



CAPITAL STRUCTURE: THE CHOICES AND THE TRADE OFF

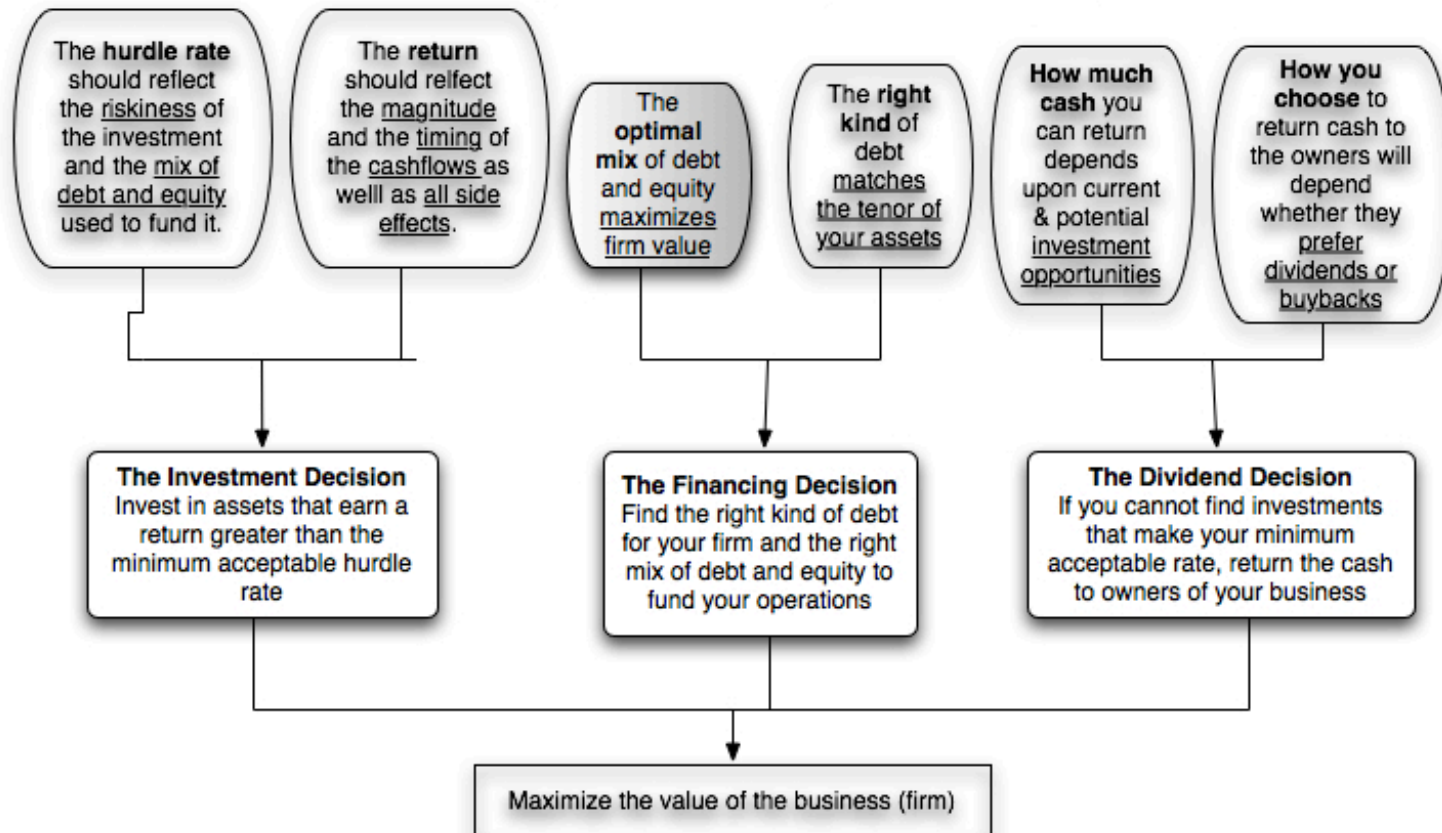
“Neither a borrower nor a lender be”

Someone who obviously hated this part of corporate finance

First principles

3

Chapters 7 & 8: Financing Choices and an Optimal Mix

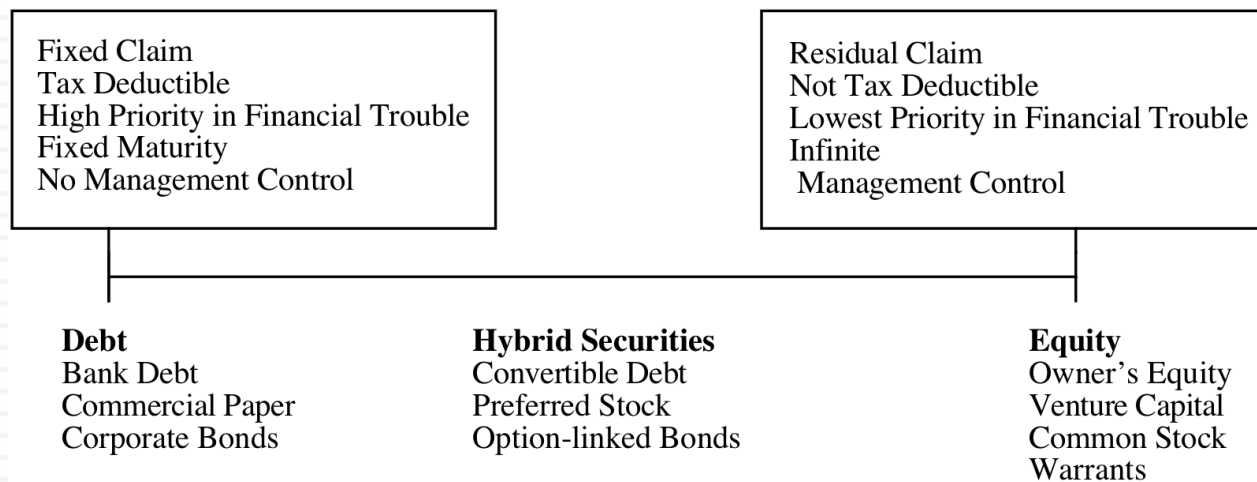


The Choices in Financing

4

- There are only two ways in which a business can make money.
 - The first is debt. The essence of debt is that you promise to make fixed payments in the future (interest payments and repaying principal). If you fail to make those payments, you lose control of your business.
 - The other is equity. With equity, you do get whatever cash flows are left over after you have made debt payments.

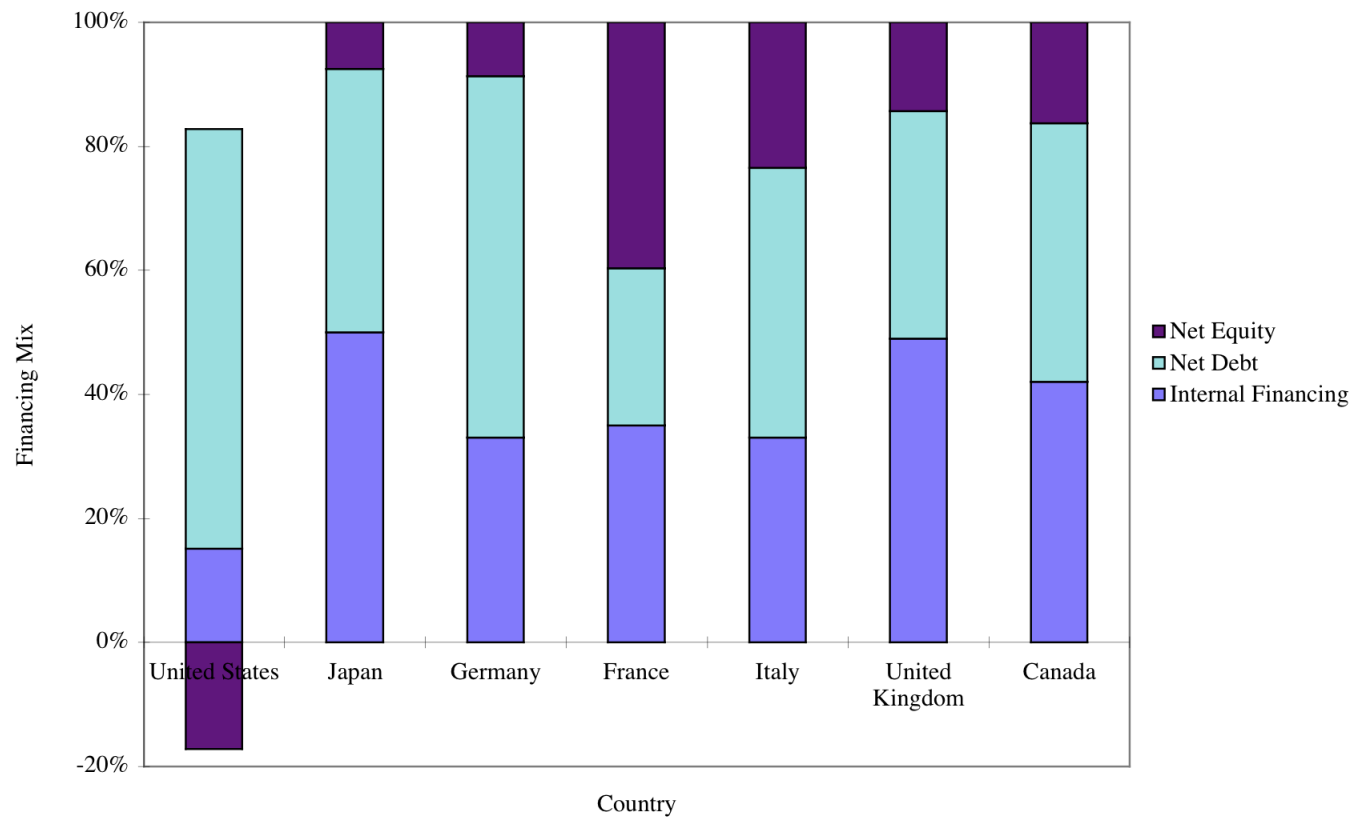
Figure 7.1: Debt versus Equity



Global Patterns in Financing...

5

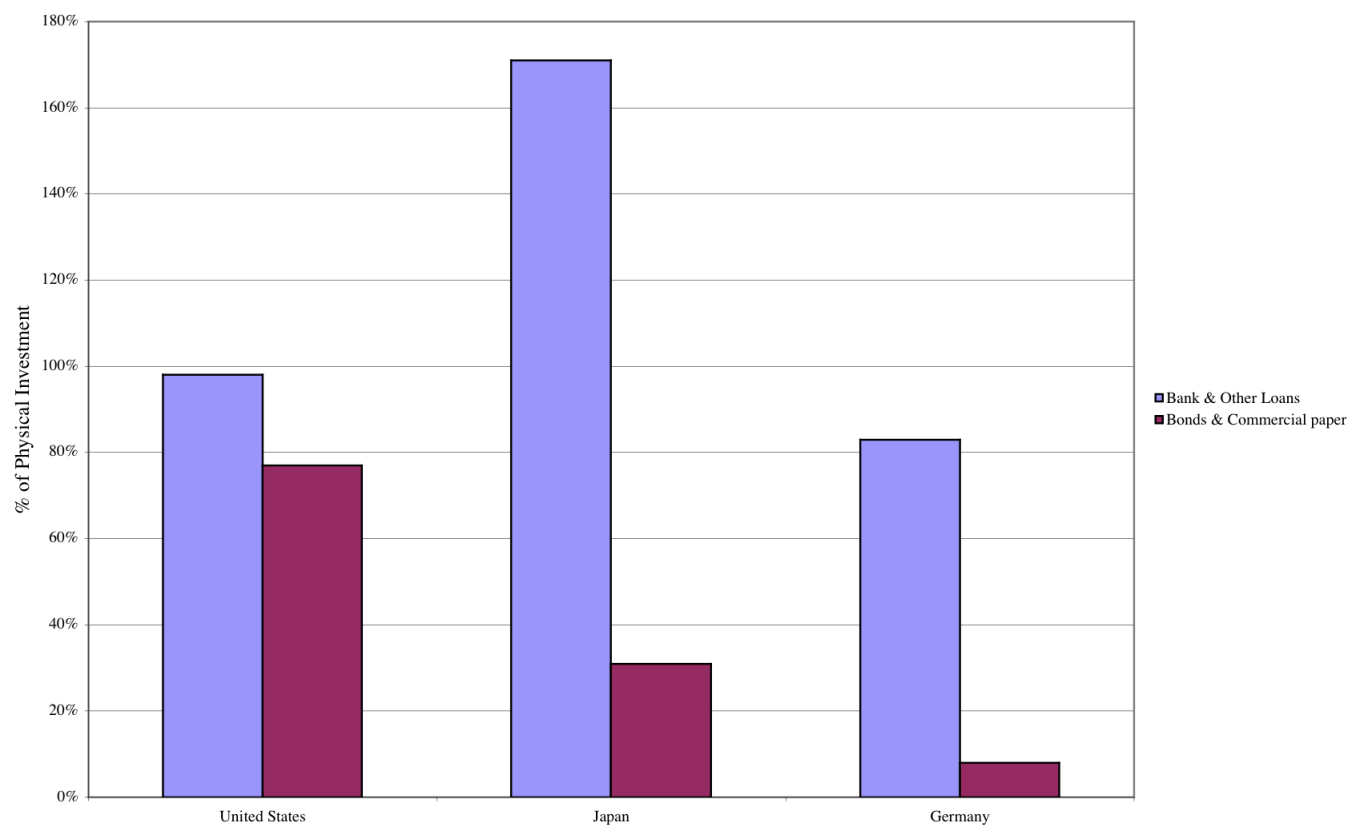
Figure 7.4: Financing Patterns for G-7 Countries – 1984-91



And a much greater dependence on bank loans outside the US...

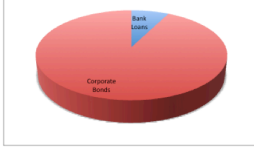
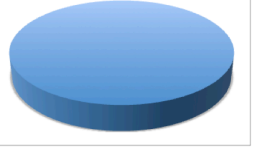
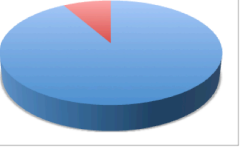
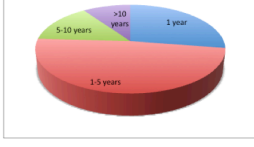
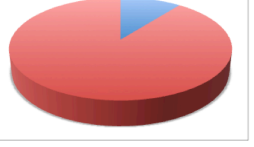
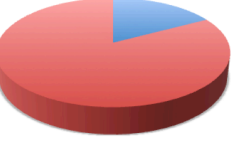
6

Figure 7.5: Bonds versus Bank Loans - 1990-96

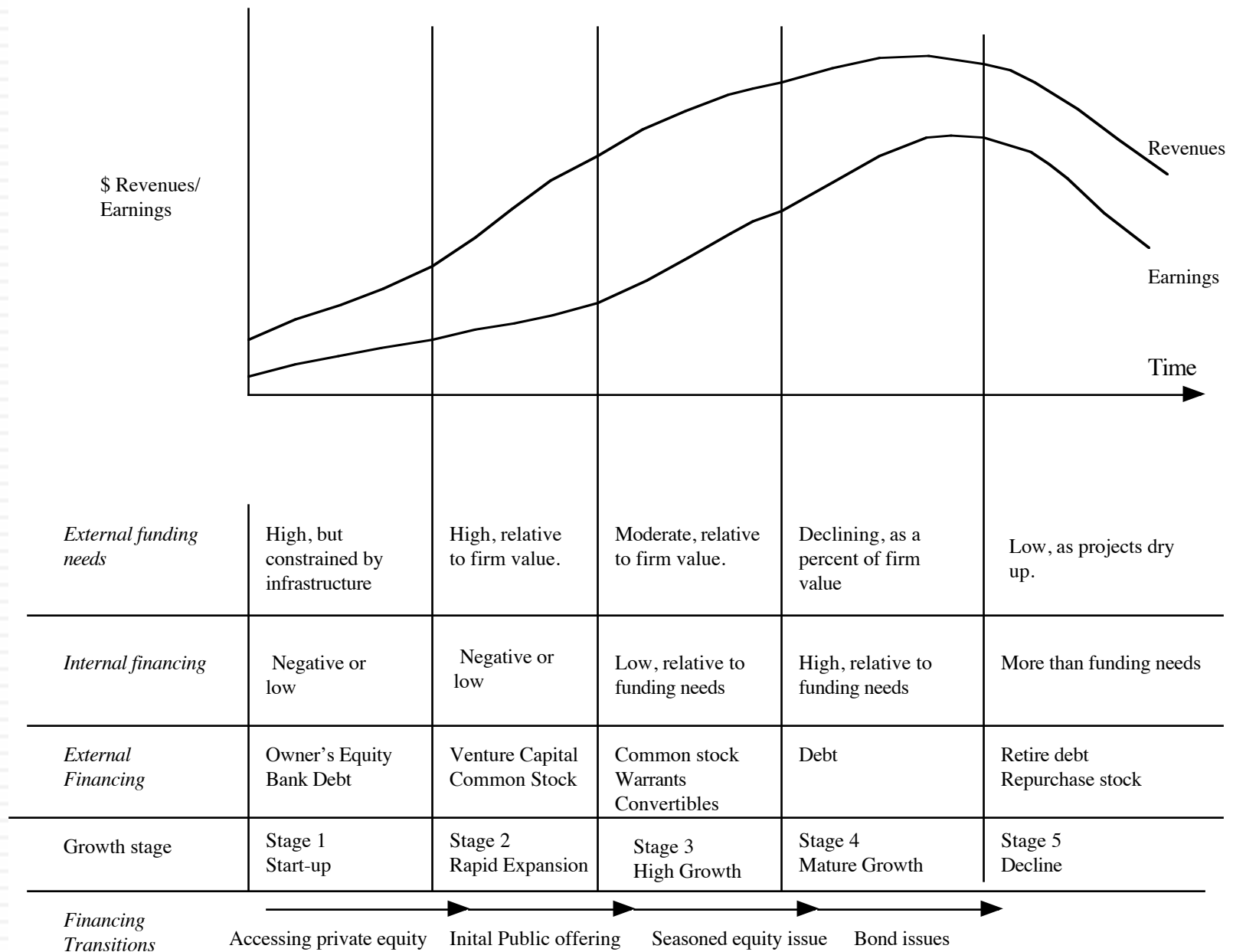


Assessing the existing financing choices: Disney, Aracruz and Tata Chemicals

7

	<i>Disney</i>	<i>Aracruz</i>	<i>Tata Chemicals</i>
Debt due	<i>\$13.27 billion</i>	<i>R\$ 24.20 billion</i>	<i>Rs 42.22 billion</i>
Loans vs Bonds			
Maturity			
Leases	Has operating leases with a debt value of \$1.46 billion (see chapter 4)	No stated lease commitments	Small lease commitments.
Fixed vs Floating	76% Fixed Rate 24% Floating Rate	100% Fixed Rate	100% Fixed Rate
Currency	90% US dollar 10% Japanese Yen	100% R\$	97% Rupees 3% US dollar
Other	43% of bonds are callable 10% of bonds are putable	Small portion of debt is convertible Bank debt is term loans	Bank debt is term loans

Financing Choices across the life cycle



The Transitional Phases..

9

- The transitions that we see at firms – from fully owned private businesses to venture capital, from private to public and subsequent seasoned offerings are all motivated primarily by the need for capital.
- In each transition, though, there are costs incurred by the existing owners:
 - When venture capitalists enter the firm, they will demand their fair share and more of the ownership of the firm to provide equity.
 - When a firm decides to go public, it has to trade off the greater access to capital markets against the increased disclosure requirements (that emanate from being publicly listed), loss of control and the transactions costs of going public.
 - When making seasoned offerings, firms have to consider issuance costs while managing their relations with equity research analysts and rat

Measuring a firm's financing mix ...

10

- The simplest measure of how much debt and equity a firm is using currently is to look at the proportion of debt in the total financing. This ratio is called the debt to capital ratio:

$$\text{Debt to Capital Ratio} = \text{Debt} / (\text{Debt} + \text{Equity})$$

- Debt includes all interest bearing liabilities, short term as well as long term.
- Equity can be defined either in accounting terms (as book value of equity) or in market value terms (based upon the current price). The resulting debt ratios can be very different.

The Financing Mix Question

11

- In deciding to raise financing for a business, is there an optimal mix of debt and equity?
 - If yes, what is the trade off that lets us determine this optimal mix?
 - What are the benefits of using debt instead of equity?
 - What are the costs of using debt instead of equity?
 - If not, why not?

Costs and Benefits of Debt

12

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

Tax Benefits of Debt

13

- When you borrow money, you are allowed to deduct interest expenses from your income to arrive at taxable income. This reduces your taxes. When you use equity, you are not allowed to deduct payments to equity (such as dividends) to arrive at taxable income.
- The dollar tax benefit from the interest payment in any year is a function of your tax rate and the interest payment:
 - Tax benefit each year = Tax Rate * Interest Payment
- Proposition 1: Other things being equal, the higher the marginal tax rate of a business, the more debt it will have in its capital structure.



The Effects of Taxes

14

- 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?
 - a. The real estate corporations
 - b. The real estate investment trusts
 - c. Cannot tell, without more information

Debt adds discipline to management

15

- If you are managers of a firm with no debt, and you generate high income and cash flows each year, you tend to become complacent. The complacency can lead to inefficiency and investing in poor projects. There is little or no cost borne by the managers
- Forcing such a firm to borrow money can be an antidote to the complacency. The managers now have to ensure that the investments they make will earn at least enough return to cover the interest expenses. The cost of not doing so is bankruptcy and the loss of such a job.



Debt and Discipline

16

- 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?
 - a. Conservatively financed (very little debt), privately owned businesses
 - b. Conservatively financed, publicly traded companies, with stocks held by millions of investors, none of whom hold a large percent of the stock.
 - c. Conservatively financed, publicly traded companies, with an activist and primarily institutional holding.

Bankruptcy Cost

17

- The expected bankruptcy cost is a function of two variables--
 - the probability of bankruptcy, which will depend upon how uncertain you are about future cash flows
 - the cost of going bankrupt
 - direct costs: Legal and other Deadweight Costs
 - indirect costs: Costs arising because people perceive you to be in financial trouble
- Proposition 2: Firms with more volatile earnings and cash flows will have higher probabilities of bankruptcy at any given level of debt and for any given level of earnings.
- Proposition 3: Other things being equal, the greater the indirect bankruptcy cost, the less debt the firm can afford to use for any given level of debt.



Debt & Bankruptcy Cost

18

- Rank the following companies on the magnitude of bankruptcy costs from most to least, taking into account both explicit and implicit costs:
 - a. A Grocery Store
 - b. An Airplane Manufacturer
 - c. High Technology company

Agency Cost

19

- An agency cost arises whenever you hire someone else to do something for you. It arises because your interests(as the principal) may deviate from those of the person you hired (as the agent).
- When you lend money to a business, you are allowing the stockholders to use that money in the course of running that business. Stockholders interests are different from your interests, because
 - ▣ You (as lender) are interested in getting your money back
 - ▣ Stockholders are interested in maximizing their wealth
- In some cases, the clash of interests can lead to stockholders
 - ▣ Investing in riskier projects than you would want them to
 - ▣ Paying themselves large dividends when you would rather have them keep the cash in the business.
- Proposition 4: Other things being equal, the greater the agency problems associated with lending to a firm, the less debt the firm can afford to use.



Debt and Agency Costs

20

- ☐ Assume that you are a bank. Which of the following businesses would you perceive the greatest agency costs?
 - a. A Large technology firm
 - b. A Large Regulated Electric Utility
- ☐ Why?

Loss of future financing flexibility

21

- When a firm borrows up to its capacity, it loses the flexibility of financing future projects with debt.
- Proposition 5: 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.

What managers consider important in deciding on how much debt to carry...

22

- A survey of Chief Financial Officers of large U.S. companies provided the following ranking (from most important to least important) for the factors that they considered important in the financing decisions

Factor	Ranking (0-5)
1. Maintain financial flexibility	4.55
2. Ensure long-term survival	4.55
3. Maintain Predictable Source of Funds	4.05
4. Maximize Stock Price	3.99
5. Maintain financial independence	3.88
6. Maintain high debt rating	3.56
7. Maintain comparability with peer group	2.47

Debt: Summarizing the trade off

23

<i>Advantages of Debt</i>	<i>Disadvantages of debt</i>
<p>1. Tax Benefit: Interest expenses on debt are tax deductible but cash flows to equity are generally not. <i>Implication: The higher the marginal tax rate, the greater the benefits of debt.</i></p>	<p>1. Expected Bankruptcy Cost: The expected cost of going bankrupt is a product of the probability of going bankrupt and the cost of going bankrupt. The latter includes both direct and indirect costs. The probability of going bankrupt will be higher in businesses with more volatile earnings and the cost of bankruptcy will also vary across businesses. <i>Implication:</i> 1. Firms with more stable earnings should borrow more, for any given level of earnings. 2. Firms with lower bankruptcy costs should borrow more, for any given level of earnings.</p>
<p>2. Added Discipline: Borrowing money may force managers to think about the consequences of the investment decisions a little more carefully and reduce bad investments. <i>Implication: As the separation between managers and stockholders increases, the benefits to using debt will go up.</i></p>	<p>2. Agency Costs: Actions that benefit equity investors may hurt lenders. The greater the potential for this conflict of interest, the greater the cost borne by the borrower (as higher interest rates or more covenants). <i>Implication: Firms where lenders can monitor/ control how their money is being used should be able to borrow more than firms where this is difficult to do.</i></p>
	<p>3. Loss of flexibility: Using up available debt capacity today will mean that you cannot draw on it in the future. This loss of flexibility can be disastrous if funds are needed and access to capital is shut off. <i>Implication:</i> 1. Firms that can forecast future funding needs better should be able to borrow more. 2. Firms with better access to capital markets should be more willing to borrow more today.</p>

The Trade off for three companies..

24

<i>Item</i>	<i>Disney</i>	<i>Aracruz</i>	<i>Tata Chemicals</i>
Tax benefits	Significant. The firm has a marginal tax rate of 38%. It does have large depreciation tax shields.	Significant. The firm has a marginal tax rate of 34%, as well. It does not have very much in noninterest tax shields.	Significant. The firm has a 33.99% tax rates. It does have significant non-interest tax shields in the form of depreciation.
Added discipline	Benefits will be high, because managers are not large stockholders.	Benefits are smaller, because the voting shares are closely held by insiders.	Since the Tata family runs the firm, the benefits from added discipline are small.
Bankruptcy costs	Movie and broadcasting businesses have volatile earnings. Direct costs of bankruptcy are likely to be small, but indirect costs can be significant.	Variability in paper prices makes earnings volatile. Direct and indirect costs of bankruptcy likely to be moderate, since assets are marketable (timber, paper plants)	Firm is mature, with fairly stable earnings and cash flows from its chemicals and fertilizer business. Indirect bankruptcy costs should be low, since physical assets are marketable.
Agency costs	High. Although theme park assets are tangible and fairly liquid, is much more difficult to monitor movie and broadcasting businesses.	Low. Assets are tangible and liquid.	Biggest concern is that debt may be utilized in other (riskier) Tata companies.
Flexibility needs	Low in theme park business but high in media businesses because technological change makes future investment uncertain.	Low. Business is mature and investment needs are well established.	Low. Tata Chemicals is a mature company with established reinvestment needs.

Application Test: Would you expect your firm to gain or lose from using a lot of debt?

25

- Considering, for your firm,
 - ▣ The potential tax benefits of borrowing
 - ▣ The benefits of using debt as a disciplinary mechanism
 - ▣ The potential for expected bankruptcy costs
 - ▣ The potential for agency costs
 - ▣ The need for financial flexibility
- Would you expect your firm to have a high debt ratio or a low debt ratio?
- Does the firm's current debt ratio meet your expectations?

A Hypothetical Scenario

26

Assume that you live in a world where

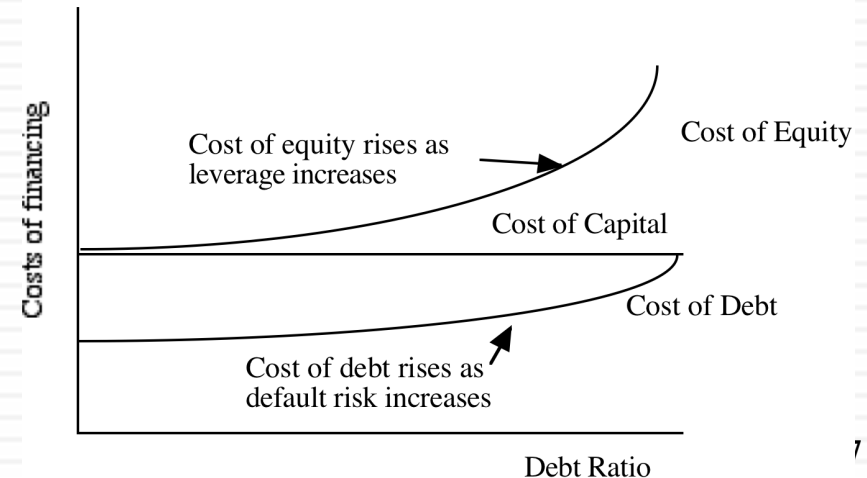
- (a) There are no taxes
 - (b) Managers have stockholder interests at heart and do what's best for stockholders.
 - (c) No firm ever goes bankrupt
 - (d) Equity investors are honest with lenders; there is no subterfuge or attempt to find loopholes in loan agreements.
 - (e) Firms know their future financing needs with certainty
- What happens to the trade off between debt and equity? How much should a firm borrow?

The Miller-Modigliani Theorem

27

- In an environment, where there are no taxes, default risk or agency costs, capital structure is irrelevant.
- If the Miller Modigliani theorem holds:
 - A firm's value will be determined the quality of its investments and not by its financing mix.
 - 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.

Figure 7.9: Cost of Capital in the MM World



What do firms look at in financing?

28

- 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. In particular,
 - ▣ Managers value flexibility. Managers value being able to use capital (on new investments or assets) without restrictions on that use or having to explain its use to others.
 - ▣ Managers value control. Managers like being able to maintain control of their businesses.
- With flexibility and control being key factors:
 - ▣ Would you rather use internal financing (retained earnings) or external financing?
 - ▣ With external financing, would you rather use debt or equity?

Preference rankings long-term finance: Results of a survey

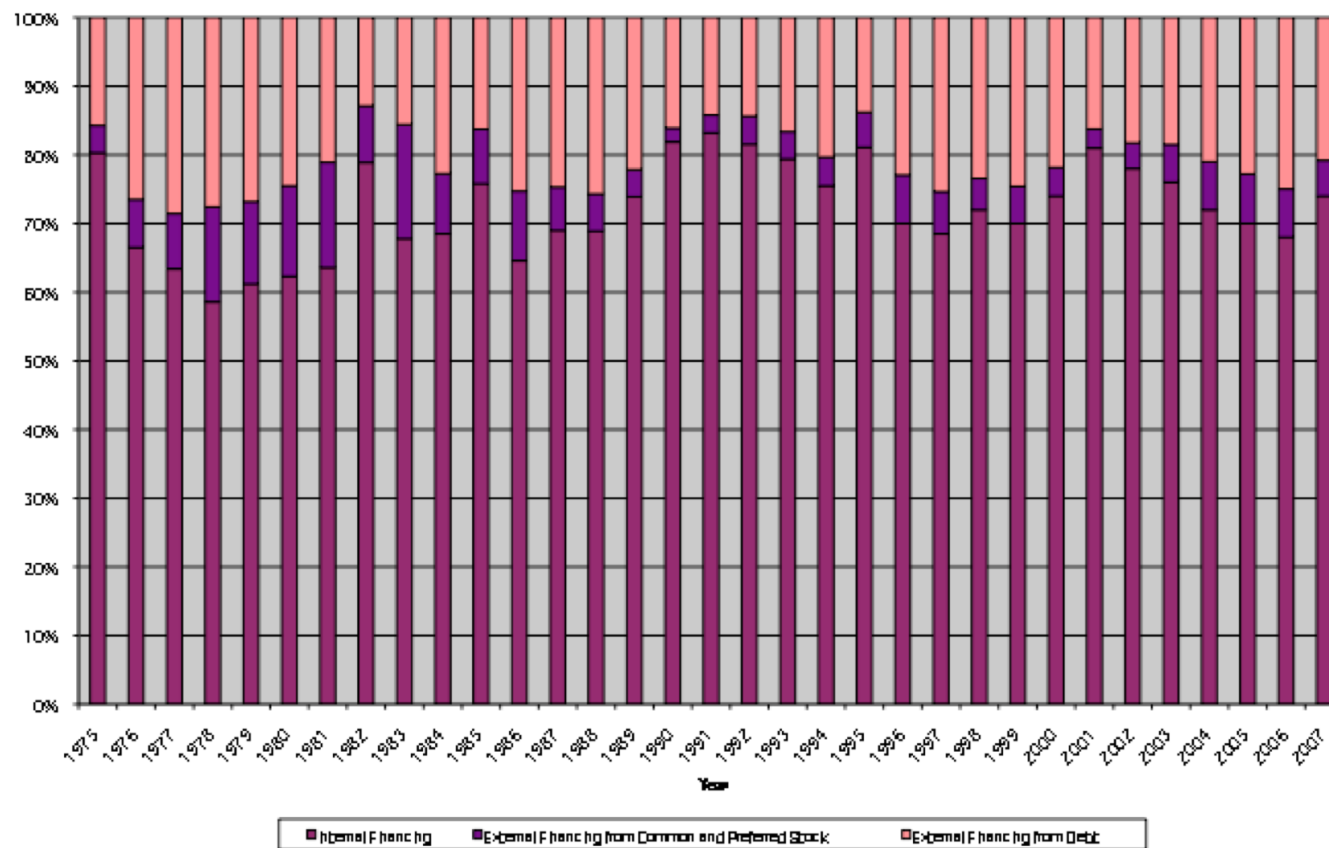
29

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

And the unsurprising consequences..

30

Figure 7.3: External and Internal Financing at US Firms





Financing Choices

31

- 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?
 - a. Nothing
 - b. Healthier than the average firm
 - c. In much more financial trouble than the average firm