The Stock Market
Mishkin Chapter 7:Part B (pp. 152-165)

**Modified Notes from F. Mishkin
(Bus. School Edition, 2nd Ed 2010)**

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Key In-Class Discussion Questions
Mishkin Chapter 7: Part B (pp. 152-165)

- How do economists model the way investors form their expectations?

- What does "**adaptive expectations**" mean?

- What does "**rational expectations**" mean?

- What is the **Efficient Market Hypothesis (EMH)**?

- Does the EMH provide practical advice for stock market investing?

- Empirical evidence for and against the EMH in stock markets?

- Are stock traders "rational"?

Alternative Views of Expectation Formation

Adaptive Expectations (Mishkin, Ch7, p. 152):

Expectations are formed on the basis of past experiences only, typically as some kind of weighted average of past observations.

EXAMPLE: To form a forecast for the price of IBM stock in 2007, call it $P^e(2007)$, an investor forms a weighted average of the prices he has observed for shares of IBM in 2006, 2005, and 2004:

$$P^e(2007) = .70 \times P(2006) + .20 \times P(2005) + .10 \times P(2004)$$

Rational Expectations: Two Basic Forms

1. Weak-Form Rational Expectations: Whatever information people have, they make optimal use of this information in forming their expectations. (**Note:** *No* restriction placed on information.)

2. Strong-Form Rational Expectations (Mishkin, Ch7,153-5):

a) People have access to all relevant available information about the structure of the world in which they live;
(**Note**: *Strong* restriction placed on information.)

b) and they make optimal use of this information in forming their expectations.

c) Thus, their expectations are correct up to unsystematic (unavoidable) errors, e.g., $P^e = P + $ (unavoidable error)

Implications of Strong-Form Rational Expectations

1. If there is a change in the way a variable moves, then the way in which expectations of this variable are formed also changes.

Example: A sudden change in government monetary policy leading to a change in the movements of the Fed Funds rate results in an immediate change in people's expectations regarding the Fed Funds rate.

2. Forecasts are not always exactly correct, but forecast errors are not predictable in advance and they average out to zero.

3. Two reasons why expectations can fail to be rational in the strong-form sense:

   a. **Investors fail to USE all available relevant information;**

   b. **Investors fail to make OPTIMAL use of available relevant information**

Efficient Market Hypothesis (Mishkin, Ch7, pp. 155-8)

$$RET_t = \frac{P_{t+1} - P_t + C}{P_t}$$

$$RET_t^e = \frac{P_{t+1}^e - P_t + C}{P_t}$$

Rational Expectations implies: $P_{t+1}^e = P_{t+1}^{of}$ (optimal forecast),

and $P_{t+1}^e = P_{t+1}^{of} \iff RET_t^e = RET_t^{of}$

Efficient Market Hypothesis -- First Form (Mishkin, p. 156):

$$RET_t^e = RET_t^{of} \qquad\qquad (8)$$

Expectations in financial markets are equal to optimal forecasts using all available information (i.e., investors have strong-form rational expectations).

Efficient Market Hypothesis -- Second Form (Stronger) (Mishkin, p. 157):

In addition to (1), i.e., strong-form rational expectations,

$$\mathbf{RET_t^{of}} = \mathbf{RET_t^*} \text{ (Equilibrium S=D Return Rate)} \qquad (10)$$

Current security prices in a financial market will be set so that the optimal forecast of a security's return rate using all available information equals the security's equilibrium return rate.

Efficient Market Hypothesis…Continued

Why the Efficient Market Hypothesis (Second Form)   Makes Sense:

$$RET_t^{of} > RET_t^* \quad \rightarrow \quad P_t \uparrow, \quad RET_t^{of} \downarrow \quad \text{until } RET_t^{of} = RET_t^*$$

$$RET_t^{of} < RET_t^* \quad \rightarrow \quad P_t \downarrow, \quad RET_t^{of} \uparrow \quad \text{until } RET_t^{of} = RET_t^*$$

1. Intuitive that security prices will adjust until all perceived unexploited profit opportunities are eliminated.

2. This security price adjustment can take place even if there are uninformed irrational participants in the market as long as enough investors recognize and act to exploit any profit opportunities that arise.

Efficient Market Hypothesis -- Third Form (Strongest) (Mishkin, p. 158):

In addition to (1) and (2), security prices reflect true fundamental (intrinsic) value, meaning there are no "price bubbles" on security prices.

Example. Stock prices equal the discounted value of their dividend payment streams. Letting P_0 = current share price and D_t = dividend expected in time period t:

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

Implications of EMH for Investing
(Mishkin, Ch. 7, pp. 158-162)

1. Published reports of financial analysts not very valuable

2. Should be skeptical of hot tips

3. Security prices can FALL after receipt of good news

4. Prescription for investors:

   a. Shouldn't try to outguess market.
   b. Therefore, buy and hold.
   c. Diversify with no-load mutual fund.

Evidence on EMH in Stock Markets

Early Favorable Empirical Evidence (1970-1983):

1. Investment analysts and mutual funds do not persistently beat the market (e.g., the average return on the S&P 500)

2. Technical analysis (predicting future prices on the basis of past price patterns) does not persistently beat the market.

3. Stock prices appear to reflect publicly available information: *anticipated* announcements do not appear to affect stock prices

4. Departures of stock prices from fundamental value do not appear to be predictable, i.e.,

$$P_{t+1} + D_t \approx (1+RET_t) \times P_t + \text{(unsystematic mean-0 error)}$$

Evidence on EMH in Stock Markets…Cont.

Unfavorable Empirical Evidence ("Anomalies") Since 1983:

1. Small-firm effect: Small firms have abnormally high returns

2. January effect: Abnormal price rise from December to January (small firms)

3. Market overreaction to news announcements

4. Excessive stock price volatility relative to fluctuations in fundamental value

5. Mean reversion (low returns today $\rightarrow$ higher returns in future, and vice versa)

6. New information is not always immediately incorporated into stock prices

Summary Overview: EMH might be a reasonable starting point for understanding stock markets, but it is not the whole story

Behavioral Finance (Mishkin pp. 162-163)

- Behavioral Finance is the application of concepts from many social sciences (econ, anthropology, psychology, sociology,…) to understand the behavior of securities prices. Human-subject experiments are key tool.

- BF researchers stress that people exhibit systematic behaviors (e.g., loss aversion, overconfidence) resulting in systematic deviations from "rational" expectations and "rational" investment behavior

- BF researchers also stress that people are affected by group behaviors that can result in "non-rational" outcomes (panics, flash selling,…) in financial markets.

Stock Market Herd Behavior?

Basic Concepts and Key Issues from Mishkin Chapter 7: Part B (pp. 152-165)

Basic Concepts:

- Adaptive expectations

- Rational expectations (strong and weak form)

- Efficient Market Hypothesis

- Behavioral finance

Key Issues:

- Adaptive vs. rational expectations

- Weak vs. strong-form rational expectations

- Implications of strong-form rational expectations

- Three versions of the Efficient Market Hypothesis

- Implications of the EMH for stock market investing

- Empirical evidence for and against the EMH in stock markets

- Are stock traders "rational"?