CHAPTER 14  
Efficient Markets and Behavioral Finance

1. 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 can give assets away for free or offer to pay twice the market value. However, when the person’s supply of assets or money runs out, the price will adjust back to its prior level (assuming there is no new, relevant information released by his action). If you are lucky enough to know such a person, you will receive a positive gain at the nutty investor’s expense. You had better not count on this happening very often, though. Fortunately, an efficient market protects crazy investors in cases less extreme than the above. Even if they trade in the market in an “irrational” manner, they can be assured of getting 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? People can be lucky and some people can be very lucky; efficient markets do not preclude this possibility.

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 because new conditions or information have developed which make the stable price obsolete? It is the market price, the price at which you can buy or sell today, which determines value.

2. a. There is risk in almost everything you do in daily life. You could lose your job or your spouse, or suffer damage to your house from a storm. That doesn’t necessarily mean you should quit your job, get a divorce, or sell your house. If we accept that our world is risky, then we must accept that asset values fluctuate as new information emerges. Moreover, if capital markets are functioning properly, then stock price changes will follow a random walk. The random walk of values is the result of rational investors coping with an uncertain world.
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 prospect of high sales tomorrow. The store’s sales will not follow a random walk, but its stock price will, because each day the stock price reflects all that investors know about future weather and future sales.

3. 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:
   
   (b) strong form
   (d) weak form
   (f) semi-strong form

4. 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 − [(-0.87) + (2.02 × Market return)]
   Abnormal return (Conagra) = Actual return − [0.40 + (0.40 × Market return)]

5. One possible procedure is to first form groups of stocks with similar P/E ratios, adjusting for market risk (using either historical estimates of alpha or estimates based on the Capital Asset Pricing Model). Then determine whether the alpha of each group is significantly different from zero. Here are some things to look out for:

   a. Don’t select samples of stock at the end of the period. You will have omitted the companies that went bankrupt.
   b. Include dividends in the actual rate of return. Low P/E stocks have high yields.
   c. Check that earnings are known on the date that you calculate P/E. Stocks whose earnings subsequently turned out high relative to price naturally perform better.
   d. Adjust for risk. Low P/E stocks tend to be more risky.
e. You may need to disentangle the P/E effect from other effects, e.g., size or dividend yield.

6. 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, he 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, he must make sure that the risk of the diversified portfolio is appropriate for the manager’s clients. Third, he 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.

7. 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.’

8. 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.

9. Some key points are as follows:

a. Unidentified Risk Factor: From an economic standpoint, 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.
b. Coincidence: 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 or, in other words, a coincidence.

c. Market Inefficiency: 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 likely that the market for small stocks is fundamentally different from the market for larger stocks and, hence, it is quite plausible that the small-firm effect is simply a reflection of market inefficiency.

10. 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:

\[
\text{Security return} = \text{alpha} + (\text{beta} \times \text{market return}) + \text{error term}
\]

The results are:

<table>
<thead>
<tr>
<th>Security</th>
<th>Alpha</th>
<th>Beta</th>
</tr>
</thead>
<tbody>
<tr>
<td>Executive Cheese</td>
<td>-1.44</td>
<td>0.21</td>
</tr>
<tr>
<td>Paddington Beer</td>
<td>1.33</td>
<td>0.19</td>
</tr>
</tbody>
</table>

The abnormal return for Executive Cheese in February 2007 was:

\[
-7.1 - [-1.44 + 0.21 \times (-0.5)] = -5.555\%
\]

For Paddington Beer, the abnormal return was:

\[
-14.1 - [1.33 + 0.19 \times (-0.5)] = -15.335\%
\]

Thus, the average abnormal return of the two stocks during the month of the dividend announcement was $-10.445\%$.

11. 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.

12. 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:

\[ 0.5^{10} = 0.00097656 \]

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:

\[ 1 - 0.00005712 = 0.99994288 \]

13. No, this does not follow. The decline in prices merely reflects the consensus market opinion about the seriousness of the country’s difficulties. The stability after the announcement reflects the market’s opinion of the nature of the assistance and its likelihood of success.