

Capital Structure

What is Corporate Finance?

- Corporate Finance addresses the following three questions:
- 1. What long-term investments should the firm choose?
- 2. How should the firm raise funds for the selected investments?
- 3. How should short-term assets be managed and financed?

Balance Sheet Model of the Firm

- Total Value of Assets: Total Firm Value to
Investors:

Current
Assets

Current
Liabilities

Non-Current
Assets

Non-
Current
Liabilities

Shareholders'
Equity

The Capital Budgeting Decision

Current
Assets

Non-Current
Assets

What long-
term
investments
should the
firm
choose?

Current
Liabilities

Non-
Current
Liabilities

Shareholders'
Equity

The Capital Budgeting Decision

Current
Assets

Non-Current
Assets

How should
the
firm raise
funds
for the
selected
investments?

Current
Liabilities

Non-
Current
Liabilities

Shareholders'
Equity

Short-Term Asset Management

Current
Assets

Net
Working
Capital

Current
Liabilities

Non-Current
Assets

How should
short-term
assets be
managed
and
financed?

Non-
Current
Liabilities

Shareholders'
Equity

Capital Structure

- The value of the firm can be thought of as a pie
- The goal of the manager is to increase the size of the pie
- The Capital Structure decision can be viewed as how best to slice the pie
- If how you slice the pie affects the size of the pie, then the capital structure decision matters

The Financial Manager

- The Financial Manager's primary goal is to
- increase the value of the firm by:
 - 1. Selecting value creating projects
 - 2. Making smart financing decisions

The Corporate Firm

- The corporate form of business is the standard method for solving the problems encountered in raising large amounts of cash
- However, businesses can also take other forms such as:
 - The Sole Proprietorship
 - The Partnership
 - General Partnership
 - Limited Partnership

A Comparison

	Corporation	Partnership
Liquidity	Shares-easily exchanged	Subject to restrictions
Liability	Limited	Partners will have unlimited liability and limited liability partners will have limited liability
Continuity	Perpetual Life	Limited Life
Voting Rights	Norm: each share get one vote	General Partner is in charge; limited partners may have some voting rights
Reinvestment and dividend payout	Broader scope	All distributed to partners

20 MINUTE BREAK

The Goal of Financial Management

- What is the correct goal?
 - Maximize profit?
 - Minimize costs?
 - Maximize market share?
 - Maximize shareholder wealth?

Conflict Issues

- Agency relationship
 - Principal hires an agent to represent his/her interest
 - Stockholders (principals) hire managers (agents) to run the company
- Agency problem
 - Conflict of interest between principal and agent

Managerial Goal

- Managerial goals may be different from
- shareholder goals
 - Expensive perquisites
 - Survival
 - Independence
 - Increased growth and size are not necessarily equivalent to increased shareholder wealth

Managing Managers

- Managerial compensation
 - Incentives can be used to align management and stockholder interests
 - The incentives need to be structured carefully to make sure that they achieve their intended goal
- Corporate control
 - The threat of a takeover may result in better management
- Other Stakeholders

Financial Markets

- Primary Market
 - Issuance of a security for the first time
- Secondary Markets
 - Buying and selling of previously issued securities
 - Securities may be traded in either a dealer or auction market
 - NYSE
 - NASDAQ
 - London Stock Exchange

A Glance at Capital Structure Choices in Practice

- One of the primary duties of a financial manager is to raise capital to finance a firm's investments.
- The primary objective of capital structure management is to maximize the total value of the firm's outstanding debt and equity. The resulting financing mix that maximizes this combined value is called the **optimal capital structure**.

Defining the Firm's Capital Structure

- A firm's **capital structure** consists of owner's equity and its interest-bearing debt., including short-term bank loans.
- The combination of capital structure *plus* the firm's non-interest bearing liabilities (such as accounts payable) to be the firm's **Financial structure** . It is common practice to describe a firm's financial structure using the **debt to equity ratio**.

The book value of a firm's interest bearing debt includes:

- Short-term notes payable (e.g., bank loans),
- Current portion of long-term debt, and
- Long-term debt.

Financial Leverage

- The term *financial leverage* is often used to describe a firm's capital structure. By borrowing a portion of firm's capital at a fixed rate of interest, firm can “leverage” the rate of return it earns on its total capital into an even higher rate of return on the firm's equity.
- For example, if the firm is earning 17% on its investments and paying only 8% on borrowed money, the 9% differential goes to the firm's owners. This is known as **favorable financial leverage**. If it earns less than 8%, it will be **unfavorable financial leverage**.

A First Look at the Modigliani and Miller Capital Structure Theorem (1 of 2)

Modigliani and Miller (1958) showed that, under idealistic conditions, it does not matter whether a firm uses no debt, a little debt, or a lot of debt in its capital structure. The theory relies on two fundamental assumptions:

1. The cash flows that a firm generates are not affected by how the firm is financed.
2. Financial markets are perfect.

Figure 15.3 Cost of Capital and Capital Structure: M&M Theory
(1 of 2)

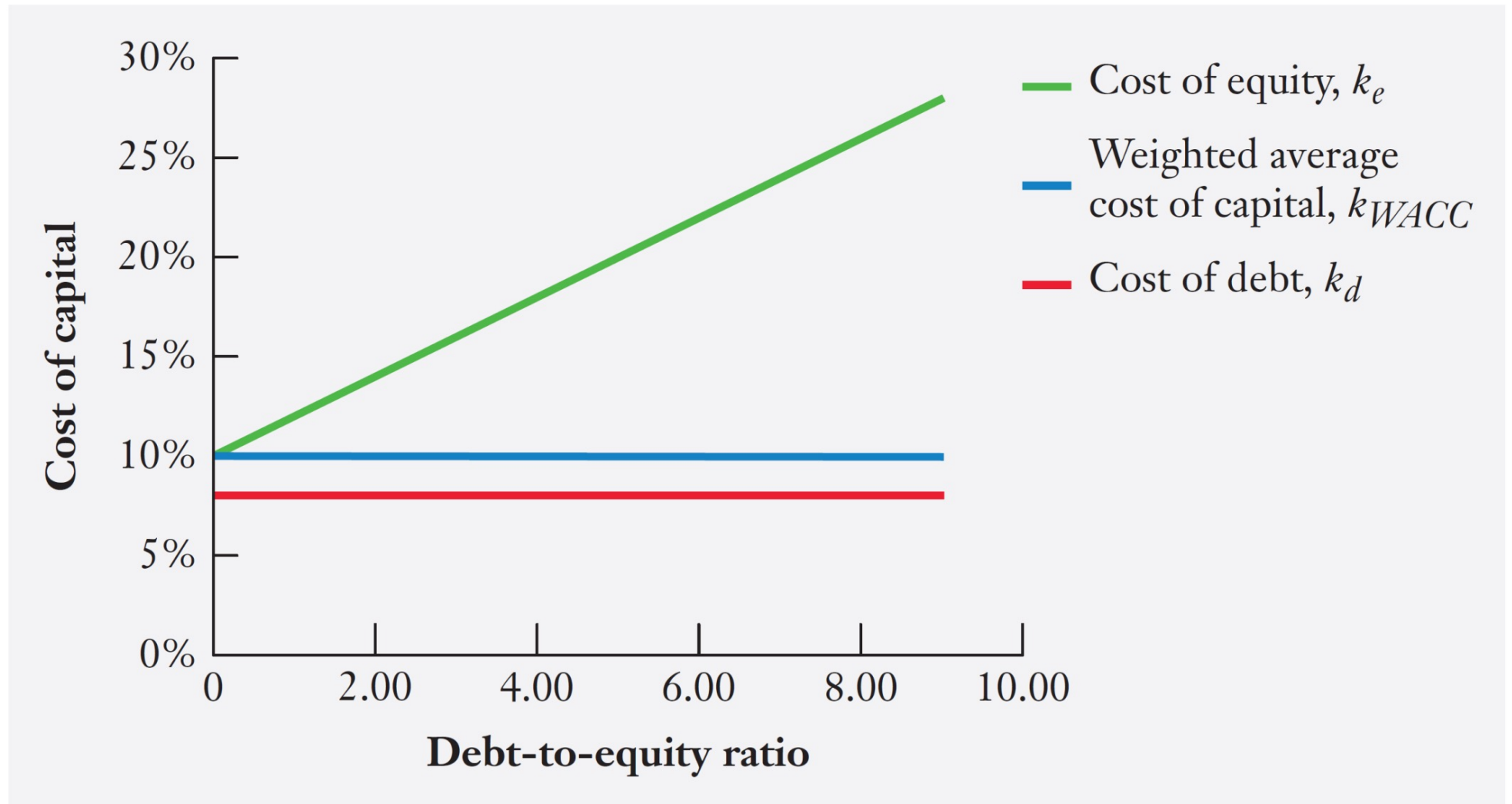


Figure 15.3 Cost of Capital and Capital Structure: M&M Theory
(2 of 2)

Debt-to-Equity Ratio	Weighted Average Cost of Capital	Cost of Debt	Cost of Equity
0.00	10%	8%	10.00%
0.11	10%	8%	10.22%
0.25	10%	8%	10.50%
0.43	10%	8%	10.86%
0.67	10%	8%	11.33%
1.00	10%	8%	12.00%
1.50	10%	8%	13.00%
2.33	10%	8%	14.67%
4.00	10%	8%	18.00%
9.00	10%	8%	28.00%

Legend:

$$k_{wacc} = \left[\text{Cost of Debt } (k_d) \times \text{Debt to Value } (D/V) \right] + \left[\text{Cost of Equity } (k_e) \times \text{Equity to Value } (E/V) \right]$$

$$\text{Cost of Equity } (k_e) = k_{wacc} + (k_{wacc} - k_d) \left(\frac{D}{E} \right)$$

where D/E is the ratio of debt to equity.

Why Capital Structure Matters in Reality?

Financial managers care a great deal about how their firms are financed. Indeed, there can be negative consequences for firms that select an inappropriate capital structure, which means that, in reality, at least one of the two M&M assumptions is violated.

Violation of Assumption 2

Assumption 2 is clearly violated in reality. Transaction costs can be important and because of these costs, the rate at which investors can borrow may differ from the rate at which firms can borrow. When this is the case, firm values may depend on how they are financed.

Violation of Assumption 1 (1 of 2)

There are three important reasons why the firm's capital structure affects the total cash flows available to its debt and equity holders:

1. Interest is a tax-deductible expense, whereas dividends are not. Thus, after taxes, firms have more money to distribute to their debt and equity holders if they use debt financing.

Violation of Assumption 1 (2 of 2)

2. Debt financing creates a fixed legal obligation. If the firm defaults on its payments, the firm will incur the added cost that the bankruptcy process entails.
3. The threat of bankruptcy can influence the behavior of a firm's executives as well as its employees and customers.

Corporate Taxes and Capital Structure

In most countries, interest payments are tax deductible (and dividends are not). So if the before-tax cash flows are unaffected by how the firm is financed, the after-tax cash flows will be higher if the firm's capital structure includes more debt and less equity.

Corporate Taxes and Capital Structure

Preference shares versus bonds

	Company A	Company B
Profits before tax, dividends and interest	200,000	200,000
Interest payable on bonds	<u>80,000</u>	<u>0</u>
Taxable profit	120,000	200,000
Tax payable @ 30% of taxable profit	<u>36,000</u>	<u>60,000</u>
	84,000	140,000
Preference dividend	<u>0</u>	<u>80,000</u>
Available for ordinary shareholders	<u>84,000</u>	<u>60,000</u>

Corporate Taxes and the WACC

The tax deductibility of interest expense causes the firm's weighted average cost of capital to decline as it includes more debt in the capital structure.

Figure 15.4 The Cost of Equity and the Weighted Average Cost of Capital with Tax—Deductible Interest Expense (1 of 2)

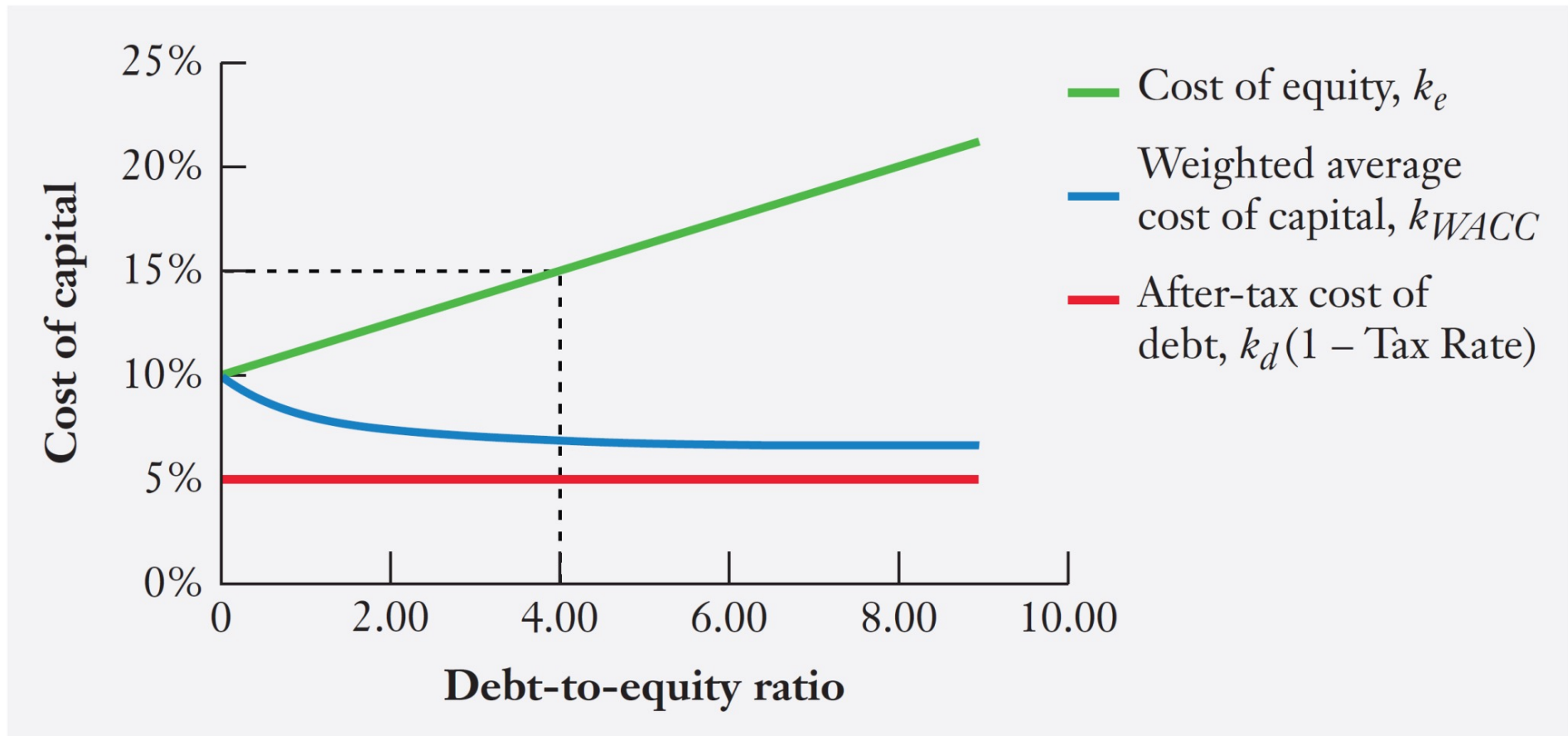


Figure 15.4 The Cost of Equity and WACC with Tax—Deductible Interest Expense (2 of 2)

Debt-to-Equity Ratio	After-Tax Cost of Debt	Cost of Equity	Weighted Average Cost of Capital
0.00	4.8%	10%	10.0%
0.11	4.8%	10%	9.6%
0.25	4.8%	10%	9.2%
0.43	4.8%	11%	8.8%
0.67	4.8%	11%	8.4%
1.00	4.8%	11%	8.0%
1.50	4.8%	12%	7.6%
2.33	4.8%	13%	7.2%
4.00	4.8%	15%	6.8%
9.00	4.8%	21%	6.4%

Legend:

$$k_{WACC} = \left[\text{Cost of Debt } (k_d) \left(1 - \text{Tax Rate} \right) \times \frac{\text{Debt to Value } (D/V)}{\text{Value } (D/V)} \right] + \left[\text{Cost of Equity } (k_e) \times \frac{\text{Equity to Value } (E/V)}{\text{Value } (E/V)} \right] \quad \text{Cost of Equity } (k_e) = k_{\text{Unlevered Equity}} + \left[(k_{\text{Unlevered Equity}} - k_d) \left(\frac{D}{E} \right) \right]$$

where $k_{\text{Unlevered equity}}$ is the cost of equity for a firm that uses no debt and D/E is the debt-to-equity ratio.

20 MINUTE BREAK

Bankruptcy and Financial Distress Costs

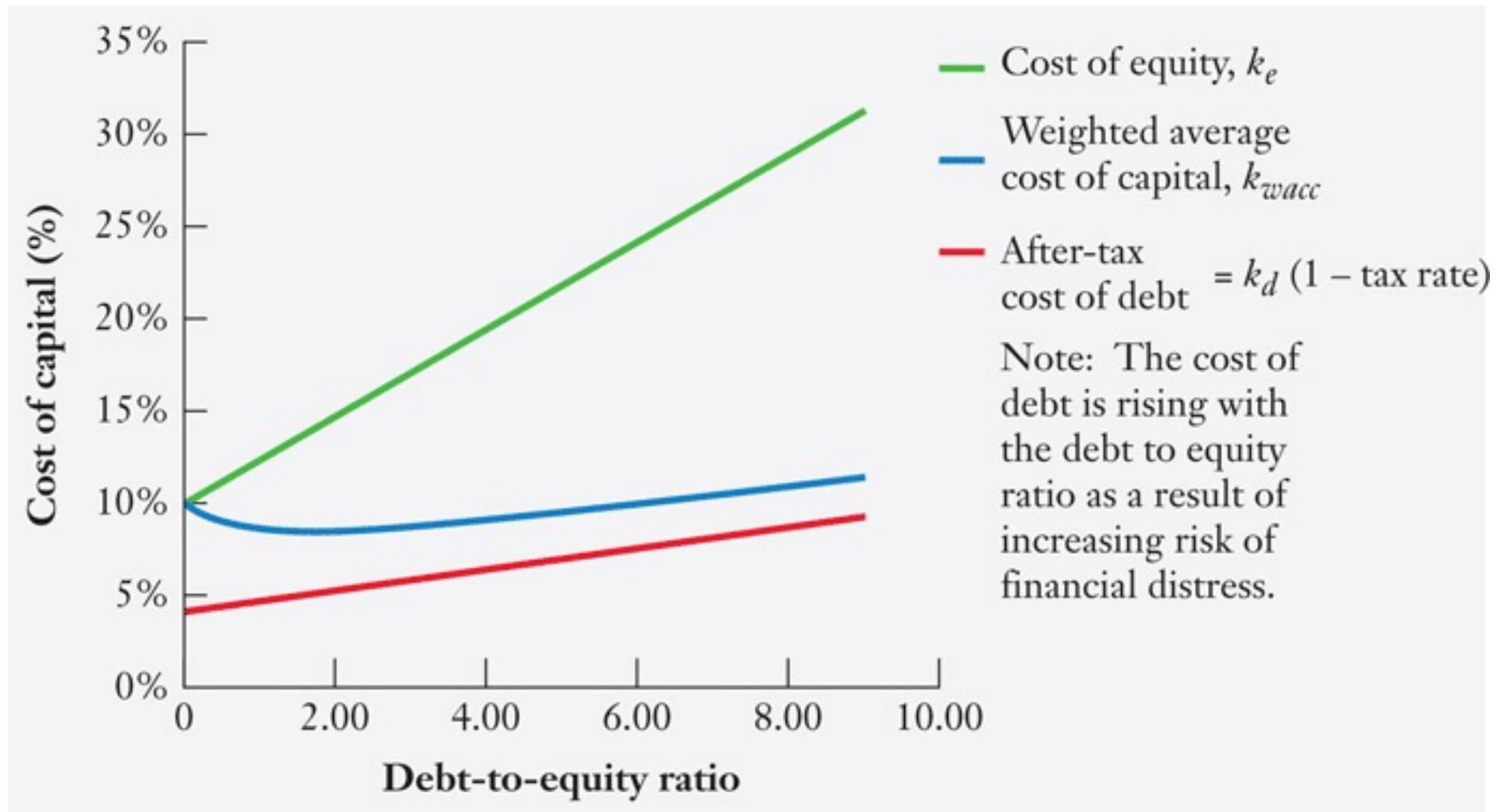
Even though debt provides valuable tax savings, a firm cannot keep on increasing debt. The downside of using debt financing quickly becomes apparent when the firm's debt obligations exceed its ability to generate cash. The firm will need to work out a deal with its bankers and bondholders to restructure its debt, or the firm might be forced into bankruptcy and incur **financial distress costs**.

The Tradeoff Theory and the Optimal Capital Structure

Two factors can have a material impact on the role of capital structure in determining firm value:

- Interest expense is tax deductible. (benefit of debt)
- Debt makes it more likely that firms will experience financial distress costs. (drawback of debt)
- Firms must trade off the benefit and drawback of debt while making financing decisions.

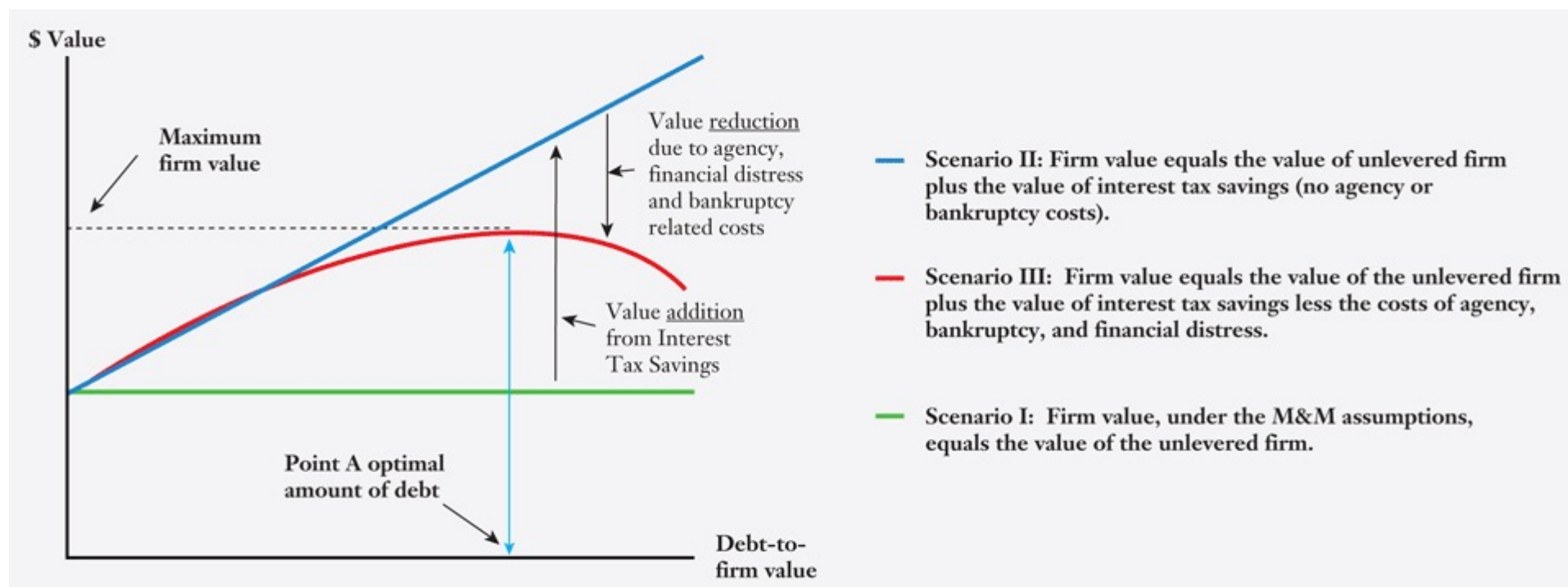
Figure 15.5 The Cost of Capital and the Tradeoff Theory



Managerial Implications

1. Higher levels of debt in its capital structure can benefit the firm due to tax savings as interest on the firm's debt is tax-deductible, and potential to reduce agency costs.
2. Higher levels of debt increase the probability of financial distress costs and offset tax and agency cost benefits of debt.

Capital Structure and Firm Value with Taxes, Agency Costs, and Financial Distress Costs



Pecking order

- The pecking order hypothesis is based on the notion that firms have a preferred order of raising capital.
- Accordingly, it states that:
 1. Firms prefer internal financing (retained earnings) first.
 2. If external financing is required, firms will choose to issue the safest or cheapest security first, starting with debt financing and using equity as a last resort.

Pecking order

- **Why do firms prefer internal financing first?**
 - It typically requires less effort,
 - Avoids transactions cost,
 - Avoids loss of secrecy.

Pecking order

- Retained earnings being limited, firms have to use other external sources such as debt and equity.
- When they do tap the capital markets, firms tend to issue debt first, ➔ less costly, and leads to less loss of control, and equity last, ➔ too much debt can put the firm into a risk of bankruptcy.

Pecking order

In summary, there are three implications of the pecking order hypothesis:

1. Profitable companies will borrow less
 - ➔ they have more internal funds available
 - ➔ and may have lower **debt to equity ratios**
 - ➔ they have more debt capacity.
2. Less profitable companies will need more external funding and will first seek debt financing in an asymmetric world, avoiding the equity market.
3. As a last resort, firms will sell equity to fund investment opportunities.

Optimal Capital Structure

(Other factors to consider)

- Business Risk
- Borrowing capacity
- Managerial preferences
- Market timing
- Financial slack
- Signalling
- Control
- Tax benefits and Tax exhaustion
- Industry group gearing

Capital Structure