

CAPITAL STRUCTURE CONCEPTS

Capital structure is defined as the relative amount of permanent short-term debt, long-term debt, preferred stock, and common stock used to finance a firm. This minimum-cost capital structure is the optimal capital structure because the value of the firm is maximized at this point.

BUSINESS RISK

The business risk of a firm consists of the variability of a firm's operating income. It is influenced by the variability of sales volumes, prices, and costs over the business cycle. Business risk is also influenced by a firm's market power and its use of operating leverage.

Business risk is the variability or uncertainty of a firm's operating income (EBIT). Many factors influence a firm's business risk (holding constant the effects of all other important factors), including:

1. *The variability of sales volumes*

Firms and industries whose sales fluctuate greatly over the business cycle have more business risk than firms and industries whose sales remain relatively stable over the course of the business cycle

2. *The variability of selling prices.*

In some industries, prices are quite stable from year to year, or the firm may be able to increase prices regularly over time. This is true for many consumer products. In contrast, in other industries, price stability is much less certain. Generally, the more price competitive an industry is, the greater the business risk is for firms in that industry.

3. *The variability of costs.*

The more variable is the cost of the inputs used to produce a firm's output, the greater is the firm's business risk

4. *The existence of market power.*

Market power refers to the ability of a firm to individually dictate the quantity and/or price charged for a product or service. A firm's market power usually stems from controlling a large proportion of the market. e.g. Microsoft

5. *The extent of product diversification.*

All other things held constant, the more diversified a firm's product line is, the less variable its operating income is likely to be.

6. *The level and rate of growth.*

Rapidly growing firms, such as Amazon.com, often experience great variability in their operating earnings. Rapid growth causes many stresses on the operations of a firm. New facilities must be constructed, frequently with uncertain operating cost characteristics; internal control systems must be expanded and updated; the pool of managerial talent must be increased rapidly; and new products require expensive research and development outlays. These factors often combine to result in high variability of operating income.

7. *The degree of operating leverage (DOL).*

Operating leverage involves the use of assets having fixed costs. The more a firm makes use of operating leverage, the more sensitive EBIT will be to changes in sales. The degree of operating leverage is the multiplier effect, resulting from a firm's use of fixed operating costs. The DOL is defined as the percentage change in EBIT resulting from a given percentage change in sales (output). Thus, if a firm is subject to considerable sales volatility over the business cycle, the variability of EBIT (business risk) can be reduced by limiting the use of assets having fixed costs in the production process. Similarly, if a firm's sales tend to be stable over the business cycle, using a high percentage of fixed-cost assets in the production process will have little impact on the variability of EBIT.

In a sense, the business risk of a firm is determined by the accumulated investments the firm makes over time. These investments determine the industries in which a firm will compete, the amount of the firm's

market power, and the extent of fixed costs in the production process. Firms in consumer products industries tend to have low levels of business risk. In contrast, firms in durable goods manufacturing, industrial goods manufacturing tend to have higher levels of business risk. Business risk possesses both systematic and unsystematic elements. Some of the variability in operating income that results from business risk cannot be diversified away by investors who hold a broad-based portfolio of securities. For example, variability attributable to business cycle behavior is clearly systematic. In contrast, the variability attributable to specific managerial decisions, such as product line diversity, is primarily unsystematic. When analysts attempt to assess the specific total risk of a firm, they must consider both systematic and unsystematic components of that risk. A firm may encounter operating (and financial) difficulty because of both economy wide factors that impact its operations and because of unique decisions made by its management.

FINANCIAL RISK

The financial risk of a firm is the additional variability of earnings per share and the increased probability of insolvency that arises when a firm uses fixed-cost sources of funds, such as debt and preferred stock, in its capital structure. Financial risk is the additional variability of earnings per share and the increased probability of insolvency that arises when a firm uses fixed-cost sources of funds, such as debt and preferred stock, in its capital structure. (Insolvency results when a firm is unable to meet contractual financial obligations—such as interest and principal payments on debt, payments on accounts payable, and income taxes—as they come due.) Fixed capital costs represent contractual obligations a company must meet regardless of the EBIT level. The use of increasing amounts of debt and preferred stock raises the firm's fixed financial costs; this, in turn, increases the level of EBIT that the firm must earn in order to meet its financial obligations and remain in business. A firm accepts the risk of fixed cost financing to increase the possible returns to stockholders.

FINANCIAL LEVERAGE

The use of financial leverage results in an increase in perceived risk to the suppliers of a firm's capital. To offset this increased risk, higher returns are required. The use of fixed-cost financing sources is referred to as the use of financial leverage. Financial leverage causes a firm's earnings per share (EPS) to change at a rate greater than the change in operating income (EBIT). For example, if a firm is financed 100 percent by equity and EBIT increases (or decreases) by 10 percent, EPS will also increase (or decrease) by 10 percent. When financial leverage, such as long-term debt, is used, a 10 percent change in EBIT will result in more than a 10 percent change in EPS. Financial risk, like business risk, contributes to both the systematic and unsystematic risk of a firm's securities. To the extent that the use of financial leverage magnifies variations in operating income resulting from unsystematic risk factors, financial leverage contributes to the unsystematic risk of a firm's securities.

Given a corporate income tax, financial distress costs, and agency costs, an optimal capital structure consisting of both debt and equity is shown to exist. Determination of the optimal capital structure involves balancing the present value of the tax shield accruing from debt financing against the present value of the expected financial distress costs and the agency costs associated with debt financing.

SIGNALING EFFECT

Given that managers have access to better information about a firm's future prospects than do outside investors (asymmetric information), capital structure changes often signal important information to investors about a firm's future prospects. When information asymmetry exists,

security prices (e.g., share prices) may not be correctly valued. Given that managers know more about the firm than do outside investors, changes in a company's investment, financing, or dividend decisions can represent a signal to investors concerning management's assessment of the expected future returns and hence the market value of the company. Generally speaking, for the signal to be credible, it must be costly. In other words, the consequence of sending a false signal should be severe. Thus, the issuance of new securities can be viewed as a signal to the financial marketplace regarding the future prospects of the firm or the future actions planned by the firm's managers. It is argued that signals provided by capital structure changes are

credible because of the potential bankruptcy cost penalty incurred if the implied future cash flows do not occur. In general, studies of capital structure changes have found that new common equity offerings tend to yield negative stock price responses and that new debt offerings tend to yield no significant stock price responses. Repurchases of common stock have led to large positive announcement returns on the company's common stock. Actions that increase leverage have generally been associated with positive stock returns, and actions that decrease leverage are associated with negative stock returns. The results of many studies of capital structure changes are consistent both with direct effects of the change, such as the benefits of greater tax shields, and with indirect information effects. Therefore, when a firm makes capital structure changes, it must be mindful of the potential signal that the proposed transaction will transmit to the marketplace regarding the firm's current and future earnings prospects and the intentions of its managers.

PECKING ORDER

According to the pecking order theory, a firm has no particular optimal capital structure. Companies prefer internal financing to external financing, and, given that external financing is necessary, they prefer to issue debt securities first and then equity securities only as a last resort.

According to the pecking order theory, a firm may not have a particular target or optimal capital structure. Instead, a company's capital structure changes when an imbalance between internal cash flows, net of cash dividend payments, and acceptable (i.e., $NPV > 0$) investment opportunities occurs. Firms whose investment opportunities exceed internally generated funds tend to issue more debt securities and hence have capacity. Financial slack allows a firm to take advantage of attractive future investment opportunities.

The pecking order theory indicates that firms prefer internal financing (retained earnings) to external financing (new security issues). This preference for internal financing is based on two considerations. First, because of the flotation costs of new security issues, internal financing is less costly than external financing. Second, because of information asymmetry, managers are likely to issue external securities when they are overvalued, thereby transferring the gains from the new shareholders to existing shareholders, whom managers are assumed to favor. Also, according to the pecking order theory, dividends are "sticky"; that is, many firms are reluctant to make major changes in dividend payments and only gradually adjust dividend payout ratios to reflect their investment opportunities and thereby avoid the issuance of new securities.

If external financing is required, the "safest" securities—debt—are issued first. The flotation costs of debt securities are generally lower than the costs of equity securities. In view of the asymmetric information, the stock market tends to react negatively to announcements of new common stock offerings, whereas debt security announcements tend to have little impact on stock prices. As additional external financing is needed, the firm will work down the pecking higher debt ratios. Conversely, highly profitable firms with limited needs for investment funds tend to have lower debt ratios. In this situation, the firm builds up financial slack in the form of highly liquid assets (i.e., cash and marketable securities) and unused debt capacity. Financial slack allows a firm to take advantage of attractive future investment opportunities.

Home -work Assignment:

Two capital goods manufacturing companies, ABC and PQR, are virtually identical in all aspects of their operations —product lines, amount of sales, total size, and so on. The two companies differ only in their capital structures, as shown here:

	ABC (millions)	PQR (millions)
Debt (8%)	Rs. 400	Rs. 100
Common equity	Rs. 600	Rs. 900
Number of common shares outstanding	30	45

Each company has Rs. 100 crores in total assets.

Capital goods manufacturers typically are subject to cyclical trends in the economy. Suppose that the EBIT level for both companies is Rs. 100 million during an expansion and Rs. 60 million during a recession. (Assume a 40 percent tax rate for both companies.)

- a. Calculate the earnings per share for both companies during expansion and recession.

(Hint: $EAT = (EBIT - Interest)(1 - tax)$

$EPS = EAT / \text{no. of respective shares}$

- b. Which stock is riskier? Why?

Calculate DOFL . More is the % change in EPS , riskier is the company

- c. At what EBIT level are the earnings per share of the two companies identical?

Use $EBIT = EPS$ analysis to find indifferent EBIT level at which both companies have same EPS

- d. Calculate the common stock price for both companies during an expansion if the stock market assigns a P/E ratio of 10 and 9 to ABC and PQR respectively.

Use $\text{Price to equity ratio} = MPS / EPS$.

If you have any doubts or need assistance, do contact me at
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