

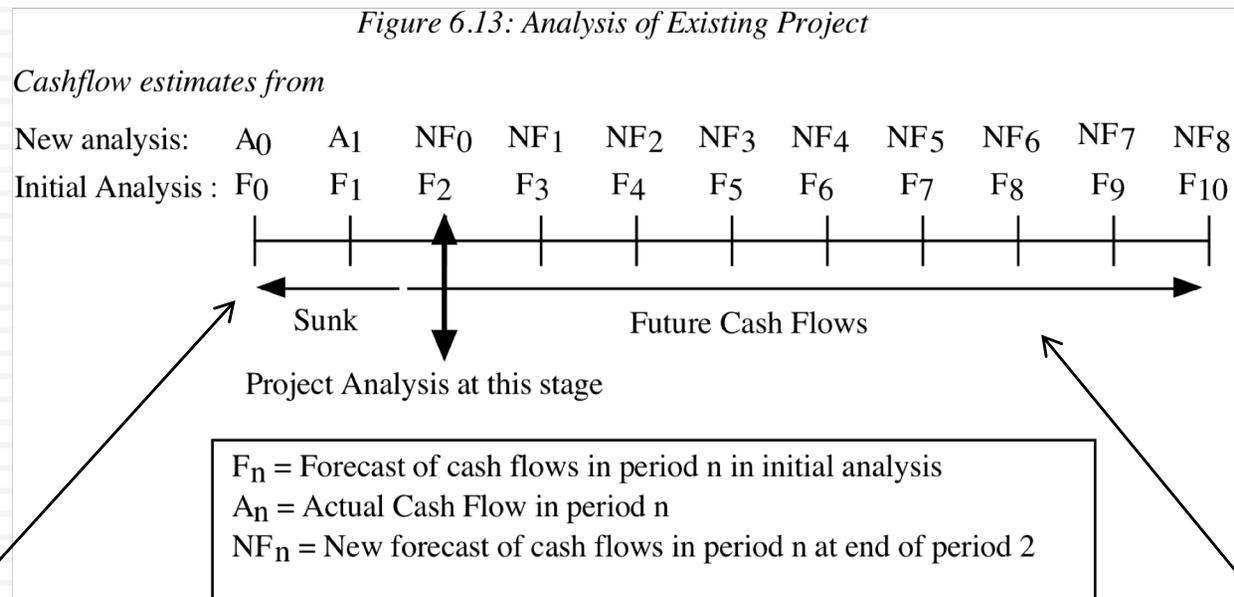
IV. Assessing Existing or Past investments...

317

- While much of our discussion has been focused on analyzing new investments, the techniques and principles enunciated apply just as strongly to existing investments.
- With existing investments, we can try to address one of two questions:
 - ▣ Post –mortem: We can look back at existing investments and see if they have created value for the firm.
 - ▣ What next? We can also use the tools of investment analysis to see whether we should keep, expand or abandon existing investments.

Analyzing an Existing Investment

318



In a post-mortem, you look at the actual cash flows, relative to forecasts.

You can also reassess your expected cash flows, based upon what you have learned, and decide whether you should expand, continue or divest (abandon) an investment

a. Post Mortem Analysis

319

- The actual cash flows from an investment can be greater than or less than originally forecast for a number of reasons but all these reasons can be categorized into two groups:
 - Chance: The nature of risk is that actual outcomes can be different from expectations. Even when forecasts are based upon the best of information, they will invariably be wrong in hindsight because of unexpected shifts in both macro (inflation, interest rates, economic growth) and micro (competitors, company) variables.
 - Bias: If the original forecasts were biased, the actual numbers will be different from expectations. The evidence on capital budgeting is that managers tend to be over-optimistic about cash flows and the bias is worse with over-confident managers.
- While it is impossible to tell on an individual project whether chance or bias is to blame, there is a way to tell across projects and across time. If chance is the culprit, there should be symmetry in the errors – actuals should be about as likely to beat forecasts as they are to come under forecasts. If bias is the reason, the errors will tend to be in one direction.

b. What should we do next?

320

$$\sum_{t=0}^{t=n} \frac{NF_n}{(1+r)^n} < 0 \quad \text{.....} \quad \text{Liquidate the project}$$

$$\sum_{t=0}^{t=n} \frac{NF_n}{(1+r)^n} < \text{Salvage Value} \quad \text{.....} \quad \text{Terminate the project}$$

$$\sum_{t=0}^{t=n} \frac{NF_n}{(1+r)^n} < \text{Divestiture Value} \quad \text{.....} \quad \text{Divest the project}$$

$$\sum_{t=0}^{t=n} \frac{NF_n}{(1+r)^n} > 0 > \text{Divestiture Value} \quad \text{.....} \quad \text{Continue the project}$$

Example: Disney California Adventure – The 2008 judgment call

321

- Disney opened the Disney California Adventure (DCA) Park in 2001, at a cost of \$1.5 billion, with a mix of roller coaster rides and movie nostalgia. Disney expected about 60% of its visitors to Disneyland to come across to DCA and generate about \$ 100 million in annual after-cash flows for the firm.
- By 2008, DCA had not performed up to expectations. Of the 15 million people who came to Disneyland in 2007, only 6 million visited California Adventure, and the cash flow averaged out to only \$ 50 million between 2001 and 2007.
- In early 2008, Disney faced three choices:
 - Shut down California Adventure and try to recover whatever it can of its initial investment. It is estimated that the firm recover about \$ 500 million of its investment.
 - Continue with the status quo, recognizing that future cash flows will be closer to the actual values (\$ 50 million) than the original projections.
 - Invest about \$ 600 million to expand and modify the park, with the intent of increasing the number of attractions for families with children, is expected to increase the percentage of Disneyland visitors who come to DCA from 40% to 60% and increase the annual after tax cash flow by 60% (from \$ 50 million to \$ 80 million) at the park.

DCA: Evaluating the alternatives...

322

- Continuing Operation: Assuming the current after-tax cash flow of \$ 50 million will continue in perpetuity, growing at the inflation rate of 2% and discounting back at the theme park cost of capital in 2008 of 6.62% yields a value for continuing with the status quo

$$\text{Value of DCA} = \frac{\text{Expected Cash Flow next year}}{(\text{Cost of capital} - g)} = \frac{50(1.02)}{(.0662 - .02)} = \$1.103 \text{ billion}$$

- Abandonment: Abandoning this investment currently would allow Disney to recover only \$ 500 million of its original investment.

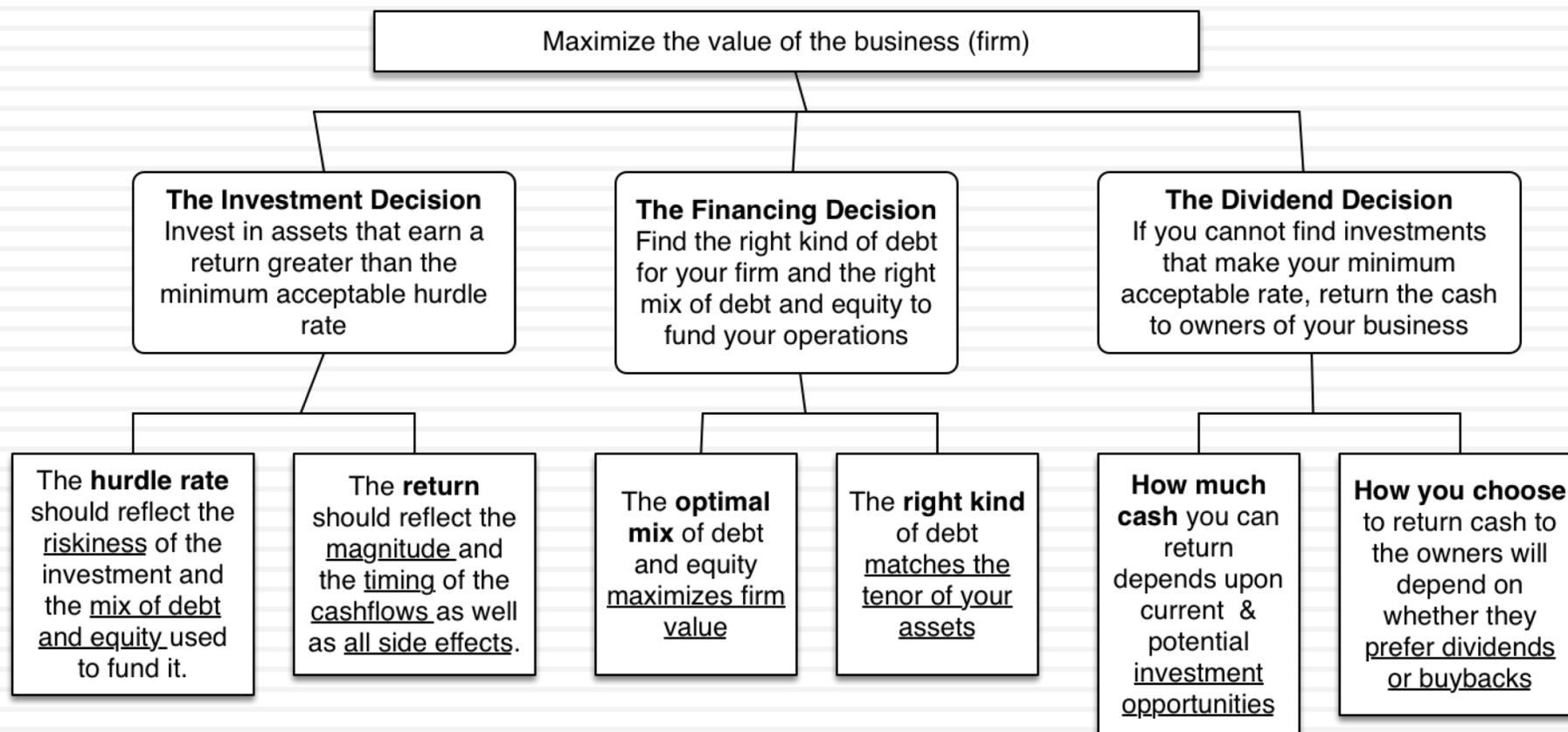
$$\text{Abandonment value of DCA} = \$ 500 \text{ million}$$

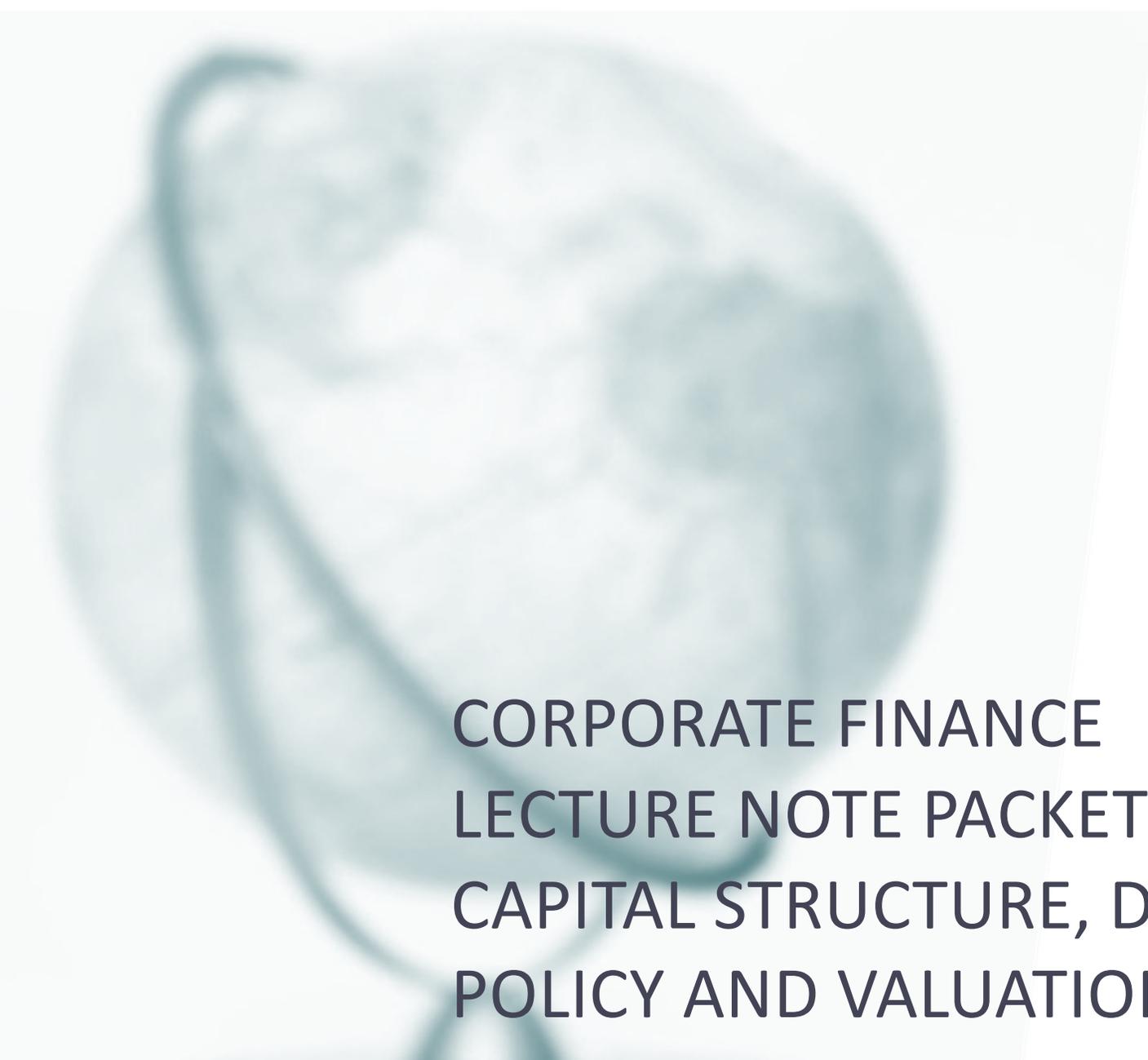
- Expansion: The up-front cost of \$ 600 million will lead to more visitors in the park and an increase in the existing cash flows from \$ 50 to \$ 80 million.

$$\text{Value of CF from expansion} = \frac{\text{Increase in CF next year}}{(\text{Cost of capital} - g)} = \frac{30(1.02)}{(.0662 - .02)} = \$662 \text{ million}$$

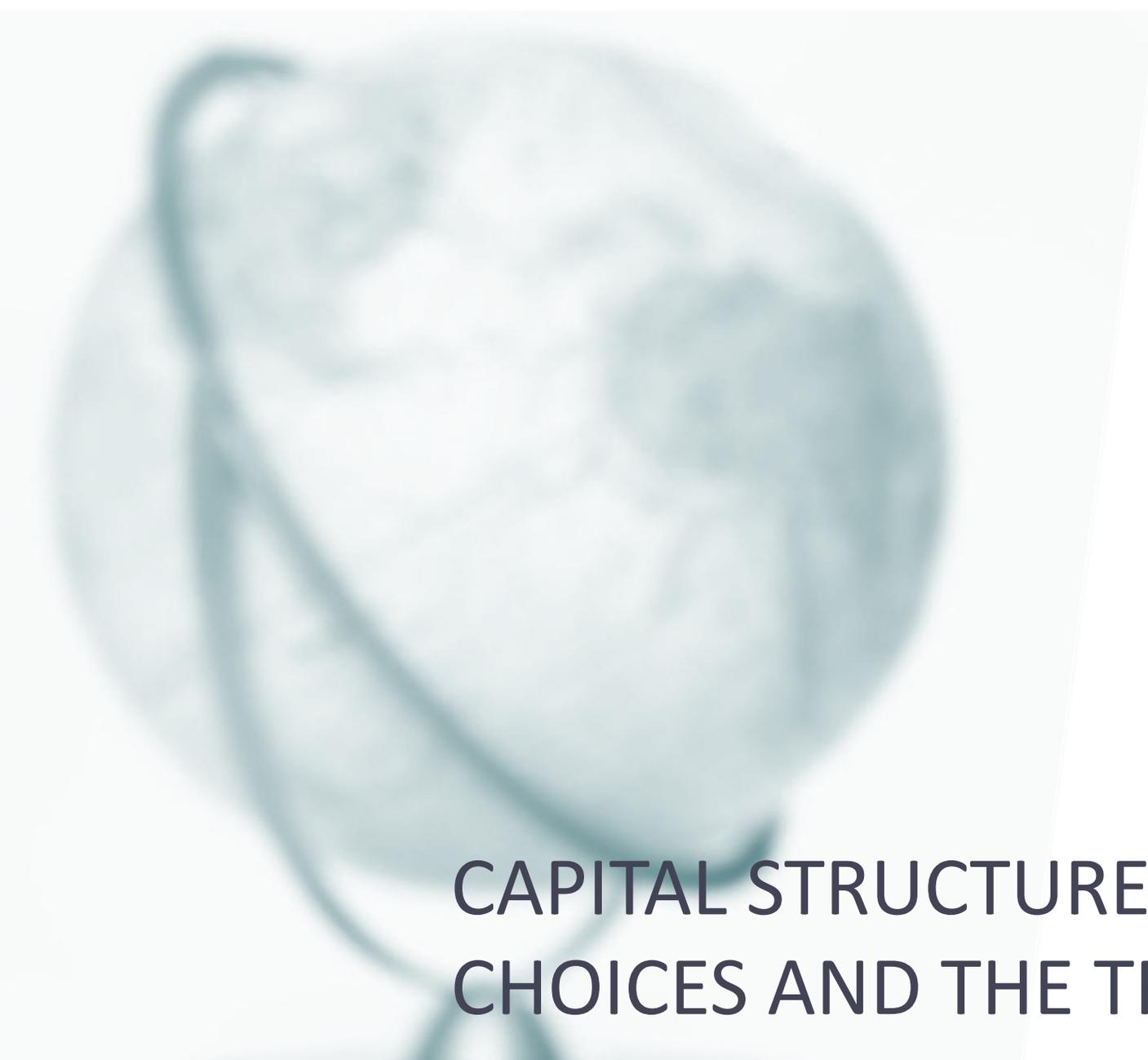
First Principles

323





CORPORATE FINANCE
LECTURE NOTE PACKET 2
CAPITAL STRUCTURE, DIVIDEND
POLICY AND VALUATION

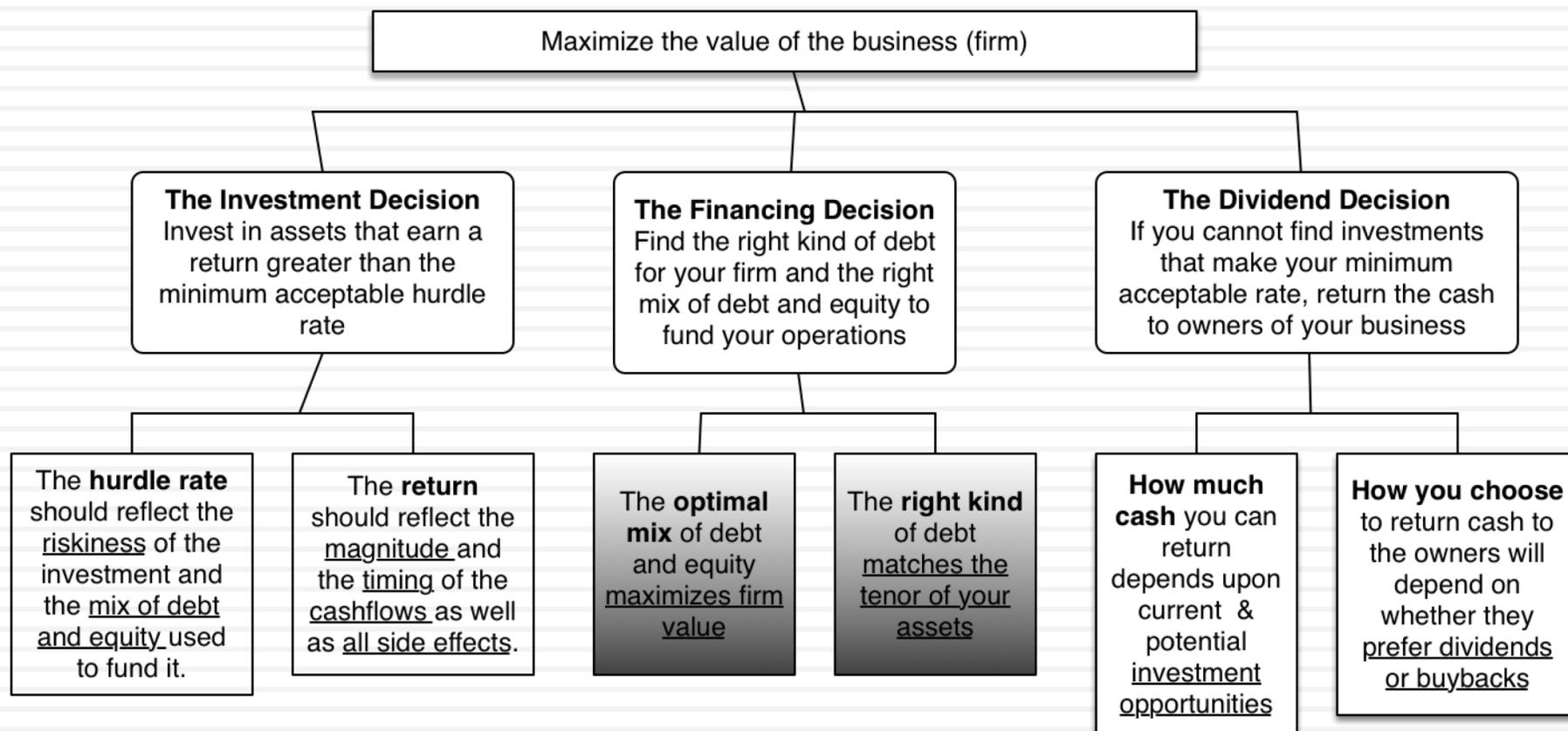


CAPITAL STRUCTURE: THE CHOICES AND THE TRADE OFF

“Neither a borrower nor a lender be”
Someone who obviously hated this part of corporate finance

First principles

3

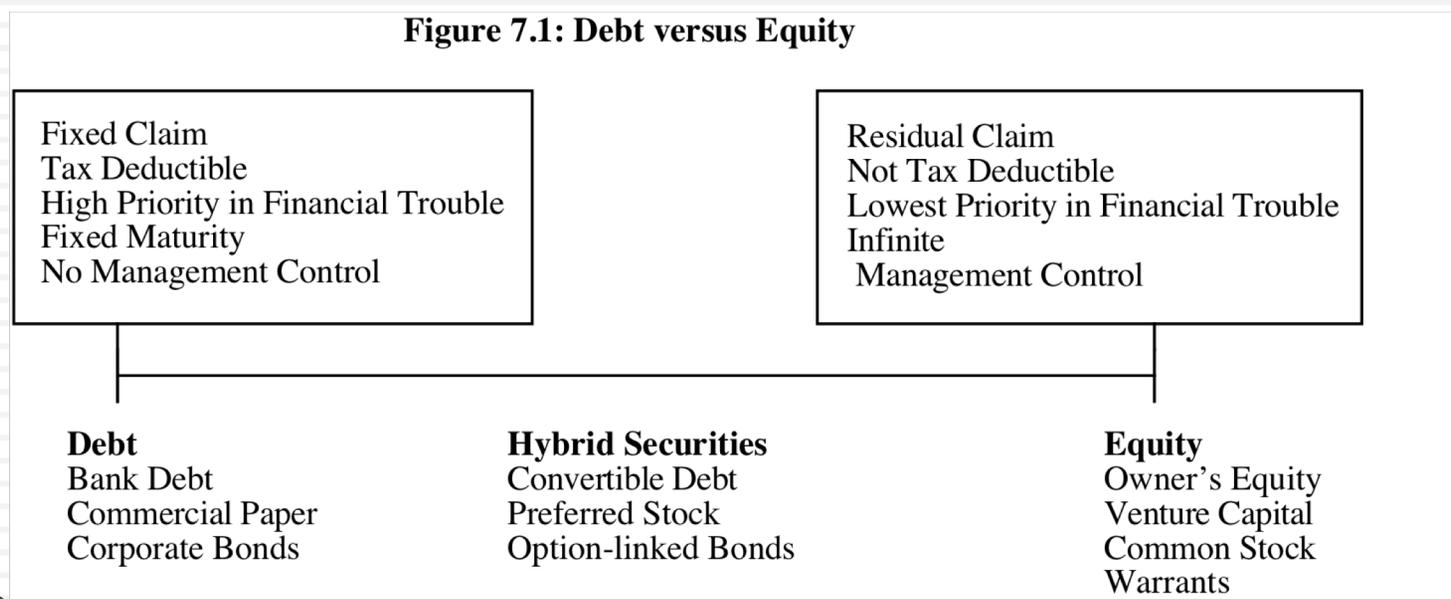


The Choices in Financing

4

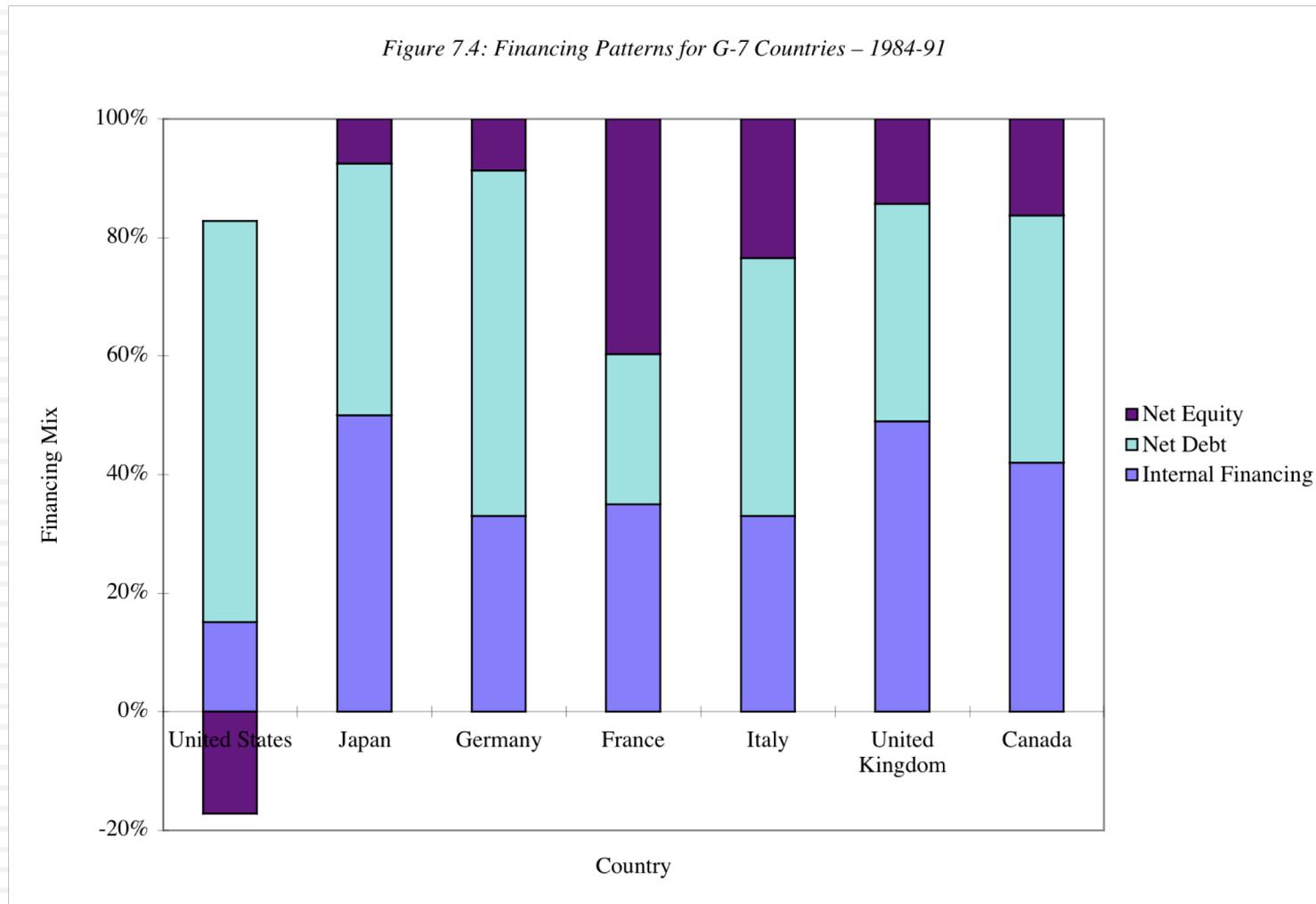
- There are only two ways in which a business can raise money.
 - ▣ The first is debt. The essence of debt is that you promise to make fixed payments in the future (interest payments and repaying principal). If you fail to make those payments, you lose control of your business.
 - ▣ The other is equity.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

Figure 7.1: Debt versus Equity



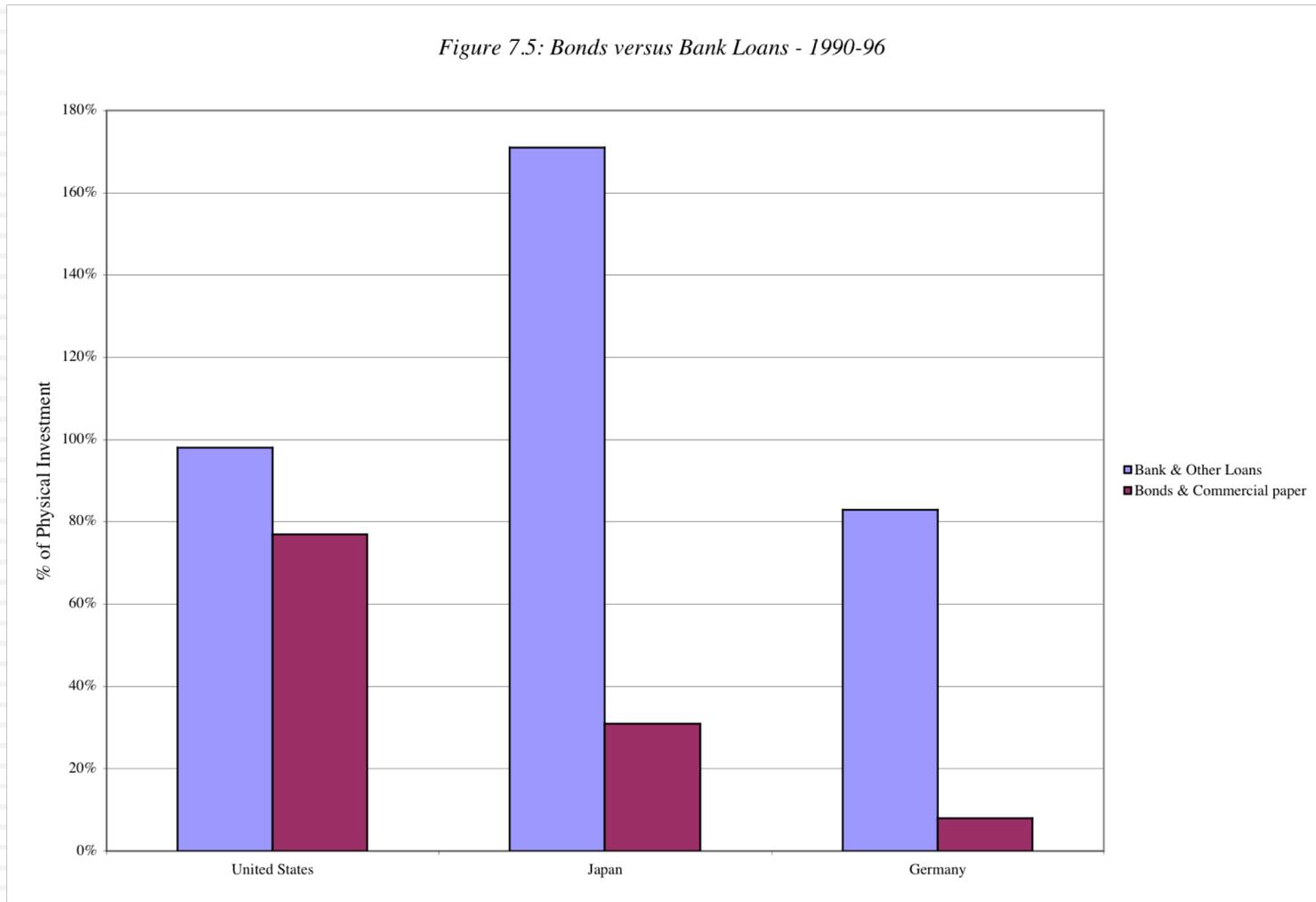
Global Patterns in Financing...

5



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

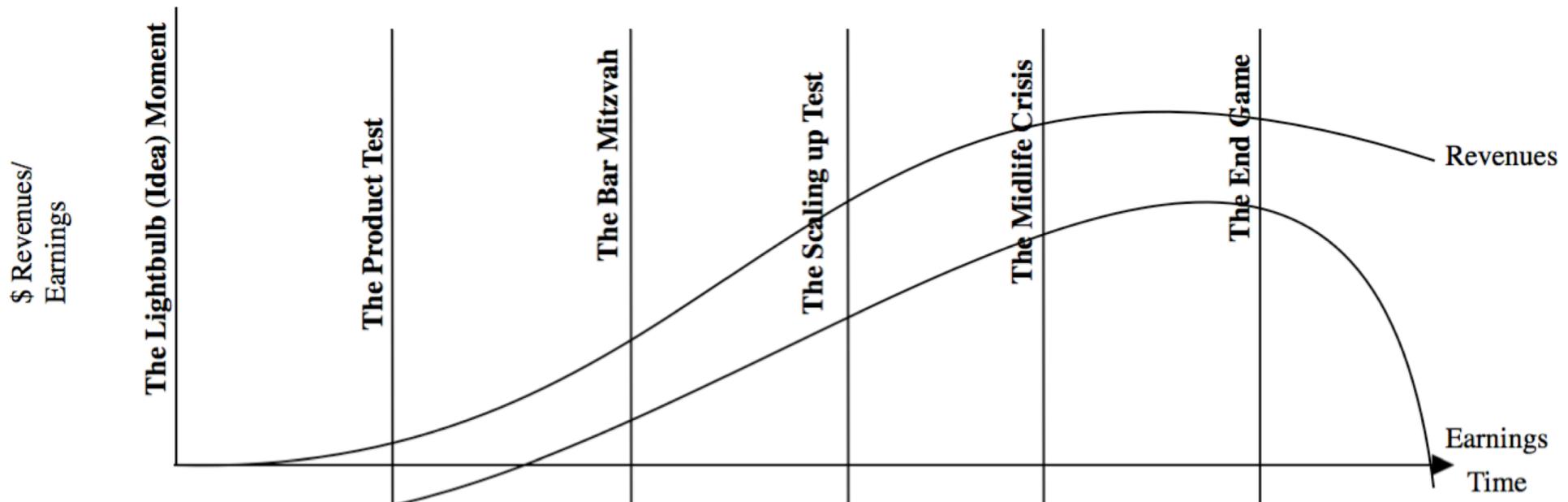
6



Assessing the existing financing choices: Disney, Vale, Tata Motors, Baidu & Bookscape

7

	<i>Disney</i>	<i>Vale</i>	<i>Tata Motors</i>	<i>Baidu</i>
BV of Interest bearing Debt	\$14,288	\$48,469	535,914₹	¥17,844
MV of Interest bearing Debt	\$13,028	\$41,143	477,268₹	¥15,403
Lease Debt	\$2,933	\$1,248	0.00₹	¥3,051
Type of Debt				
Bank Debt	7.93%	59.97%	62.26%	100.00%
Bonds/Notes	92.07%	40.03%	37.74%	0.00%
Debt Maturity				
<1 year	13.04%	6.08%	0.78%	1.98%
1- 5 years	48.93%	23.12%	30.24%	68.62%
5-10 years	20.31%	29.44%	57.90%	29.41%
10-20 years	4.49%	3.00%	10.18%	0.00%
> 20 years	13.24%	38.37%	0.90%	0.00%
Currency for debt				
Debt in domestic currency	94.51%	34.52%	70.56%	17.90%
Debt in foreign currency	5.49%	65.48%	29.44%	82.10%
Fixed versus Floating rate debt				
Fixed rate debt	94.33%	100.00%	100.00%	94.63%
Floating rate debt	5.67%	0.00%	0.00%	5.37%



<i>Growth stage</i>	Stage 1 Start-up	Stage 2 Young Growth	Stage 3: High Growth	Stage 4 Mature Growth	Stage 5 Mature Stable	Stage 6 Decline
<i>External funding needs</i>	High, but constrained by other resources	High, relative to firm value.	Moderate, relative to firm value.	Declining, as a percent of firm value	Not needed	
<i>Internal financing</i>	Negative or low	Negative or low	Low, relative to funding needs	High, relative to funding needs	More than funding needs	
<i>External Financing</i>	Owner's Equity Bank Debt	Venture Capital Common Stock	Common stock Warrants Convertibles	Debt	Retire debt Repurchase stock	
<i>Financing Transitions</i>	→ Accessing private equity		→ Initial Public offering	→ Seasoned equity issue	→ Bond issues	

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. It should also include other commitments that meet the criteria for debt: contractually pre-set payments that have to be made, no matter what the firm's financial standing.
- 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?

The Illusory Benefits of Debt

12

- At first sight, the benefit of debt seems obvious. The cost of debt is lower than the cost of equity.
- That benefit is an illusion, though, because debt is cheaper than equity for a simple reason. The lender gets both first claim on the cash flows and a contractually pre-set cash flow. The equity investor is last in line and has to demand a higher rate of return than the lender does.
- By borrowing money at a lower rate, you are not making a business more valuable, but just moving the risk around.

Costs and Benefits of Debt

13

□ Benefits of Debt

- *Tax Benefits*: The tax code is tilted in favor of debt, with interest payments being tax deductible in most parts of the world, while cash flows to equity are not.
- *Adds discipline to management*: When managers are sloppy in their project choices, borrowing money may make them less so.

□ Costs of Debt

- *Bankruptcy Costs*: Borrowing money will increase your expected probability and cost of bankruptcy.
- *Agency Costs*: What's good for stockholders is not always what's good for lenders and that creates friction and costs.
- *Loss of Future Flexibility*: Using up debt capacity today will mean that you will not be able to draw on it in the future.

Tax Benefits of Debt

14

- 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 PaymentThe caveat is that you need to have the income to cover interest payments to get this tax benefit.
- *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

15

- 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

16

- 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

17

- 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

18

- 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

19

- 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

20

- 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

21

- Assume that you are a bank. Which of the following businesses would you perceive the greatest agency costs?
 - a. A Technology firm
 - b. A Large Regulated Electric Utility
 - c. A Real Estate Corporation
- Why?

Loss of future financing flexibility

22

- When a firm borrows up to its capacity, it loses the flexibility of financing future projects with debt.
- Thus, if the firm is faced with an unexpected investment opportunity or a business shortfall, it will not be able to draw on debt capacity, if it has already used it up.
- *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...

23

- 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

24

<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 Disney, Vale, Tata Motors and Baidu

25

<i>Debt trade off</i>	<i>Discussion of relative benefits/costs</i>
Tax benefits	Marginal tax rates of 40% in US (Disney & Bookscape), 32.5% in India (Tata Motors), 25% in China (Baidu) and 34% in Brazil (Vale), but there is an offsetting tax benefit for equity in Brazil (interest on equity capital is deductible).
Added Discipline	The benefits should be highest at Disney, where there is a clear separation of ownership and management and smaller at the remaining firms.
Expected Bankruptcy Costs	Volatility in earnings: Higher at Baidu (young firm in technology), Tata Motors (cyclicality) and Vale (commodity prices) and lower at Disney (diversified across entertainment companies). Indirect bankruptcy costs likely to be highest at Tata Motors, since it's products (automobiles) have long lives and require service and lower at Disney and Baidu.
Agency Costs	Highest at Baidu, largely because it's assets are intangible and it sells services and lowest at Vale (where investments are in mines, highly visible and easily monitored) and Tata Motors (tangible assets, family group backing). At Disney, the agency costs will vary across its business, higher in the movie and broadcasting businesses and lower at theme parks.
Flexibility needs	Baidu will value flexibility more than the other firms, because technology is a shifting and unpredictable business, where future investment needs are difficult to forecast. The flexibility needs should be lower at Disney and Tata Motors, since they are mature companies with well-established investment needs. At Vale, the need for investment funds may vary with commodity prices, since the firm grows by acquiring both reserves and smaller companies. At Bookscape, the difficulty of accessing external capital will make flexibility more necessary.

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

26

- 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

27

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?