Today’s Topics

• Dow Jones Industrial Average
  – History
  – Declines

• Bubbles
  – Fundamentals
  – Buying on Margin

• Speculative Bubbles
  – Barber & Odean

• Next Class—Real Estate and Housing Bubbles
Brief Wall Street History
Dow Jones History

• Charlie Dow and Eddie Jones
Dow Jones Industrial Average

- Longest continual stock Index
Large DJIA declines (rank and percent)

1. October 19, 1987       22% Drop
2. October 28, 1929       13% Drop
3. October 29, 1929       12% Drop
9. October 15, 2008       8% Drop
17. September 17, 2001    7% Drop

*4 in the top 20 from fall 2008
Bubbles
Bubbles

- A bubble inflates with hot air, then pops and collapses
- Asset price bubble: The price of an asset is bid up higher than is “reasonably” expected
- People pay lots for an asset because price is rising, but price is rising because people pay lots
Bubbles

• Examples: baseball cards, beanie babies, recent housing market

• Cannot say for sure if in a bubble, because it depends on people’s expectations, which we don’t know
Tulip Bubble
Tulip Bubble

• 1630s Holland
• Dutch Merchant had bulb worth $30,000
• A sailor arrived with good news of overseas business, asked to stay for dinner
• Sailor ate an “onion” he found to go with the red herring
• By 1637, bubble crashed
Was 1929 stock market a speculative bubble?

- There WAS a big drop in stock prices
- DJIA fell from 386 to 41
- It took over 10 years to recover
- But was this a *bubble*?
The rise and fall in stock prices shows the magnitude of speculative activity and the market crash. From a level of 100 in 1926, the market index soared to a high of 206 in September 1929 before collapsing to 34 in June 1932.

Fundamentals approach

• Stock price is based on expected future dividends, which are based on expected future profits
• As expected dividends rise, stock price rises
• The most someone will pay for a stock is the discounted sum of expected dividends
Expected Stock Price = \frac{Dividend \ 1930}{(1+i)} + \frac{Dividend \ 1931}{(1+i)^2} + \frac{Dividend \ 1932}{(1+i)^3} + \ldots

where \( i \) is the interest rate.

This is just an application of present discounted value.
Were stock buyers irrational?

Perhaps not:

- A Depression is a rare event, so it would have been almost impossible to predict
- Only after 1928 do stock prices increase quicker than dividends
Were stock buyers irrational?

Perhaps not:

• If expected dividends (based on the 1922-29 actual dividend growth) are used, then in 1929 the implied interest rate is 14% – This is *high* compared to 5% typical, which suggests stock prices were actually too low in 1929!
Were stock buyers irrational?

Perhaps not:

• Barsky and DeLong 1990 show that “fundamental” investors were buying stocks in 1929

• Even Irving Fisher (famous and respected economist) in December 1929 was buying stock!
Buying on Margin

• New financial innovation
• In 1929, 10% needed as margin requirement
• Today, 50% needed
• Regulated by the Fed
• Allows for greater % gains (or losses!) through leverage
• You can buy more stocks using leverage
Buying on Margin

• Example: Pay $10 for $100 stock (borrow $90). If stock price goes up to $105, then you make $5 profit (after paying back loan)
  ▪ Original $10 increased by $5, so rate of return is 5/10 = 50%
Buying on Margin

• Example: If pay $100 for $100 stock and if stock price goes up to $105, then you still make $5 profit
  ▪ But original $100 increased by $5, so rate of return is $5/100 = 5\%$
Margin Call

• If stock broker notices stock price falling, he won’t let price fall below what he has loaned to you
• He might make you repay the loan (Margin Call).
• Often this forces you to sell, which makes prices fall even faster if lots of margin calls are made
Buying on Margin

- House mortgage financing uses leverage too, since borrower keeps all the gain.
- Today we see the trouble in the leveraged housing market when prices fall (note: the mortgage lender can lose *more* since can’t foreclose (margin call) before price falls too low!)
Program Trading

• Today, software will generate “sell” orders if stock prices falls below a set threshold
• This makes sense for individual investor
• But if everyone’s software kicks in, then mass selling
• 1987 Crash involved program trading
• ‘Circuit breakers’ put into effect afterwards
  – It’s not clear if these efforts will stop slide, or only delay slide until reopening
Market “Correction”

• A momentary drop in stock values after stock had become overvalued (bursting of a small bubble)

• Different from the onset of a bear market, where stock prices continue to fall

• Impossible to know if a fall is a correction or a prolonged slide
• Internet has reduced middle-men but this is only good if middlemen don’t give good advice

• More information available, but is it useful?

• **Roulette Wheel** analogy:
  – If you know when, where, how produced, you still can’t predict the number!
• From psychology:
  • **Illusion of knowledge**—more data and you believe you have better ability to predict
    – People tend to seek out only confirming evidence & opinions
  • **Illusion of control**—more active traders believe that they can influence outcomes (returns)
Conditions Most Conducive to Speculative Bubbles

1. Active and Inexperienced Traders

2. Lots of Cash Available to Buy Stocks

3. Great Uncertainty Regarding Future Stock Value
Conditions Most Conducive to Speculative Bubbles (Evidence from 1990s)

1. Active and Inexperienced Traders
   - ½ of all traders in 2000 started in 1990s
   - Turnover in 1999=
     * Dollar value of trades divided by market capitalization
     * Was 78% in 1990s, the highest value since 1929
Conditions Most Conducive to Speculative Bubbles (Evidence from 1990s)

2. Lots of Cash Available to Buy Stocks
   – Strong economy
   – High margin debt
Figure 2
Margin Debt for U.S. Households Divided by Disposable Personal Income

Source: Goldstein and Krutov (2000).
Conditions Most Conducive to Speculative Bubbles (Evidence from 1990s)

3. Great Uncertainty Regarding Future Stock Value
   – E-commerce firms hard to value
Arbitrage should eliminate the bubble!

- Arbitrageurs—people who make profit when market is “irrational”
- If market is overvalued, then can make profits by *selling short*
- Selling short will reduce prices today, in anticipation of future price declines
- However, if stock mispricing persists and continues for a long time, then may not be able to short the market
- Today have new rules *against* selling short