

# CONCEPTS AND ISSUES: RETURN, RISK, AND RISK AVERSION

This chapter introduces some key concepts and issues that are central to informed investment decision making. The material presented is basic to the development of portfolio theory in this and subsequent parts of the book.

The investment process consists of two broad tasks. One task is security and market analysis, by which we assess the risk and expected-return attributes of the entire set of possible investment vehicles. The second task is the formation of an optimal portfolio of assets. This task involves the determination of the best risk-return opportunities available from feasible investment portfolios and the choice of the best portfolio from that feasible set. This latter task is known as *portfolio theory*.

We start this chapter by presenting the basic components of the return of any financial asset: real and nominal interest rates and risk premiums on risky securities. Then, we review the historical record of rates of return on Treasury bills, bonds, and stocks. These elements are basic tools of the security analysis task, to which we return in later chapters.

The remainder of this chapter introduces three themes in portfolio theory, all centring on risk.

The first is the basic tenet that investors avoid risk and demand a reward for engaging in risky investments. The reward is taken as a risk premium, an expected rate of return higher than that available on alternative risk-free investments.



The second theme allows us to summarize and quantify investors' personal tradeoffs between portfolio risk and expected return. To do this we introduce the utility function, which assumes that investors can assign a welfare, or "utility," score to any investment portfolio depending on its risk and return.

Finally, the third fundamental principle is that we cannot evaluate the risk of an asset separately from the portfolio of which it is a part; that is, the proper way to measure the risk of an individual asset is to assess its impact on the volatility of the entire portfolio of investments. Taking this approach, we find that seemingly risky securities may be portfolio stabilizers and actually low-risk assets.

Appendix 5A discusses continuous compounding. Appendix 5B describes the theory and practice of measuring portfolio risk by the variance or standard deviation of returns. We also discuss other potentially relevant characteristics of the probability distribution of portfolio returns, as well as the circumstances in which variance is sufficient to measure risk. Appendix 5C discusses the classical theory of risk aversion.



## 5.1 DETERMINANTS OF THE LEVEL OF INTEREST RATES

Interest rates and forecasts of their future values are among the most important inputs into an investment decision.

For example, suppose you have \$10,000 in a savings account. The bank pays you a variable interest rate tied to some short-term reference rate such as the 30-day Treasury bill rate. You have the option of moving some or all of your money into a longer-term *guaranteed investment certificate* (GIC) that offers a fixed rate over the term of the deposit.

Your decision depends critically on your outlook regarding interest rates. If you think rates will fall, you will want to lock in the current higher rates by investing in a relatively long-term GIC. If you expect rates to rise, you will want to postpone committing any funds to long-term GICs.

Forecasting interest rates is one of the most notoriously difficult parts of applied macroeconomics. Nonetheless, we do have a good understanding of the fundamental factors that determine the level of interest rates:

1. The supply of funds from savers, primarily households
2. The demand for funds from businesses to be used to finance physical investments in plant, equipment, and inventories (real assets or capital formation)
3. The government's net supply and/or demand for funds as modified by actions of the monetary authority

Before we elaborate on these forces and resultant interest rates, we need to distinguish real from nominal interest rates.

### Real and Nominal Rates of Interest

Suppose exactly one year ago you deposited \$1,000 in a one-year time deposit guaranteeing a rate of interest of 10 percent. You are about to collect \$1,100 in cash.