



Lecture 14: Stock market basics and stock pricing

Mishkin Ch 7 – part A

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Plus supplementary lecture notes

Review

- Term structure of interest rate
- Yield curve
- Expectations theory
 - long-term interest rate = average of short-term interest rates.
- Segmented markets theory
- Liquidity premium theory
 - long-term interest rate = average + **liquidity premium**
 - liquidity premium > 0 and increase with maturity

Interpret the yield curve using liquidity premium theory

yield curve

expected future short-term i would?

steeply upward sloping

rise

slightly upward sloping

unchanged

flat

decline moderately

downward sloping

decline sharply

- You can figure out what the market is predicting about future short-term interest rates by looking at the slope of the yield curve.



Stocks

- A share of stock is a claim on the net income and assets of the corporation.



Rights of shareholders

- Shareholders (stockholders) have ownership interest in the company **proportional to** shares owned.
 - Large shareholder vs. small shareholders
- Rights include:
 1. rights to be 'residual claimants'
 2. voting rights influence management



Shareholders' payoff

- possible income:
 - dividends: payments made periodically, usually every quarter, to stockholders. Shareholders are eligible for dividends, but no guarantee.
 - capital gain: can sell stocks to earn price appreciation but may also incur loss from price decline.
- limited liability

Stock exchanges

- New York Stock Exchange (NYSE, "Big Board")
- NASDAQ (National Association of Securities Dealers Automated Quotation System) electronic trading system
- Dow Jones and S&P 500 indexes
- listed companies
 - When a firm go public, it does not add to its debt. Instead, it brings in additional "owners" who supply it with funds.





Read stock quotes

Microsoft Corporation

(MSFT) NASDAQ

\$26.03 \$+0.05 +0.19%

Open \$26.11

High: \$26.39

Low: \$25.45

52-Wk Rng \$ 25.60 - \$ 37.50

P/E Ratio 15.13

Volume 71,527,599

- 52-Wk Rng
 - Highest and lowest share price achieved by the stock over the past 52 weeks.
- P/E Ratio
 - Price-Earnings Ratio = (Current stock price)/(Current annual earnings per share)
- Volume
 - Volume of shares traded yesterday (in 100s)



Major events

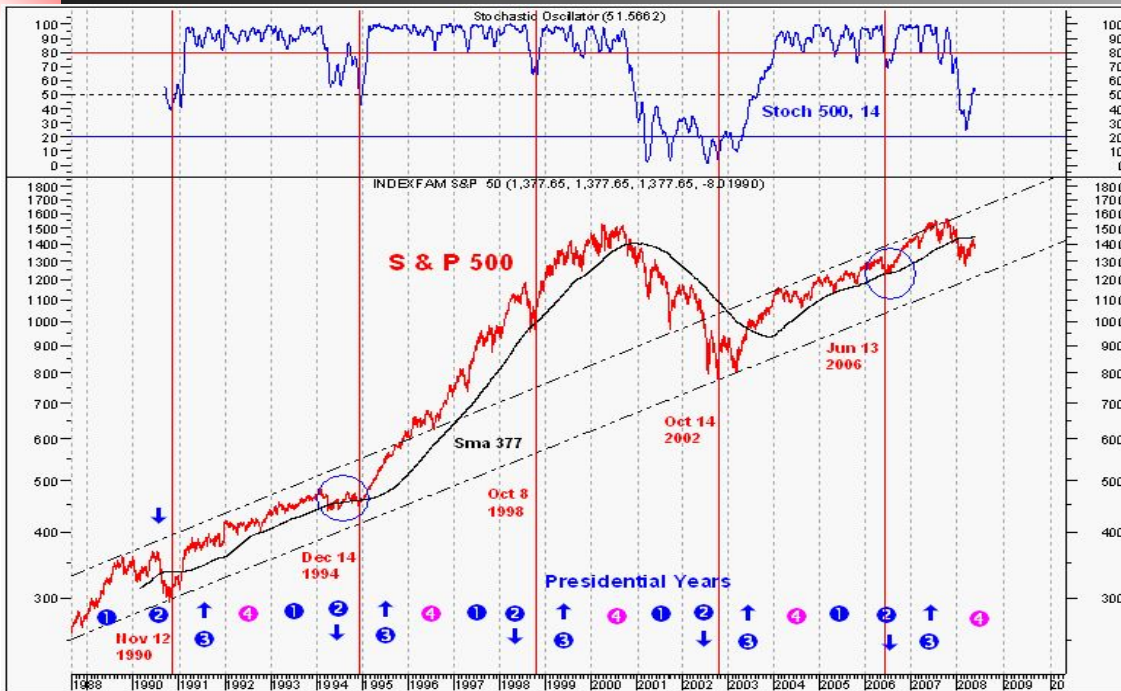
- 1987 crash:
 - total value of stocks fell by about a trillion dollars between August 1987 and the end of October 1987.
- 1990s boom:
 - a major boom in last half of the 1990s, the value of stocks increased by about \$2.5 trillion per year during the boom.
- bubble burst in 2000:
 - Starting in early 2000, the stock market began to decline, the NASDAQ fell by over 50%, while the Dow Jones and S&P 500 indexes fell by 30% through January 2003.



If I could forecast stock price

- Fundamental analysis
 - macro-econ and firm performance dividend stock's intrinsic value
 - P/E ratio, debt-to-equity ratio, return-on-assets ratio, price/earnings to growth ratio ...
- Technical analysis
 - volume of trade and price trend
 - moving averages, regressions, price correlations, cycles, chart.
- Behavioral finance perspective
 - 'sunspot' and consumer confidence

Technical analysis



cycles and waves



candle stick chart

Alternative views of stock pricing

- Fundamental Finance View:
 - Stock prices are largely determined by the true financial conditions of firms, as reflected in their profits, market power, R&D prospects, etc.
- Behavioral Finance View:
 - Stock prices are strongly affected by market psychology:
 1. “irrational exuberance” or pessimism;
 2. “beauty contest” guesses about the most attractive stocks to buy based on what other people are buying or selling (fads, herd following, ...).

Pricing principle of 'fundamental view'

- 'Basic principle of finance':
 - value today = present value of future cash flows
- e.g. for coupon bonds, bond price today = PV of all future cash flows:

$$P = \frac{C}{1+i} + \frac{C}{(1+i)^2} + \dots + \frac{C}{(1+i)^n} + \frac{F}{(1+i)^n}$$

- Then, value of stock today (current price) = ?

One-period valuation model

- current stock price = PV of all future cash flows
- for a one-period stock, current price should be:


$$P_0 = \frac{Div_1}{(1 + k_e)} + \frac{P_1}{(1 + k_e)} \quad (1)$$

P_0 = the current price of the stock

Div_1 = the dividend paid at the end of year 1

k_e = the required return on investment in equity

P_1 = the sale price of the stock at the end of the first period


Expected end of period price, and **Expected** dividend

Generalized dividend valuation model

- for a n-period stock, current price should be:

$$P_0 = \frac{D_1}{(1+k_e)^1} + \frac{D_2}{(1+k_e)^2} + \dots + \frac{D_n}{(1+k_e)^n} + \frac{P_n}{(1+k_e)^n} \quad (2)$$

- If n is large, P_n happens far in the future, then the last term of the equation is small. (no “price bubble”) □

$$P_0 = \sum_{t=1}^{\infty} \frac{D_t}{(1+k_e)^t} \quad (3)$$

- Price of stock is determined only by present value of future dividends: *‘dividend valuation model’*.

Gordon growth model

- Assume dividend growth is a constant, denote as g □

$$P_0 = \frac{D_0 \times (1+g)^1}{(1+k_e)^1} + \frac{D_0 \times (1+g)^2}{(1+k_e)^2} + \dots + \frac{D_0 \times (1+g)^\infty}{(1+k_e)^\infty} \quad (4)$$

- Assume the growth rate g is less than the required return on equity K_e □

$$P_0 = \frac{D_0 \times (1+g)}{(k_e - g)} = \frac{D_1}{(k_e - g)} \quad (5)$$

Apply 'Gordon growth model'

- Gordon growth model predicts that current stock price P_0 will be **lower** if:
 1. Current dividend D_0 is **lower**;
 2. Or the expected dividend growth rate g is **lower**;
 3. Or the required return on equity k_e is **larger**.

Example - 9/11 attacks

- Fears led to downward revision of the growth prospects for U.S. companies and hence a **lower** expected dividend growth rate g .
- Increased uncertainty led to a **larger** required return on investment k_e .
- As predicted by the Gordon Growth Model, these two effects of the 9/11 attacks were followed by a **drop** in stock market prices.
- How would you predict the effects of oil price spikes on stock market prices?

More about pricing formulas

- The current market price P_0 is an **equilibrium market price**:
- Right side is what investors are willing to pay for the stock, given their ***current desires and beliefs***.
- If right side were **greater** than the current market price, investors would increase their demand for the stock and thus bid up this market price.
- If right side were **less than** current market price, investors would reduce their demand for the stock, thus causing this market price to fall.



How the market sets prices

- The price is set by the buyer willing to pay the highest price
- The market price will be set by the buyer who can take best advantage of the asset
- Superior information about an asset can increase its value by reducing its risk