

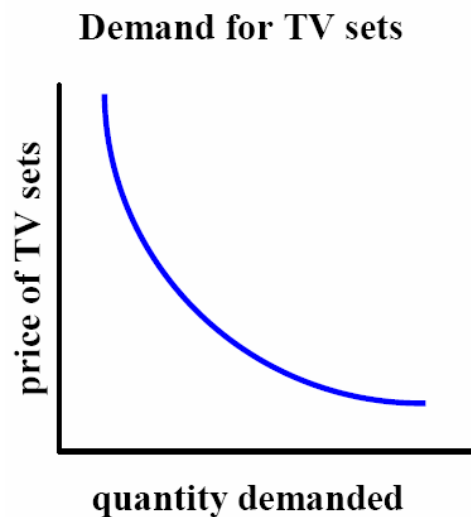
## Lecture 3

# Supply, Demand and Equilibrium

Eric Doviak  
Principles of Microeconomics

## Demand

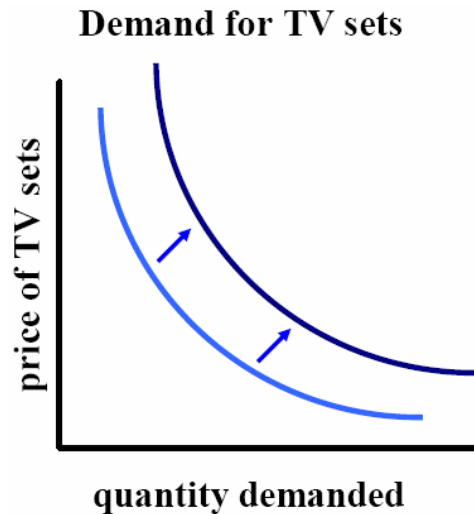
- How many TV sets do you have in your house?
- One in the kitchen, one in the bedroom, one in the living room ....
- Back in the 1950's, most families only had one TV, if they had one at all.
- Q.: Why do families have so many more TV sets today?
- A. # 1: They're cheaper.



If price of TV sets rises, then, *ceteris paribus*, the quantity of TV sets demanded will fall, and vice versa.

# Demand

- **Q.:** Why do families have so many more TV sets today?
- **A. # 2:** Families' real incomes are larger.
- An increase in income changes relationship between price and quantity demanded.
- Demand curve shifts out (up and right).



When income rises, but the price of TV sets doesn't change (i.e. ceteris paribus), there's more demand for TV sets at every price level.

## Movement along Demand Curve vs. Shift of Demand

### Movement along:

- Only if there is change in the good's price (shift of supply curve)

### Shift of demand,

due to changes in:

- Income
- Accumulated wealth
- Tastes and preferences (ex. fewer smokers)
- Prices of other goods
- Expectations (of future income, wealth and prices)

**Income** – *a flow* – sum of all earnings (wages, salaries, profits, interest payments, rents, etc.) in a given period of time

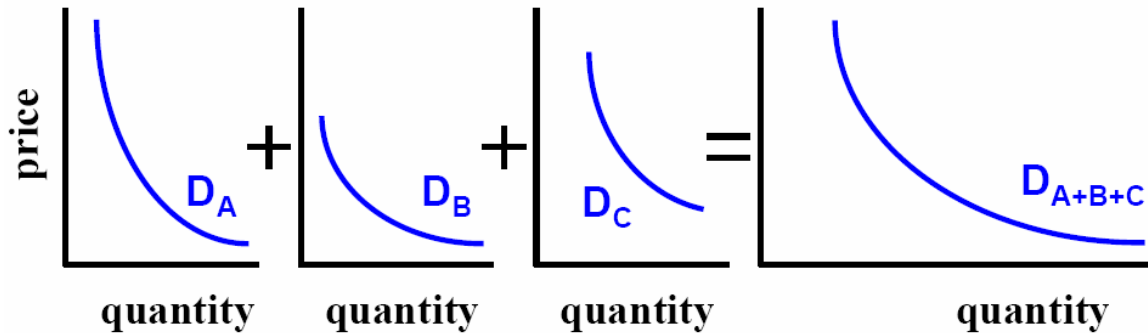
**Wealth** – *a stock* – total value of what household owns minus what it owes

**Substitutes** – when price of good X rises, demand for good Y rises (ex. cigs & rolling tobacco)

**Complements** – when price of good X rises, demand for good Y falls (ex. pasta & sauce)

# Market Demand

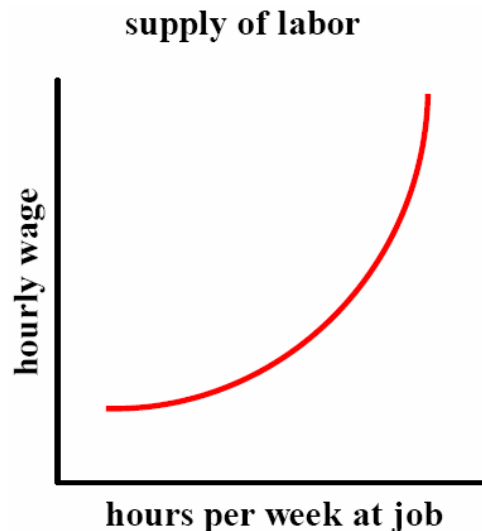
Sum of all individual demand curves (sum of all individual quantities demanded at each price)



price	quantity demanded by:					market demand
	A		B		C	
\$4	4	+	0	+	4	= 8
\$2	8	+	3	+	9	= 20

# Supply

- If you were offered a job for \$3 an hour, how many hours a week would you work?
- You wouldn't take a job that pays so little.
- At \$50 an hour, how many hours a week?
- 40, 50, 60 hours?
- At \$100 an hour, how many hours a week?
- 40, 50, 60 hours? There's a limit to how much you can work in a week.
- *Ceteris paribus* – ex. if there's very high inflation, increase in wage reflect inflation and therefore will not increase output (hours worked)

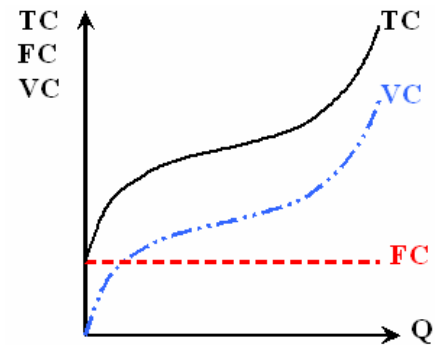


An increase in price – wage is the price of labor – will *ceteris paribus* increase the quantity of labor supplied and vice versa.

# Firm Supply

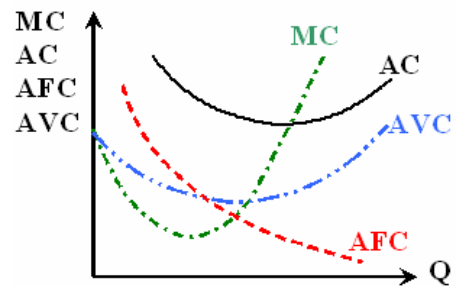
**Total Cost:**  $TC = FC + VC$

- **Fixed costs (FC)** – repayment of loans, lump sum taxes, etc.
- **Variable costs (VC)** – labor, raw materials, electricity, etc.



**Average Cost:**  $AC = AFC + AVC$

- **Average fixed cost (AFC)** decreases as output increases
- **Average variable cost (AVC)** increases as output increases (at least at higher output levels)



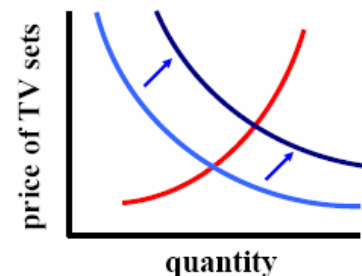
**Marginal Cost (MC):**

- Rate of change in total costs from extra unit of output
- Is the supply curve when  $MC > AC$

## Movement along Supply Curve vs. Shift of Supply

Movement along:

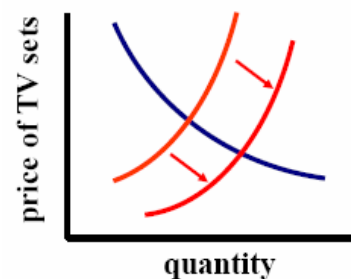
- Only if there is a change in the good's price (shift of demand curve)



Shift of supply,

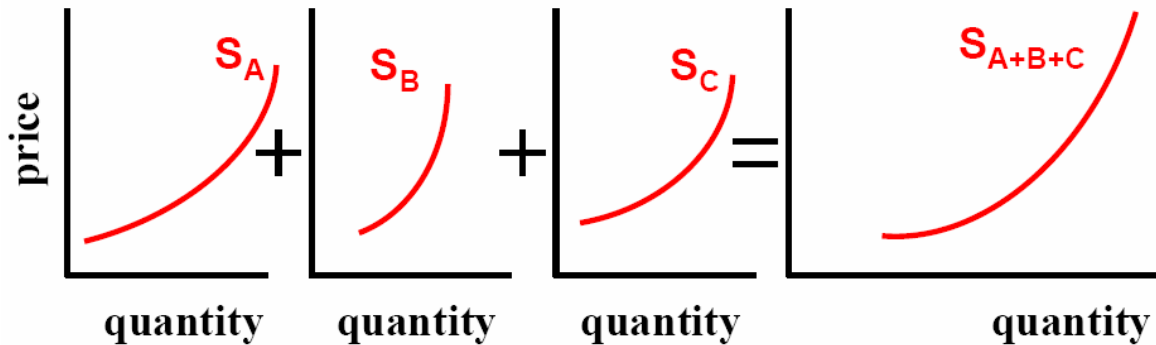
due to changes in:

- **Costs:**
  - wages
  - dividend payments
  - raw materials
- **Technology**
  - more productive machines
  - increased efficiency with which firm uses its inputs into its production



# Market Supply

Sum of all individual supply curves (sum of all individual quantities supplied at each price)

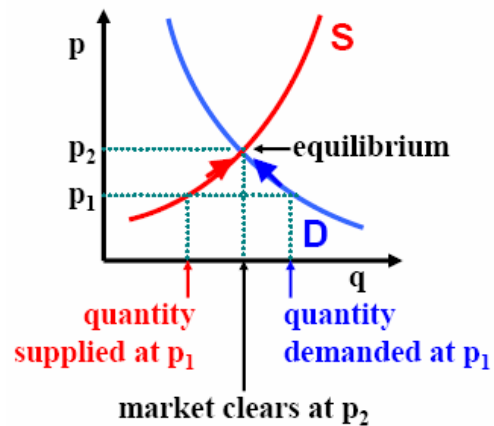


price	quantity supplied by:			market supply
	A	B	C	
\$4	30	10	25	= 65
\$2	10	5	10	= 25

# Market Equilibrium

## Excess Demand

- The absolutely must-have Christmas present
- Parents bid up the price of the present, some parents drop out of the market
- Factories increase production and ask higher price
- Shortage eliminated – “price rationing”

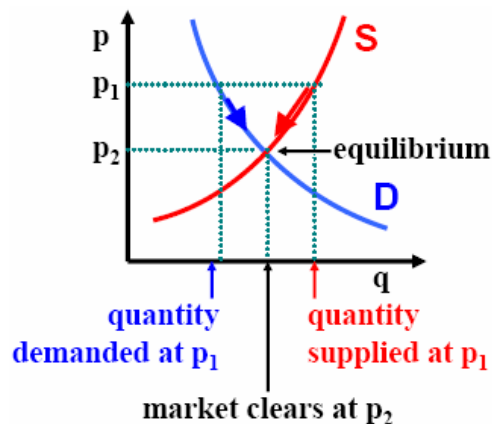


At equilibrium there is no natural tendency for further adjustment.

# Market Equilibrium

## Excess Supply

- Car sales at the beginning of a recession
  - Think back to end-2001
  - Every other ad on TV/radio was a car commercial
- Buyers know of excess supply, offer lower prices and increase quantity demanded
- Automakers decrease production and accept a lower price

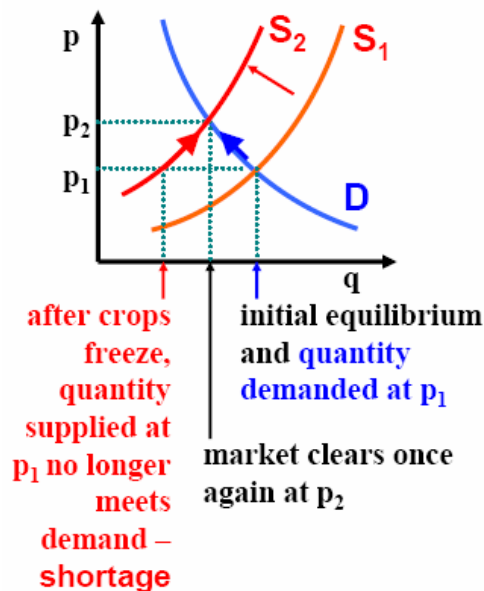


At equilibrium there is no natural tendency for further adjustment.

# Changes in Equilibrium

## Fall in Supply

- Some crops freeze
- Initially at equilibrium
- After freeze, market supply is more limited
- Supply curve shifts in
- Shortage at initial price
- Price bid up, some drop out of market
- Other farms harvest more of frozen crop
- New equilibrium



# Scalpers

- How much would you pay for the best seats in the house?
- Limited supply
- Tickets priced below market equilibrium
- Excess demand at list price
- Arbitrage – whoever obtains tickets at list price, can profit by reselling them

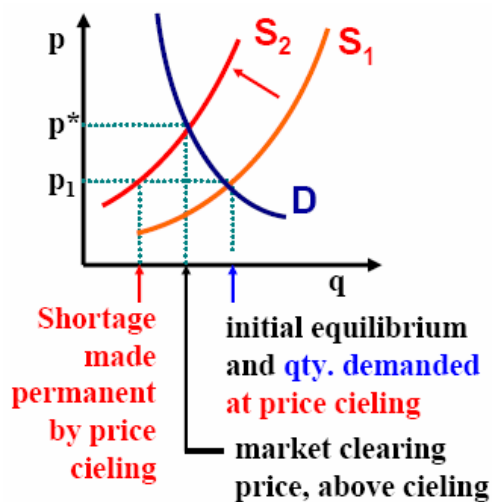


# Stupidity

If “pro-” is the opposite of “con-,” what’s the opposite of “progress?”

## Price ceilings

- 1974 – OPEC imposed oil embargo on US
- Supply shock
- Congress imposed a price ceiling on the price of gasoline
- Result: long lines and shortage of gasoline

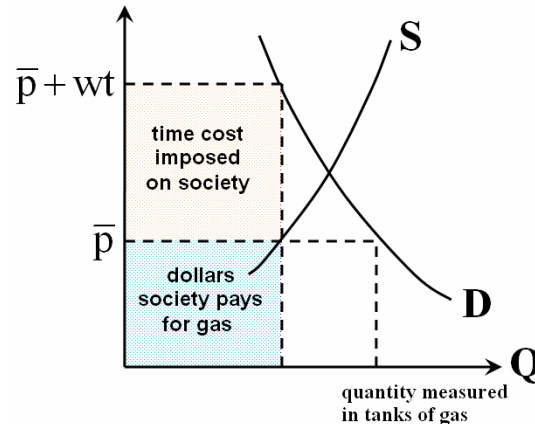


## Ways to beat a ceiling

1. Queuing – be first in line
2. Favored customers – bribe the retailer
3. Ration coupons – buy coupons from friends

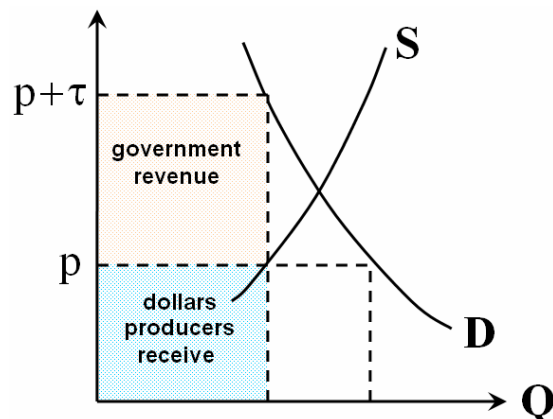
## What is the Cost of Stupidity?

- Since a car owner has to wait in line to buy gas, he/she doesn't just pay the fixed price of gas (denoted:  $\bar{p}$ ).
- For simplicity, we'll assume that  $\bar{p}$  is the price per tank of gas.
- He/She also faces a time cost. But what is the value of time?
- An hour of an individual's time is equal to his/her hourly wage (denoted:  $w$ ).
- So if he/she has to wait  $t$  hours for a tank of gas
- **effective price** he/she pays per tank is:  $\bar{p} + wt$ .
- **qty. demanded at effective price equals qty. supplied at fixed price**



## Excise Tax

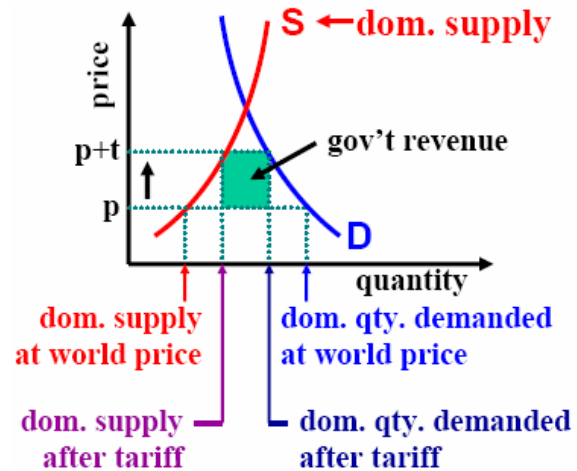
- Now let's say the government imposes a tax,  $\tau$ , on sales:
  - It could be a sales tax of 8.375%. If so:  $\tau = p \cdot 8.375\%$
  - It could be a fixed dollar amount – e.g.  $\tau = \$2$  per gallon of gas
  - Or it could be a FICA (Social Security) tax on wage income. If so, the wage is the “price” of labor and:  $\tau = \text{wage} \cdot 15\%$
- Again, consumers pay an effective price,  $p + \tau$ , which:
  - is greater than market equilibrium price,  $p^*$
  - is greater than price that producers receive,  $p$
- Government collects revenue equal to the dollar amount of the tax times the quantity sold





# Tariff

- When US imports good, domestic demand exceeds domestic supply
- Imposition of tariff drives a wedge between world price and domestic price
- After tariff imposed, domestic producers can sell more and charge higher price for their product
- Consumers however pay higher price and cut qty. demanded



- Government receives revenue from tariff