

# Understanding Financial Management: A Practical Guide

## Guideline Answers to the Concept Check Questions

### Chapter 11 Capital Structure

#### Concept Check 11.1

1. **What is meant by the term capital structure?**

*Capital structure* refers to a firm's relative mix of long-term sources of funds. Many firms have complex capital structures that include debt, preferred stock, common stock, leases, warrants, convertible bonds, and convertible preferred stock. Debt and equity, however, represent the two largest sources of financing for most firms.

2. **Do US firms in the same industries tend to have similar or widely divergent capital structures?**

US firms in the same industries often have widely divergent capital structures. While some differences may be attributable to firm-specific differences, each firm's management most likely uses informed judgment to determine their target or optimal capital structure.

#### Concept Check 11.2

1. **What do the terms “business risk” and “financial risk” mean?**

*Business risk* refers to the volatility of a firm's operating income due to the nature of its business. A firm's business risk is a function of the uncertainty of demand, uncertainty of output prices and input costs, competitive factors, as well as product and other types of liability. A firm's *financial risk* is the additional risk to a firm's investors when it borrows. Financial risk includes the increased risk of default and the increased volatility of a firm's earnings per share and return on equity that accompanies borrowing.

2. **What effect does financial leverage have on the expected level and the variability of a firm's EPS and ROE?**

Financial leverage generally increases the expected level of a firm's EPS and ROE. At low levels of EBIT, however, both EPS and ROE may actually be lower because of the debt's fixed interest expense. Fixed interest expense also magnifies the volatility of EPS and ROE.

### Concept Check 11.3

1. **What is the implication for financial managers of M&M Proposition I? What assumptions must hold for this result to be true?**

According to M&M's Proposition I, the value of a firm is independent of the financing mix of the firm. Thus, managers cannot alter firm value by their choice of the relative amounts of debt and equity financing. According to M&M, the value of the firm is determined by the size and riskiness of the real cash flows generated by the firm's assets, and not by how these cash flows are divided between the debt and equity stakeholders of the firm. These results hold under the assumption of perfect capital markets with no corporate or personal taxes. Under perfect capital markets, investors face no transactions costs and are symmetrically informed. In addition, firms can borrow and lend at the risk-free rate and can issue securities with no issuance costs.

2. **Under perfect capital markets without taxes, why does borrowing at a rate less than the required return on equity not decrease a firm's WACC?**

When firms use financial leverage, the returns to the shareholders become more volatile. To compensate for the higher risk, shareholders require a higher rate of return on their equity investment. The increase in the cost of equity exactly offsets the lower cost of debt financing keeping the weighted average cost of capital constant.

### Concept Check 11.4

1. **How may corporate taxes make a firm's borrowing decision relevant? Why might debt financing increase the total cash flows that a firm distributes to its debt and equity security holders?**

Corporate taxes may affect a firm's borrowing decision because the interest payments are a tax-deductible expense. Thus, interest payments shield taxable income from federal and state taxes. Increasing the amount of debt financing shields more of the firm's cash flows from taxes and therefore increases the total amount of cash flows distributed to both debt and equity security holders.

2. **What is the value of the interest tax shield when a firm borrows?**

Assuming the firm has tax savings from the interest payments equal to  $t_c k_d D$  in perpetuity, the value of the interest tax shield is the present value of these tax savings discounted at the cost of debt,  $k_d$ :

$$\text{PV of interest tax shield} = \frac{t_c k_d D}{k_d} = t_c D.$$

3. **What is the implication for financial managers of M&M Proposition I under perfect capital markets with corporate taxes?**

Under perfect capital markets with corporate taxes, M&M Proposition I implies that financial managers should maximize the use of debt financing in order to maximize firm value. For every dollar of debt that replaces equity, the value of the firm would increase by  $t_c D$ .

**Concept Check 11.5**

1. **What are three reasons that firms would not maximize the use of financial leverage as predicted under M&M Proposition I with corporate taxes?**

One reason that managers do not borrow as much as M&M Proposition I predicts is because of the availability of other non-debt tax shields. These tax shields reduce the probability that a firm can fully use the interest tax deduction on debt financing. A second reason is personal taxes that reduce the corporate tax advantage of debt financing. Finally, the costs of financial distress that accompany higher levels of debt financing limit the amount of borrowing.

2. **What does the term “financial distress” mean? What are some of the costs of financial distress for a firm?**

*Financial distress* refers to the deterioration in the firm’s performance brought on by the increased likelihood that the firm will default on its debt. Many of the costs of financial distress involve likely actions by stakeholders of the distressed firm. The costs include (1) top management devising short-term strategies to stay afloat rather working on the firm’s long-term strategy; (2) key employees leaving the firm in search of a more secure future; and (3) the firm’s suppliers being unwilling to supply short-term credit terms.

3. **Do the direct costs of bankruptcy seem to be high enough to limit the amount of financial leverage employed by a firm?**

The direct costs of bankruptcy (legal and administrative costs) are probably not large enough to offset the corporate tax advantage of debt financing and therefore do not appear to be large enough cost for a firm to limit its debt financing. Indirect costs such as the cost of financial distress may be substantial for most firms. Such costs are a strong deterrent that limits the amount of financial leverage that a firm is willing to undertake.

**Concept Check 11.6**

1. **What factors may lead to an optimal capital structure for a firm?**

The optimal capital structure for a firm is a function of numerous factors including the firm’s marginal tax rate, the amount of other non-interest tax shields, the variability of the

firm's operating earnings, and the likelihood and magnitude of the costs of financial distress for that firm.

- The higher a firm's marginal tax rate, the greater is the tax savings from debt financing. Thus, firms facing higher marginal tax rates should borrow more.
- When a firm has many other non-interest tax shields, given the variability of its operating income, the firm will have a lower probability of being deduct all of its interest payments on debt. Thus, firms with substantial amounts of other non-interest tax shields would tend to borrow less than other firms would borrow.
- Firms that have greater variability in operating income should borrow less than would other firms.
- Firms that have a greater likelihood and higher costs of financial distress should generally borrow less than would other firms.

2. **Should the optimal capital structure be viewed as a point or a range? Why?**

An appropriate way to view a firm's optimal capital structure is as a range, not a point. Firms cannot determine a precise optimal capital structure mix because the indirect costs of financial distress are difficult to measure.

3. **If a firm were operating at its optimal capital structure, what would also be true about the firm's weighted average cost of capital?**

At the optimal capital structure, a firm maximizes its value and minimizes its weighted average cost of capital (WACC). Determining the value of a firm involves discounting the firm's real asset after-tax cash flows (those flows that the firm can distribute to its bondholders and shareholders) at the firm's WACC. Assuming the firm's real asset cash flows are fixed, managers obtain an optimal capital structure by minimizing the WACC and maximizing the value of the firm's stock price.

4. **What empirical evidence supports the trade-off theory of capital structure?**

The following evidence supports the trade-off theory of capital structure.

- Firms with higher tax rates tend to have higher debt ratios.
- A negative relationship exists between observed debt ratios and such factors as bankruptcy and financial distress costs, R&D expenditures, as well as advertising and selling expenses.
- High costs of bankruptcy and financial distress reduce optimal debt ratios for these firms. Firms with other tax-deductible expenses have a lower probability of being able to use fully all tax benefits from borrowing.
- Survey evidence indicates that chief financial officers often state they try to maintain an optimal capital structure.

**Concept Check 11.7**

1. **What is the pecking order theory of financing choices?**

Pecking order theory deals with the notion that managers have insider information about a firm's current and future situation. This leads to the belief that managers prefer internal financing to external financing and prefer debt securities to equity securities when a firm requires external financing.

2. **Why would managers prefer internal financing to external financing?**

When a firm uses external financing, it incurs flotation costs. Such costs make external equity (new common stock) more costly than internal equity (retained earnings). In addition, the firm's managers must disclose additional (private) information about their firm to the outside community. Firms can avoid both effects by using retained earnings to finance projects instead of using external debt or equity.

3. **Why would managers prefer issuing debt to issuing equity?**

There are several reasons for the preference of issuing debt versus equity. First, the issuance costs for debt are lower than for equity. Second, the signaling effects to announcements of new debt issues are, on average, positive versus negative for new equity issues. Investors understand that managers with inside information have an incentive to issue equity when they believe the equity is overpriced. Thus, investors regard the announcement of the sale of new equity as a signal that managers believe the equity is overpriced.

4. **Do the pecking order and optimal capital structure theories provide consistent conclusions? Discuss.**

According to the pecking order hypothesis, firms prefer internal financing (retained earnings) to external financing. Firms choose their long-term dividend payouts to avoid having to raise funds externally in the capital markets. Changes in both profitability and capital expenditure needs necessitate that a firm seek external financing from time to time. When a firm raises external funds, it initially prefers issuing debt securities. If the firm cannot issue debt securities, it prefers issuing preferred stock or convertible securities. The last choice in this pecking order is to issue new shares of equity. Under the pecking order hypothesis, firms have no target capital structure. The capital structure reflects the firm's need for external financing over time. With equity at both ends of the pecking order (retained earnings is the first choice and new issues of equity is the last choice), there is no optimal capital structure identified by this hypothesis.

5. **Why is sufficient financial slack important to growth firms?**

*Financial slack* refers to a sufficient level of cash, marketable securities, and real assets that are saleable in order to obtain debt from the financial markets. Financial slack is important to growth firms because it enables them to adopt all positive NPV projects in their capital budgets.

6. **What empirical evidence supports the pecking order theory of capital structure?**

Research shows a negative relationship between the past profitability for firms and their observed debt ratios. According to this theory, firms tend to pay down their debt when

firms are more profitable and issue more debt to cover their shortfall when they are less profitable.

### Concept Check 11.8

1. **Which types of non-financial stakeholders will a firm's financing choices likely affect?**

A firm's financial choices will likely affect its customers, employees, suppliers, and the overall community in which it operates. The firm's choices may also have important effects on local and national governments. For example, if a firm defaults on its debt payments and enters bankruptcy, this will affect the employees of a firm. The tax deductibility of interest payments on debt lowers a firm's taxable income and may provide less tax revenue to local and state taxing authorities.

2. **What are the basic predictions of the stakeholder theory of capital structure?**

Stakeholder theory applies to firms that produce goods or provide services whose quality is important but difficult to assess in advance, firms producing highly specialized products or products that may require repairs, and firms whose employees and/or suppliers require specialized capital or training. In these cases, the presence of debt may reduce the firm's profits even if bankruptcy does not occur, and these types of firms should have relatively low levels of debt financing.

3. **Why is the national government a potential non-financial stakeholder of a firm?**

A national government may believe that certain firms have strategic importance for the good of the country. Firms in the airlines or defense industries are often prime candidates.

4. **What empirical evidence supports the stakeholder theory of capital structure?**

The negative relationship between R&D expenses and observed debt ratios provides support to the stakeholder theory of capital structure. This is because firms with the higher R&D expense may also be growth firms that produce specialized products requiring employees and suppliers with specialized training or capital.

### Concept Check 11.9

1. **What are some of the important observations about existing capital structures for firms?**

One of the most important observations is that observed capital structures vary markedly across firms. Even similar firms in the same industry may have very different amounts of

financial leverage. Surveys and anecdotal evidence often help provide an understanding of how managers' approach setting their firm's capital structures.

2. **What do surveys of capital structure tell us about how firms chose their capital structures?**

Most US firms have low or conservative debt ratios, lower than many of their foreign counterparts in Japan, France, and Italy. Most US firms do not issue sufficient debt to allow them to use fully the interest tax shields that are available to them. Finally, changes in the debt-equity financing mix affect the value of the firm.

3. **What three factors should financial managers consider when setting a firm's capital structure? How might each factor affect the capital structure choice?**

When setting a firm's capital structure, financial managers should consider taxes, risk, and the types of the firm assets. A firm with large taxable income should consider employing more debt as a way to reduce its tax obligations to the government. Firms with volatile earnings, and hence high business risk, may not choose to borrow as much because they might be able to use fully the tax deduction during lower income years. Finally, firms with substantial amounts of intangible assets and growth opportunities should rely on equity financing because of the costs associated with financial distress.

4. **What type of firm would be likely to rely more heavily on debt financing?**

Firms with large taxable income would want to rely more heavily on debt financing because of the large potential tax shield. Firms with more stable operating earnings can also borrow more because of the greater likelihood the firm can use all of its interest expense to shield income from taxes. Firms with tangible assets and fewer growth opportunities are likely to borrow more than would growth firms or firms with substantial intangible assets because incurring financial distress from borrowing could limit a growth firm's ability to raise funds to finance future growth. Finally, firms with higher expected costs of financial distress tend to borrow less, because such costs would reduce the corporate tax advantage of debt.

**Concept Check 11.10**

1. **What do the terms business failure, technical insolvency, accounting insolvency, and bankruptcy mean?**

*Business failure* describes a situation in which a firm has terminated its operations or business with a loss to its creditors. *Technical insolvency* occurs when a firm cannot pay its liabilities as they come due. *Accounting insolvency* occurs when a firm has a negative net worth on its balance sheet. *Bankruptcy* is to the process of dealing in an orderly manner with a firm's payments to its creditors when the firm is having payment difficulties.

2. **What is the difference between Chapter 11 and Chapter 7 bankruptcy?**

Under Chapter 11 bankruptcy, a company attempts to reorganize under the supervision of a bankruptcy court. This protects the troubled firm from its creditors while the firm tries to overcome its financial difficulties. For example, creditors cannot seize control of the firm's assets when it experiences temporary cash flow problems. If reorganization is infeasible, the firm face liquidation under Chapter 7 bankruptcy provisions.