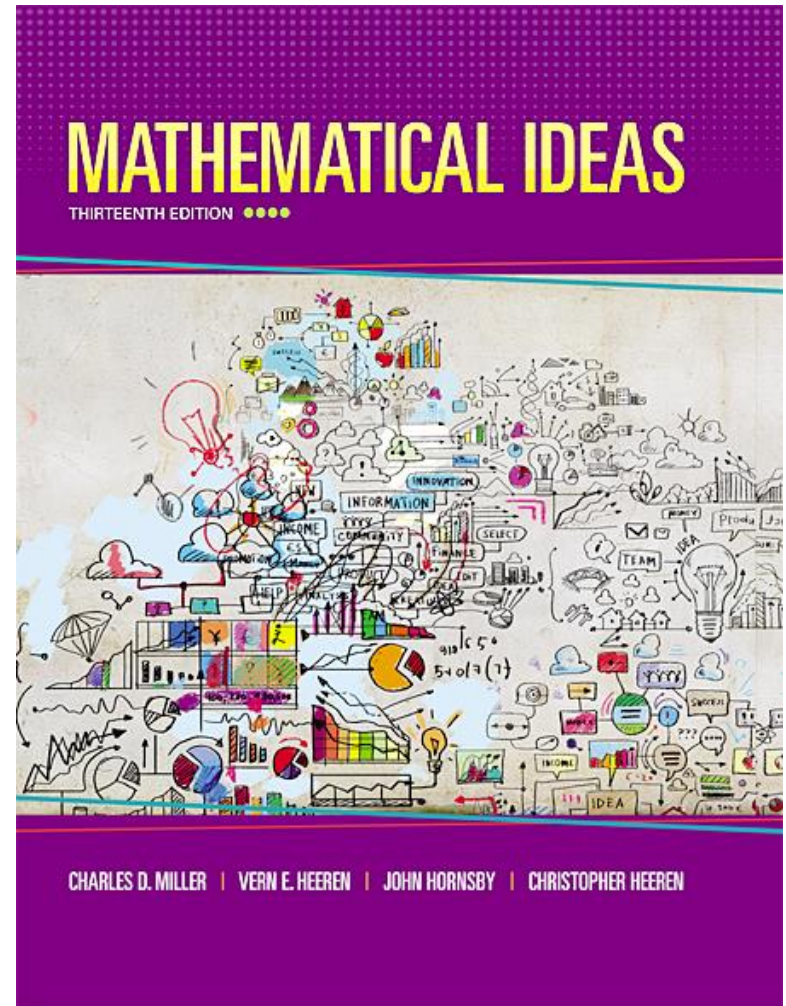


Chapter 13

Personal Financial Management



Chapter 13: Personal Financial Management

- 13.1 The Time Value of Money
- 13.2 Consumer Credit
- 13.3 Truth in Lending
- 13.4 The Costs and Advantages of Home Ownership
- 13.5 Financial Investments

Section 13-5

Financial Investments

Financial Investments

- Become familiar with stocks.
- Become familiar with bonds.
- Become familiar with mutual funds.
- Evaluate investment returns.
- Explore strategies for building a nest egg.

Stocks



Buying stock in a corporation makes you a part owner of the corporation. You then share in any profits the company makes, and your share of the profits is called a **dividend**.

The profit you make by selling for more than you paid is called a **capital gain**. A negative gain, or **capital loss**, results if you sell for less than you paid.

Stocks

By **return on investment**, we mean the net difference between what you receive (including any dividends) and what you paid (purchase price plus any other expenses of buying and selling the stock).

The price of a share of stock is determined by the law of supply and demand at institutions called **stock exchanges**.

Example: Return on Stock

You buy 100 shares of stock in Company X on February 2, 2016, paying \$28.50 per share. On February 2, 2017, you receive a dividend of \$0.60 per share and the stock price had risen to \$29.75 per share. Find the following.

- a) Your total cost for the stock
- b) The total dividend amount
- c) The capital gain if you sold the stock
- d) The total return and percentage return for one year of ownership of this stock

Example: Return on Stock

Solution

a) Total cost = $(100)(\$28.50) = \2850

b) Total dividend = $(100)(\$0.60) = \60

c) Capital gain = $\$2975 - \$2850 = \$125$

d) The total return = $\$125 + \$60 = \$185$

Percentage return = $(\$185/\$2850)(100) = 6.5\%$

Reading a Stock Table

YTD %CHG	52-WEEK		STOCK (SYM)	YLD		
	HI	LO		DIV	%	PE
3.5	19.55	12.66	WARDENS WRD	0.53	2.8	35

Stock increased 3.5% so far this calendar year

Highest and lowest price in the last 52 weeks

Company pays an annual dividend of \$0.53, which is 2.8% (**yield**) of the price of the stock. The 35 is the **price-to-earnings ratio**, stock price divided by earnings per share over the last 12 months

Reading a Stock Table (continued)

VOL 100s	CLOSE	NET CHG
1411	18.79	0.03

On this day,
 $1411(100) = 141,100$
shares were sold

The stock price closed for the day at
\$18.79, which is \$0.03 higher than
that of the previous trading day

Special Features in Stock Listings

1. A line listed in boldface print distinguishes a stock whose price changed by 5% or more.
2. An underlined row in the listings indicates a stock with an especially high volume of trading for the day relative to its usual volume.

Special Features in Stock Listings

3. A “pf” between the company name and symbol indicates a “preferred” stock, a special category of stock issued by some companies in addition to their ordinary, or “common,” stock. A company must pay dividends to holders of its preferred stock before it can pay dividends to holders of its common stock.
4. The symbol ▲ at the left indicates a new 52-week high, while the symbol ▼ indicates a new 52-week-low.

Brokers

To buy or sell a stock, generally it is necessary to use a broker. A broker has representatives at the stock exchange who will execute a buy or sell order. The broker will charge a **commission** (broker's fee).

Full-service brokers, who offer research, professional opinions, and various other services, tend to charge the highest commissions. **Discount brokers** buy and sell stock for clients and offer little in the way of additional services.

Commissions

Commissions will normally be some percentage of the value of a purchase or sale (called the **principal**). Rates may depend on whether the order is for a **round lot** of shares (a multiple of 100) or an **odd lot**. On the odd-lot portion, you may be charged an **odd-lot differential**. Also, it is possible to place a **limit order**, where the broker is instructed to buy or sell if the stock reaches a predesignated price. An example of a commission structure is shown on the next two slides.

Typical Discount Commission Structure

	Automated (Online)	Automated (Phone)	Broker- Assisted
Brokerage Firm A	\$8.95	\$13.95	\$33.95
Brokerage Firm B	\$9.99	\$34.99	\$44.99
Brokerage Firm C	\$7.95	\$12.95	\$32.95

Example: Cost for a Broker-Assisted Stock Purchase

Find the total cost for a broker-assisted purchase from Brokerage Firm A of 800 shares of a stock at \$5.45 per share. Use the information from the previous slide.

Solution

$$\text{Basic cost} = \$5.45(800) = \$4360$$

$$\text{Broker commission} = \$33.95$$

$$\text{Total cost} = \$4360 + \$33.95 = \$4393.95$$

Bonds



You may *lend* money to a company, receiving an agreed-upon rate of interest for the use of your money. In this case you would buy a bond from the company. The bond (loan) is issued with a stated term (life span), after which the bond “matures” and the principal (or **face value**) is paid back to you.

Example: Return on a Bond

\$5000 is invested in a 10-year corporate bond paying 7.5% annual interest, paid semiannually. Find the total return on the investment if it is held to maturity.

Solution

We use the simple interest formula:

$$I = Prt = \$5000(0.075)(10) = \$3750.$$

Mutual Funds



A **mutual fund** is a pool of money collected by an investment company from individuals and/or institutions and invested in many stocks, bonds, or money market instruments.

Mutual Funds Versus Stocks and Bonds – Advantages of Mutual Funds

1. *Simplicity*

Someone else does the work.

2. *Diversification*

You own interests in many different stocks, which decreases vulnerability to large losses in one particular stock.

3. *Access to New Issues*

The large assets of fund managers give them more clout to get initial public offerings (IPOs), which can be profitable.

Mutual Funds Versus Stocks and Bonds – Advantages of Mutual Funds

4. *Economies of Sale*

Expenses are shared by large numbers of investors.

5. *Professional Management*

6. *Indexing*

An index fund can mimic a popular index (like the S&P 500). This way individual investors can achieve returns close to those of the index.

Mutual Funds Versus Stocks and Bonds – Disadvantages of Mutual Funds

1. *Impact of One-Time Charges and Recurring Fees*
Sales charges, management fees, “12b-1” fees, and fund expenses can mount.
2. *Hidden Cost of Brokerage*
Recurring fees and expenses are added to give the *expense ratio* of a fund. But commissions paid by the fund for stock purchases and sales are in addition to the expense ratio.

Mutual Funds Versus Stocks and Bonds – Disadvantages of Mutual Funds

3. *Hidden Risks of Fund Ownership*

Getting out of a fund in a market crash may mean accepting securities rather than cash.

Managers may stray from stated strategies of the fund.

Since tax liability is passed on to fund investors, and depends on purchases and sales made by fund managers, investors may be unable to avoid inheriting unwanted tax basis.

Source: Forbes Guide to the Markets, John Wiley & Sons, Inc.

Net Asset Value of a Mutual Fund

If A = Total fund assets, L = Total fund liabilities, and N = Number of shares outstanding, then the **net asset value** is given by

$$NAV = \frac{A - L}{N}.$$

Example: *NAV*

A mutual fund has \$520 million worth of stock, \$700,000 in cash, and \$300,000 in other assets. The fund also has \$4 million in liabilities. If there are 30 million shares outstanding, find the *NAV*.

Solution

$$\begin{aligned} A &= \$520,000,000 + \$700,000 + \$300,000 \\ &= \$521,000,000 \end{aligned}$$

$$L = \$4,000,000$$

$$N = 30,000,000$$

Example: *NAV*

Solution (continued)

$$NAV = \frac{\$521,000,000 - \$4,000,000}{30,000,000} = \$17.23$$

Evaluating Investment Returns

It is important to be able to accurately evaluate and compare returns (profits or losses). Even though past performance is never a guarantee of future returns, it is crucial information. A wealth of information on stock and bond markets and mutual funds is available through publications and internet resources.

The most important measure of an investment is the **annual rate of return**. It is not the same as percentage return because it depends on the time period involved.

Example: Mutual Fund's Annual Rate of Return

You own shares of a mutual fund and the only return that the fund earns is dividends of 0.5% per month, which are reinvested. Find the annual rate of return.

Solution

The “return relative” is $1 + 0.005 = 1.005$

Because of compounding, we have $(1 + 0.005)^{12}$, which gives 1.062. Subtract 1 and multiply by 100 to convert to a percentage rate. The annual percentage rate is 6.2%.

Building a Nest Egg

The most important function of investing, for most people, is to build an account for some future use, probably for retirement living.

The remainder of the slides goes over a few topics associated with retirement accounts.

Future Value of an Inflation-Adjusted Retirement Account

Assume annual deposits into a retirement account, adjusted for inflation. If

i = annual rate of inflation,

R = initial deposit (at the end of year 1),

r = annual rate of return on money in the account, and

n = number of years deposits are made,

then the value V of the account at the end of n years is:

$$V = R \left[\frac{(1+r)^n - (1+i)^n}{r-i} \right].$$

Example: Adjusting a Retirement Account for Inflation

Find the final account value of an account paying 8%, with initial deposit amount of \$2500, after 30 years of deposits, assuming that the deposited amounts had been adjusted for a 4% annual inflation rate.

Solution

$$V = \$2500 \left[\frac{(1 + 0.08)^{30} - (1 + 0.04)^{30}}{0.08 - 0.04} \right] \approx \$426,203.$$

Tax-Deferred Versus Taxable Retirement Accounts

In both cases,

R = amount withheld annually from salary,

r = annual rate of return on money in the account,

t = marginal tax rate of account holder,

n = number of years contributions are made,

V = final value of the account, following all accumulations and payment of all taxes.

Tax-Deferred Versus Taxable Retirement Accounts

Tax Deferred Account

The entire amount R is contributed each year. All contributions, plus earnings, earn a return over the n years, at which time tax is paid on all money in the account. The final account value is given by:

$$V = \frac{(1-t)R \left[(1+r)^n - 1 \right]}{r}.$$

Tax-Deferred Versus Taxable Retirement Accounts

Taxable Account

Each amount R withheld from salary is taxed up front, decreasing the amount of the annual deposit to $(1 - t)R$. Annual earnings are also taxed at the end of each year. But at the end of the accumulation period, no more tax will be due. The final account value is given by:

$$V = \frac{R[(1 + r(1 - t))^n - 1]}{r}$$

Example: Comparing Accounts

Compare the final account values of a tax-deferred account and a taxable account with $R = \$2500$, $n = 30$, $r = 0.06$, and $t = 0.20$.

Solution

Tax-deferred account

$$V = \frac{(1 - 0.2)\$2500 \left[(1 + 0.06)^{30} - 1 \right]}{0.06} = \$158,116.37.$$

Example: Comparing Accounts

Solution (continued)

Taxable account

$$V = \frac{\$2500[(1 + 0.06(1 - 0.2))^{30} - 1]}{0.06}$$
$$= \$128,403.15$$

The tax-deferred account will have \$29,713.22 more in it at the end of the period.