here today.

"At present a total of 2.8 core landline and broadband users exist in the country and among them BSNL's share is 1.8 crore, which is 65 per cent of the total market share," BSNL's Madhya Pradesh Circle Chief General Manager, N K Yadav told reporters.

During the current financial year, the company expects an increase of 25 per cent in broadband connections across the country, he said.

He said that the government considers broadband connectivity as an important aspect for infrastructure development specially in transforming education, health, governance, trade and commerce areas.

VoLTE: Change from Circuit Switching to Packet Switching

VoLTE (Voice over LTE)

Realising revenue potential with Voice over LTE

What is VoLTE?

VoLTE stands for '**Voice over Long Term Evolution**'. Utilising IMS technology, it is a digital packet voice service delivered over IP via an LTE access network.

Voice calls over LTE are recognised as the industry-agreed progression of voice services across mobile networks, deploying LTE radio access technology.

VoWiFi to the rescue!

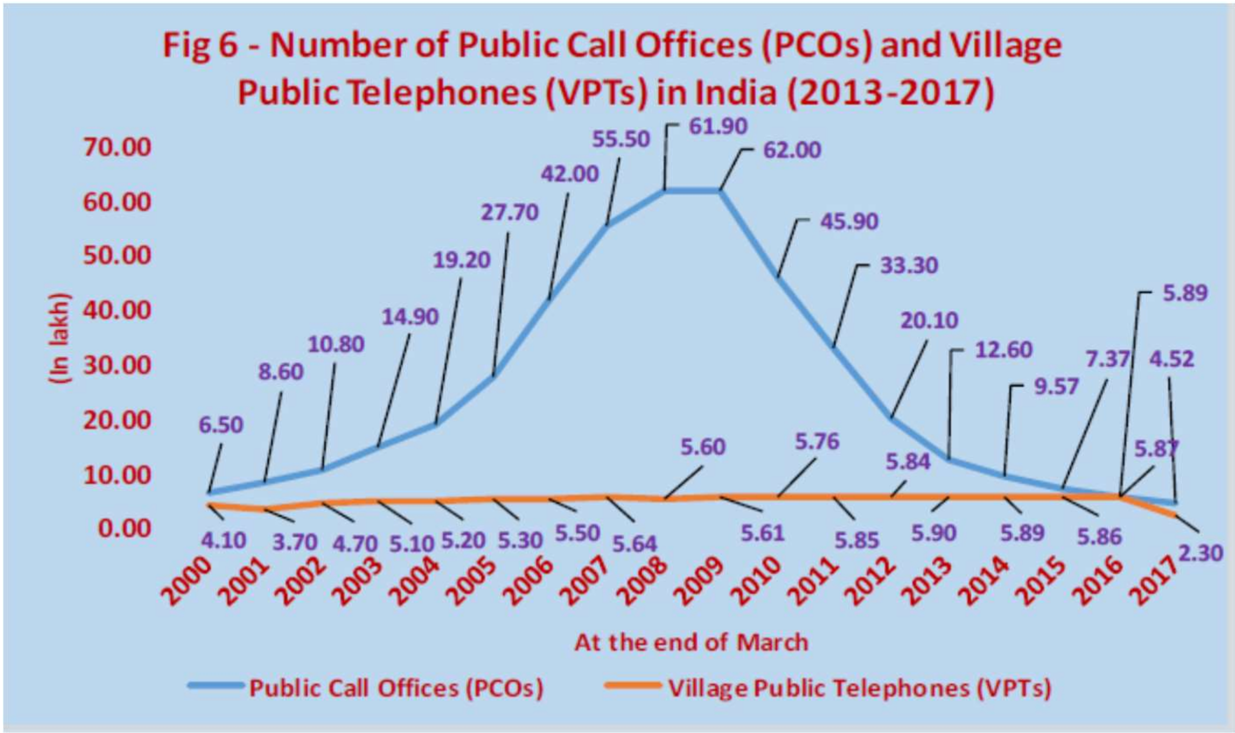
VoWifi (Voice over Wi-Fi)

Keeping customers connected without a mobile signal

What is VoWi-Fi?

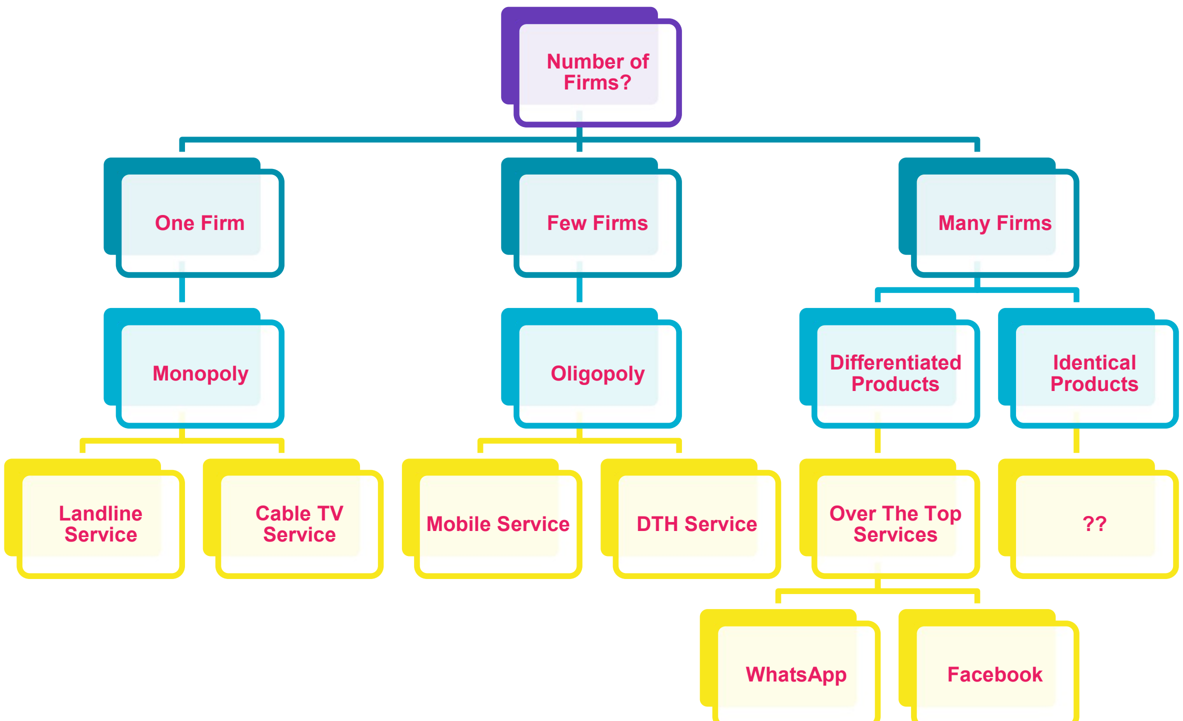
VoWi-Fi stands for **Voice over (EPC-integrated) Wi-Fi.** VoWi-Fi is a complementary technology to VoLTE and utilises IMS technology to provide a packet voice service delivered over IP via a Wi-Fi network. Where possible, VoLTE calls may be seamlessly handed over between LTE and Wi-Fi and vice versa. Conversational video is also possible via Wi-Fi (see ViLTE).

Public Call Offices and Public Telephones



Basic Economics

Taxonomy of market types



Terms and Definitions

- Total Revenue (TR) = P × Q;
- Marginal Revenue (MR) = d(TR)/dQ
- Average Revenue = TR/Q
- Total Cost (TC) = Fixed Cost (FC) + Variable Cost (VC)
- Marginal Cost (MC) = d(TC)/dQ
- Average Total Cost (ATC) = TC/Q
- Marginal Benefit = MR – MC

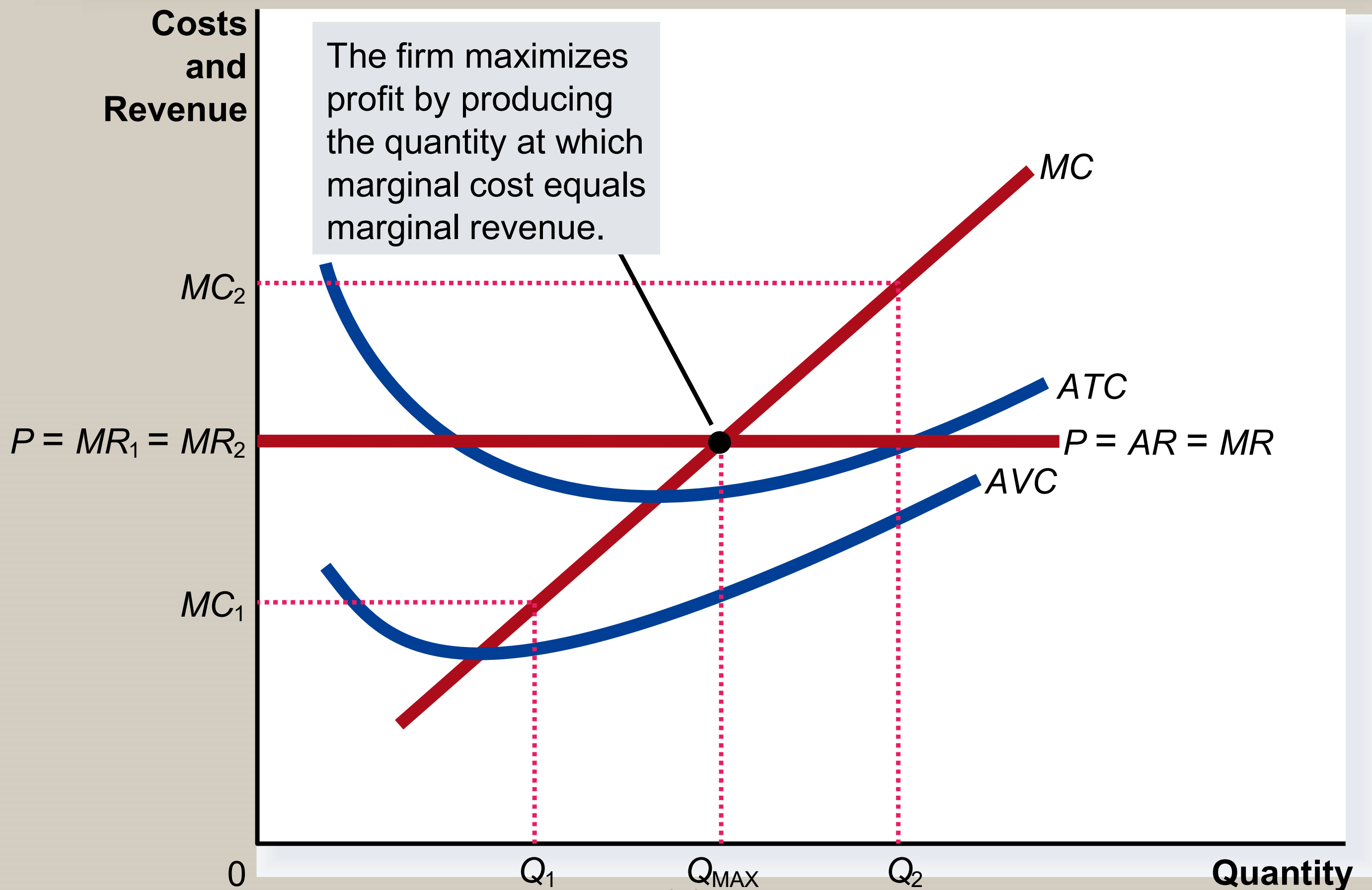
WHAT IS A COMPETITIVE MARKET?

- A perfectly *competitive market* has the following characteristics:
  - There are many buyers and sellers in the market.
  - The goods offered by the various sellers are largely the same.
  - Firms can freely enter or exit the market.

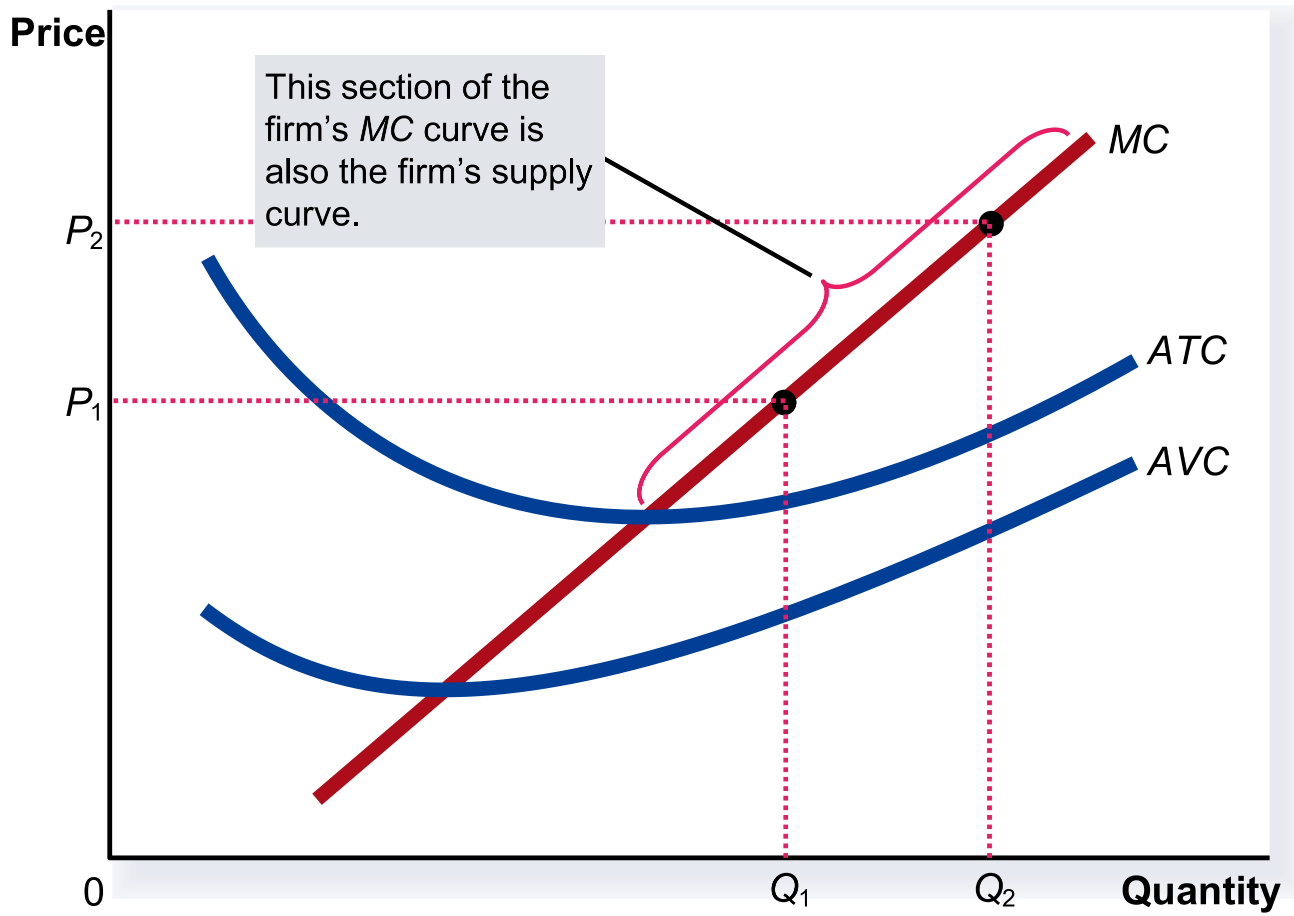
WHAT IS A COMPETITIVE MARKET?

- As a result of its characteristics, the perfectly competitive market has the following outcomes:
  - The actions of any single buyer or seller in the market have a negligible impact on the market price
  - Each buyer and seller takes the market price as given
    - Firms are *price takers*

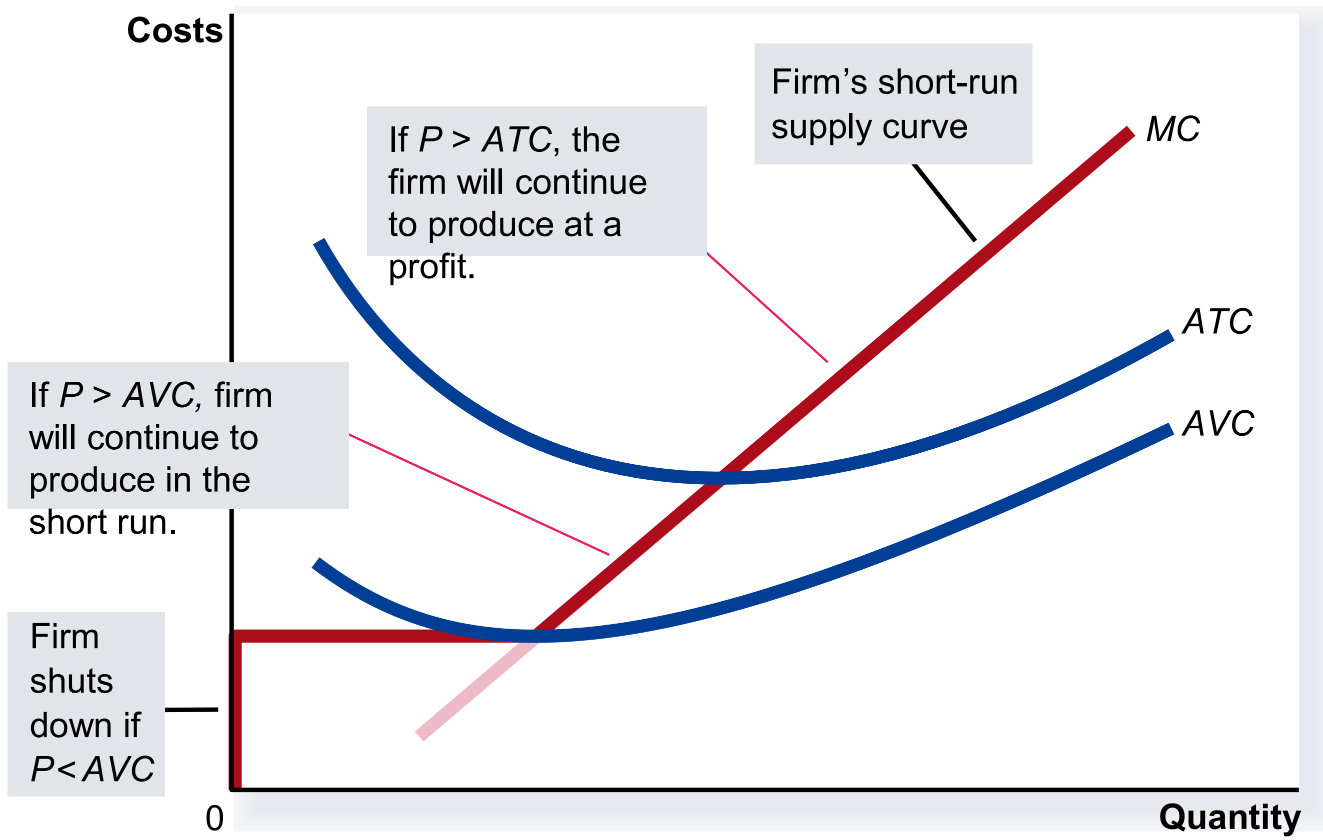
Profit Maximization for a Competitive Firm



Marginal Cost as the Competitive Firm's Supply Curve



The Competitive Firm’s Short Run Supply Curve

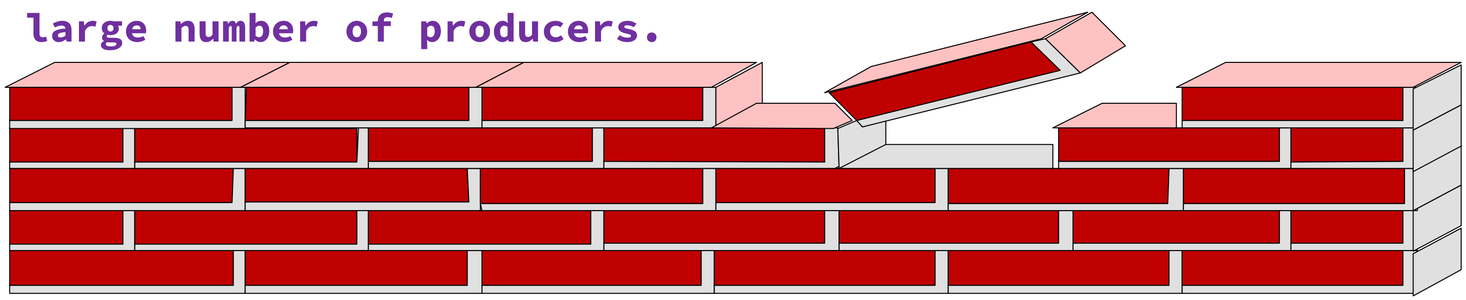


Monopoly Market

- While a competitive firm is a *price taker*, a monopoly firm is a *price maker*
- A firm is considered a *monopoly* if . . .
  - it is the sole seller of its product.
  - its product does not have close substitutes.

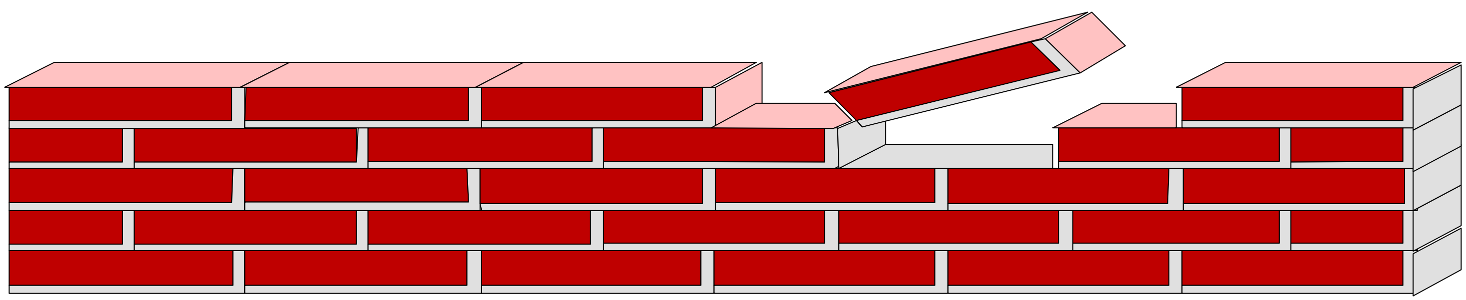
WHY MONOPOLIES ARISE

- **The fundamental cause of monopoly is *barriers to entry***
- **Barriers to entry have three sources:**
    - **Ownership of a key resource.**
    - **The government gives a single firm the exclusive right to produce some good.**
    - **Costs of production make a single producer more efficient than a large number of producers.**



Natural Monopolies

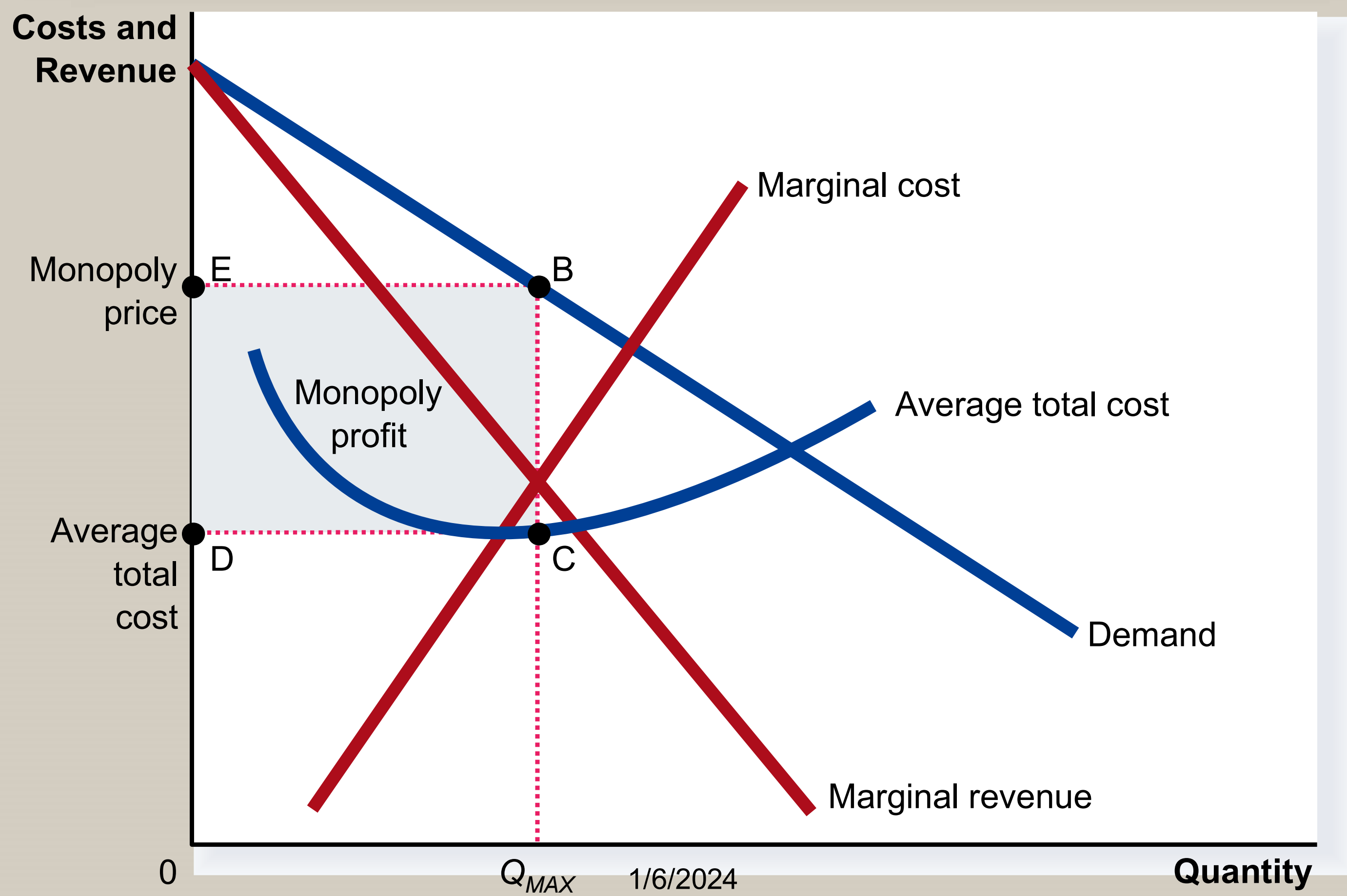
- An industry is a *natural monopoly* when a single firm can supply a good or service to an entire market at a smaller cost than could two or more firms
- A *natural monopoly* arises when there are economies of scale over the relevant range of output.



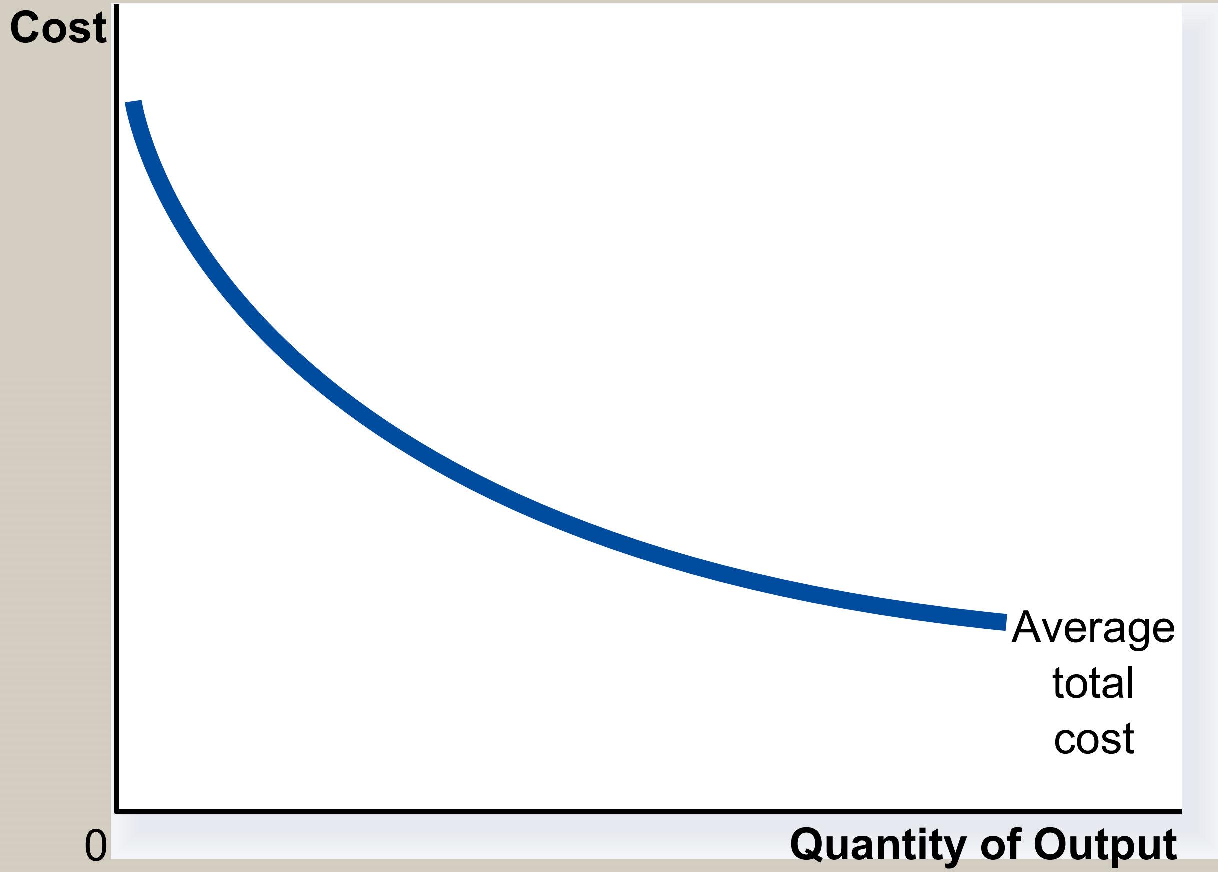
A Monopoly's Revenue

- **A Monopoly's Marginal Revenue**
  - A monopolist's marginal revenue is always *less than* the price of its good.
    - The demand curve is downward sloping.
    - When a monopoly drops the price to sell one more unit, the revenue received from previously sold units also decreases
  - When a monopoly increases the amount it sells, it has two effects on total revenue ($P \times Q$).
    - The output effect—more output is sold, so Q is higher.
    - The price effect—price falls, so P is lower.

The Monopolist's Profit



Economies of Scale as a Cause of Monopoly



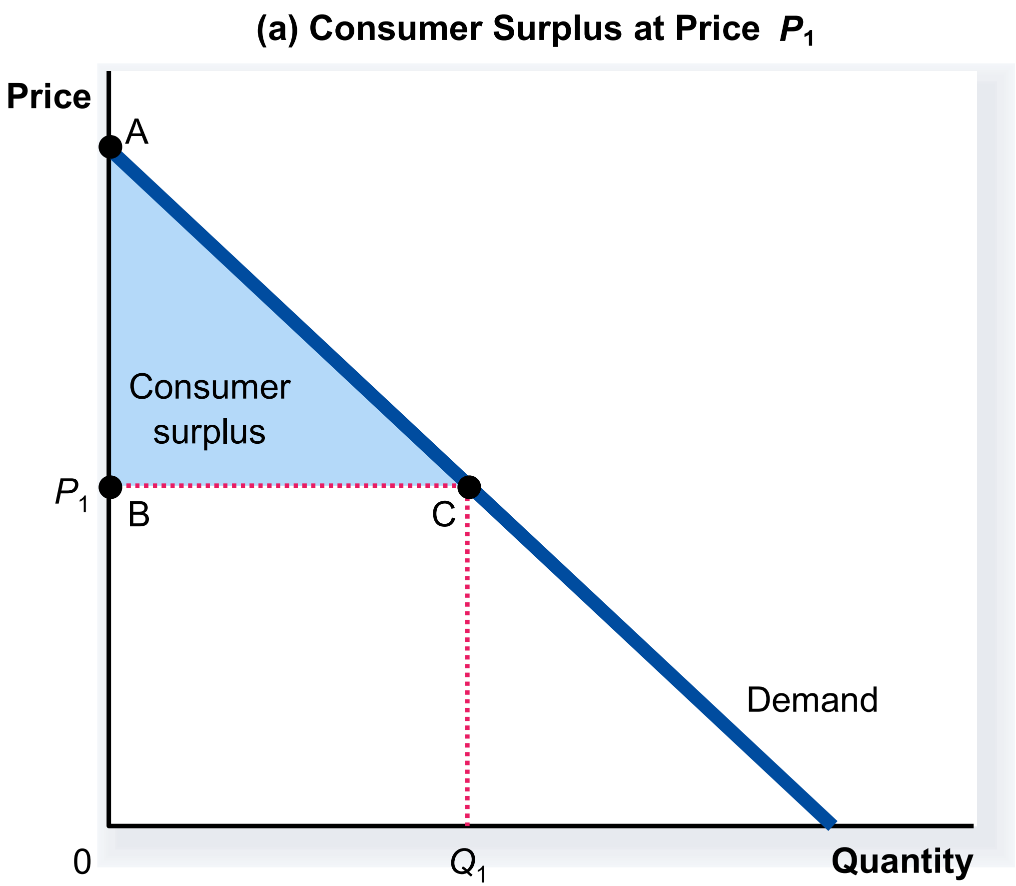
CONSUMER SURPLUS

- *Willingness to pay* is the maximum amount that a buyer will pay for a good.
  - It measures how much the buyer values the good or service.
- *Consumer surplus* is the buyer’s willingness to pay for a good minus the amount the buyer actually pays for it.

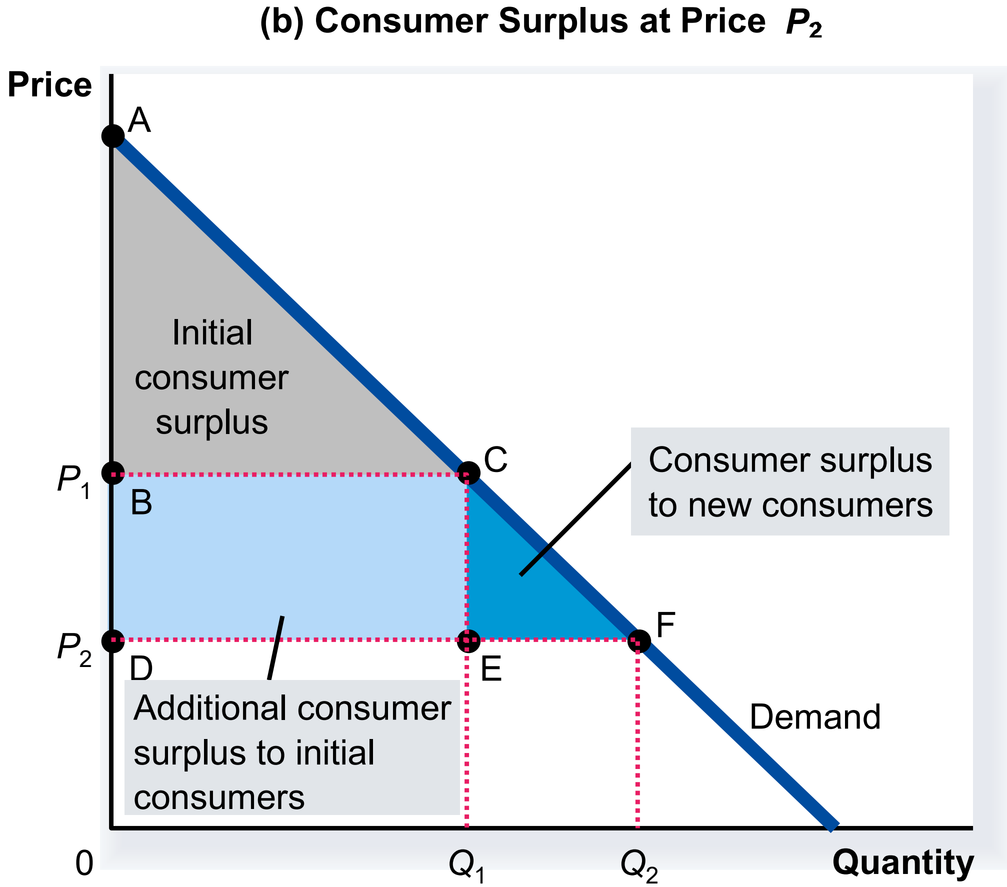
CONSUMER SURPLUS

- The market demand curve depicts the various quantities that buyers would be willing and able to purchase at different prices.
  - The area below the demand curve and above the price measures the consumer surplus in the market.

How the Price Affects Consumer Surplus



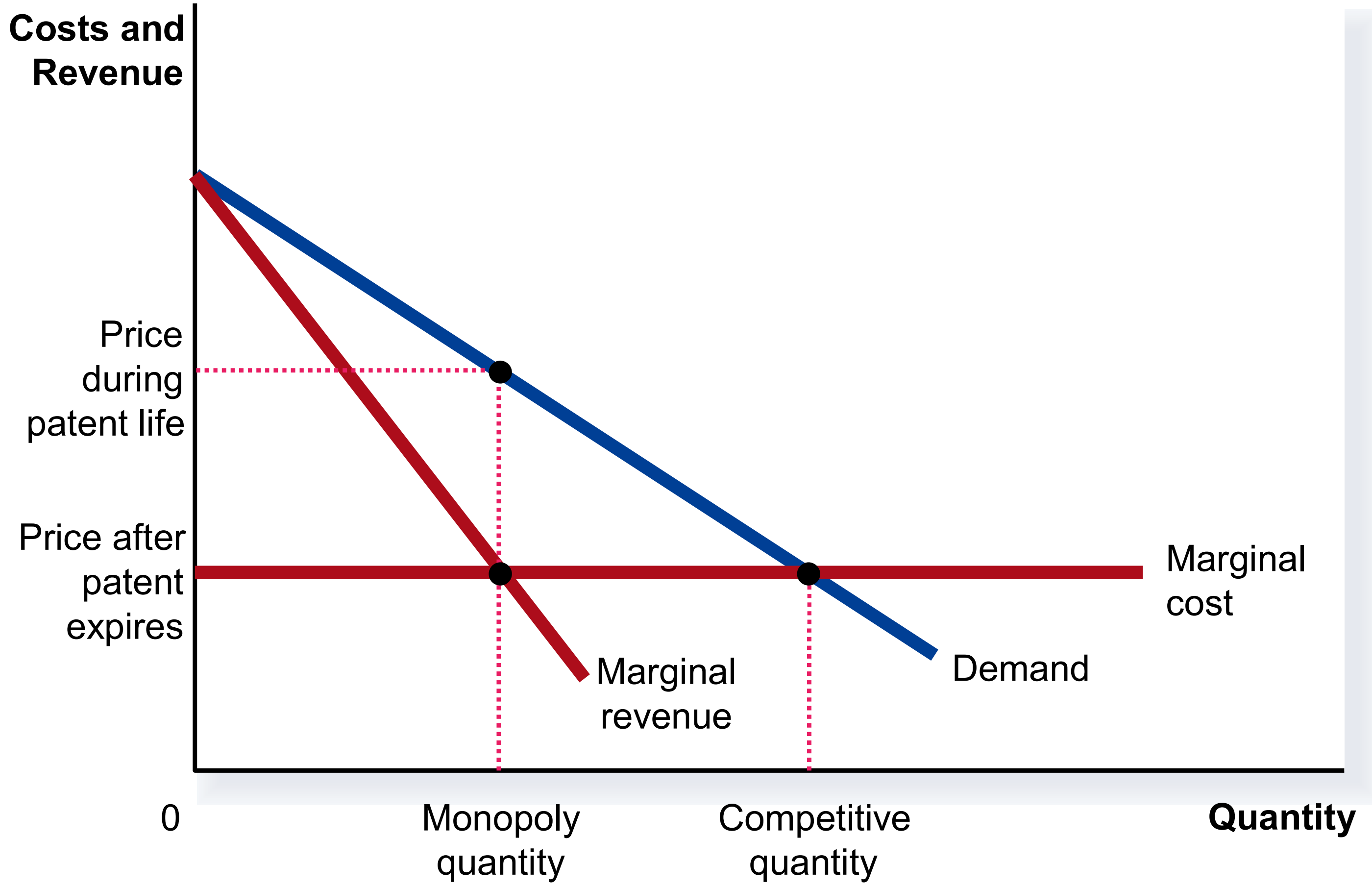
How the Price Affects Consumer Surplus



PRODUCER SURPLUS

- *Producer surplus* is the amount a seller is paid for a good minus the seller's *cost*.
- It measures the benefit to sellers participating in a market.

Intellectual Property Rights: Monopoly Rights



PRICE DISCRIMINATION

- ***Price discrimination*** **is the business practice of selling the same good at different prices to different customers, even though the costs for producing for the two customers are the same.**

https://global.oup.com/academic/product/the-dynamics-of-spectrum-management-9780198099789?cc=in&lang=en& ➔ $25 ; Q = 1 M

https://www.amazon.in/Dynamics-Spectrum-Management-Technology-Economics/dp/0198099789 ➔ $10; Q = 4 M

Cost of production of books: $10 M

Should OUP print only for the US market at $25; or should it print only for Indian market at $10; or should it produce for both the markets?

PRICE DISCRIMINATION

- Price discrimination is not possible when a good is sold in a competitive market since there are many firms all selling at the market price
- Two important effects of price discrimination:
    - It can increase the monopolist's profits.
    - It can reduce deadweight loss.

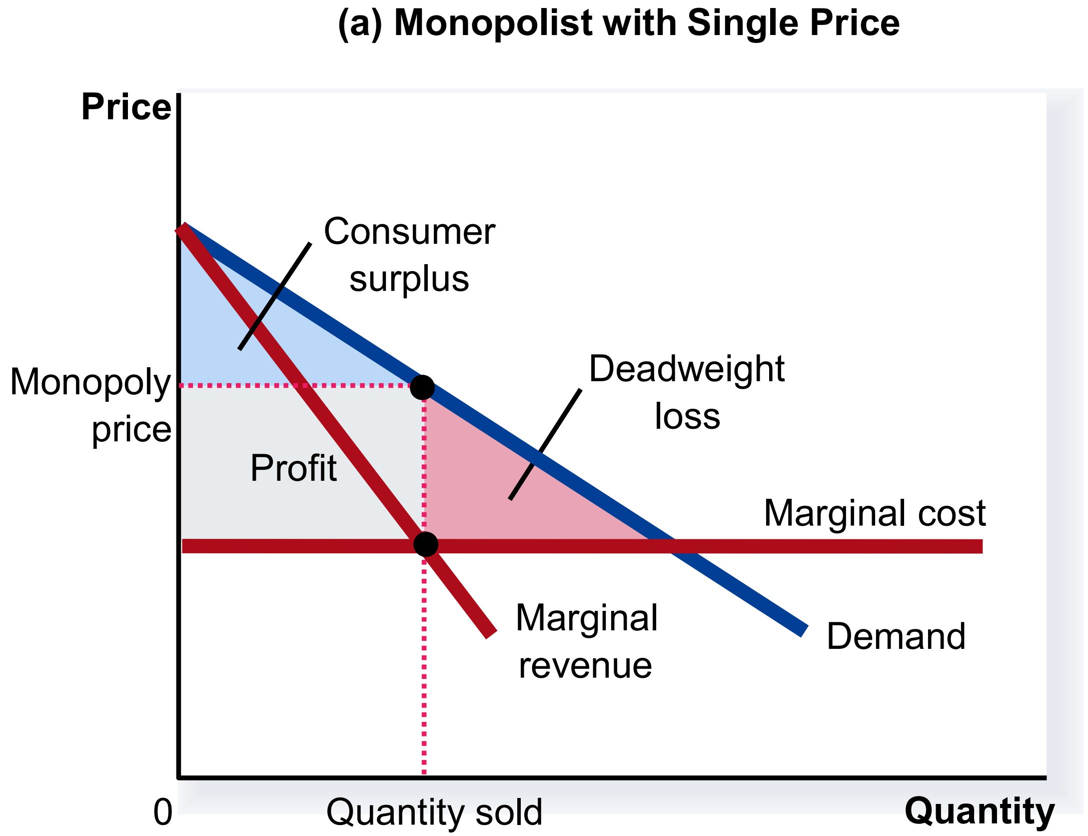
First Degree Price Discrimination

- Highly personalized products can be sold at highly personalized price
  - “market of one!”
- Amazon/ Flipkart/ Ola/ Uber
  - Charge differently depending on user profile for the same good/ service
  - Extended relationship allows firms to better know their customers and hence price appropriately
- Enhanced surplus extraction effect
- Intensified competition effect
  - Each consumer is a market to be contested

Third degree price discrimination

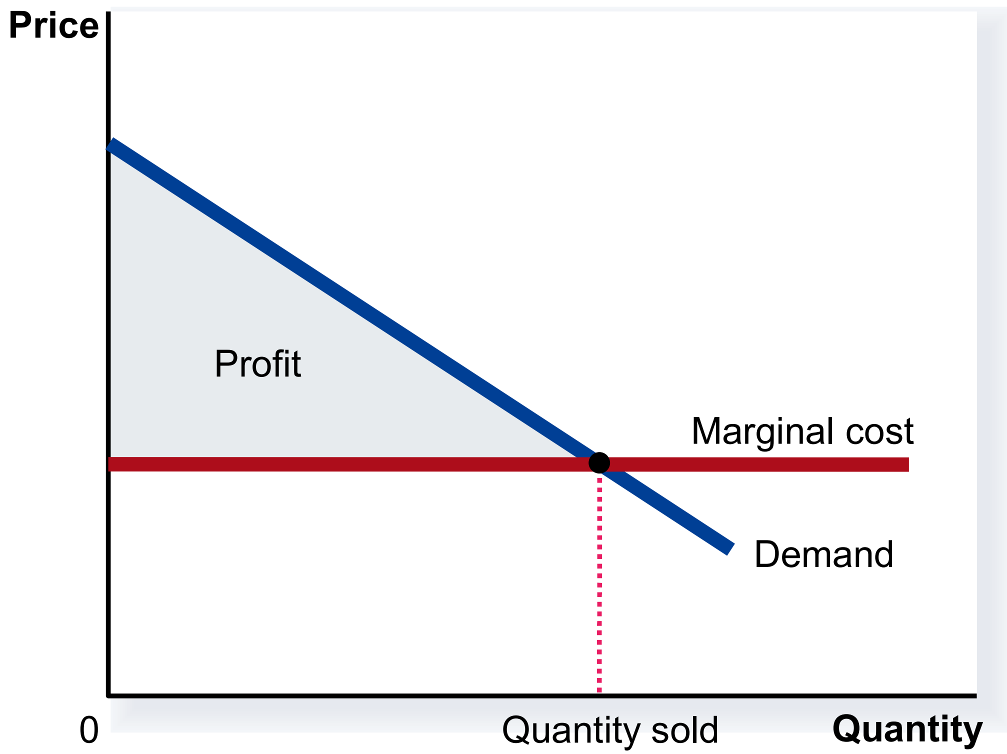
- Selling the same product at different prices to different groups
  - Enterprise vs. Home
  - Geographically differentiated pricing
  - Conditioning on purchase history
    - New customers versus old customers

Welfare with and without Price Discrimination



Welfare with and without Price Discrimination

(b) Monopolist with Perfect Price Discrimination



Case of Landline

Q1) Is the landline dead? How can fixed line telecom firms make money?

Landline (Basic) Services

- Historically, basic telecom services was considered as "natural monopoly"
  - huge fixed and sunk cost associated with the investment on the local loop; low marginal cost
  - duplication of local loop is not possible and economically justifiable
- Economies of scale holds good
  - decreasing average cost curve
  - Cost per user decreases with size of the network

Bundling

A marketing strategy that joins products or services together in order to sell them as a single combined unit for a special price

- Bundling allows the convenient purchase of several products and/or services from one company
- Products and services are usually related, but they can also consist of dissimilar products which appeal to one group of customers

Pure Bundling
Firms offer several products or services as one package so that consumers do not have an option to purchase package components separately

Tying
Tying a product/ service in which the firm has market power conditional on the purchase of a another product (tied product) where there is competition

Mixed Bundling
Allows consumers to purchase package components either as a single unit or separately

Service bundling
where a service provider offers two or more services separately, but gives a discount to customers who purchase the services as a combined bundle

Product Bundling: Economies of Scope

- **Bundling voice + Data**
- **Break-even on fixed costs**
  - Sooner or later

	Willingness to pay		
	Voice (unlimited)	Data (1.5 GB/ Day)	Bundle
Customer-1 (n)	100	200	250
Customer-2 (n)	200	100	250

Economies of Density: What is the strategy of incumbent/ New Entrant?

- Average cost of providing service: Rs. 1,000,000/d
  - d: density of the coverage area
- Coverage area: 100 Sq. met
- Population of Urban area $p_{u:}$:100,000
- Population of Rural area $p_{r:}$:10,000
- What should be the price set by a monopoly?
- What will be the pricing strategy if another telco enters the market?