

Capital structure and solvency

10

Lecture

Lecture 10: Agenda

Capital structure and solvency analysis

Basics of Solvency

- Capital structure
- Motivation for debt
- Financial leverage
- Adjustment for capital structure

Capital composition And Solvency

- Long-term projections
- Common-size statement
- Capital structure measures
- Interpretation of measures
- Assesd-based Solvency measures
- Introduction to earning coverage

Basic of Solvency

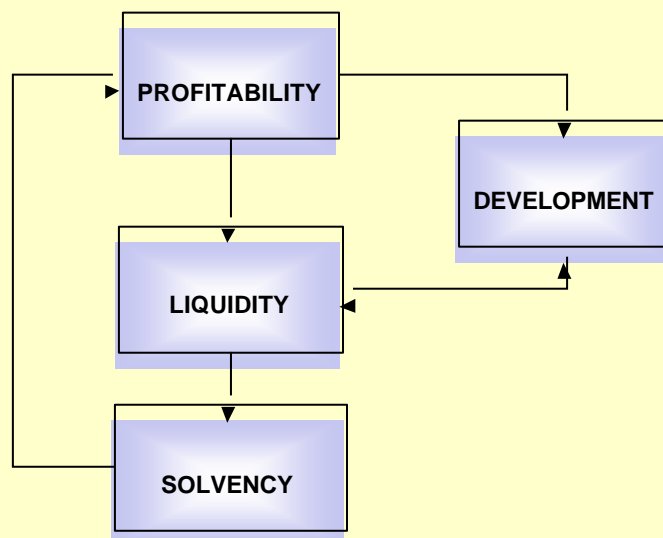
Elements of long-term solvency

Key elements in evaluating long-term solvency are:

- Analysis of the capital structure of the firm.
- Assessing different risks for different types of assets.
- Measuring earnings, earning power, and earnings trend.
- Estimating earnings coverage of fixed charges.
- Assessing the asset coverage of loans.
- Measuring protection afforded by loan covenants and collateral agreements.

Basic of Solvency

Facts



Basic of Solvency

Facts

Solvency – refers to a company's long-run financial viability and its ability to cover long-term obligations

Capital structure -- financing sources and their attributes

Earning power — recurring ability to generate cash from operations

Loan *covenants* – protection against insolvency and financial distress; they define *default* (and the legal remedies available when it occurs) to allow the opportunity to collect on a loan before severe distress

Basic of Solvency

Capital Structure

Equity financing

- Risk capital of a company
- Uncertain and unspecified return
- Lack of any repayment pattern
- Contributes to a company's stability and solvency

Debt financing

- Must be repaid with interest
- Specified repayment pattern

When the proportion of debt financing is higher, the higher are the resulting fixed charges and repayment commitments

Basic of Solvency

Motivation for Debt

From a shareholder's perspective, debt financing is *less expensive* than equity financing because:

1. Financial Leverage--Interest on most debt is fixed, and provided interest is less than the return earned from debt financing, the excess return goes to equity investors
2. Tax Deductibility of Interest--Interest is a tax-deductible expense whereas dividends are not

Basic of Solvency

Financial Leverage

Leverage -- use of debt to increase net income

Leverage:

- Magnifies both managerial success (profits) and failure (losses)
- Increases risks
- Limits flexibility in pursuing opportunities
- Decreases creditors' protection against loss

Companies with leverage are said to be trading on the equity — when a company is using equity financing to obtain debt financing in a desire to reap returns above the cost of debt.

Basic of Solvency

Financial Leverage - Illustration

Trading on the Equity—Returns for Different Earnings Levels (\$ thousands)

	Financing Sources			Income before Interest and Taxes	10 Percent Debt Interest	Taxes*	Return on			
	Assets	Debt	Equity				Net Income	Net Income + [Interest (1 - Tax Rate)]	Assets†	Equity‡
Year 1:										
Risky, Inc.	\$1,000,000	\$400,000	\$600,000	\$200,000	\$40,000	\$64,000	\$96,000	\$120,000	12.0%	16.0%
Safety, Inc.	1,000,000		1,000,000	200,000		80,000	120,000	120,000	12.0	12.0
Year 2:										
Risky, Inc.	1,000,000	400,000	600,000	100,000	40,000	24,000	36,000	60,000	6.0	6.0
Safety, Inc.	1,000,000		1,000,000	100,000		40,000	60,000	60,000	6.0	6.0
Year 3:										
Risky, Inc.	1,000,000	400,000	600,000	50,000	40,000	4,000	6,000	30,000	3.0	1.0
Safety, Inc.	1,000,000		1,000,000	50,000		20,000	30,000	30,000	3.0	3.0

* Tax rate is 40 percent.

† Return on assets = Net income + Interest (1 - 0.40)/Assets.

‡ Return on equity = Net income/Shareholders' equity.

Basic of Solvency

Financial Leverage- Illustrating Tax Deductibility of Interest

Consider two companies' results for Year 2:

Year 2 Financials	Risky, Inc.	Safety, Inc.
Income before interest and taxes	\$ 100,000	\$ 100,000
Interest (10% of \$400,000)	40,000	—
Income before taxes	\$ 60,000	\$ 100,000
Taxes (40%)	24,000	40,000
Net income	\$ 36,000	\$ 60,000
Add back interest paid to bondholder	40,000	—
Total return to security holders (debt and equity)	\$ 76,000	60,000

Basic of Solvency

Financial Leverage

Financial Leverage Ratio

$$\frac{\text{Total assets}}{\text{Common equity capital}}$$

Greater the proportion of financing from equity vs. debt
 → lower the financial leverage ratio

Note: Financial leverage ratio is a component of the disaggregated return on equity:

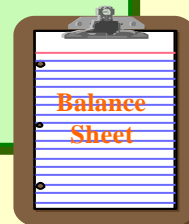
$$ROCE = \text{Adjusted profit margin} \times \text{Asset turnover} \times \text{Leverage}$$



Basic of Solvency

Adjustments for Capital Structure - Liabilities

<u>Potential accounts needing adjustments</u>	<u>Chapter reference</u>
Deferred Income Taxes — Is it a liability, equity, or some of both?	3 & 6
Operating Leases -- capitalize non-cancelable operating leases?	3
Off-Balance-Sheet Financing	3
Convertible Debt	3
Preferred Stock	3



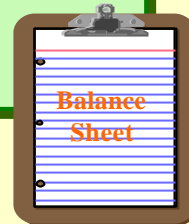
Basic of Solvency

Adjustments for Capital Structure - Assets

Potential accounts needing adjustments _____ Chapter reference

Inventories—LIFO Reserve? 4

Intangible Assets 4



Capital Structure and Solvency

Long-Term Projections

Projection of Future Cash Inflows and Outflows

Reflects on risk for a levered company's capital structure

Prepare a Statement of Forecasts of Cash Inflows and Outflows

Capital Structure and Solvency

Common-Size Statements

Capital structure composition analysis

- Performed by constructing a common -size statement of liabilities and equity
- Reveals relative magnitude of financing sources
- Allows direct comparisons across different companies
- Two Variations—(1) Use ratios, and (2) Exclude current liabilities

Capital Structure and Solvency

Capital Structure Measures

Total Debt to Total Capital (also called **total debt ratio**)

$$\frac{\text{Total debt}}{\text{Total capital}}$$



Capital Structure and Solvency

Capital Structure Measures

Total Debt to Equity Capital

$$\frac{\text{Totaldebt}}{\text{Shareholders' equity}}$$

Reciprocal measure of this ratio—Equity Capital to Total Debt

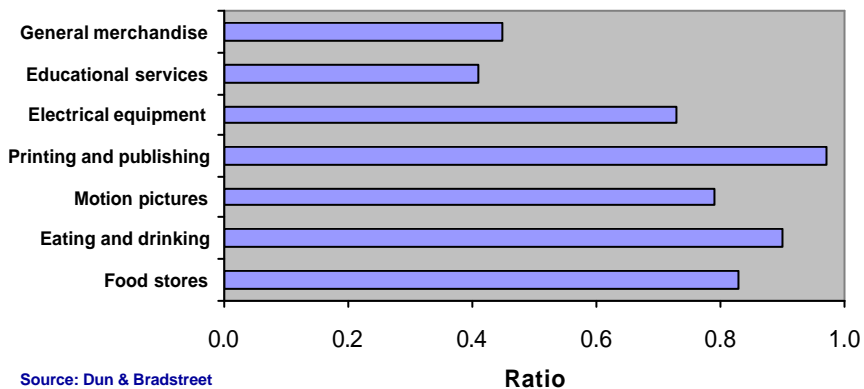
$$\frac{\text{Shareholders' equity}}{\text{Totaldebt}}$$



Capital Structure and Solvency

Capital Structure Measures

Total Debt to Equity



Capital Structure and Solvency

Capital Structure Measures

Long -Term Debt to Equity Capital (also called Debt to Equity)

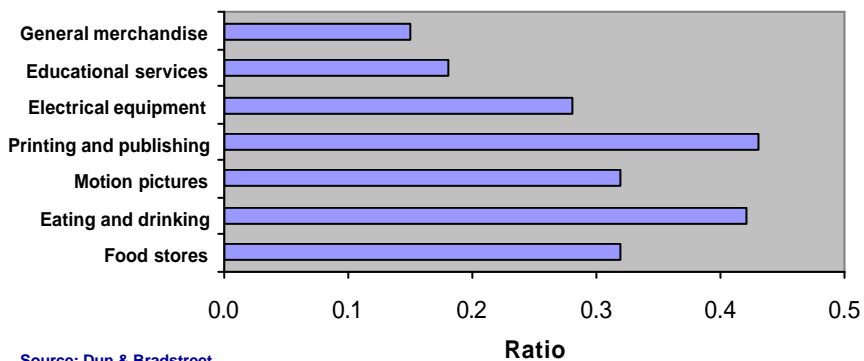
$$\frac{\text{Long -term debt}}{\text{Shareholder s' equity}}$$



Capital Structure and Solvency

Capital Structure Measures

Long-Term Debt to Equity Ratio



Source: Dun & Bradstreet

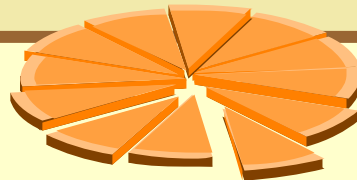
Capital Structure and Solvency

Capital Structure Measures

Short-Term Debt to Total Debt

$$\frac{\text{Short term debt}}{\text{Total debt}}$$

important indicator of enterprise reliance on short-term (primarily bank) financing



Capital Structure and Solvency

Interpretation of Capital Structure Measures

Common-size and ratio analyses of capital structure mainly reflect capital structure *risk*

Capital structure measures serve as *screening devices*

Extended analysis focuses financial condition, results of operations, and future prospects

Prior to long-term solvency analysis, we perform liquidity analysis to be satisfied about near-term survival

Additional analyses include examination of

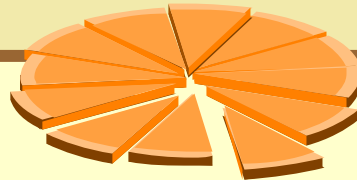
- Debt maturities (amount and timing)
- Interest costs
- Risk-bearing factors (earnings persistence, industry performance, and *asset composition*)

Capital Structure and Solvency

Asset-Based Measures of Solvency

Asset Composition Analysis

- Tool in assessing the risk exposure of a capital structure
- Typically evaluated using common-size statements



Capital Structure and Solvency

Asset-Based Measures of Solvency

Asset Coverage

- Assets provide protection to creditors—earning power and liquidation value
- Base for additional financing
- Useful ratios include:
 - Fixed assets to equity capital
 - Net tangible assets to long-term debt
 - Total liabilities to net tangible assets

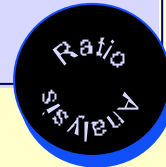
Earning Coverage

Earnings to Fixed Charges

Earning coverage measures focus on the relation between debt-related fixed charges and a company's earning available to meet these charges

Earnings to fixed charges *ratio*

$$\frac{\text{Earnings available for fixed charges}}{\text{Fixed charges}}$$

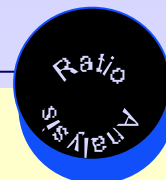


Earning Coverage

Times Interest Earned

Times interest earned ratio

$$\frac{\text{Income} + \text{Tax expense} + \text{Interest expense}}{\text{Interest expense}}$$



Earning Coverage

Interpreting Earnings Coverage

- Earnings-coverage measures provide insight into the ability of a company to meet its fixed charges
- High correlation between earnings-coverage measures and default rate on debt
- Earnings variability and persistence is important
- Use earnings *before* discontinued operations, extraordinary items, and cumulative effects of accounting changes for single year analysis — but, include them in computing the *average* coverage ratio over several years

Earning Coverage

Capital Structure Risk and Return

- A company can increase risks (and potential returns) of equity holders by increasing leverage
- Substitution of debt for equity yields a riskier capital structure
- Relation between risk and return in a capital structure exists
- Only personal analysis can reflect one's unique risk and return expectations



Predicting Financial Distress

Altman Z-Score

$$Z = 0.717X_1 + 0.847X_2 + 3.107X_3 + 0.420X_4 + 0.998X_5$$

X1 = Working capital/Total assets

X2 = Retained earnings/Total assets

X3 = Earnings before interest and taxes/Total assets

X4 = Shareholders' equity/Total liabilities

X5 = Sales/Total assets

Z < 1.20 implies a high probability of bankruptcy

Z > 2.90 implies a low probability of bankruptcy

1.20 < Z < 2.90 implies an ambiguous area