The Debt-Equity Trade Off: The Capital Structure Decision

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First Principles

- Invest in projects that yield a return greater than the minimum acceptable hurdle rate.
  - The hurdle rate should be higher for riskier projects and reflect the financing mix used - owners' funds (equity) or borrowed money (debt)
  - Returns on projects should be measured based on cash flows generated and the timing of these cash flows; they should also consider both positive and negative side effects of these projects.
- **Choose a financing mix that minimizes the hurdle rate and matches the assets being financed.**
- If there are not enough investments that earn the hurdle rate, return the cash to stockholders.
  - The form of returns - dividends and stock buybacks - will depend upon the stockholders' characteristics.

The Agenda

- What is debt?
- What determines the optimal mix of debt and equity for a company?
- How does altering the mix of debt and equity affect investment analysis and value at a company?
- What is the right kind of debt for a company?

What is debt...

- General Rule: Debt generally has the following characteristics:
  - Commitment to make fixed payments in the future
  - The fixed payments are tax deductible
  - Failure to make the payments can lead to either default or loss of control of the firm to the party to whom payments are due.

What would you include in debt?

- Any interest-bearing liability, whether short term or long term.
- Any lease obligation, whether operating or capital.

Converting Operating Leases to Debt

- The “debt value” of operating leases is the present value of the lease payments, at a rate that reflects their risk.
- In general, this rate will be close to or equal to the rate at which the company can borrow.

Operating Leases at The Gap

- Operating lease expenses in 1995 = $304.6 million
- Cost of Debt in 1995 = 7.30%
- Duration of Lease Obligations = 12 yrs
- PV of Lease Expenses = $304.6 million for 12 years at 7.30% = $2,381 million

Measuring Financial Leverage

- Two variants of debt ratio
  - Debt to Capital Ratio = Debt / (Debt + Equity)
  - Debt to Equity Ratio = Debt / Equity
- Ratios can be based only on long term debt or total debt.
- Ratios can be based upon book value or market value.

Costs and Benefits of Debt

- Benefits of Debt
  - Tax Benefits
  - Adds discipline to management
- Costs of Debt
  - Bankruptcy Costs
  - Agency Costs
  - Loss of Future Flexibility

Tax Benefits of Debt

- (a) Tax Benefits: Interest on debt is tax deductible whereas cashflows on equity (like dividends) are not.
  - Tax benefit each year = t r B
  - After tax interest rate of debt = (1-t) r
- Proposition 1: Other things being equal, the higher the marginal tax rate of a corporation, the more debt it will have in its capital structure.

Issue 1: The Effects of Taxes

1. You are comparing the debt ratios of real estate corporations, which pay the corporate tax rate, and real estate investment trusts, which are not taxed, but are required to pay 95% of their earnings as dividends to their stockholders. Which of these two groups would you expect to have the higher debt ratios?

- ❒ The real estate corporations
- ❒ The real estate investment trusts
- ❒ Cannot tell, without more information

Debt adds discipline to management

- Equity is a cushion; Debt is a sword;
- The management of firms which have high cashflows left over each year are more likely to be complacent and inefficient.

Issue 2: Debt and Discipline

2. Assume that you buy into this argument that debt adds discipline to management. Which of the following types of companies will most benefit from debt adding this discipline?
- ❒ Conservatively financed, privately owned businesses
- ❒ Conservatively financed, publicly traded companies, with a wide and diverse stock holding
- ❒ Conservatively financed, publicly traded companies, with an activist and primarily institutional holding.

Bankruptcy Cost

- The expected bankruptcy cost is a function of two variables--
  - the cost of going bankrupt
    - direct costs: Legal and other Deadweight Costs
    - indirect costs: Lost Sales...
      - durable versus non-durable goods (cars)
      - quality/safety is important (airlines)
      - supplementary services (copiers)
  - the probability of bankruptcy

The Bankruptcy Cost Proposition

- Proposition 2: Other things being equal, the greater the implicit bankruptcy cost and/or probability of bankruptcy in the operating cashflows of the firm, the less debt the firm can afford to use.

Issue 3 : Debt & Bankruptcy Cost

3. Rank the following companies on the magnitude of bankruptcy costs from most to least, taking into account both explicit and implicit costs:

- A Grocery Store
- An Airplane Manufacturer
- High Technology company

Agency Cost

- Stockholders incentives are different from bondholder incentives
  - Taking of Risky Projects
  - Paying large dividends
- Proposition 3: Other things being equal, the greater the agency problems associated with lending to a firm, the less debt the firm can afford to use.

Loss of future financing flexibility

- When a firm borrows up to its capacity, it loses the flexibility of financing future projects with debt.
- Proposition 4: Other things remaining equal, the more uncertain a firm is about its future financing requirements and projects, the less debt the firm will use for financing current projects.

Relative Importance Of Financing Planning Principles

Planning Principle by Order of Importance	Percentage of Responses Within Each Rank[a]						
	Unimportant	2	3	4	Important	Not Ranked	Mean[b]
1. Maintaining financial flexibility	0.6	0.0	4.5	33.0	61.4	0.6	4.55
2. Ensuring long-term survivability	4.0	1.7	6.8	10.8	76.7	0.0	4.55
3. Maintaining a predictable source of funds	1.7	2.8	20.5	39.2	35.8	0.0	4.05
4. Maximizing security prices	3.4	4.5	19.3	33.5	37.5	1.7	3.99
5. Maintaining financial independence	3.4	4.5	22.2	27.3	40.9	1.7	3.99
6. Maintaining a high debt rating	2.3	9.1	32.4	43.2	13.1	0.0	3.56
7. Maintaining comparability with other firms in the industry	15.9	36.9	33.0	10.8	2.8	0.6	2.47

Debt: A Balance Sheet Format

Advantages of Borrowing	**Disadvantages of Borrowing**
1. Tax Benefit:	*1. Bankruptcy Cost:*
Higher tax rates --> Higher tax benefit	Higher business risk --> Higher Cost
2. Added Discipline:	*2. Agency Cost:*
Greater the separation between managers and stockholders --> Greater the benefit	Greater the separation between stock-holders & lenders --> Higher Cost
	3. Loss of Future Financing Flexibility:
	Greater the uncertainty about future financing needs --> Higher Cost

A Hypothetical Scenario

- Assume you operate in an environment, where
  - (a) there are no taxes
  - (b) there is no separation between stockholders and managers.
  - (c) there is no default risk
  - (d) there is no separation between stockholders and bondholders
  - (e) firms know their future financing needs

The Miller-Modigliani Theorem

- In an environment, where there are no taxes, default risk or agency costs, capital structure is irrelevant.
- The value of a firm is independent of its debt ratio.

Implications of MM Theorem

(a) Leverage is irrelevant. A firm's value will be determined by its project cash flows.

(b) The cost of capital of the firm will not change with leverage. As a firm increases its leverage, the cost of equity will increase just enough to offset any gains to the leverage

What do firms look at in financing?

- A. Is there a financing hierarchy?
- Argument:
  - There are some who argue that firms follow a financing hierarchy, with retained earnings being the most preferred choice for financing, followed by debt and that new equity is the least preferred choice.

Rationale for Financing Hierarchy

- Managers value flexibility. External financing reduces flexibility more than internal financing.
- Managers value control. Issuing new equity weakens control and new debt creates bond covenants.

Preference rankings long-term finance: Results of a survey

Ranking	Source	Score
1	Retained Earnings	5.61
2	Straight Debt	4.88
3	Convertible Debt	3.02
4	External Common Equity	2.42
5	Straight Preferred Stock	2.22
6	Convertible Preferred	1.72

Issue 5: Financing Choices

5. You are reading the Wall Street Journal and notice a tombstone ad for a company, offering to sell convertible preferred stock. What would you hypothesize about the health of the company issuing these securities?

- ❒ Nothing
- ❒ Healthier than the average firm
- ❒ In much more financial trouble than the average firm