

Solution Homework 1

Chapter 1

14. Treasury bills serve a purpose for investors who prefer a low-risk investment. The lower average rate of return compared to stocks is the price investors pay for predictability of investment performance and portfolio value.
15. With a “top-down” investing style, you focus on asset allocation or the broad composition of the entire portfolio, which is the major determinant of overall performance. Moreover, top-down management is the natural way to establish a portfolio with a level of risk consistent with your risk tolerance. The disadvantage of an *exclusive* emphasis on top-down issues is that you may forfeit the potential high returns that could result from identifying and concentrating in undervalued securities or sectors of the market.

With a “bottom-up” investing style, you try to benefit from identifying undervalued securities. The disadvantage is that you tend to overlook the overall composition of your portfolio, which may result in a non-diversified portfolio or a portfolio with a risk level inconsistent with your level of risk tolerance. In addition, this technique tends to require more active management, thus generating more transaction costs. Finally, your analysis may be incorrect, in which case you will have fruitlessly expended effort and money attempting to beat a simple buy-and-hold strategy.

Chapter 2

12. a. Total market value at $t = 0$ is: $(\$9,000 + \$10,000 + \$20,000) = \$39,000$

Total market value at $t = 1$ is: $(\$9,500 + \$9,000 + \$22,000) = \$40,500$

Rate of return = $(\$40,500/\$39,000) - 1 = 3.85\%$

b. The return on each stock is as follows:

$$r_A = (95/90) - 1 = 0.0556$$

$$r_B = (45/50) - 1 = -0.10$$

$$r_C = (110/100) - 1 = 0.10$$

The equally-weighted average is:

$$[0.0556 + (-0.10) + 0.10] / 3 = 0.0185 = 1.85\%$$

22. A call option conveys the *right* to buy the underlying asset at the exercise price. A long position in a futures contract carries an *obligation* to buy the underlying asset at the futures price.

Chapter 5

2. If we assume that the distribution of returns remains reasonably stable over the entire history, then a longer sample period (i.e., a larger sample) increases the precision of the estimate of the expected rate of return; this is a consequence of the fact that the standard error decreases as the sample size increases. However, if we assume that the mean of the distribution of returns is changing over time but we are not in a position to determine the nature of this change, then the expected return must be estimated from a more recent part of the historical period. In this scenario, we must determine how far back, historically, to go in selecting the relevant sample. Here, it is likely to be disadvantageous to use the entire dataset back to 1880.

6. a. The “Inflation-Plus” CD is the safer investment because it guarantees the purchasing power of the investment. Using the approximation that the real rate equals the nominal rate minus the inflation rate, the CD provides a real rate of 1.5% regardless

of the inflation rate.

- b. The expected return depends on the expected rate of inflation over the next year. If the expected rate of inflation is less than 3.5% then the conventional CD offers a higher real return than the Inflation-Plus CD; if the expected rate of inflation is greater than 3.5%, then the opposite is true.
- c. If you expect the rate of inflation to be 3% over the next year, then the conventional CD offers you an expected real rate of return of 2%, which is 0.5% higher than the real rate on the inflation-protected CD. But unless you know that inflation will be 3% with certainty, the conventional CD is also riskier. The question of which is the better investment then depends on your attitude towards risk versus return. You might choose to diversify and invest part of your funds in each.
- d. No. We cannot assume that the entire difference between the risk-free nominal rate (on conventional CDs) of 5% and the real risk-free rate (on inflation-protected CDs) of 1.5% is the expected rate of inflation. Part of the difference is probably a risk premium associated with the uncertainty surrounding the real rate of return on the conventional CDs. This implies that the expected rate of inflation is less than 3.5% per year.

Chapter 6

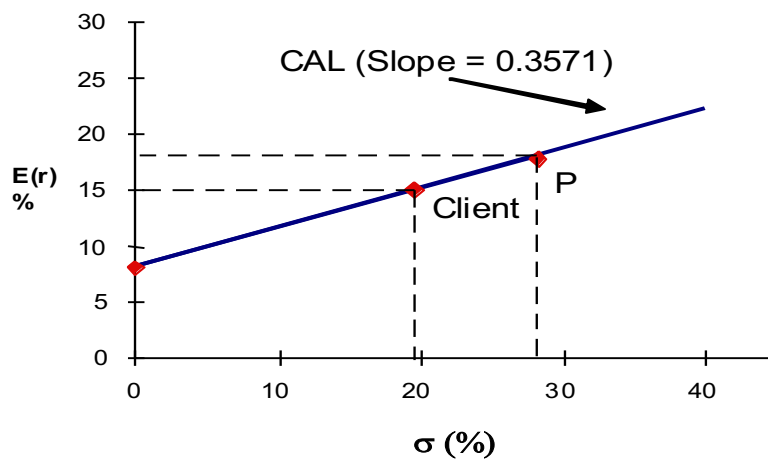
- 2. (b) A higher borrowing rate is a consequence of the risk of the borrowers' default. In perfect markets with no additional cost of default, this increment would equal the value of the borrower's option to default, and the Sharpe measure, with appropriate treatment of the default option, would be the same. However, in reality there are costs to default so that this part of the increment lowers the Sharpe ratio. Also, notice that answer (c) is not correct because doubling the expected return with a fixed risk-free rate will more than double the risk premium and the Sharpe ratio.

13. Expected return = $(0.7 \times 18\%) + (0.3 \times 8\%) = 15\%$

Standard deviation = $0.7 \times 28\% = 19.6\%$

15. Your reward-to-volatility ratio: $S = \frac{.18 - .08}{.28} = 0.3571$

Client's reward-to-volatility ratio: $S = \frac{.15 - .08}{.196} = 0.3571$



16.