funds are assessed management fees and incur other expenses, which reduce the investor's rate of return. Funds also eliminate some of the individual's control over the timing of capital gains realizations.

4. Mutual funds are often categorized by investment policy. Major policy groups include money market funds; equity funds, which are further grouped according to emphasis on income versus growth; fixed-income funds; balanced and income funds; asset allocation funds; index funds; and specialized sector funds.
5. Costs of investing in mutual funds include front-end loads, which are sales charges; back-end loads, which are redemption fees or, more formally, contingent-deferred sales charges; fund operating expenses; and 12b-1 charges, which are recurring fees used to pay for the expenses of marketing the fund to the public.
6. Income earned on mutual fund portfolios is not taxed at the level of the fund. Instead, as long as the fund meets certain requirements for pass-through status, the income is treated as being earned by the investors in the fund.
7. The average rate of return of the average equity mutual fund in the last 40 years has been below that of a passive index fund holding a portfolio to replicate a broad-based index like the S&P 500 or Wilshire 5000. Some of the reasons for this disappointing record are the costs incurred by actively managed funds, such as the expense of conducting the research to guide stock-picking activities, and trading costs due to higher portfolio turnover. The record on the consistency of fund performance is mixed. In some sample periods, the better-performing funds continue to perform well in the following periods; in other sample periods they do not.

Related Web sites for this chapter are available at **www.mheducation.asia/olc/bodie**

Key Terms

investment company	closed-end fund	soft dollars
net asset value (NAV)	load	turnover
unit investment trust	hedge fund	exchange-traded funds
open-end fund	12b-1 fees	

Problem Sets

Basic

1. Would you expect a typical open-end fixed-income mutual fund to have higher or lower operating expenses than a fixed-income unit investment trust? Why?
2. What are some comparative advantages of investing in the following:
   a. Unit investment trusts.
   b. Open-end mutual funds.
   c. Individual stocks and bonds that you choose for yourself.
3. Open-end equity mutual funds find it necessary to keep a significant percentage of total investments, typically around 5% of the portfolio, in very liquid money market assets. Closed-end funds do not have to maintain such a position in "cash equivalent" securities. What difference between open-end and closed-end funds might account for their differing policies?
4. Balanced funds, life-cycle funds, and asset allocation funds all invest in both the stock and bond markets. What are the differences among these types of funds?
5. Why can closed-end funds sell at prices that differ from net asset value while open-end funds do not?
6. What are the advantages and disadvantages of exchange-traded funds versus mutual funds?

Intermediate

7. An open-end fund has a net asset value of $10.70 per share. It is sold with a front-end load of 6%. What is the offering price?

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8. If the offering price of an open-end fund is $12.30 per share and the fund is sold with a front-end load of 5%, what is its net asset value?
9. The composition of the Fingroup Fund portfolio is as follows:

Stock	Shares	Price
A	200,000	$35
B	300,000	40
C	400,000	20
D	600,000	25

The fund has not borrowed any funds, but its accrued management fee with the portfolio manager currently totals $30,000. There are 4 million shares outstanding. What is the net asset value of the fund?
10. Reconsider the Fingroup Fund in the previous problem. If during the year the portfolio manager sells all of the holdings of stock D and replaces it with 200,000 shares of stock E at $50 per share and 200,000 shares of stock F at $25 per share, what is the portfolio turnover rate?
11. The Closed Fund is a closed-end investment company with a portfolio currently worth $200 million. It has liabilities of $3 million and 5 million shares outstanding.
    a. What is the NAV of the fund?
    b. If the fund sells for $36 per share, what is its premium or discount as a percent of net asset value?
12. Corporate Fund started the year with a net asset value of $12.50. By year-end, its NAV equaled $12.10. The fund paid year-end distributions of income and capital gains of $1.50. What was the (pretax) rate of return to an investor in the fund?
13. A closed-end fund starts the year with a net asset value of $12.00. By year-end, NAV equals $12.10. At the beginning of the year, the fund was selling at a 2% premium to NAV. By the end of the year, the fund is selling at a 7% discount to NAV. The fund paid year-end distributions of income and capital gains of $1.50.
    a. What is the rate of return to an investor in the fund during the year?
    b. What would have been the rate of return to an investor who held the same securities as the fund manager during the year?
14 *a.* Impressive Fund had excellent investment performance last year, with portfolio returns that placed it in the top 10% of all funds with the same investment policy. Do you expect it to be a top performer next year? Why or why not?
    b. Suppose instead that the fund was among the poorest performers in its comparison group. Would you be more or less likely to believe its relative performance will persist into the following year? Why?
15. Consider a mutual fund with $200 million in assets at the start of the year and with 10 million shares outstanding. The fund invests in a portfolio of stocks that provides dividend income at the end of the year of $2 million. The stocks included in the fund's portfolio increase in price by 8%, but no securities are sold, and there are no capital gains distributions. The fund charges 12b-1 fees of 1%, which are deducted from portfolio assets at year-end. What is net asset value at the start and end of the year? What is the rate of return for an investor in the fund?
16. The New Fund had average daily assets of $2.2 billion last year. The fund sold $400 million worth of stock and purchased $500 million during the year. What was its turnover ratio?
17. If New Fund's expense ratio (see the previous problem) was 1.1% and the management fee was .7%, what were the total fees paid to the fund's investment managers during the year? What were other administrative expenses?
18. You purchased 1,000 shares of the New Fund at a price of $20 per share at the beginning of the year. You paid a front-end load of 4%. The securities in which the fund invests increase in value by 12% during the year. The fund's expense ratio is 1.2%. What is your rate of return on the fund if you sell your shares at the end of the year?

19. Loaded-Up Fund charges a 12b-1 fee of 1.0% and maintains an expense ratio of .75%. Economy Fund charges a front-end load of 2% but has no 12b-1 fee and an expense ratio of .25%. Assume the rate of return on both funds' portfolios (before any fees) is 6% per year. How much will an investment in each fund grow to after:

    a. 1 year. *b.* 3 years. *c.* 10 years.

20. City Street Fund has a portfolio of $450 million and liabilities of $10 million.
    a. If 44 million shares are outstanding, what is net asset value?
    b. If a large investor redeems 1 million shares, what happens to the portfolio value, to shares outstanding, and to NAV?
21. The Investments Fund sells Class A shares with a front-end load of 6% and Class B shares with 12b-1 fees of .5% annually as well as back-end load fees that start at 5% and fall by 1% for each full year the investor holds the portfolio (until the fifth year). Assume the portfolio rate of return net of operating expenses is 10% annually. If you plan to sell the fund after 4 years, are Class A or Class B shares the better choice for you? What if you plan to sell after 15 years?
22. You are considering an investment in a mutual fund with a 4% load and expense ratio of .5%. You can invest instead in a bank CD paying 6% interest.
    a. If you plan to invest for 2 years, what annual rate of return must the fund portfolio earn for you to be better off in the fund than in the CD? Assume annual compounding of returns.
    b. How does your answer change if you plan to invest for 6 years? Why does your answer change?
    c. Now suppose that instead of a front-end load the fund assesses a 12b-1 fee of .75% per year. What annual rate of return must the fund portfolio earn for you to be better off in the fund than in the CD? Does your answer in this case depend on your time horizon?
23. Suppose that every time a fund manager trades stock, transaction costs such as commissions and bid–asked spreads amount to .4% of the value of the trade. If the portfolio turnover rate is 50%, by how much is the total return of the portfolio reduced by trading costs?
24. You expect a tax-free municipal bond portfolio to provide a rate of return of 4%. Management fees of the fund are .6%. What fraction of portfolio income is given up to fees? If the management fees for an equity fund also are .6%, but you expect a portfolio return of 12%, what fraction of portfolio income is given up to fees? Why might management fees be a bigger factor in your investment decision for bond funds than for stock funds? Can your conclusion help explain why unmanaged unit investment trusts tend to focus on the fixed-income market?

Challenge

25. Suppose you observe the investment performance of 350 portfolio managers for 5 years and rank them by investment returns during each year. After 5 years, you find that 11 of the funds have investment returns that place the fund in the top half of the sample in each and every year of your sample. Such consistency of performance indicates to you that these must be the funds whose managers are in fact skilled, and you invest your money in these funds. Is your conclusion warranted?

E-Investments Exercises

Choosing a Mutual Fund

Go to **finance.yahoo.com**. Click on Mutual Funds under the Investing tab. Look for the Fund Screener. Use the drop-down boxes to select the criteria for mutual funds that are of interest to you. How many funds are shown in your results? If there are no funds or only a few funds that meet your criteria, try loosening your standards. If there are too many funds, try stricter standards. You can click on any column heading in the results list to sort by that criterion.