

CHAPTER 11: THE EFFICIENT MARKET HYPOTHESIS

1. The correlation coefficient between stock returns for two non-overlapping periods should be zero. If not, one could use returns from one period to predict returns in later periods and make abnormal profits.
2. c. This is a predictable pattern in returns which should not occur if the weak-form EMH is valid.
3. c. This is a classic filter rule which should not produce superior returns in an efficient market.
4. b. This is the definition of an efficient market.
5. c. The P/E ratio is public information and should not be predictive of abnormal security returns.
6. b. Semi-strong form efficiency implies that market prices reflect all *publicly available* information concerning past trading history as well as fundamental aspects of the firm.
7. a. The full price adjustment should occur just as the news about the dividend becomes publicly available.
8. d. If low P/E stocks tend to have positive abnormal returns, this would represent an unexploited profit opportunity that would provide evidence that investors are not using all available information to make profitable investments.
9. c. In an efficient market, no securities are consistently overpriced or underpriced. While some securities will turn out after any investment period to have provided positive alphas (i.e., risk-adjusted abnormal returns) and some negative alphas, these past returns are not predictive of future returns.
10. c. A random walk implies that stock price changes are unpredictable, using past price changes or any other data.

11. d. A gradual adjustment to fundamental values would allow for the use of strategies based on past price movements in order to generate abnormal profits.
12. a.
13. b. The contrarian technical analyst would notice that other investors have become deeply pessimistic about prices, and therefore would take this as a *bullish* indicator, reasoning that market sentiment swings too widely and that stock prices reflect a too-pessimistic view of the economy.
14. No. Microsoft's continuing profitability does not imply that stock market investors who purchased Microsoft shares after its success was already evident would have earned an exceptionally high return on their investments.
15. The question regarding market efficiency is whether investors can earn abnormal risk-adjusted profits. If the stock price run-up occurs when only insiders are aware of the coming dividend increase, then it is a violation of strong-form, but not semistrong-form, efficiency. If the public already knows of the increase, then it is a violation of semistrong-form efficiency.
16. While positive beta stocks respond well to favorable new information about the economy's progress through the business cycle, they should not show abnormal returns around already anticipated events. If a recovery, for example, is already anticipated, the actual recovery is not news. The stock price already should reflect the coming recovery.
17. a. Consistent. Based on pure luck, half of all managers should beat the market in any year.
b. Inconsistent. This would be the basis of an "easy money" rule: simply invest with last year's best managers.
c. Consistent. In contrast to predictable returns, predictable *volatility* does not convey a means to earn abnormal returns.
d. Inconsistent. The abnormal performance ought to occur in January when earnings are announced.
e. Inconsistent. Reversals offer a means to earn easy money: just buy last week's losers.

18. Expected rates of return will differ because of differential risk premiums.
19. The return on the market is 8%. Therefore, the forecast monthly return for GM is:

$$0.10\% + (1.1 \times 8\%) = 8.9\%$$
 GM's actual return was 7%, so the abnormal return was -1.9% .
20. a. Based on broad market trends, the CAPM indicates that AmbChaser stock should have increased by: $1.0\% + 2.0(1.5\% - 1.0\%) = 2.0\%$
 Its firm-specific (nonsystematic) return due to the lawsuit is \$1 million per \$100 million initial equity, or 1%. Therefore, the total return should be 3%. (It is assumed here that the outcome of the lawsuit had a zero expected value.)
- b. If the settlement was expected to be \$2 million, then the actual settlement was a "\$1 million disappointment," and so the firm-specific return would be -1% , for a total return of $2\% - 1\% = 1\%$.
21. Given market performance, predicted returns on the two stocks would be:
 Apex: $0.2\% + (1.4 \times 3\%) = 4.4\%$
 Bpex: $-0.1\% + (0.6 \times 3\%) = 1.7\%$
 Apex underperformed this prediction; Bpex outperformed the prediction. We conclude that Bpex won the lawsuit.
22. a. $E(r_M) = 12\%$, $r_f = 4\%$ and $\beta = 0.5$
 Therefore, the expected rate of return is:

$$4\% + 0.5(12\% - 4\%) = 8\%$$
 If the stock is fairly priced, then $E(r) = 8\%$.
- b. If r_M falls short of your expectation by 2% (that is, $10\% - 12\%$) then you would expect the return for Changing Fortunes Industries to fall short of your original expectation by: $\beta \times 2\% = 1\%$
 Therefore, you would forecast a "revised" expectation for Changing Fortunes of:
 $8\% - 1\% = 7\%$
- c. Given a market return of 10%, you would forecast a return for Changing Fortunes of 7%. The actual return is 10%. Therefore, the surprise due to firm-specific factors is $10\% - 7\% = 3\%$ which we attribute to the settlement. Because the firm is initially worth \$100 million, the surprise amount of the settlement is 3% of \$100 million, or \$3 million, implying that the prior expectation for the settlement was only \$2 million.

23. Implicit in the dollar-cost averaging strategy is the notion that stock prices fluctuate around a “normal” level. Otherwise, there is no meaning to statements such as: “when the price is high.” How do we know, for example, whether a price of \$25 today will turn out to be viewed as high or low compared to the stock price six months from now?
24. No. The value of dividend predictability would be already reflected in the stock price.
25. The market responds positively to *new* news. If the eventual recovery is anticipated, then the recovery is already reflected in stock prices. Only a better-than-expected recovery should affect stock prices.
26. Over the long haul, there is an expected upward drift in stock prices based on their fair expected rates of return. The fair expected return over any single day is very small (e.g., 12% per year is only about 0.03% per day), so that on any day the price is virtually equally likely to rise or fall. However, over longer periods, the small expected daily returns accumulate, and upward moves are indeed more likely than downward ones.
27. Buy. In your view, the firm is not as bad as everyone else believes it to be. Therefore, you view the firm as undervalued by the market. You are less pessimistic about the firm’s prospects than the beliefs built into the stock price.
28. The negative abnormal returns (downward drift in CAR) just prior to stock purchases suggest that insiders deferred their purchases until *after* bad news was released to the public. This is evidence of valuable inside information. The positive abnormal returns after purchase suggest insider purchases in anticipation of good news. The analysis is symmetric for insider sales.
29. Here we need a two-factor model relating Ford’s return to those of both the broad market and the auto industry. If we call r_I the industry return, then we would first estimate parameters a, b, c in the following regression:

$$r_{\text{FORD}} = a + br_M + cr_I + e$$

Given these estimates we would calculate Ford’s firm-specific return as:

$$r_{\text{FORD}} - [a + br_M + cr_I + e]$$

This estimate of firm-specific news would measure the market’s assessment of the potential profitability of Ford’s new model.

30. The market may have anticipated even greater earnings. *Compared to prior expectations*, the announcement was a disappointment.
31. a. Some empirical evidence that supports the EMH is:
- (i) professional money managers do not typically earn higher returns than comparable risk, passive index strategies;
 - (ii) event studies typically show that stocks respond immediately to the public release of relevant news;
 - (iii) most tests of technical analysis find that it is difficult to identify price trends that can be exploited to earn superior risk-adjusted investment returns.
- b. Some evidence that is difficult to reconcile with the EMH concerns simple portfolio strategies that apparently would have provided high risk-adjusted returns in the past. Some examples of portfolios with attractive historical returns:
- (i) low P/E stocks;
 - (ii) high book-to-market ratio stocks;
 - (iii) small firms in January;
 - (iv) firms with very poor stock price performance in the last few months.
- Other evidence concerns post-earnings-announcement stock price drift and intermediate-term price momentum.
- c. An investor might choose not to index even if markets are efficient because he or she may want to tailor a portfolio to specific tax considerations or to specific risk management issues, for example, the need to hedge (or at least not add to) exposure to a particular source of risk (e.g., industry exposure).
32. a. The efficient market hypothesis (EMH) states that a market is efficient if security prices immediately and fully reflect all available relevant information. If the market fully reflects information, the knowledge of that information would not allow an investor to profit from the information because stock prices already incorporate the information.
- i. The *weak form* of the EMH asserts that stock prices reflect all the information that can be derived by examining market trading data such as the history of past prices and trading volume.
- A strong body of evidence supports weak-form efficiency in the major U.S. securities markets. For example, test results suggest that technical trading rules do not produce superior returns after adjusting for transaction costs and taxes.

ii. The *semistrong form* states that a firm's stock price reflects all publicly available information about a firm's prospects. Examples of publicly available information are company annual reports and investment advisory data.

Evidence strongly supports the notion of semistrong efficiency, but occasional studies (e.g., those identifying market anomalies such as the small-firm-in-January or book-to-market effects) and events (such as the stock market crash of October 19, 1987) are inconsistent with this form of market efficiency. However, there is a question concerning the extent to which these "anomalies" result from data mining.

iii. The *strong form* of the EMH holds that current market prices reflect *all* information (whether publicly available or privately held) that can be relevant to the valuation of the firm.

Empirical evidence suggests that strong-form efficiency does not hold. If this form were correct, prices would fully reflect all information. Therefore even insiders could not earn excess returns. But the evidence is that corporate officers do have access to pertinent information long enough before public release to enable them to profit from trading on this information.

- b.
 - i. *Technical analysis* involves the search for recurrent and predictable patterns in stock prices in order to enhance returns. The EMH implies that technical analysis is without value. If past prices contain no useful information for predicting future prices, there is no point in following any technical trading rule.
 - ii. *Fundamental analysis* uses earnings and dividend prospects of the firm, expectations of future interest rates, and risk evaluation of the firm to determine proper stock prices. The EMH predicts that most fundamental analysis is doomed to failure. According to semistrong-form efficiency, no investor can earn excess returns from trading rules based on publicly available information. Only analysts with unique insight achieve superior returns.

In summary, the EMH holds that the market appears to adjust so quickly to information about both individual stocks and the economy as a whole that no technique of selecting a portfolio using either technical or fundamental analysis can consistently outperform a strategy of simply buying and holding a diversified portfolio of securities, such as those comprising the popular market indexes.

- c. Portfolio managers have several roles and responsibilities even in perfectly efficient markets. The most important responsibility is to identify the risk/return objectives for a portfolio given the investor's constraints. In an efficient market, portfolio managers are responsible for tailoring the portfolio to meet the investor's needs, rather than to beat the market, which requires identifying the client's return requirements and risk tolerance. Rational portfolio management also requires examining the investor's constraints, including liquidity, time horizon, laws and regulations, taxes, and unique preferences and circumstances such as age and employment.

33. a. The earnings (and dividend) growth rate of growth stocks may be consistently overestimated by investors. Investors may extrapolate recent growth too far into the future and thereby downplay the inevitable slowdown. At any given time, growth stocks are likely to revert to (lower) mean returns and value stocks are likely to revert to (higher) mean returns, often over an extended future time horizon.
- b. In efficient markets, the current prices of stocks already reflect all known relevant information. In this situation, growth stocks and value stocks provide the same risk-adjusted expected return.