The Stock Market
Chapter 7: Part A (pp. 147-152)

Modified Notes from F. Mishkin
(Business School Edition, 2nd Edition 2010)

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Key In-Class Discussion Questions
Mishkin Chapter 7: Part A (pp.147-152)

- What distinguishes fundamental from behavioral models of stock market pricing?
- Form and interpretation of the one-period valuation model for common stocks and its generalized version
- Are price bubbles ruled out by the one-period valuation model? The generalized valuation model?
- Under what conditions does the Gordon Growth Model make empirical sense?
- Applications of the Gordon Growth Model

Alternative Views of Stock Market Pricing

1. Fundamental Finance View: Stock prices are largely determined by the true financial conditions of firms, as reflected in their price/earnings ratios, capitalization, R&D prospects, etc.

2. Behavioral Finance View: Stock prices are strongly affected by market psychology: e.g.,

- "irrational exuberance" or pessimism;
- "beauty contest" guesses about the most attractive stocks to buy based on what other people are buying or selling (fads, herd following, …).

Fundamental View of Stock Valuation

- **Basic Principle of Finance (Fundamental View)**

For any security S,

Current Market Value of S = Present Value of its Expected Future Cash Flow

- **One-Period Valuation Model for Common Stocks**
  - P_1 = Expected stock market price at beginning of period 1
  - k_e = "*Required return on investments in equity*"
  - P_0 = Stock market price at beginning of current period 0

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

-- Div_1 = Expected dividend at the beginning of period 1 (or equivalently, at the end of period 0)

(Compare Mishkin, Equ.(1), Ch7, p. 148)

Fundamental View of Stock Valuation…Continued

Equation (1) reflects view that the current market price P_0 is an *equilibrium* market price:

1. Right side of (1) is what investors are willing to pay for the stock, given their current desires and beliefs.

2. If right side of (1) were **greater** than the current market price, investors would increase their demand for the stock and thus bid up this market price.

3. If right side of (1) were **less than** current market price, investors would reduce their demand for the stock, thus causing this market price to fall.

Generalized Dividend Valuation Model: Fundamental View (Mishkin, Ch7, 149)

- D_t = Expected dividend payment at beginning of period t:

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

where the last term of the equation is assumed to approach 0 as $n \to \infty$ (no "price bubble").

- Thus, the Generalized Dividend Valuation Model is

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

Gordon Growth Model (Mish Ch7,149-150)

- Suppose dividends are expected to grow at a constant rate g: $D_{t+1} = [1+g]D_t$ for all $t \geq 0$, where t=0 is the current period. Then equation (3) can be written as

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

- Assuming g is less than the required return on equity k_e, equation (4) can be equivalently expressed as*

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

* See Mishkin, page 150, footnote 1

Gordon Growth Model…Continued

Equation (5) allows us to estimate the current equilibrium stock price P_0 based on:

1. The known dividend D_0 at the beginning of the current period 0;

2. The expected constant dividend growth rate g, which must be estimated or assumed;

3. The required return on equity k_e, which must also be estimated or assumed.

Gordon Growth Model…Continued

Does equation (5) make sense? It predicts 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**.

Application: Effects of September 11 Terrorist Attacks on Stock Prices

Gordon Growth Model predicts two ways in which such attacks affected stock prices:

1. Fears led to downward revision of the growth prospects for U.S. companies and hence a **lower** expected dividend growth rate g.

2. Increased uncertainty led to a **larger** required return on investment k_e.

3. As predicted by the Gordon Growth Model, these two effects of the 9/11 attacks were followed by a **drop** in stock market prices.

Application: Effects of Enron Scandal on Stock Prices

Gordon Growth Model predicts two ways in which this scandal affected stock prices:

1. Doubts regarding formerly optimistic forecasts of company earnings and dividend growth led to a **lower** expected dividend growth rate g.

2. Increased uncertainty over quality of accounting information led to **larger** required return on investment k_e

3. As predicted by the Gordon Growth Model, these two effects of the scandal were followed by a **drop** in stock market prices.

Application: Monetary Policy and Stock Prices (Mishkin Ch7, p. 151-152)

Gordon Growth Model predicts that monetary policy will affect stock prices in two ways:

1. Monetary policy directly affects bond return rates, which represent *opportunity costs* for stock investors (alternative possibilities), and thus k_e;

2. Monetary policy affects the growth rate of the economy as a whole, which tends to be *positively correlated* with the expected dividend growth rate g.

Application: The Subprime Financial Crisis and the Stock Market (Mishkin 152)

- Financial crisis that started in August 2007 led to one of the worst bear markets in 50 years.
- Downward revision of growth prospects: $\downarrow g$.
- Increased uncertainty: $\uparrow k_e$
- Gordon model predicts a drop in stock prices (as occurred in 2007-2008).

Basic Concepts

Mishkin Chapter 7: Part A (pp. 147-152)

Basic Concepts:

- Fundamental approach to stock market pricing
- Behavioral approach to stock market pricing
- Required return on investments in equity
- One-period valuation model for common stocks
- Generalized dividend valuation model for common stocks
- Price bubble
- Gordon Growth Model

Key Issues

Mishkin Chapter 7: Part A (pp. 147-152)

Key Issues:

- Comparing and contrasting fundamental vs. behavioral approaches to stock market pricing
- Fundamental models of stock valuation (one-period and multiple period)
- Form and interpretation of the Gordon Growth Model
- Applications of the Gordon Growth Model