Solutions for Principles of Managerial Finance 16th Edition by Zutter

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Solutions

Chapter 1 Answers to Review Questions

1-1 The goal of a firm, and therefore of all financial managers, is maximizing shareholder wealth. The proper metric for this goal is the price of the firm's stock. Other things equal, an increasing price per share of common stock relative to the stock market as a whole indicates achievement of this goal.

1-2 Actions that maximize the firm's current profit may not produce the highest stock price because (1) some firm activities that result in slightly lower profit today generate much larger profits in the future periods (i.e., focusing on current profit overlooks the time value of money); (2) activities that generate higher accounting profits today may not result in higher cash flows to stockholders; and (3) activities that lead to high profits today may involve higher risk, which could result in significant future losses.

1-3 Risk is the chance actual outcomes may differ from expected outcomes. Financial managers must consider risk *and* return because the two factors tend to have an opposite effect on share price. That is, other things equal, an increase in the risk of cash flows to shareholders will depress firm stock price while higher average cash flows to shareholders will increase stock price.

1-4 Maximizing shareholder wealth does not mean overlooking or minimizing the welfare of other firm stakeholders. Firms with satisfied employees, customers, and suppliers tend to produce higher (or less risky) cash flows for their shareholders compared with companies that neglect non-owner stakeholders. That said, customers prefer lower prices for firm output, firm employees prefer higher wages, and firm suppliers prefer higher prices for the input goods and services they provide. So actions that produce the highest price of the firm's stock cannot simultaneously maximize customer, employee, and supplier satisfaction.

1-5 Broadly speaking, the decisions made by financial managers fall under three headings: (i) investment, (ii) capital budgeting, and (iii) working capital. Investment decisions involve the firm's long-term projects while financing decisions concern the funding of those projects. Working-capital decisions, in contrast are related to the firm's management of short-term financial resources.

1-6 Financial managers must recognize the tradeoff between risk and return because shareholders prefer higher cash flows but dislike large swings in cash flows. And, as a general rule, actions that boost the firm's average cash flows also result in greater cash-flow greater volatility. Viewed another way, firm actions to reduce the chance cash flows will be low or negative also tend to reduce average cash flows over time. Understanding this tradeoff is important because shareholders are risk averse. That is, they will only accept larger swings in a firm's cash flows only if compensated over time with higher average cash flows.

1-7 Finance is often considered applied economics. One reason is firms operate within the larger economy. More importantly, the bedrock concept in economics—marginal benefit-marginal cost analysis—is also central to managerial finance. Marginal benefit-marginal cost analysis is the notion a firm (or any other economic actor) should take only those actions for which the extra benefits exceed the extra costs. Nearly, all financial decisions ultimately turn on an assessment of their marginal benefits and marginal costs.

1-8 Accountants and financial managers perform separate but equally important functions for the firm. Accountants primarily collect and present financial data according to generally accepted financial principles while financial managers make investment, capital-budgeting, and working-capital decisions with financial data. In part because of their different functions, accountants and financial managers log firm revenues and expenses using different conventions. Accountants operate on an accrual basis, recognizing revenues as firm output is sold (whether or not payment is actually received) and firm expenses as incurred. Financial managers, in contrast, focus on actual inflows and outflows of cash, recognizing revenues when physically received and expenses when actually paid.

1-9 Like any economic actor, managers respond to incentives. Managers have a fiduciary duty to maximize shareholder wealth, but as humans, they also have personal goals—such as maximizing their own income, wealth, reputation, and quality of life. If the personal benefits of delivering for shareholders (or the costs of slighting them) are small, a financial manager might opt to further his own interest at the expense of shareholders. For example, CEOs of large firms—those with more sales, assets, employees, etc.—tend to receive more compensation than CEOs of smaller firms. If a CEO has to choose between two operating strategies—one that produces modest growth for his firm but a large jump in current stock price and another that generates rapid growth but a more modest rise in share price—and the firm's board is not closely monitoring the CEO, she might pursue the high-growth strategy to boost her future compensation. A partial solution to such a problem is a compensation closely linking CEO compensation to firm stock price.

1-10 Sole proprietorships are the most common form of business organization, while corporations tend to be the largest. Large firms tend to organize as corporations to insulate owners from losses (limit liability) and facilitate acquisition of financial capital to fund growth.

1-11 Stockholders are the owners of a corporation. Their ownership (equity) takes the form of common stock or, less frequently, preferred stock. Stockholders elect the board of directors, which has ultimate responsibility for guiding corporate affairs and setting general policy. The board usually comprises key corporate personnel and outside directors. The corporation's president or chief executive officer (CEO) reports to the board. He or she oversees day-to-day operations subject to the general policies established by the board. The corporation's owners (shareholders) do not have a direct relationship with management; they provide input by electing board members and voting on major charter issues. Shareholders receive compensation in two forms: (i) dividends paid on their stock (from corporate earnings) and (ii) capital gains from increases in the price of their shares (which reflect market expectations about future dividends).

1-12 Generally speaking, income from sole proprietorships and partnerships is taxed only once at the individual level; the owner or owners pay personal income tax on their share of firm's profits. In contrast, corporate income is taxed first at the firm level (via the corporate income tax paid on firm profits) and then again at the personal level (via personal income tax paid on dividends or capital gains enjoyed by shareholders). Under the tax law prevailing in 2020, corporations paid tax at a flat rate of 21%, which means that the average tax rate and the marginal tax rate are the same (21%). Under a progressive tax structure, the tax rates rises with income, so the marginal tax rate generally exceeds the average tax rate.

1-13 Agency problems arise when managers place personal goals ahead of their duty to shareholders to maximize stock price. The attendant costs are called agency costs. Agency costs can be implicit or explicit; either way they reduce shareholder wealth. An example of an "implicit" agency cost is the dividends or capital gains shareholders miss out on because the firm's management team pursued a personal interest (like maximizing sales to boost future compensation) rather than maximizing shareholder wealth. Of course, if shareholders sense stock price is not what it should be, they will start monitoring management more closely (as in the chapter opener with Brookdale Senior Living). The expenses associated with greater monitoring are an example of an "explicit" agency cost. Agency problems in a firm can be reduced with a properly constructed and followed corporate-governance structure. Such a structure will feature checks and balances that reduce management's interest in and ability to deviate from shareholder-wealth maximization. Like all corporate decisions, reducing agency costs is subject to marginal benefit–marginal cost analysis. In other words, the firm should invest in policies to align the incentives of management and shareholders as long as the marginal benefits exceed the marginal costs.

1-14 Firms most commonly try to mitigate agency problems by linking pay to metrics connected with shareholder wealth. Incentive plans tie compensation to share price. For example, the CEO might receive options offering the right to purchase stock at a set price (say current price) any time in the next few years. If the CEO takes actions that subsequently boost share price, she can profit personally by exercising the option—purchasing stock at the set price—and reselling at the higher market price. The higher the firm's stock price, the more money the CEO can make, so options create a powerful incentive to focus laser-like on shareholder wealth. There is a downside, however. Sometimes general market trends swamp all the good done by management, so even though the CEO obsessed over shareholder wealth, her options proved worthless because a bear market hammered the firm's stock price. This problem has made performance plans more popular. These plans link compensation with performance measures related to stock price that management can more closely control—such as earnings per share (EPS) and EPS growth. When targets for the performance metrics are attained, managers receive rewards like performance shares and/or cash bonuses.

1-15 If the board of directors fails to keep management focused on shareholder wealth, market forces can apply the necessary pressure. Two such forces are activism by institutional investors (such as Land and Buildings in the chapter opener) and the threat of hostile takeovers. Institutions typically hold large quantities of shares in many corporations. Because of their large stakes, these investors actively monitor management and vote their shares for the benefit of all shareholders. Large institutional investors reduce agency problems by using their voting clout to elect new directors that will make the changes in policies and personnel necessary to get underperforming stock to its highest possible price. The threat of hostile takeover can also keep management focused on shareholders. Say a firm has a stock price of $15, but that price could be $20 with bold action management is reluctant to take. The lure of a $5 capital gain per share could tempt an outside individual, group of investors or firm not supported by existing management to purchase controlling interest and force the necessary changes. Incumbent management knows "necessary changes" means unemployment, so the threat of takeover could be enough to align their interests with those of the owners.

Part One
Introduction to Managerial Finance

Chapters in This Part

Chapter 1
The Role of Managerial Finance

■ Instructor's Resources

Chapter Overview

This chapter introduces the field of finance through building-block terms and concepts. The chapter starts by explaining what a firm is and discussing the goals that managers of a firm might pursue. The chapter provides a justification for focusing on shareholders rather than stakeholders broadly, but it also discusses other goals that firms might pursue. The opening section concludes with material on the importance of ethical behavior in business.

The next section discusses the managerial finance function, the key decisions that financial managers make, and the principles that guide their decisions. The discussion draws out distinctions among the overlapping disciplines of finance, economics, and accounting.

The third section describes pros and cons of different legal forms for a business. This section places particular emphasis on differences in taxation of proprietorships, partnerships, and corporations, and it highlights the importance of the marginal tax rate rather than the average tax rate. Next, this section describes the classical principal-agent problem and describes both internal and external corporate governance mechanisms that help manage that problem.

This chapter and the ones to follow stress the important role finance vocabulary, concepts, and tools will play in the professional and personal lives of students—even those choosing other majors, such as accounting, economics information systems, management, marketing, or operations. Whenever possible, personal-finance applications are provided to motivate and illustrate topics. This pedagogical approach should inspire students to master chapter content quickly and easily.

■ Suggested Answer to *Opener-in-Review*

Students learned the stock price of Brookdale Senior Living lost 80% of its value from 2015 to 2019, prompting Land and Buildings (a prominent stockholder) to urge the firm sell its real-estate holdings, distribute the anticipated net sales proceeds ($21 cash) to shareholders, and then focus on managing its senior living facilities. Students were asked whether the proposal would make Brookdale's shareholders better off if the expected cash proceeds were realized, but stock price dipped to $5 per share.

Before restructuring, an investor with one Brookdale share had $21.35 in total wealth. Afterward, that same investor might have a share worth $5 and $21 in cash—total wealth of $26. The hypothetical shareholder reaped a gain of $4.65 per share or 21.8%. Before the asset sale, with 185.45 million shares outstanding and a

share price of $21.35, total shareholder wealth was $3.96 billion. After the sale, with same shares outstanding and wealth per share now $26, shareholder wealth rose to $4.82 billion—a net gain of $0.86 *billion*.

Here is a discussion question for the class to motivate future exploration of CEO compensation: Suppose Brookdale's CEO came up with the asset-sale idea rather than a prominent shareholder, and Brookdale's board rewarded him with a $1 million dollar bonus—a figure alone that would easily vault the CEO into the top 1% of U.S. income earners. Is the CEO's compensation excessive?

■ Answers to Review Questions

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Suggested Answer to *Focus on Ethics* Box: Do Corporate Executives Have a Social Responsibility?

How would Friedman view a sole proprietor's use of firm resources to pursue social goals?

In a sole proprietorship, the owner and manager are one in the same. So a manager using firm resources to support social goals would be doing exactly what the owner wanted. Put another way, Friedman would not see a conflict. He did not oppose pursuit of social goals by a firm or individual; he opposed doing so with someone else's money.

Suggested Answer to *Focus on Practice* Box: Must Search Engines Screen Out Fake News?

Is the goal of maximizing shareholder wealth necessarily ethical or unethical?

The "end" of maximizing shareholder wealth is neither ethical nor unethical; it is neutral. But the means employed to pursue the end can be ethical or unethical. For example, taking actions to raise share price in clear violation of U.S. law is unethical—that is to say, wrong even if the violations are not uncovered.

What responsibility, if any, does Google have to help users assess the veracity of online content?

Management's overriding concern should be shareholder wealth. Knowingly posting content a reasonable person could see is fake harms shareholders by damaging the Google brand, so some due diligence is warranted. How much Google should invest in validating online content depends on the marginal benefits and costs. Specifically, Google should verify as long as the marginal benefit to shareholders exceeds the marginal cost—that is, only as long as the net effect on stock price is positive.

Suggested Answer to *Focus on People/Planet/Profits* Box: The Business Roundtable Revisits the Goal of a Corporation

What kind of actions could CEOs who are members of the Business Roundtable take that would clearly indicate that their 2019 statement truly represented a break from the shareholder primacy doctrine?

A break from shareholder primacy means not doing things that are good for shareholders or doing things that are not beneficial for shareholders. Doing something that benefits a stakeholder group does not necessarily represent a break from shareholder primacy because sometimes an action that benefits a stakeholder also benefits shareholders. For example, if customers and shareholders place a value on fighting climate change, then a company that makes green investments make may its own shareholders better off while also becoming more green. On the other hand, firms could spend so much on green investments that shareholder value might suffer. That would represent a true break from the shareholder primacy doctrine. Evidence of this might take the form of markets pushing down a firm's stock price when it announces a major new green investment initiative.

■ Answers to Warm-Up Exercises

E1-1 ***Advantages and disadvantages of partnership versus incorporation*** **(LG 5)**

Answer: Each form of business organization has advantages and disadvantages. One advantage of a simple partnership is that each partner's income is taxed only once as personal income (i.e., subject to the personal income tax). Corporate income, in contrast, is taxed twice—corporate profits will be subject to the corporate income tax, and the dividends and capital gains from each partner's stock will be taxed as personal income.

Taxation is a key factor in choosing the form of business organization, but two other factors are also important. In a partnership, each partner has unlimited liability and may have to cover debts of other partners, while corporate owners have limited liability that guarantees they cannot lose more than they have invested in the corporation. The third major consideration is ease of transfer of the business. Partnerships are harder to transfer and technically dissolved when a partner dies, while a corporation has an infinite life (absent bankruptcy, merger, or acquisition) with ownership readily transferable through sale of existing shares.

If a third party were asked to decide which legal form of business A&J Tax Preparation should take, it would be useful to have the following information:

- Relevant specifics of current personal and corporate income tax codes (such as marginal rates, deductions, etc.)
- Expected future changes in tax law
- Expected longevity of firm
- Age of current owners
- Current succession plan
- Risk tolerance of owners
- Capital needs of firm
- Growth prospects of firm
- Reasons for each partner's view on preferred form of ownership

E1-2 ***Timing of cash flows*** **(LG 4)**

Answer: Based on the information provided, the choice is not obvious. Even though the second project is expected to provide a larger overall increase in earnings, the goal of the firm is maximizing shareholder value (not earnings *per se*), so the timing and risk of cash flows must be considered to determine which project is superior. For example, even if the second project's cash flows are higher, they tend to arrive later, so it is not clear whether the second project is preferable to the first.

E1-3 ***Cash flow vs. profits*** **(LG 4)**

Answer: It is not unusual for profitable firms to suffer a cash crunch. This typically happens when expenses must be paid before revenue can be collected. In such cases, the firm must arrange financing to plug the gap between cash inflows and outflows. If cash crunches are regular, management should consider going ahead with the party, particularly if it is important for employee morale (i.e., cancelling might significantly reduce productivity)—provided adequate short-term funding is available. If the crunch is new, larger problems could lie ahead, and funding a party before the cash-flow outlook became clear might expose the firm to financial risk.

E1-4 ***Sunk costs*** **(LG 5)**

Answer: Marginal benefit-marginal cost analysis ignores sunk costs, so the $2.5 million dollars spent over the past 15 years is irrelevant to the current decision. At this point, what matters is whether expected revenues from additional investment exceed expected costs, after adjusting for the risk and timing of cash flows. If so, and funding is available, the investment is sound (irrespective of the specific capital expenditure required). The key to the decision may well lie in the satellite-division

manager's candid assessment that the project has little chance of viability. That assessment suggests additional expenditure is likely to throw good money after bad.

E1-5 ***Agency costs*** **(LG 6)**

Answer: Agency costs arise when one party (principal) designates another party (agent) to act on her behalf and the second party (agent) has latitude to pursue her own interest at the expense of the principal. In a corporation, shareholders are principals and managers agents. If shareholders fail to monitor adequately, managers could focus on personal goals rather than shareholder value. The resulting negative impact on stock price is an example of an agency cost. Another example is the cost of stock options, which focus manager attention on share price but also raise managerial compensation.

In the Donut Shop, Inc. example, the principal is store management, and the agents are employees. As normal humans, employees might prefer talking with other each or taking long breaks to focusing laser-like on customers. Banning tips led to poorer service, which could ultimately drive customers elsewhere and cost store managers their jobs. Tipping, like options, aligns the interests of principals and agents. The prospect of a tip kept employees (agents) focused on customer satisfaction, just as store management (principals) wished.

One potential solution for Donut Shop, Inc., is a profit-sharing plan that includes employees whose behavior reduced customer satisfaction. For the new benefit to be effective, Donut Shop must sell the plan as a replacement for tipping and structure it to provide generous bonuses when profits rise (because profit sharing lacks the immediacy of tips for good service). Perhaps a simpler solution is recognizing the ban on tipping led to customer-service problems in the first place and reversing the policy.

E1-6 ***Corporate tax liability*** **(LG 5)**

Answer: The company must pay the corporate tax rate of 21% on both its pretax ordinary income and any capital gain on the sale of the asset. Ross purchased the asset for $125,000 and sold it for $150,000, thereby netting a $25,000 capital gain, so total taxable income is $525,000. The total tax liability is 21% × $525,000 = $110,250.

■ Solutions to Problems

P1-1 ***Liability comparisons*** **(LG 5; Basic)**

a. Ms. Smith has lost her $47,000 investment and has unlimited personal liability, so she is also liable for the firm's $108,000 in unpaid debts.
b. Ms. Smith has lost her $47,000 investment and shares unlimited liability with her partner, Mr. Brown. Initially, Ms. Smith is liable for $54,000 (50% of total unpaid debts). But if her partner cannot cover half the debt, Ms. Smith is liable for the full amount.
c. Ms. Smith has lost her $47,000 investment, but she has limited liability, so she is not personally liable for the firm's $108,000 in unpaid debts.
d. Ms. Smith has limited liability, so she cannot lose more than her $47,000 investment and is not liable for the firm's $108,000 in unpaid debts.

P1-2 ***Accrual income versus cash flow for a period*** **(LG 4; Basic)**

a.

Sales	$760,000
Cost of goods sold	300,000
Net profit	$460,000

b.

Cash receipts	$690,000
Cost of goods sold	300,000
Net cash flow	$390,000

c. The accrual and cash accounting methods show different net profits because the accrual approach counts all $760,000 as revenue, whereas the cash flow approach only counts the $690,000 that the firm collected this year. Both profit figures are informative to the financial manager. The cash flow approach helps the manager make plans for any cash surpluses or shortages that may occur, and the accrual approach gives a good picture for whether the firm is profitable or not as a going concern over time.

P1-3 ***Personal finance problem: Cash flows*** **(LG 4; Intermediate)**

a. Total cash inflow: $450 + $4,500 = $4,950
Total cash outflow: $1,000 + $500 + $800 + $355 + $280 + $1,200 + $222 = $4,357

b. Net cash flow: Total cash inflows—Total cash outflows = $4,950 – $4,357 = $593

c. If Jane is facing a shortage, she could reduce spending on discretionary items such as clothing, dining out, and gas (i.e., travel less).

d. Jane should examine anticipated cash flows in other months to verify August is typical. She may, for instance, discover expenditures not in her August budget—like large quarterly automobile-insurance expenses or large gift purchases in December. To prepare for such outlays, Jane should put the $593 in a bank deposit or money-market account where the funds are readily accessible, and capital losses unlikely. If the $593 will not needed for anticipated bills, Jane should explore longer-term investment options, such as a diversified portfolio of stocks and bonds.

P1-4 ***Marginal cost–benefit analysis and the goal of the firm*** **(LG 2 and LG 4; Challenging)**

a. Marginal benefits of equipment replacement =
Benefits of new equipment – Benefits of old equipment
$900,000 – $300,000 = $600,000

b. Marginal cost of equipment replacement =
Cost of new equipment – Net salvage value of old equipment
$600,000 – $250,000 = $350,000

c. Net benefits of equipment replacement =
Marginal benefits of equipment replacement – Marginal cost of equipment replacement
$600,000 – $350,000 = $250,000

d. Monsanto should replace the old equipment with the new equipment because the marginal benefits exceed marginal costs.

P1-5 ***Marginal cost–benefit analysis and the goal of the firm*** **(LG 2 and LG 4; Challenging)**

a. Marginal benefits of proposed robotics =
Benefits of new robotics – Benefits of original robotics

$$\$560{,}000 - \$400{,}000 = \$160{,}000$$

b. Marginal cost of proposed robotics =
Cost of new robotics – Sales price of current robotics

$$\$220{,}000 - \$70{,}000 = \$150{,}000$$

c. Net benefits of new robotics =
Marginal benefits of proposed robotics – Marginal cost of proposed robotics

$$\$160{,}000 - \$150{,}000 = \$10{,}000$$

d. Provided cash flows from new and existing robotics are equally risky, Ken Allen should recommend new robotics because the marginal benefits exceed marginal costs.

e. Three other important factors are cash-flow risk, cash-flow timing, and interest rates. New technology sometimes presents unique risks—new robotics, for example, could have unanticipated breakdowns that necessitate a recall—so Ken Allen should investigate the riskiness of each cash flow under the marginal-benefit and marginal-cost headings. He should also determine the exact timing of cash inflows/outflows for both options as well as the opportunity cost of funds invested (i.e., the interest rate). Timing and the interest rate are important because the project spans five years, and dollars received/spent today are worth more than dollars received/spent tomorrow.

P1-6 ***Identifying agency problems, costs, and resolutions*** **(LG 6; Intermediate)**

a. The agency cost is wages paid to an idle employee whose responsibilities must be covered by someone else. One solution is a time clock everyone must punch when arriving for work, take a lunchbreak, and leave for the day. A punch clock would reduce agency costs by (1) prompting the receptionist to return from lunch on time or (2) reduce wages paid for unproductive time.

b. The agency costs are opportunity costs—money budgeted for inflated cost estimates that cannot be used to fund other projects to enhance shareholder wealth. One solution is rewarding managers for accurate cost estimates rather keeping actual costs below their estimates.

c. The agency cost is lost shareholder wealth; the CEO might agree to sell the firm for less than fair-market value in return for a post-merger position with more income, wealth, power, or visibility. One safeguard is allowing bids from other potential partners once the CEO has publicly disclosed firm interest in merging. Competitive bidding should reveal a merger price fair to shareholders.

d. Part-time or temporary workers are less productive than full-time workers for two reasons: (i) new employees must learn their jobs, and (ii) fully trained employees obtain insights about improving efficiency from experience. In the short run, any decline in service caused by part-time or temporary workers would probably not drive branch customers away. And the same revenue with lower costs (from cheaper workers) will, indeed, boost profits. Over the long run, however, consistently less-productive employees will hurt profitability by reducing revenue or raising costs. One solution is rewarding managers with stock for meeting performance targets over a longer horizon (like average branch profit over the past three years).

P1-7 ***Corporate taxes*** **(LG 5; Basic)**

a. Firm's tax liability on $1,863,600 using the corporate tax rate of 21%:
Total taxes due = 21% × $1,863,600 = $391,356

b. After-tax earnings: $1,863,600 – $391,356 = $1,472,244.

c. Average tax rate: $391,356 ÷ $1,863,600 = 21%.

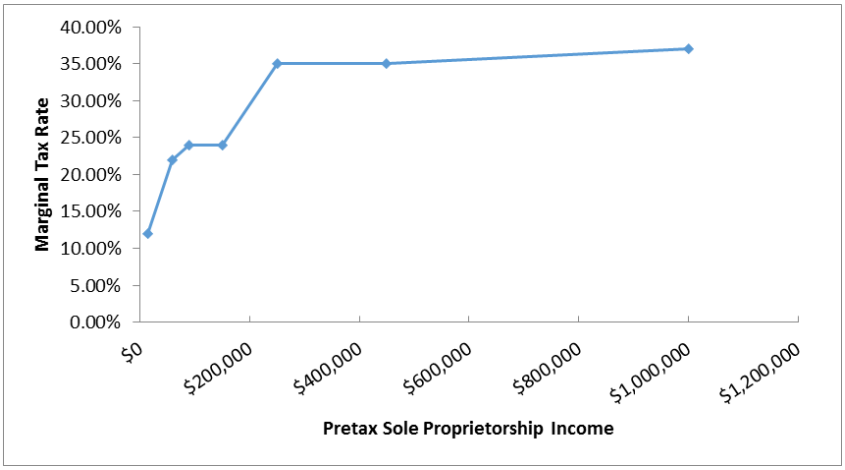
d. Marginal tax rate is 21%. Notice that the marginal and average tax rates are the same under a flat tax.

P1-8 ***Marginal tax rates*** **(LG 6; Basic)**

a. The marginal tax rates at the specified income levels are as follows:

Income	Marginal rate
$15,000	12%
$60,000	22%
$90,000	24%
$150,000	24%
$250,000	35%
$450,000	35%
$1,000,000	37%

b. The plot shows that as income increases the marginal tax rate increases and peaks at 37% for income in excess of $518,400.



P1-9 ***Tax liability, marginal tax rate, and average tax rate*** **(LG 6; Basic)**

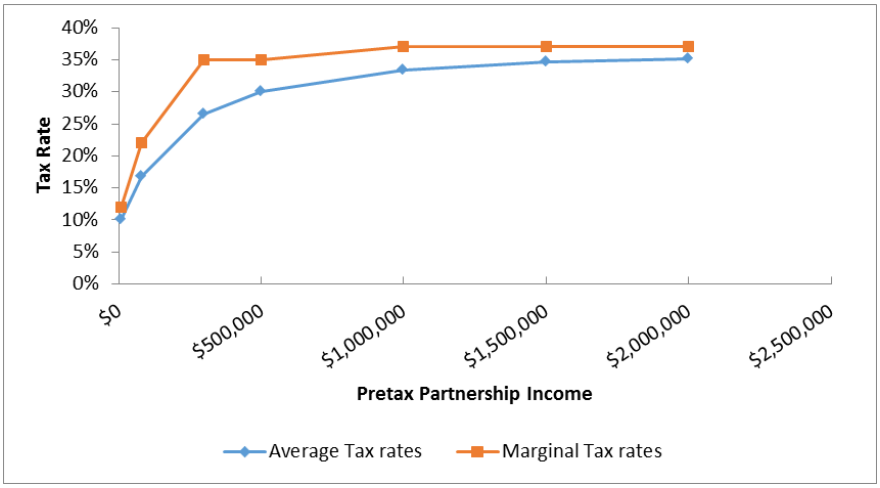
a. Tax calculations using Table 1.2:

$10,000:	Tax liability:	(0.10 × $9,875) + [0.12 × ($10,000 – $9,875)] = $987.50 + $15 = $1,002.50
	After-tax earnings:	$10,000 – $1,002.50 = $8,997.50
	Marginal tax rate:	$9,875 < $10,001 < $40,125 so 12%
	Average tax rate:	$1,002.50 ÷ $10,000 = 10.03%

$80,000:	Tax liability:	$(0.10 \times \$9{,}875) + [0.12 \times (\$40{,}125 - \$9{,}875)]$ $+ [0.22 \times (\$80{,}000 - \$40{,}125)]$ $= \$987.50 + \$3{,}630 + \$8{,}772.50 = \$13{,}390$
	After-tax earnings:	$\$80{,}000 - \$13{,}390 = \$66{,}610$
	Marginal tax rate:	$\$40{,}125 < \$80{,}001 < \$85{,}525$ so 22%
	Average tax rate:	$\$13{,}390 \div \$80{,}000 = 16.74\%$
$300,000:	Tax liability:	$(0.10 \times \$9{,}875) + [0.12 \times (\$40{,}125 - \$9{,}875)]$ $+ [0.22 \times (\$85{,}525 - \$40{,}125)]$ $+ [0.24 \times (\$163{,}525 - \$85{,}525)]$ $+ [0.32 \times (\$207{,}350 - \$163{,}300)]$ $+ [0.35 \times (\$300{,}000 - \$207{,}350)]$ $= \$987.50 + \$3{,}630 + \$9{,}988 + \$18{,}666$ $+ \$14{,}096 + \$32{,}427.50 = \$79{,}795$
	After-tax earnings:	$\$300{,}000 - \$79{,}795 = \$220{,}205$
	Marginal tax rate:	$\$207{,}350 < \$300{,}001 < \$518{,}400$ so 35%
	Average tax rate:	$\$79{,}795 \div \$300{,}000 = 26.60\%$
$500,000:	Tax liability:	$(0.10 \times \$9{,}875) + [0.12 \times (\$40{,}125 - \$9{,}875)]$ $+ [0.22 \times (\$85{,}525 - \$40{,}125)]$ $+ [0.24 \times (\$163{,}525 - \$85{,}525)]$ $+ [0.32 \times (\$207{,}350 - \$163{,}300)]$ $+ [0.35 \times (\$500{,}000 - \$207{,}350)]$ $= \$987.50 + \$3{,}630 + \$9{,}988 + \$18{,}666$ $+ \$14{,}096 + \$102{,}427.50 = \$149{,}795$
	After-tax earnings:	$\$500{,}000 - \$149{,}795 = \$350{,}205$
	Marginal tax rate:	$\$207{,}350 < \$500{,}001 < \$518{,}400$ so 35%
	Average tax rate:	$\$149{,}795 \div \$500{,}000 = 29.96\%$
$1,000,000:	Tax liability:	$(0.10 \times \$9{,}875) + [0.12 \times (\$40{,}125 - \$9{,}875)]$ $+ [0.22 \times (\$85{,}525 - \$40{,}125)]$ $+ [0.24 \times (\$163{,}525 - \$85{,}525)]$ $+ [0.32 \times (\$207{,}350 - \$163{,}300)]$ $+ [0.35 \times (\$518{,}400 - \$207{,}350)]$ $+ [0.37 \times (\$1{,}000{,}000 - 518{,}400)]$ $= \$987.50 + \$3{,}630 + \$9{,}988 + \$18{,}666$ $+ \$14{,}096 + \$108{,}867.50 + \$178{,}192 = \$334{,}427$
	After-tax earnings:	$\$1{,}000{,}000 - \$334{,}427 = \$665{,}573$
	Marginal tax rate:	$\$518{,}400 < \$1{,}000{,}001$ so 37%
	Average tax rate:	$\$334{,}427 \div \$1{,}000{,}000 = 33.44\%$

$1,500,000:	Tax liability:	(0.10 × $9,875) + [0.12 × ($40,125 – $9,875)] + [0.22 × ($85,525 – $40,125)] + [0.24 × ($163,525 – $85,525)] + [0.32 × ($207,350 – $163,300)] + [0.35 × ($518,400 – $207,350)] + [0.37 × ($1,500,000 – 518,400)] = $987.50 + $3,630 + $9,988 + $18,666 + $14,096 + $108,867.50 + $363,192 = $519,427
	After-tax earnings:	$1,500,000 – $519,427 = $980,573
	Marginal tax rate:	$518,400 < $1,500,001 so 37%
	Average tax rate:	$519,427 ÷ $1,500,000 = 33.44%
$2,000,000:	Tax liability:	(0.10 × $9,875) + [0.12 × ($40,125 – $9,875)] + [0.22 × ($85,525 – $40,125)] + [0.24 × ($163,525 – $85,525)] + [0.32 × ($207,350 – $163,300)] + [0.35 × ($518,400 – $207,350)] + [0.37 × ($2,000,000 – 518,400)] = $987.50 + $3,630 + $9,988 + $18,666 + $14,096 + $108,867.50 + $548,192 = $704,427
	After-tax earnings:	$2,000,000 – $704,427 = $1,295,573
	Marginal tax rate:	$518,400 < $2,000,001 so 37%
	Average tax rate:	$704,427 ÷ $2,000,000 = 35.22%

b. To build a plot of the marginal and average tax rates, first highlight the cells containing the partnership earnings before taxes and the cells containing the marginal and average tax rates in part a., and then under the Insert and Charts select Scatter and Scatter with Straight Lines and Markers. Once the graph appears, you can move it, format the axis scales and titles, move the legend, and remove the gridlines.



As pretax partnership income increases, the marginal and average tax rates increase. However, the average tax rate increases more smoothly and at a slower rate.

P1-10 ***Double taxation and implied cost of limited liability*** **(LG 5 LG 6; Intermediate)**

Total tax liability if organized as a sole proprietorship:

$$
\begin{aligned}
&(0.10 \times \$9{,}875) + [0.12 \times (\$40{,}125 - \$9{,}875)] \\
&+ [0.22 \times (\$85{,}525 - \$40{,}125)] \\
&+ [0.24 \times (\$163{,}525 - \$85{,}525)] \\
&+ [0.32 \times (\$207{,}350 - \$163{,}300)] \\
&+ [0.35 \times (\$518{,}400 - \$207{,}350)] \\
&+ [0.37 \times (\$650{,}000 - 518{,}400)] \\
&= \$987.50 + \$3{,}630 + \$9{,}988 + \$18{,}666 \\
&+ \$14{,}096 + \$108{,}867.50 + \$48{,}692 = \$204{,}927
\end{aligned}
$$

After-tax income if organized as a sole proprietorship: $650,000 – $204,927 = $445,073

Total tax liability if organized as a corporation:

$$
\begin{aligned}
&(0.21 \times \$650{,}000) + [(0.20 + 0.038) \times (\$650{,}000 - (0.21 \times \$650{,}000))] \\
&= \$136{,}500 + (0.238 \times \$513{,}500) \\
&= \$136{,}500 + \$122{,}213 \\
&= \$258{,}713
\end{aligned}
$$

After-tax income if organized as a corporation: $650,000 – $258,713 = $391,287

The implied cost of limited liability is $53,786 because this is how much less after-tax income you have when organized as a corporation.

P1-11 ***Interest versus dividend income*** **(LG 6; Intermediate)**

a. The firm faces a 21% flat tax on operating earnings, so 21% × $490,000 = $102,900.

b., c.

	(b) Interest Income	(c) Dividend Income	
Before-tax amount	$20,000	$20,000	
Less: Applicable exclusion	0	10,000	(0.50 × $20,000)
Taxable amount	20,000	10,000	
Tax (21%)	4,200	2,100	
After-tax amount	15,800	17,900	

d. The after-tax amount of dividends received, $17,900, exceeds the after-tax amount of interest received, $15,800, due to the 50% corporate dividend exclusion. This increases the attractiveness of stock investments by one corporation in another relative to bond investments.

e. The firm's total tax liability is $102,900 from operating earnings, $4,200 from interest earnings, and $2,100 from dividends received for a total of $109,200.

P1-12 ***Interest versus dividend expense*** **(LG 6; Intermediate)**

a. EBIT	$50,000
Less interest	12,000
Pre-tax earnings	$38,000
Less taxes (21%)	7,980
After-tax earnings	$30,020
(all of this available to common stockholders)	
b. EBIT	$50,000
Less taxes (21%)	10,500
After-tax earnings	$39,500
Less preferred div	12,000
Earnings for common stockholders	$27,500

P1-13 ***Corporate taxes and the use of debt*** **(LG 5; Intermediate)**

a. With pre-tax income currently of $200,000, Hemingway's current annual corporate tax liability is 21% × $200,000 = $42,000.

b. Because the corporate tax rate is a flat tax, the average tax rate and the marginal tax rate are the same, 21%.

c. If expansion is financed with cash reserves, then taxable income will be $350,000 with a corresponding tax liability of 21% × $350,000 = $73,500. The average tax rate and the marginal tax rate are both 21%.

d. If expansion is financed with debt financing, taxable income will be $350,000 – $70,000 = $280,000. Taxes owed will equal 21% × ($350,000 – $70,000) = $58,800. Again, the average tax rate and the marginal tax rate are the same (21%) no matter what the income level is under a flat tax.

e. Student answers might vary here. Students might say (regardless of the tax law), that income is lower when the company uses debt. That's true, but again regardless of the tax law, the amount of taxes paid is lower when debt is used. If the value of the company depends on the cash flow that it distributes to ALL investors (not just shareholders), then financing the expansion with debt might be optimal. However, there may be offsetting effects (not mentioned in this chapter) that would negate the tax benefits of debt.

P1-14 ***ETHICS PROBLEM*** **(Intermediate)**

Maximizing shareholder wealth subject to "ethical constraints" means pursuing all opportunities to boost stock price consistent with community ethical norms and applicable federal/state laws. "Community ethical norms" refers to prevailing standards about right and wrong. Consistent, knowing violation of such norms can reduce shareholder wealth by prompting stakeholder backlash and punitive government action. For example, in 2017, sexual mistreatment of women in the workplace became an overriding concern for many Americans. Firms with executives guilty of harassing female subordinates were vulnerable to attacks by customers, employees, lawyers, the media, and elected officials. If a firm knew an executive had a history of inappropriate behavior and took no action (believing, perhaps, the executive was irreplaceable), the backlash was even worse when the story inevitably came out. As a result, many high-profile executives were fired to head off customer boycotts, employee defections, hostile-workplace lawsuits, and political retaliation (such as Congressional hearings or targeted legislation) that could hammer the firm's stock price. Similarly, abiding by applicable federal and state laws protects shareholders wealth from punitive legal action against the firm and its executives as well as backlash from stakeholders and elected officials.

■ Case

Case studies are available on www.pearson.com/mylab/finance.

Assessing the Goal of Sports Products, Inc.

a. The primary goal of Sports Products, Inc. should be maximizing shareholder wealth, which means taking all legal and ethical actions to get firm stock price to the highest possible level. Unlike profit maximization, maximizing stock price requires consideration of the level of cash flows (which, unlike profits, can be used to meet firm obligations) as well as the timing and riskiness of those flows.

b. Yes, there appears to be an agency problem. In this case, the stockholders (owners) of Sports Products are the principals, and company management the agents. Stockholders want the highest possible stock price, but management compensation is directly tied to profits, not share price. So, predictably, company executives have focused on obtaining the highest possible profit, and stock price has languished.

c. Sports Products' approach to pollution control is ethically questionable and harmful to shareholders. It is unclear whether polluting the stream was intentional or accidental; what is clear from the state-and-local-government lawsuits is the firm violated the law. In the near term, litigation and judgment costs will reduce firm stock price (other things equal). Over the longer term, the related bad publicity could damage Sports Products' relationships with customers, employees and suppliers—putting further downward pressure on share price. Had the firm been more concerned about shareholder wealth, it would have seen the wisdom in sacrificing some near-term profits to avoid sustained damage to stock price.

d. The corporate governance system at Sports Products appears weak. A management-compensation system focused on profits, rather than stock price, indicates shareholder welfare is not a firm priority. Another sign of weak governance is management's willingness to risk an environmental disaster—and the accompanying damage to shareholder wealth—to avoid higher pollution-control costs (and somewhat lower profits).

e. Recommendations to Sports Products could include the following:

- Overhauling management compensation to strengthen incentives to focus on shareholder interests. Specifically, Sports Products should consider distributing stock options to executives or awarding large bonuses based on performance-based metrics related to share price (like earnings per share or growth in earnings per share).

- Introducing an explicit system of "carrots and stocks" to reward ongoing management/employee compliance with federal and state laws (particularly those pollution related) and punish transgressions.
- Establishing a corporate ethics policy, to be read and signed by all employees, along with a system of "carrots and stocks" to reward ongoing management/employee compliance and punish transgressions.
- Recruiting new board members to enact policies to change the corporate culture to focus on shareholder wealth and good corporate citizenship.

■ Spreadsheet Exercise

Excel Answers to Chapter 1 spreadsheet problem (Space Ace) are available on www.pearson.com/mylab/finance.

■ Group Exercise

Group exercises are available on www.pearson.com/mylab/finance.

Notes for Adopters

Group exercises offer students an opportunity to apply chapter topics in a real-world setting using one fictional and one actual company. Apart from reinforcing learning goals, this approach gives students valuable experience working in teams—as both leader and follower. Assignments can be easily modified to fit an adopter's course goals. Students should enjoy these exercises; they have less structure than traditional homework and compellingly answer the age-old question: "Why must I learn this?"

The first practical issue is assembling groups—should the instructor assign students to groups or let students form their own? This project is semester-long, so group members must work well together for months. If students choose, they are more likely to get along—but at the cost of less intragroup diversity. A hybrid strategy is asking students to pair-off and then randomly combining student-selected pairs into larger groups.

The next issue is determining group size and leaders. Exercises generate workloads suitable for three or more students. Larger groups reduce individual workloads but facilitate "slacking." Apart from missing a learning opportunity, slackers create resentment over unequal contributions to team output. Managing larger groups can also be a challenge for students with little leadership experience. For these reasons, group size should be capped at five. As for selecting CEOs, rotation inside the group gives each student an opportunity to lead.

One final note—exercises were designed to give students the freedom to work largely independent of the instructor. Accordingly, instructions for each assignment are self-explanatory.

Chapter 1

This first chapter asks students to name and describe their fictional firm. They must then justify the decision to go public and discuss different managerial roles within their firm. The group must select a publicly held peer (shadow firm) in a related industry with a wealth of online information (including detailed financials).

The instructor should stress the importance of laboring over initial decisions because later work builds on them. For example, the choice of shadow firm should be weighed carefully because students will apply real-world information about their shadow firm to their fictitious firm. A good first step in narrowing candidates is starting with a familiar industry.