

change in the slope of the SML. Finally, a change in expected real growth, in capital market conditions, or in the expected rate of inflation will cause a parallel shift of the SML.

Based on this understanding of the investment environment, you are prepared to consider the asset allocation decision. This is the subject of Chapter 2.

Questions

1. Discuss the overall purpose people have for investing. Define investment.
2. As a student, are you saving or borrowing? Why?
3. Divide a person's life from ages 20 to 70 into 10-year segments and discuss the likely saving or borrowing patterns during each period.
4. Discuss why you would expect the saving-borrowing pattern to differ by occupation (for example, for a doctor versus a plumber).
5. *The Wall Street Journal* reported that the yield on common stocks is about 2 percent, whereas a study at the University of Chicago contends that the annual rate of return on common stocks since 1926 has averaged about 12 percent. Reconcile these statements.
6. Some financial theorists consider the variance of the distribution of expected rates of return to be a good measure of uncertainty. Discuss the reasoning behind this measure of risk and its purpose.
7. Discuss the three components of an investor's required rate of return on an investment.
8. Discuss the two major factors that determine the market nominal risk-free rate (NRFR). Explain which of these factors would be more volatile over the business cycle.
9. Briefly discuss the five fundamental factors that influence the risk premium of an investment.
10. You own stock in the Gentry Company, and you read in the financial press that a recent bond offering has raised the firm's debt/equity ratio from 35 percent to 55 percent. Discuss the effect of this change on the variability of the firm's net income stream, other factors being constant. Discuss how this change would affect your required rate of return on the common stock of the Gentry Company.
11. Draw a properly labeled graph of the security market line (SML) and indicate where you would expect the following investments to fall along that line. Discuss your reasoning.
 - a. Common stock of large firms
 - b. U.S. government bonds
 - c. U.K. government bonds
 - d. Low-grade corporate bonds
 - e. Common stock of a Japanese firm
12. Explain why you would change your nominal required rate of return if you expected the rate of inflation to go from 0 (no inflation) to 4 percent. Give an example of what would happen if you did not change your required rate of return under these conditions.
13. Assume the long-run growth rate of the economy increased by 1 percent and the expected rate of inflation increased by 4 percent. What would happen to the required rates of return on government bonds and common stocks? Show graphically how the effects of these changes would differ between these alternative investments.
14. You see in *The Wall Street Journal* that the yield spread between Baa corporate bonds and Aaa corporate bonds has gone from 350 basis points (3.5 percent) to 200 basis points (2 percent). Show graphically the effect of this change in yield spread on the SML and discuss its effect on the required rate of return for common stocks.
15. Give an example of a liquid investment and an illiquid investment. Discuss why you consider each of them to be liquid or illiquid.

Problems

1. On February 1, you bought 100 shares of a stock for \$34 a share and a year later you sold it for \$39 a share. During the year, you received a cash dividend of \$1.50 a share. Compute your HPR and HPY on this stock investment.
2. On August 15, you purchased 100 shares of a stock at \$65 a share and a year later you sold it for \$61 a share. During the year, you received dividends of \$3 a share. Compute your HPR and HPY on this investment.

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3. At the beginning of last year, you invested \$4,000 in 80 shares of the Chang Corporation. During the year, Chang paid dividends of \$5 per share. At the end of the year, you sold the 80 shares for \$59 a share. Compute your total HPY on these shares and indicate how much was due to the price change and how much was due to the dividend income.
4. The rates of return computed in Problems 1, 2, and 3 are nominal rates of return. Assuming that the rate of inflation during the year was 4 percent, compute the real rates of return on these investments. Compute the real rates of return if the rate of inflation were 8 percent.
5. During the past five years, you owned two stocks that had the following annual rates of return:

Year	Stock T	Stock B
1	0.19	0.08
2	0.08	0.03
3	-0.12	-0.09
4	-0.03	0.02
5	0.15	0.04

- a. Compute the arithmetic mean annual rate of return for each stock. Which stock is most desirable by this measure?
 - b. Compute the standard deviation of the annual rate of return for each stock. (Use Chapter 1 Appendix if necessary.) By this measure, which is the preferable stock?
 - c. Compute the coefficient of variation for each stock. (Use the Chapter 1 Appendix if necessary.) By this relative measure of risk, which stock is preferable?
 - d. Compute the geometric mean rate of return for each stock. Discuss the difference between the arithmetic mean return and the geometric mean return for each stock. Relate the differences in the mean returns to the standard deviation of the return for each stock.
6. You are considering acquiring shares of common stock in the Madison Beer Corporation. Your rate of return expectations are as follows:

MADISON BEER CORP.	
Possible Rate of Return	Probability
-0.10	0.30
0.00	0.10
0.10	0.30
0.25	0.30

- Compute the expected return $[E(R_i)]$ on your investment in Madison Beer.
7. A stockbroker calls you and suggests that you invest in the Lauren Computer Company. After analyzing the firm's annual report and other material, you believe that the distribution of rates of return is as follows:

LAUREN COMPUTER CO.	
Possible Rate of Return	Probability
-0.60	0.05
-0.30	0.20
-0.10	0.10
0.20	0.30
0.40	0.20
0.80	0.15

Compute the expected return $[E(R_i)]$ on Lauren Computer stock.

8. Without any formal computations, do you consider Madison Beer in Problem 6 or Lauren Computer in Problem 7 to present greater risk? Discuss your reasoning.
9. During the past year, you had a portfolio that contained U.S. government T-bills, long-term government bonds, and common stocks. The rates of return on each of them were as follows:

U.S. government T-bills	5.50%
U.S. government long-term bonds	7.50
U.S. common stocks	11.60

During the year, the consumer price index, which measures the rate of inflation, went from 160 to 172 (1982–1984 = 100). Compute the rate of inflation during this year. Compute the real rates of return on each of the investments in your portfolio based on the inflation rate.

10. You read in *Business Week* that a panel of economists has estimated that the long-run real growth rate of the U.S. economy over the next five-year period will average 3 percent. In addition, a bank newsletter estimates that the average annual rate of inflation during this five-year period will be about 4 percent. What nominal rate of return would you expect on U.S. government T-bills during this period?
11. What would your required rate of return be on common stocks if you wanted a 5 percent risk premium to own common stocks given what you know from Problem 10? If common stock investors became more risk averse, what would happen to the required rate of return on common stocks? What would be the impact on stock prices?
12. Assume that the consensus required rate of return on common stocks is 14 percent. In addition, you read in *Fortune* that the expected rate of inflation is 5 percent and the estimated long-term real growth rate of the economy is 3 percent. What interest rate would you expect on U.S. government T-bills? What is the approximate risk premium for common stocks implied by these data?

References

Fama, Eugene F., and Merton H. Miller. *The Theory of Finance*. New York: Holt, Rinehart and Winston, 1972.
 Fisher, Irving. *The Theory of Interest*. New York: Macmillan, 1930; reprinted by Augustus M. Kelley, 1961.

APPENDIX
Chapter 1

Computation of Variance and Standard Deviation

Variance and standard deviation are measures of how actual values differ from the expected values (arithmetic mean) for a given series of values. In this case, we want to measure how rates of return differ from the arithmetic mean value of a series. There are other measures of dispersion, but variance and standard deviation are the best known because they are used in statistics and probability theory. Variance is defined as:

$$\text{Variance } (\sigma^2) = \sum_{i=1}^n (\text{Probability})(\text{Possible Return} - \text{Expected Return})^2$$

$$= \sum_{i=1}^n (P_i) [R_i - E(R_i)]^2$$

Consider the following example, as discussed in the chapter:

Probability of Possible Return (P_i)	Possible Return (R_i)	$P_i R_i$
0.15	0.20	0.03
0.15	-0.20	-0.03
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