CHAPTER 9

CAPITAL STRUCTURE

Capital structure policy involves a tradeoff between risk and return: Using more debt raises the riskiness of the firm’s earnings stream; however, a higher debt ratio generally leads to a higher expected rate of return. Higher risk associated with greater debt tends to lower the stock’s price.

- The optimal capital structure is the one that strikes a balance between risk and return so as to maximize stock price.
- The target capital structure is the mix of debt, preferred stock, and common equity with which the firm plans to finance its investments.
- A firm establishes a target capital structure it believes is optimal, and which it uses as guidance for raising future funds.
- Four primary factors influence capital structure decisions:
  - Business risk is the amount of risk in a firm’s operations if no debt is used. The greater the firm’s business risk, the lower its optimal debt ratio.
  - A major reason for using debt is the fact that interest is tax deductible, which lowers the effective cost of debt. Therefore, the higher a firm’s tax rate, the more advantageous debt is to the firm.
  - Financial flexibility is the ability to raise capital on reasonable terms under adverse conditions. The potential future availability of funds, and the consequences of a funds shortage, have a major influence on the target capital structure.
  - Managerial attitude (conservatism or aggressiveness) with regard to borrowing influences the target capital structures firms actually establish. This factor does not affect the optimal, or value-maximizing, capital structure.
- Operating conditions can cause the actual capital structure to vary from the target at any given time.

Two dimensions of risk are business risk and financial risk, which both affect the firm’s capital structure.

Business risk is defined as the uncertainty inherent in projections of future returns, either on assets (ROA) or on equity (ROE), if the firm uses no debt, or debt-like financing (preferred stock). It is the risk associated with the firm’s operations, ignoring any financing effects. It is the single most important determinant of a firm’s capital structure.

Financial risk is defined as the additional risk, over and above basic business risk, placed on common stockholders, that results from using financing alternatives with fixed periodic payments, such as debt and preferred stock. It is the risk associated with using debt or preferred stock.

Business risk varies from one industry to another and also among firms in a given industry, and it can also change over time.
Business risk depends on a number of factors, the more important include:

- Sales variability (volume and price). The more stable the unit sales and prices of a firm’s products, other things held constant, the lower its business risk.
- Input price variability. A firm whose input prices are highly uncertain is exposed to a high degree of business risk.
- Ability to adjust output prices for changes in input prices. The greater the ability to adjust selling prices, the lower the degree of business risk.
- Operating leverage (the extent to which costs are fixed). If a high percentage of a firm’s operating costs are fixed and hence do not decline when demand declines, this increases the company’s business risk.
- Each of these factors is determined partly by the firm’s industry characteristics, but each also is controllable to some extent by management.

Financial risk results from using financial leverage, which exists when a firm uses fixed-income securities, such as debt and preferred stock, to raise capital.

- Thus, the use of debt intensifies the firm’s business risk borne by the common stockholders.
- The value of a firm that has no debt first rises as it substitutes debt for equity, then hits a peak, and finally declines as the use of debt becomes excessive.

Operating leverage and financial leverage are interrelated: A reduction in operating leverage would normally lead to an increase in the optimal amount of financial leverage, while an increase in operating leverage would lead to a decrease in the optimal amount of debt. Financial theory has not been developed to the point where we can actually specify simultaneously the optimal levels of operating and financial leverage. However, the interaction of operating and financial leverage can be shown through an analysis of the degree of leverage concept.

The degree of operating leverage (DOL) is defined as the percentage change in operating income (EBIT) associated with a given percentage change in sales. The formula used to analyze the DOL for a single product is shown below:

\[
DOL_Q = \frac{Q(P - V)}{Q(P - V) - F}
\]

Here, \(Q\) = initial units of output, \(P\) = sales price per unit, \(V\) = variable cost per unit, and \(F\) = fixed operating costs.

The formula to analyze the DOL based on dollar sales is shown below:

\[
DOL_S = \frac{S - VC}{S - VC - F} = \frac{\text{Gross profit}}{\text{EBIT}}.
\]

Here, \(S\) = initial sales in dollars, \(VC\) = total variable costs, and \(F\) = fixed operating costs.

In general, if a firm is operating at close to its breakeven level, the DOL will be high, but DOL declines the higher the base level of sales is above breakeven sales.
The greater the degree of operating leverage, the more sensitive EBIT will be to changes in sales.

Financial leverage affects earnings after interest and taxes, or the earnings available to common stockholders. Financial leverage takes over where operating leverage leaves off, further magnifying the effects on earnings per share of changes in the level of sales. The degree of financial leverage (DFL) is defined as the percentage change in earnings per share (EPS) associated with a particular percentage change in EBIT.

The formula for DFL is:

\[
DFL = \frac{\Delta EPS}{\Delta EBIT} = \frac{EBIT}{EBIT - I}.
\]

To find the effects on income available to common stockholders, multiply the percentage change in EBIT by DFL. The greater the degree of financial leverage, the greater the impact of a given change in EBIT on EPS.

Degree of total leverage (DTL) combines DOL and DFL to show how a given change in sales will affect EPS. Formulas for DTL include:

\[
DTL = DOL \times DFL = \frac{Q(P - V)}{Q(P - V) - F - I} = \frac{S - VC}{S - VC - F - I} = \frac{\text{Gross profit}}{EBIT - I}.
\]

The degree of leverage concept is useful primarily for the insights it provides regarding the joint effects of operating and financial leverage on earnings per share. The concept can be used to show management the impact of financing the firm with debt versus common stock.

Capital structure theory has developed along two main lines: (1) tax benefit/bankruptcy cost trade-off theory and (2) signaling theory.

Trade-off theory as set forth by Modigliani and Miller states that, due to the tax deductibility of interest on debt, a firm’s value rises continuously as it uses more debt, and hence its value will be maximized by financing almost entirely with debt. This theory holds only under a very restrictive set of assumptions.

- These assumptions, however, do not hold true in the real world.
  - For example, debt costs rise as the debt ratio rises, EBIT declines at extreme leverage, expected tax rates fall and reduce the value of the tax shelter, and the probability of bankruptcy increases as the debt level rises.
  - Therefore, at some point, bankruptcy-related costs exceed the benefit of additional debt. This point denotes the target capital structure.
• A disturbing aspect of this capital structure theory is the fact that many large, successful firms use far less debt than this theory suggests. This point led to the development of the signaling theory.

Signaling theory recognizes the fact that investors and managers do not have the same information regarding a firm’s prospects as was assumed by the trade-off theory. Symmetric information exists when investors and managers have identical information about the firm’s prospects.

• In fact, managers generally have better information about their firms than outside investors. This is called asymmetric information, and it has an important effect on the optimal capital structure.

• As a result, one would expect a firm with very favorable prospects to avoid selling stock and to raise any required new capital by other means, including using debt beyond its normal target capital structure.

• The announcement of a stock offering by a mature firm that seems to have multiple financing alternatives is taken as a signal that the firm’s prospects as seen by its management are not bright. This, in turn, suggests that when a mature firm announces a new stock offering, the price of its stock should decline.

• Firms, in normal times, maintain a reserve borrowing capacity, and use less debt than specified by the MM optimal capital structure to ensure that they can obtain debt capital later if needed.

In real life, capital structure decisions must be made more on the basis of judgment than numerical analysis. Still, an understanding of the theoretical issues is essential to making sound judgments on capital structure issues.