

# Finding the Right Financing Mix: The Capital Structure Decision

# First Principles

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- 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.

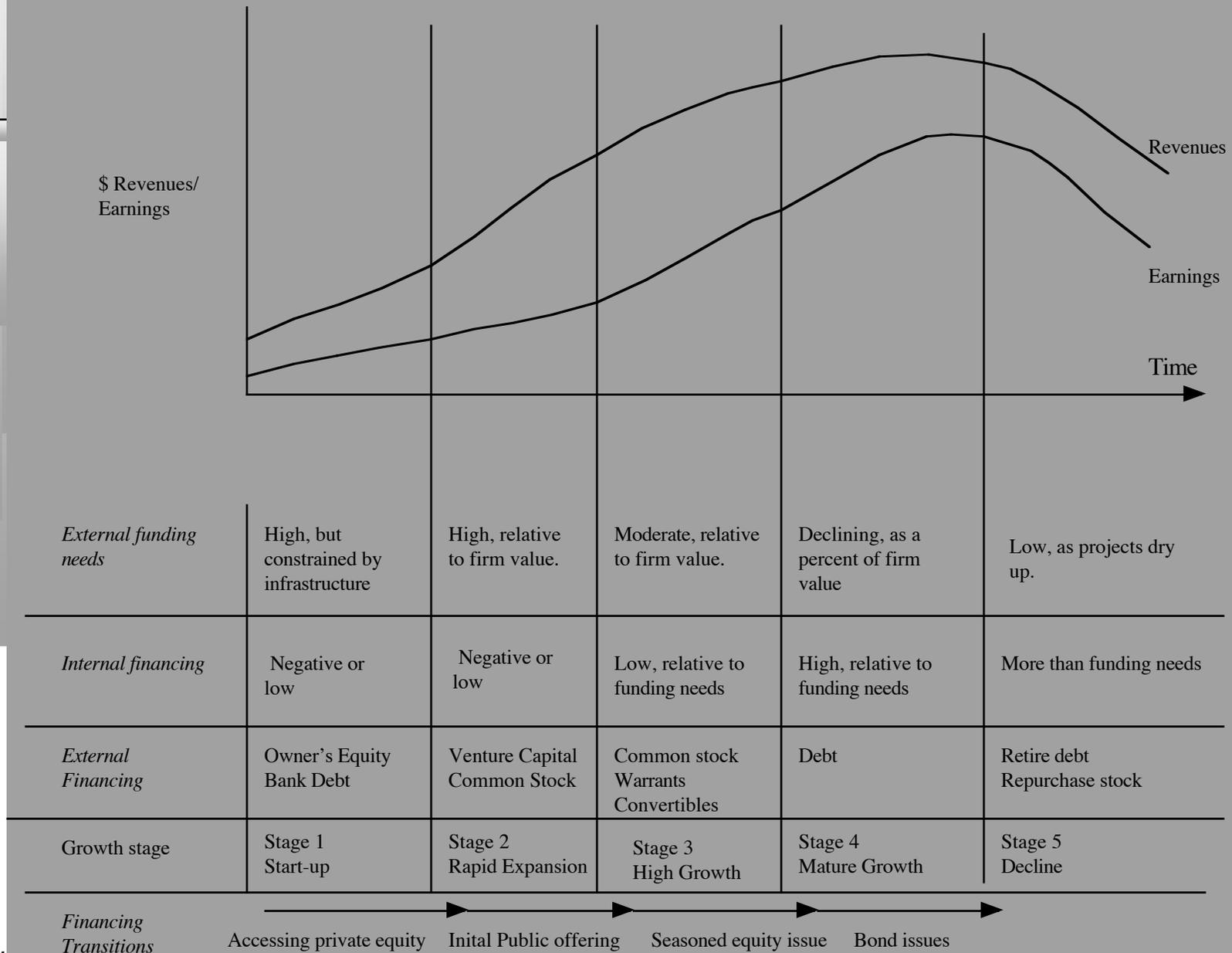
**Objective: Maximize the Value of the Firm**

# The Choices in Financing

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- 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.
- The equity can take different forms:
  - For very small businesses: it can be owners investing their savings
  - For slightly larger businesses: it can be venture capital
  - For publicly traded firms: it is common stock
- The debt can also take different forms
  - For private businesses: it is usually bank loans
  - For publicly traded firms: it can take the form of bonds

## Financing Choices across the life cycle



# The Financing Mix Question

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- 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?
  - If not, why not?

## Measuring a firm's financing mix

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- 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:  
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.

# Costs and Benefits of Debt

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- Benefits of Debt

- Tax Benefits
- Adds discipline to management

- Costs of Debt

- Bankruptcy Costs
- Agency Costs
- Loss of Future Flexibility

# Tax Benefits of Debt

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- 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

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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

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- 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

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

# Bankruptcy Cost

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- The expected bankruptcy cost is a function of two variables--
  - 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
  - the probability of bankruptcy, which will depend upon how uncertain you are about future cash flows
- As you borrow more, you increase the probability of bankruptcy and hence the expected bankruptcy cost.

# The Bankruptcy Cost Proposition

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



## Debt & Bankruptcy Cost

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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

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- 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 your 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 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.



## Debt and Agency Costs

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Assume that you are a bank. Which of the following businesses would you perceive the greatest agency costs?

- A Large Pharmaceutical company
- A Large Regulated Electric Utility

Why?

## Loss of future financing flexibility

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- 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.

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

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- 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

<b>Factor</b>	<b>Ranking (0-5)</b>
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

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## **Advantages of Borrowing**

### *1. Tax Benefit:*

Higher tax rates --> Higher tax benefit

### *2. Added Discipline:*

Greater the separation between managers and stockholders --> Greater the benefit

## **Disadvantages of Borrowing**

### *1. Bankruptcy Cost:*

Higher business risk --> Higher Cost

### *2. Agency Cost:*

Greater the separation between stockholders & lenders --> Higher Cost

### *3. Loss of Future Financing Flexibility:*

Greater the uncertainty about future financing needs --> Higher Cost

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

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- 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

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- 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

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- 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

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- Leverage is irrelevant. A firm's value will be determined by its project cash flows.
- 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?

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- 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

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- 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

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<b>Ranking</b>	<b>Source</b>	<b>Score</b>
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



## Financing Choices

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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