## **CHAPTER 11**

## **Efficient Markets and Behavioral Finance**

## **Answers to Problem Sets**

1. c

2. Weak, semistrong, strong, strong, weak.

3. a. False

b. False

c. True

d. False

e. False

f. True

4. a. False - In what kind of markets do financing decisions occur? Investment

Decisions occur where?

b. False -

c. True – what information do stocks not reflect?

d. False- returns are the same for what kind of stocks?

5. 6 - (-.2 + 1.45 X 5) = -1.05%.

6. a. True

b. False

c. True

d. True – can managers increase EPS?

7. Decrease. The stock price already reflects an expected 25% increase. The 20% increase conveys bad news relative to expectations.

8. a. Executives should not plan on issuing shares based on apparent trends or

cycles in their company’s stock price.

b. Executives can observe their company’s stock price change and use the

change as a reliable source of market-based information about the future

prospects of the company. Stock price changes are the best forecast of

a company’s future earnings as well as the best forecast future industry

earnings.

c. A financial manager evaluating the creditworthiness of a large customer

could check the customer’s stock price and the yield on its debt. A falling stock price or a high yield could indicate trouble ahead.

d. Don’t assume that accounting choices that increase or decrease earnings

will have any effect on stock price.

e. The company should not seek diversification just to reduce risk. Investors

can diversify on their own. They can also create their own dividends and

they can lever-up for themselves.

f. Stock issuances do not depress price by increasing supply, and buybacks do not increase price by reducing supply (assuming no inside information is released by the issuance or buyback). Why? Because the supply of stock with a given Beta is infinity. There is an infinite number of shares traded in the market place with the same Beta.

9. a. Evidence that two securities with identical cash flows (e.g. Royal Dutch

Shell and Shell Transport & Trading) can sell at different prices.

b. Small-cap stocks and high book-to-market stocks appear to have given above-average returns for their level of risk.

c. IPOs provide relatively low returns after their first few days of trading.

d. Stocks of firms that announce unexpectedly good earnings perform well

over the coming months.

In each case there appear to have been opportunities for earning superior profits.

10. a. An individual *can* do crazy things, but still not affect the efficiency of markets. The price of the asset in an efficient market is a consensus price as well as a marginal price. A nutty person may be willing to give stocks/bonds away for free or willing to offer to pay twice the market value. However, market exchanges have specialists that must maintain price stability in efficient markets, thereby protecting crazy investors. Even if they trade in the market in an “irrational” manner, they can be buy or sell at the current market price, which is a fair price since the price reflects all information.

b. Yes, and how many people have dropped a bundle? Or, more to the point, how many people have made a bundle only to lose it later? And how many people talk only about their gains, but do not talk about their losses. In the short-run, People can be lucky and some people can be very lucky; efficient markets do not preclude this possibility, but in the long-run they eventually earn a fair return for the risk level at which they invest.

c. Investor psychology is a slippery concept, more often than not used to explain price movements that the individual invoking it cannot personally explain. Even if it exists, is there any way to make money from it? If investor psychology drives up the price one day, will it do so the next day also? Or will the price drop to a ‘true’ level? Almost no one can tell you beforehand what ‘investor psychology’ will do. Theories based on it have no content.

d. What good is a stable “value” when you can’t buy or sell at that value? If it can’t be traded at that price, then it is artificial and not a true value. It is the market price, which captures all available information, and the price at which you can buy or sell today that determines value.

11. a. Would it be more fair if MBAs could be taught how to forecast future stock price movements? Then, the rich (who could afford an MBA) could always get richer and the poor could never earn as much as the rich. But if stock prices are random in the short-run and earn fair returns for risk levels in the long-run, then everyone who buys a well-diversified portfolio is better-off in the long-run. It is a positive-sum game for everyone. The random walk of values is not roulette, it is simply the *result* of rational investors digesting new information that flows into the world randomly.

b. To make the example clearer, assume that everyone believes in the same chart. What happens when the chart shows a downward movement? Are investors going to be willing to hold the stock when it has an expected loss? Of course not. They start selling, and the price will decline until the stock is expected to give a positive return. The trend will ‘self-destruct.’

c. Random-walk theory as applied to efficient markets means that fluctuations from the *expected* outcome are random. Suppose there is an 80 percent chance of rain tomorrow (because it rained today). Then the local umbrella store’s stock price will respond *today* to the expected prospect of high umbrella sales tomorrow. The store’s umbrella *sales* will not follow a random walk, but its stock price will be random, because each day the stock price changes in response to the success or failure in meeting expected umbrella sales.

12. One of the ways to think about market inefficiency is that it implies there is easy money to be made. The following appear to suggest market inefficiency:

(a) efficient, weak and semi-strong. Most investors, and certainly all

marginal investors know that muni bond yields reflect their tax-exempt

status.

1. strong form, inefficient. They may go to jail, but they can earn excess returns because they have inside information.
2. Semi-strong, efficient. The market is the best forecast of future corporate performance (i.e. profits)

(d) weak form, inefficient. Past trends do not forecast future trends.

(e) strong form, efficient. The market is pricing the merger (which is inside information) before the information is released.

(f) weak form, inefficient. past information cannot forecast future prices.

(g) semi-strong form, efficient. All marginal investors understand that returns are associated with Beta, and not total variance.

13. The estimates are first substituted in the market model. Then the result from this expected return equation is subtracted from the actual return for the month to obtain the abnormal return.

Abnormal return (Intel) = Actual return – [(−0.57) + (1.08 × Market return)]

Abnormal return (Conagra) = Actual return – [(-0.46) + (0.65 × Market return)]

14. The efficient market hypothesis does not imply that portfolio selection should be done with a pin. The manager still has three important jobs to do. First, she must make sure that the portfolio is well diversified. It should be noted that a large number of stocks is not enough to ensure diversification. Second, she must make sure that the risk of the diversified portfolio is appropriate for the manager’s clients. Third, she might want to tailor the portfolio to take advantage of special tax laws for pension funds. These laws may make it possible to increase the expected return of the portfolio without increasing risk.

15. They are both under the illusion that markets are predictable and they are wasting their time trying to guess the market’s direction. Remember the first lesson of market efficiency: Markets have no memory. The decision as to when to issue stock should be made without reference to ‘market cycles.’

16. The efficient-market hypothesis says that there is no easy way to make money. Thus, when such an opportunity seems to present itself, we should be very skeptical. For example:

* In the case of short- versus long-term rates, and borrowing short-term versus long-term, there are different risks involved. For example, suppose that we need the money long-term but we borrow short-term. When the short-term note is due, we must somehow refinance. However; this may not be possible, or may be possible only at a very high interest rate.
* In the case of Japanese versus United States interest rates, there is the risk that the Japanese yen - U.S. dollar exchange rate will change during the period of time for which we have borrowed.

17. This does present some evidence against the efficient capital market hypothesis. One key to market efficiency is the high level of competition among participants in the market. For small stocks, the level of competition is relatively low because major market participants (e.g., mutual funds and pension funds) are biased toward holding the securities of larger, well-known companies. Thus, it is plausible that the market for small stocks is fundamentally different from the market for larger stocks and, hence, that the small-firm effect is simply a reflection of market inefficiency.

But there are at least two alternative possibilities. First, this difference might just be coincidental. In statistical inference, we never prove an affirmative fact. The best we can do is to accept or reject a specified hypothesis with a given degree of confidence. Thus, no matter what the outcome of a statistical test, there is always a possibility, however slight, that the small-firm effect is simply the result of statistical chance.

Second, firms with small market capitalization may contain some type of additional risk that is not measured in the studies. Given the information available and the number of participants, it is hard to believe that any securities market in the U.S is not very efficient. Thus, the most likely explanation for the small-firm effect is that the model used to estimate expected returns is incorrect, and that there is some as-yet-unidentified risk factor.

18. There are several ways to approach this problem, but all (when done correctly!) should give approximately the same answer. We have chosen to use the regression analysis function of an electronic spreadsheet program to calculate the alpha and beta for each security. The regressions are in the following form:

Security return = alpha + (beta × market return) + error term

The results are:

|  |  |  |
| --- | --- | --- |
|  | Alpha | Beta |
| Executive Cheese | 0.803 | 0.956 |
| Paddington Beer | -0.834 | 0.730 |

The abnormal return for Executive Cheese in February 2007 was:

–2.1 – [0.803 + 0.956 × (–7.7)] = 4.31%

For Paddington Beer, the abnormal return was:

–9.4 – [-0.834 + 0.73 × (–7.7)] = –2.95%

Thus, the average abnormal return of the two stocks during the month of the earnings announcement was –0.68%.

19. The market is most likely efficient. The government of Kuwait is not likely to have non-public information about the BP shares. Goldman Sachs is providing an intermediary service for which they should be remunerated. Stocks are bought by investors at (higher) ask prices and sold at (lower) bid prices. The spread between the two ($0.11) is revenue for the broker. In the U.S., at that time, a bid-ask spread of 1/8 ($0.125) was not uncommon. The ‘profit’ of $15 million reflects the size of the order more than any mispricing.

20. Any time there is a separation of ownership and control, it is possible that the resulting agency costs will lead to market distortions. Many people hire others (explicitly or implicitly) to manage their money, and these managers may not have the same incentives to push for the best price. Over large markets, we might expect many of these distortions to have less impact, but some imperfections may remain.

As described in the text, one example of this is mortgage securitization market. Because banks were paid a fee for packaging the securities and did not retain the risks of ownership, they may not have pushed for adequate underwriting. This may have lead to easy credit terms and a housing market bubble.

21. Opinion question; answers will vary. Some of the blame may indeed rest with borrowers who held overly-optimistic views of housing market appreciation and of their ability to repay mortgages. Similarly, purchasers of mortgage backed securities may have unwisely believed that these instruments offered an adequate return. Alternative explanations include inaccurate ratings, agency cost problems (where loan originators lacked incentives to underwrite the loans effectively, the purchase activity and implicit government backing of Fannie Mae and Freddie Mac, and other information asymmetry problems.

22. a. The probability that mutual fund X achieved superior performance in any one year is 0.50. The probability that mutual fund X achieved superior performance in each of the past ten years is:

0.510 = 0.00097656

b. The probability that, out of 10,000 mutual funds, none of them obtained ten successive years of superior performance is:

(1 – 0.00097656)10,000 = 0.00005712

Therefore, the probability that at least one of the 10,000 mutual funds obtained ten successive years of superior performance is:

1 – 0.00005712 = 0.99994288

23. It is difficult to define ex ante rules for identifying bubbles where prices differ from some measure of intrinsic value. Research in this area focuses on excessive liquidity, inflationary pressures, a rigorous analysis of “underlying fundamentals,” and other factors that may cause prices to exceed intrinsic value (whatever that means). But since we expect prices to move in a random walk—and since this random walk might sometimes move rapidly upwards—the process of identifying bubbles is vexing.