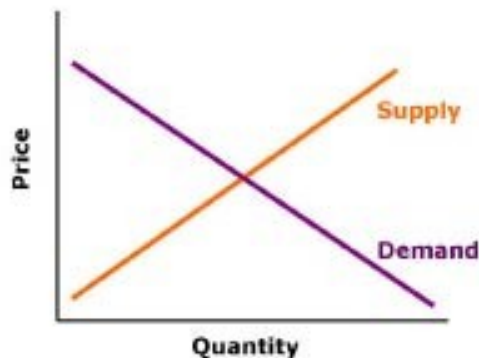


# Macroeconomics



Supply and  
Demand



Output



Money



Expectations

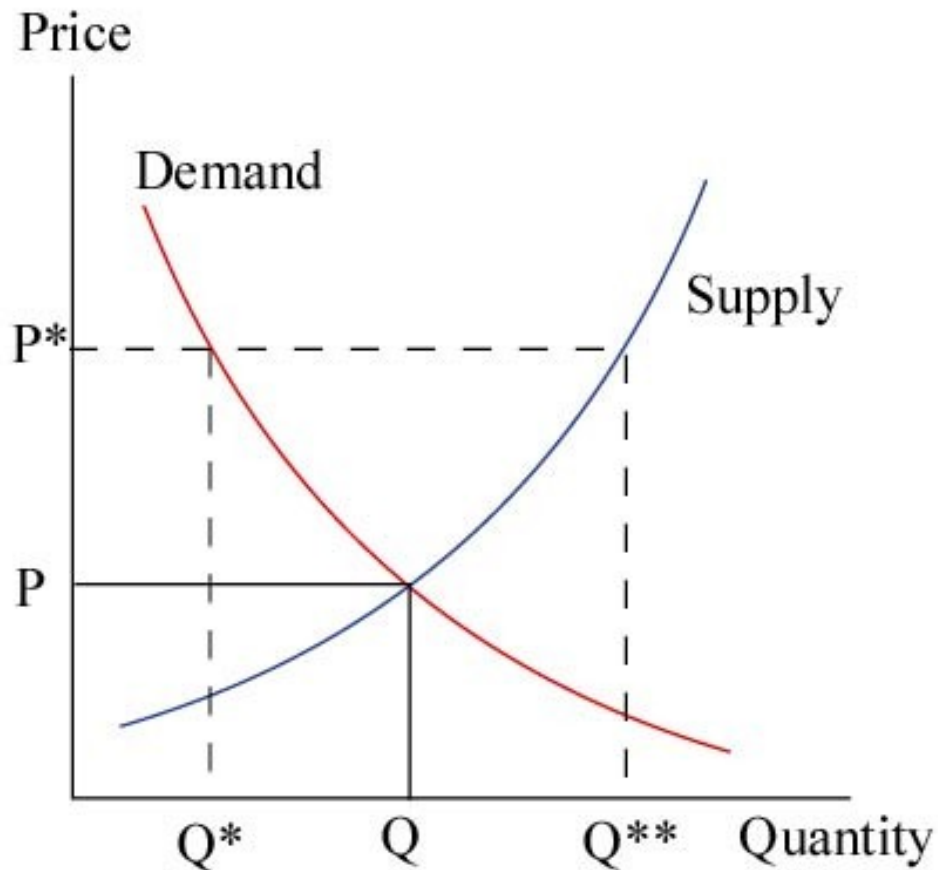


Crashes



Government  
Intervention

# Supply and Demand

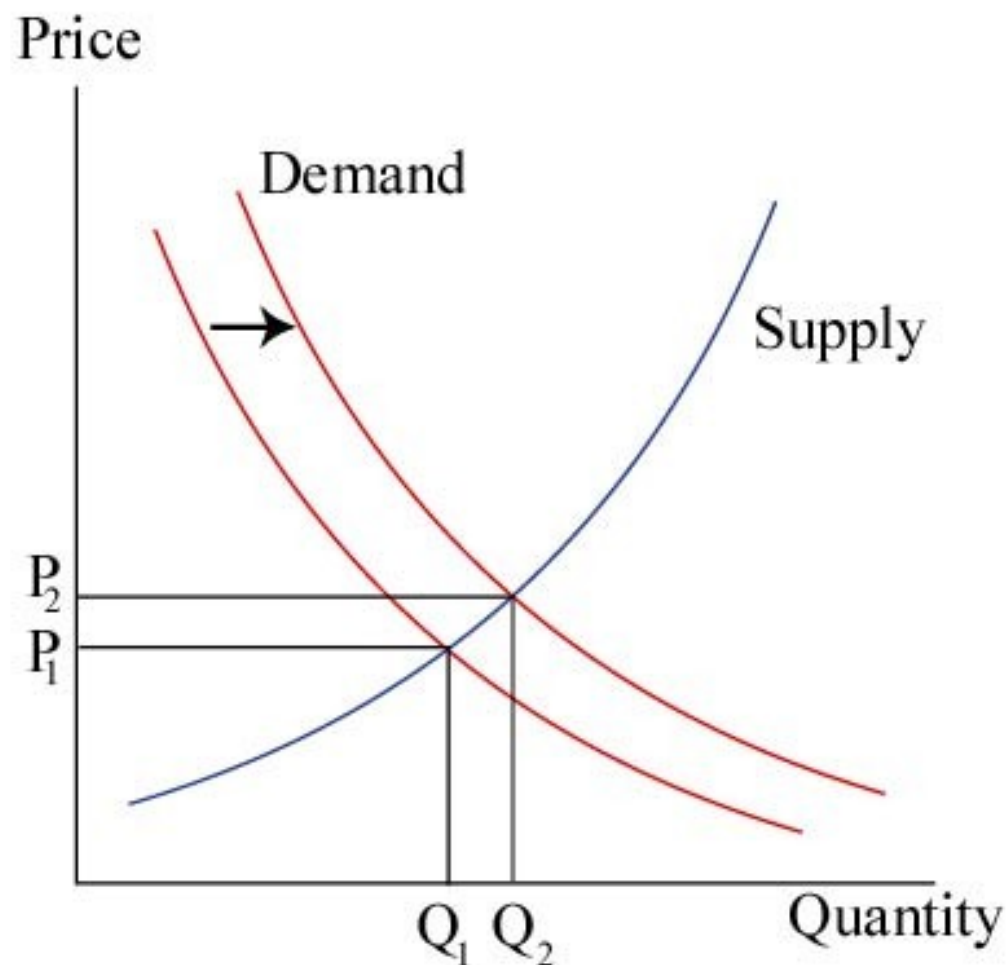


For a particular commodity decreasing the price tends to increase the quantity of goods demanded. More people are willing to pay for an item if it is cheaper.

However, if the price drops, producers have less incentive to produce since the profits per item are less. The quantity of production drops.

If the price is set too high, say  $P^*$ , then the demand will be very low,  $Q^*$ , but the suppliers, hoping to make lots of money will produce  $Q^{**}$ . There will be a glut of  $Q^{**} - Q^*$ . Then prices will fall eventually to  $P$ , the equilibrium price.

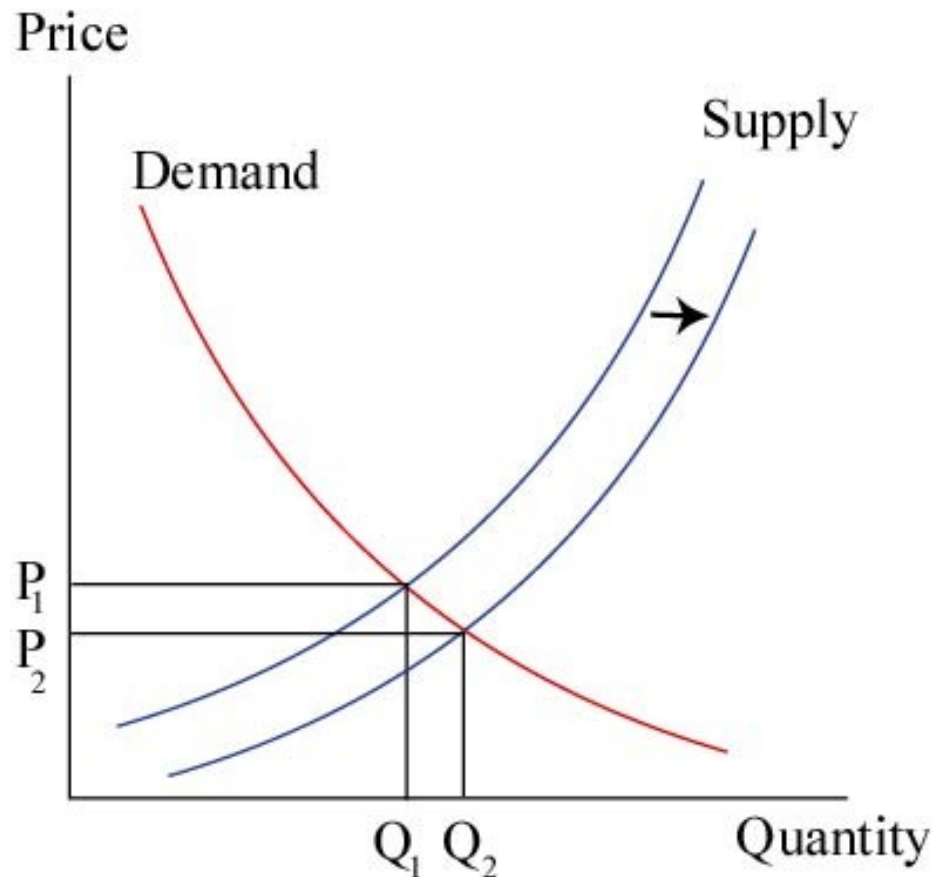
# Shifting Demand



Demand increases due to changing buying habits, cultural values, or increased wealth, or improved expectations for the future.

Increase in demand generates an increase in price. The increase in price is coupled with suppliers raising production.

# Shifting Supply



The supply curve will also sometimes shift. This is typically due to an increase in efficiency, technology or organization. Alternately, if the price of manufacturing goes down due to a decrease in the costs of labor or inputs or a decrease in the cost of borrowing the supply curve will shift. Anything that allows the manufacturer to create the same quantity of goods for a lower price will shift the supply curve.

# Caveats

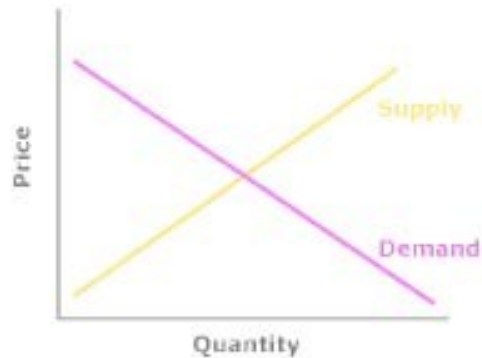
Reality is complex.

- Prices fluctuate around equilibrium.
- Prices can be fixed by laws and regulations (Govt. sets price of milk)
- World events can temporarily affect both supply and demand  
(gulf hurricane, summer driving season, China demand for oil may boom)
- Expectations can create changes in both supply and demand  
(dot com mania, fear of a recession)
- Government can stimulate supply or demand

Cash for clunkers gave a real shot in the arm for auto demand  
However, this will have adverse affects on future demand since  
those older cars will not be replaced later. It is simply stealing  
future demand to help current crisis. The artificial demand can  
lead automakers to inappropriate manufacturing decisions.



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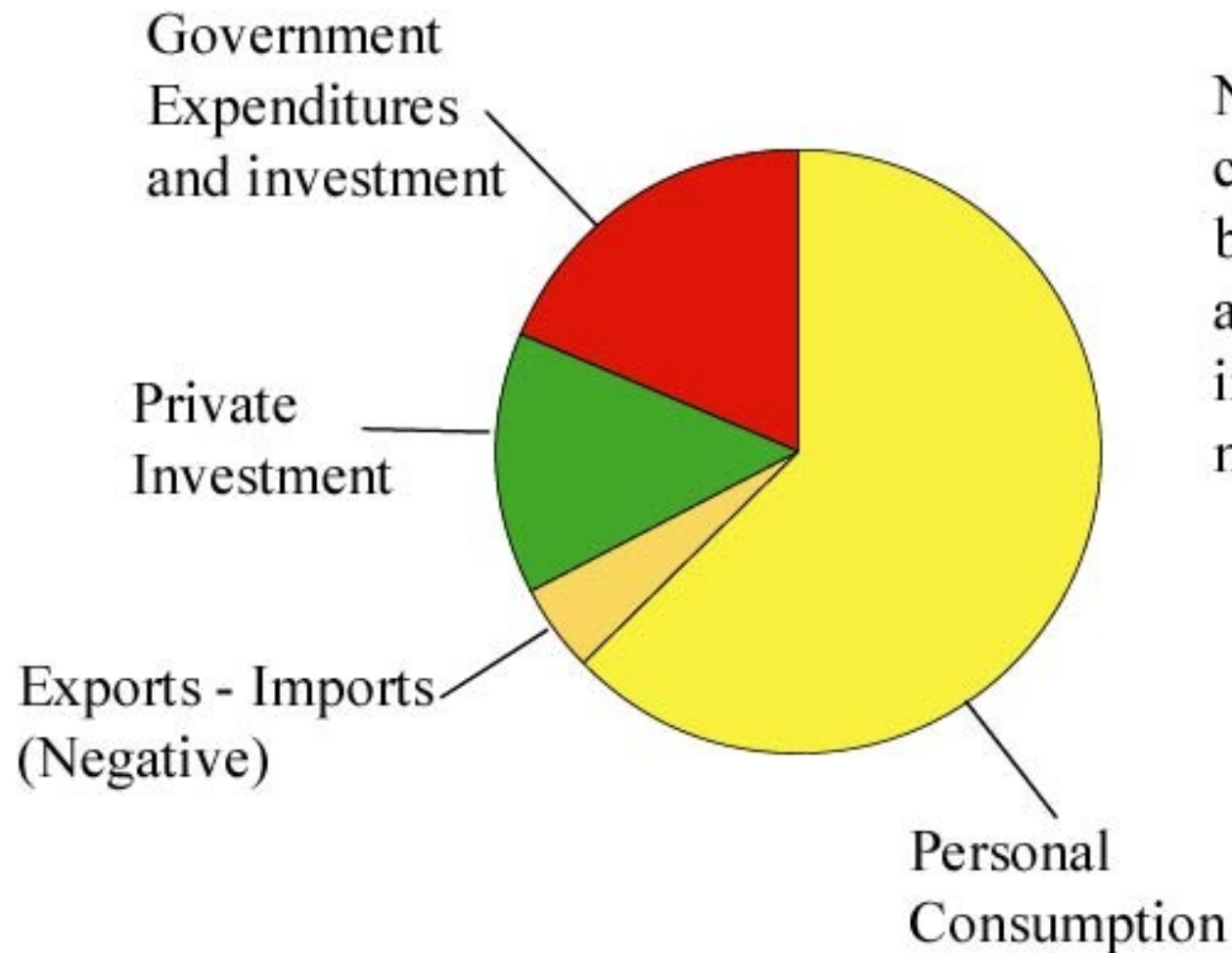
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# Measure of a Country's Wealth

- Total amount of goods and services produced
- Measured by final expenditure (exclude sales from business to business to not double count)
- GDP = Gross domestic product
  - = Private consumption  
(stuff that is used up or not used to produce like houses, cars, food etc.)
  - + business/government investment  
(stuff that is purchased to increase production but is not resold like machines, computers, factories, roads etc.)
  - + Government spending  
(like private spending)
  - + Exports-imports  
(Exports are not consumed by us, but by others, but we produced them so they are part of GDP. Imports are just the opposite. They are subtracted since an imported stereo will be counted as private consumption and we did not produce it.)
- Alternate measure using income

# GDP 2008

Total = \$14.4 Trillion



Note that personal consumption spans both yellow sectors and that Exports minus imports is a negative number.

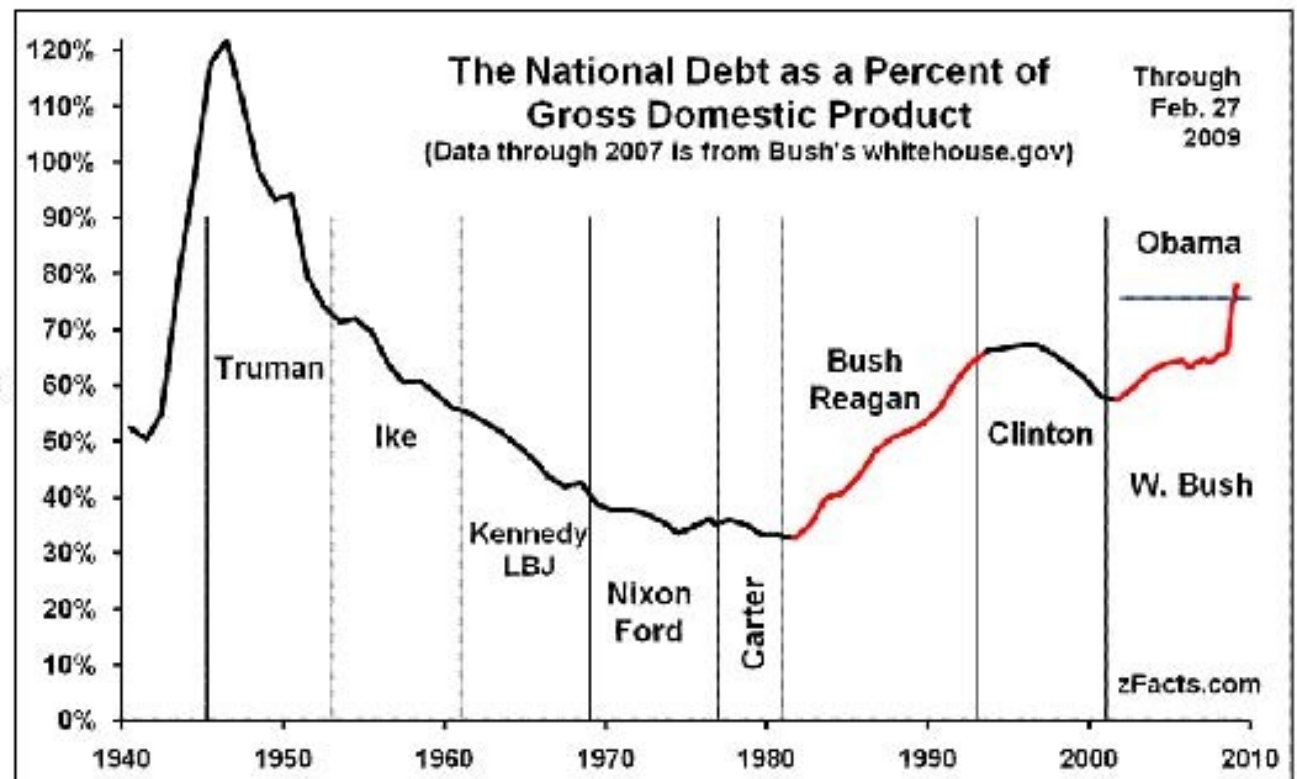


# Debt

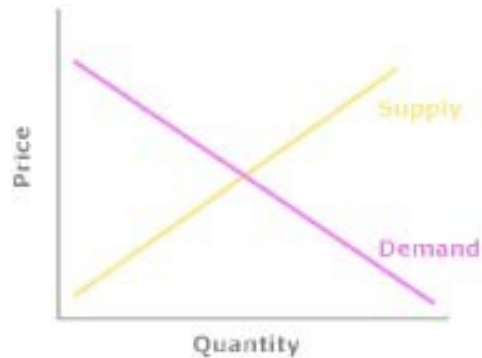
- Countries expenditures exceed production (exports < imports)

The debt is financed by borrowing from other countries. Borrowing internally simply allows one person to spend what another person is not spending. The trade deficit for 2008 was 4.9% of GDP. However, the total debt is much larger ~20%.
- Extra expenditure goes to investment - boost GDP to pay off debt
- Extra expenditure goes to consumption - tighten belt later.

- National Debt is debt government holds, not the whole country
  - Financed internally (from savings of individuals and business)
  - Financed externally (e.g. from China)
  - National debt comes from deficit spending



# Macroeconomics



Supply and  
Demand



Output



Money



Expectations



Crashes



Government  
Intervention

# Money

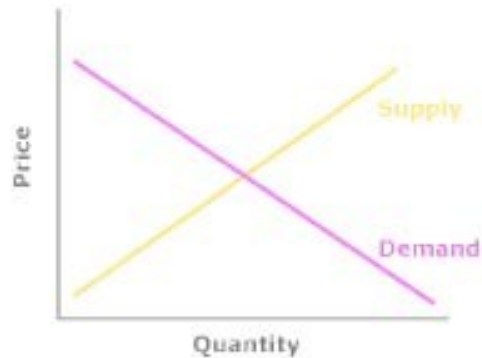
- Currency (\$724B in 2005) and Demand Deposits (\$638B in 2005)  
Called "Money Supply"
- Money Creation by Banks and Fed  
Federal reserve sends out checks for \$1000 each to 1000 individuals  
1000 individuals deposit \$1000 each in Gutenberg Bank (= \$1 million)  
Gutenberg Bank keeps \$100,000 in reserve and lends 900,000 to Gutenberg College  
Gutenberg College spends the money on a building  
Contractors, suppliers etc receive the money and deposit it in other banks, eg. MSC bank  
MSC bank holds \$90,000 in reserve and lends \$810,000 to MSC  
MSC buys a radio station and hires employees.  
Employees and the previous station owner deposit money in bank, e.g. Art Project Bank  
Process continues.  
Total money = \$1M (depositors) + \$900k (contractors etc) + \$810k (station owner) etc.  
= \$1M x 10 = \$10M  
(Note: x10 multiplier =  $1/\text{reserve} = 1/10\% = 1/.1$  However, usually smaller than this)
- Problem: Run on the bank (very common problem in 19th century)  
Recession hits. 20 depositors need cash and 81 get scared the bank will fail  
101 depositors ask for their deposits.  
Gutenberg Bank holds \$100,000 in cash and can't pay the demanded \$101,000  
Gutenberg Bank goes bankrupt.  
FDIC insures depositors with taxpayer money (as of 1933) Confidence reduces runs

# Money supply and rates

- Interest rate - The cost of borrowing money
- Exchange rate - The cost of foreign currency
- Aggregate price level - the price of all goods and services
- Suppose money supply goes **up**
  - Interest Rate goes **down**: there is more money and it is easier to get - supply and demand
  - Exchange rate **less** favorable: dollar worth less due to glut.
  - Aggregate Price level goes **up**: more dollars chasing the same goods.
- Inflation
  - When aggregate price level goes up drastically or over long periods it is inflation
  - Inflation effects individuals on fixed income or with low interest yield savings
  - Reduces "real" income
- Real and nominal rates and prices
  - Real quantities are tied to commodities: during inflation the real price of goods remains fixed since there is no change in supply or demand (presumably)
  - Nominal quantities are published prices or rates. During inflation the nominal price of goods goes up.
  - It is possible for the real interest rate to go down while the nominal rate goes up
    - e.g. inflation goes from 3% to 8% and nominal interest rate goes from 6% to 9%
  - If inflation goes up, lenders usually increase interest rates to account for that.



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Crashes



Government  
Intervention



# Expectations

- Expectations are self fulfilling - positive feedback
- Consumer expectations
  - Fear of recession reduces spending and increases saving, deepening recession
  - Hope of recovery can increase spending and spur recovery
- Investor expectations
  - Investors expect stock or commodity prices to increase so they invest - prices go up
  - Investors expect their investment values to go down and they sell - values go down
- Inflation expectations
  - Banks, in expectation of inflation, raise rates - inflation exacerbated.
  - Long term investments will change if inflation is expected.
  - Businesses will raise prices and employees demand cost of living increases.
- Depositor expectations
  - If depositors are worried about the stability of bank or company, they withdraw deposits and sell stock, creating a self fulfilling instability
- Manufacturer expectations
  - If manufacturer expects high demand, they produce more
  - If manufacturer expects weak demand, they scale back

# Example of Expectations: Oil 2008

Before 1976 oil was sold in large long term contracts from a few major producers

Smaller oil companies were born, sold for cheaper

Market more responsive. Variations in conditions cause fluctuations in supply and demand.

**Futures** - buyers look for a way to control and predict costs.

Southwest air agrees to buy 1M barrels from Shell in one year for an agreed on price

In a year, both Southwest and Shell **MUST** carry out sale at one year deadline

Traders/investors see this as a way of making money.

Traders buy futures in hopes that the price will go up. Sell when they fear price drop.

Based on EXPECTATIONS. 97% of futures trading done by speculators

**Spike in 2008**

Evidence suggests there was not a supply demand change that could account for price spike.

Furthermore, US demand is relatively independent of price

China demand not as large as made out.

Investment firms and the media were printing doomsday \$200/barrel

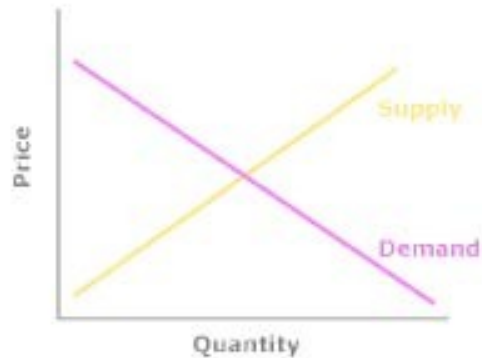
Sources for media were undisclosed (Some of those were heavily invested in oil)

There was a lot of investment in one futures market that was unregulated.

"One of the things I think is very important to realize is that the growth in the world oil consumption is not that strong." -- David Kelly, chief market strategist, J.P. Morgan Funds; The Washington Post, May 4, 2008

"...There is substantial evidence that the large amount of speculation in the current market has significantly increased [oil] prices." -- U.S. Senate Staff Report, The Role of Market Speculation in Rising Oil and Gas Prices, June 27, 2006

# Macroeconomics



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Demand



Output



Money



Expectations



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Government  
Intervention

# Anatomy of a Crash

- **Some change in the economy (could be a combination of many)**
  - New financial instrument (hedge funds)
  - Opening of a new market (Malaysia in 1990's)
  - New regulatory environment (New low income loans, IRA's invented)
  - New demand created by socio-political environment or technology (dot com)
  - New source of funds (Fed lowers rates, increase in IRA's)
- **Investors see opportunity and start investing**
  - Investment causes excitement and rising values.
  - Bandwagon mentality. Denial of potential fall (AIG rated AAA)
- **Supply follows lead**
  - Rising prices interpreted as very strong demand.
  - Manufacturing increases to fill that perceived demand.
    - (Central Ca. homes, computers, new city in Malaysia, greater oil/altern energy production)
- **Reality bites back**
  - Actual consumer demand does not support supply
    - nobody buys homes, nobody buys online, oil usage stays flat or decreases
  - Huge surplus of goods and services
  - Investors realize the potential danger
- **Crash**
  - Investors sell paper Manufacturers try to sell oversupply of goods
  - No one wants to buy and prices and values plummet.
  - Bad news affects consumers and they start to conserve Demand pushed below normal levels
  - Investors lose and banks are left to foot the bill
  - Manufacturers have to severely cut output until inventory sold off.

# Crash Causes

- **Margin buying and risk**

- Investors borrow money to invest. (in stock, oil futures, housing)

- Law regulates how much personal collateral or "margin" investor must invest to cover loss

- Oil futures margin was 6%, stock market margin was 10% in 1928, housing margin 0%?

- example Use \$100 to buy \$1000 stock. (borrow \$900)

- Stock increases(decreases) 1% (\$10) you make(lose) 10% on your investment

- Stock increases(decreases) 12%, you make(lose) 120% on your investment

- Low margin means very high potential gains, very high risk. Very attractive to some.

- With lots of margin buying if the price drops, everyone tries to get out fast, drives price down.

- Lenders can lose big time since investors lose more than their personal collateral

- **Lack of regulation on new financial instruments or poor regulation**

- New financial instruments introduced. Govt. doesn't regulate until there is a crisis

- Stock market in early 20th century, hedge funds, oil futures, stock options, derivatives

- Govt. reduces margin requirement in a particular sector (e.g. housing)

- **Expectations and fear**

- When expectations are positive, investors invest. When expectations are negative investors sell fast

- Intensive investment blows up bubble. Intensive sell off creates crash

- Many don't base investment on value of company or careful analysis of market, but rumors

- **Abundance of cash**

- Cash for investments come from savings (mutual funds and pensions are driving force)

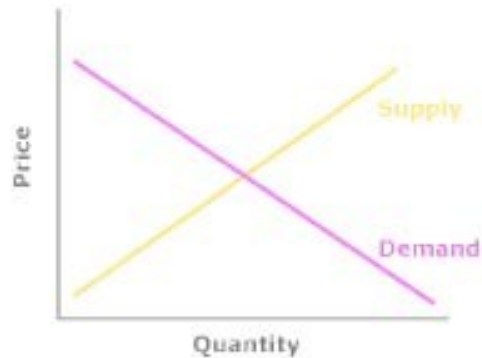
- Large funds and desire for large returns drive bubbles

- Cash for borrowing influenced heavily by money supply and interest rates.

- Low rates spur investors to borrow



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Government  
Intervention

# Government Tools

- **Money supply**

Increasing or decreasing the money supply affects rates and incentive to invest

- **Fiscal Policy - Spending and Tax cuts**

Supply side: Cut taxes to encourage people to 1. work harder (high taxes discourage work),  
2. save money (to lower rates and boost investment) and 3. invent or organize.

Demand side: Government spending to hire more labor, increase education to improve efficiency, R & D for efficiency, increase infrastructure to raise efficiency.

- **Regulation**

Changing regulations can have an impact on all sorts of economic activity  
price fixing, margins, lending regulations, red tape costs, curbing abuses

- **Public relations announcements**

Convincing consumers to spend or save can heat or cool the economy

- **Public ownership of various sectors of the economy**

Increased or decreased efficiency of government owned business can have effects

- **International negotiations and regulations**

Trade agreements impact imports, exports and global efficiency

Opening and closing markets can impact the economic output significantly

# Recessions and Depressions

- Classical Theory

A free market will through natural economic forces fluctuate around equilibrium  
If there is a recession, unemployment causes wages to drop. This spurs production because companies can now produce the same product for cheaper and sell more  
Also as prices drop the rich save more as money becomes more valuable.  
interest rates thus fall. This spurs production

- Keynesian theory

Things are more complicated. There is no automatic adjustment toward equilibrium  
e.g. Unemployment and low wages lowers demand so that even cheap products won't sell  
Production is reduced further, creating more unemployment. Downward spiral ensues.

- Keynesian solution

During recession, stimulate demand by tax cuts, deficit spending and lowering interest rates  
There is a potential output, but actual output is down. Raise actual to potential  
During growth, raise taxes, decrease spending and raise rates  
If actual output equals potential output govt. stimulus has adverse effects. (e.g. bubble)

- Monetary policy vs spending

In recession, lowering rates has minor effect. Increased production based on long term expectations  
In normal times, lowering rates can stimulate economy, especially housing.

- Problems

Governmental fixes become permanent stifling government programs  
Stagflation caused by excessive money supply in monetary policy