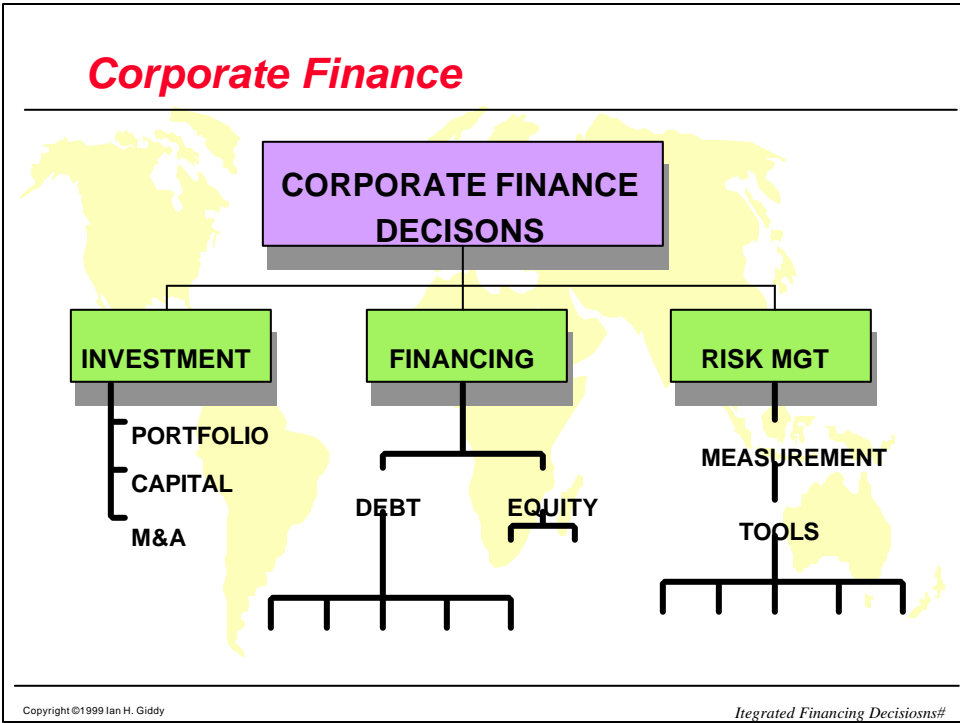


***Integrated Financing Decisions***

Prof. Ian Giddy  
New York University



## Maximize Firm Value

- λ Identify the economic and financial market conditions facing the firm, and analyze the competitive features of the business.
- λ 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
- λ Manage financial risks that investors cannot easily manage, to maximize the firm's debt and investment capacity
- λ Choose a capital structure and financing mix that minimizes the hurdle rate and matches the assets being financed.
- λ If there are not enough investments that earn the hurdle rate, return the cash to the parent company and stockholders in such a way as to minimize worldwide taxes.

Objective: Maximize the Value of the Firm

## Equity Betas and Leverage

- λ The beta of equity alone can be written as a function of the unlevered beta and the debt-equity ratio

$$\beta_L = \beta_u (1 + ((1-t)D/E))$$

where

- $\beta_L$  = Levered or Equity Beta
- $\beta_u$  = Unlevered Beta
- t = Corporate marginal tax rate
- D = Market Value of Debt
- E = Market Value of Equity

## From Cost of Equity to Cost of Capital

- λ The cost of capital is a composite cost to the firm of raising financing to fund its projects.
- λ It is the discount rate that will be applied to capital budgeting projects within the firm

## The Cost of Capital

### Choice

1. Equity
  - Retained earnings
  - New stock issues
  - Warrants

**Cost of equity = riskless rate + beta \* risk premium**

2. Debt

- Bank borrowing
- Bond issues

**Cost of debt = Borrowing rate (1 - tax rate)**

Debt + equity =  
Capital

### Cost

Cost of equity

- depends upon riskiness of the stock
- will be affected by level of interest rates

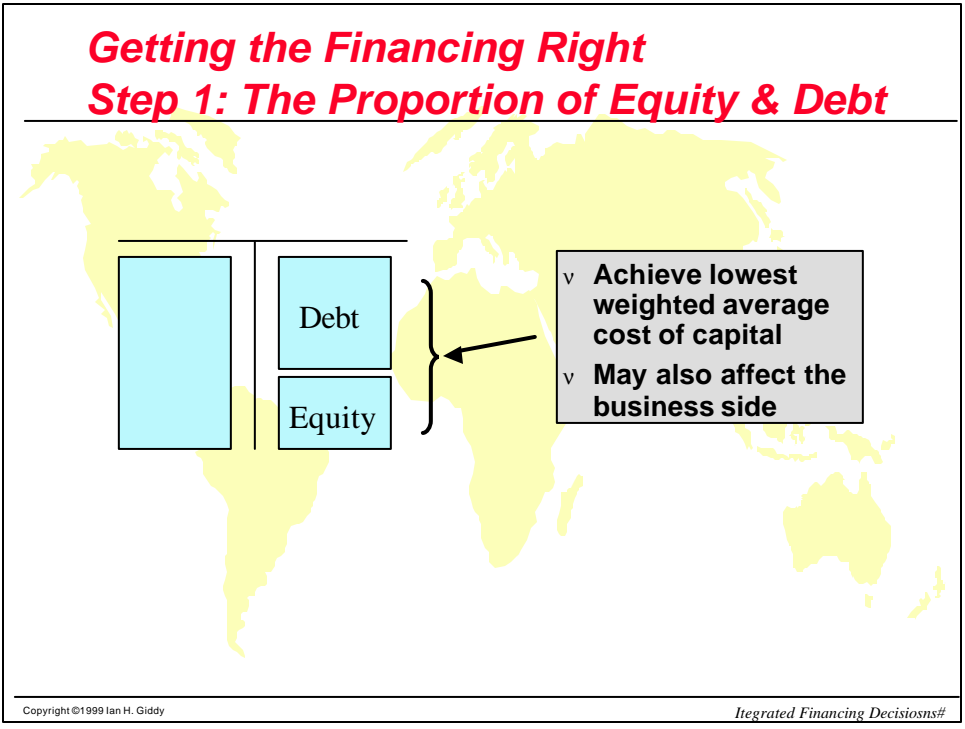
Cost of debt

- depends upon default risk of the firm
- will be affected by level of interest rates
- provides a tax advantage because interest is tax-deductible

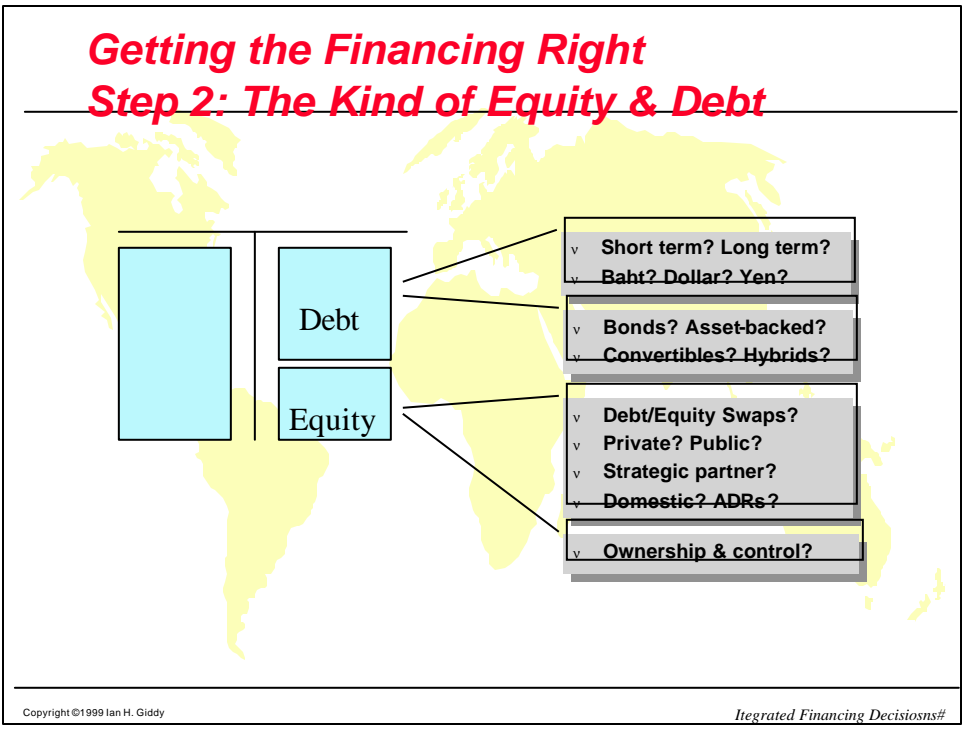
Cost of capital = Weighted average of cost of equity and cost of debt; weights based upon market value.

**Cost of capital =  $k_d [D/(D+E)] + k_e [E/(D+E)]$**

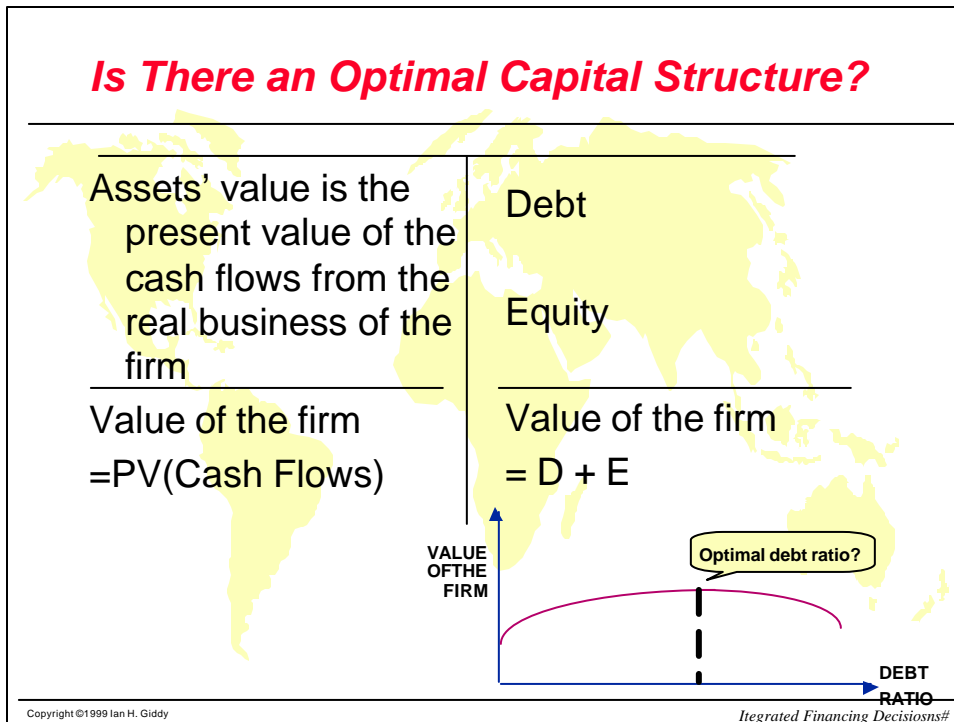
**Getting the Financing Right**  
**Step 1: The Proportion of Equity & Debt**



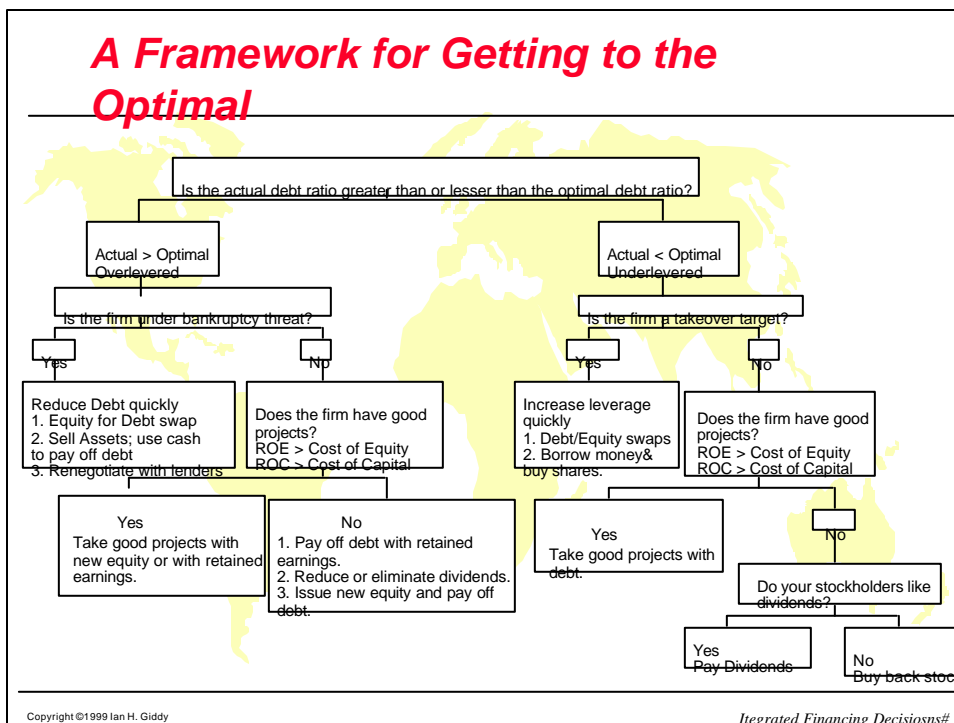
**Getting the Financing Right**  
**Step 2: The Kind of Equity & Debt**



## Is There an Optimal Capital Structure?



## A Framework for Getting to the Optimal



## Financing Choices

Assets' value is the present value of the cash flows from the real business of the firm

Value of the firm  
=PV(Cash Flows)

From  
How much debt?  
to  
What kind of debt?

*You cannot change the value of the real business just by shuffling paper*  
*- Modigliani-Miller*

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## Corporate Financing Choices: What Kind of Debt?

- λ Fixed/floating
- λ Currency of denomination
- λ Maturity or availability
- λ Domestic/Euro
- λ Public/private
- λ Asset-based
- λ Credit enhanced
- λ Swapped
- λ Equity-linked

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## Financing Choices and Risk Management

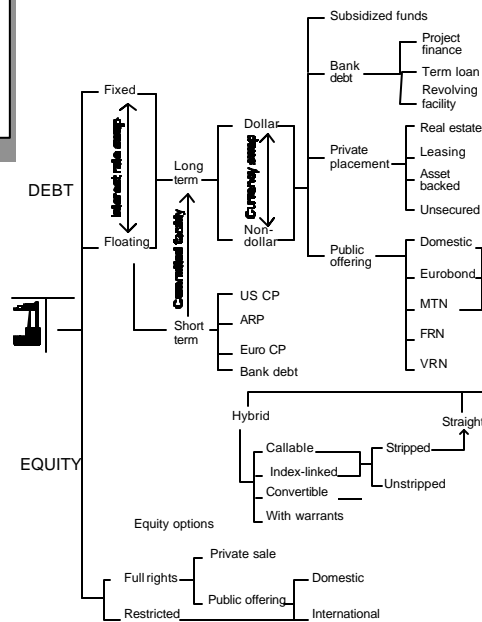
- λ Financial market risk - *exposure to interest rate and currency fluctuations*
- λ Techniques for measuring financial risk
- λ Instruments for managing financial risk

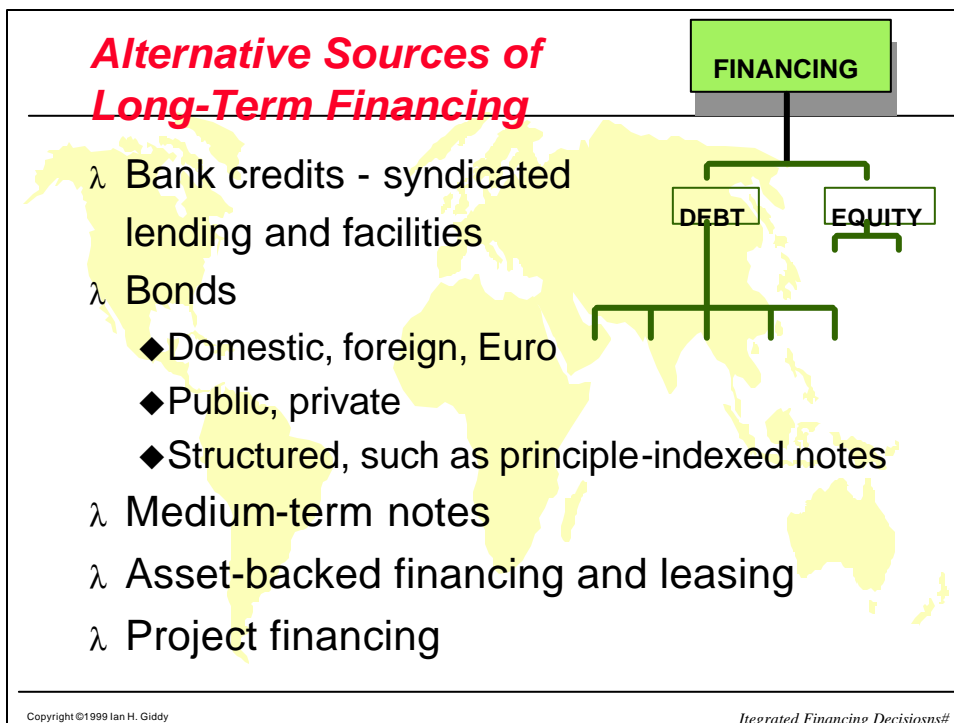
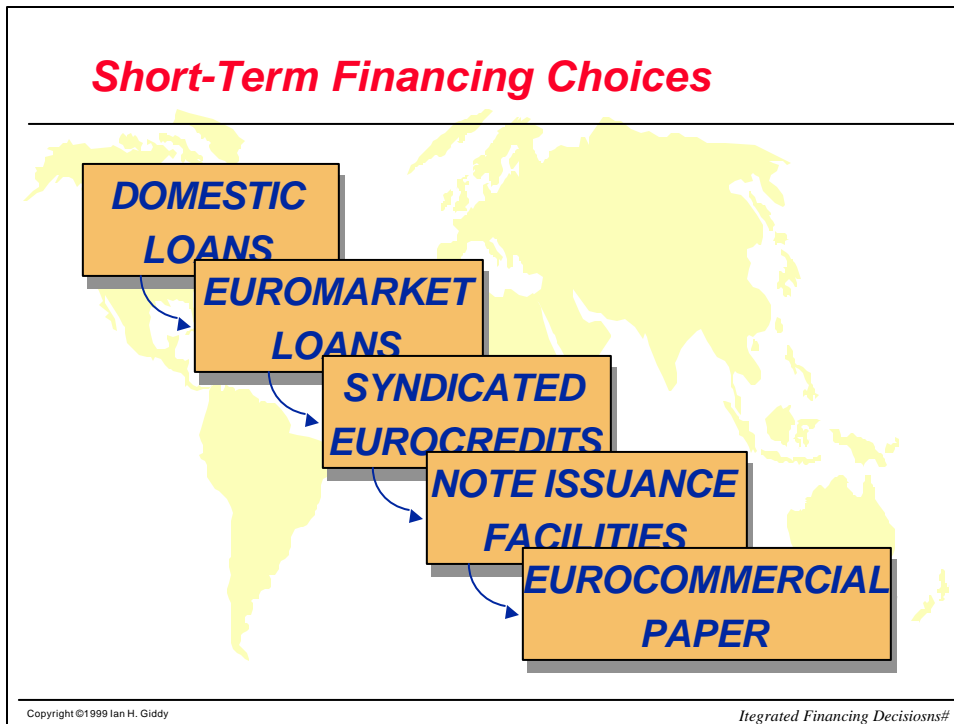
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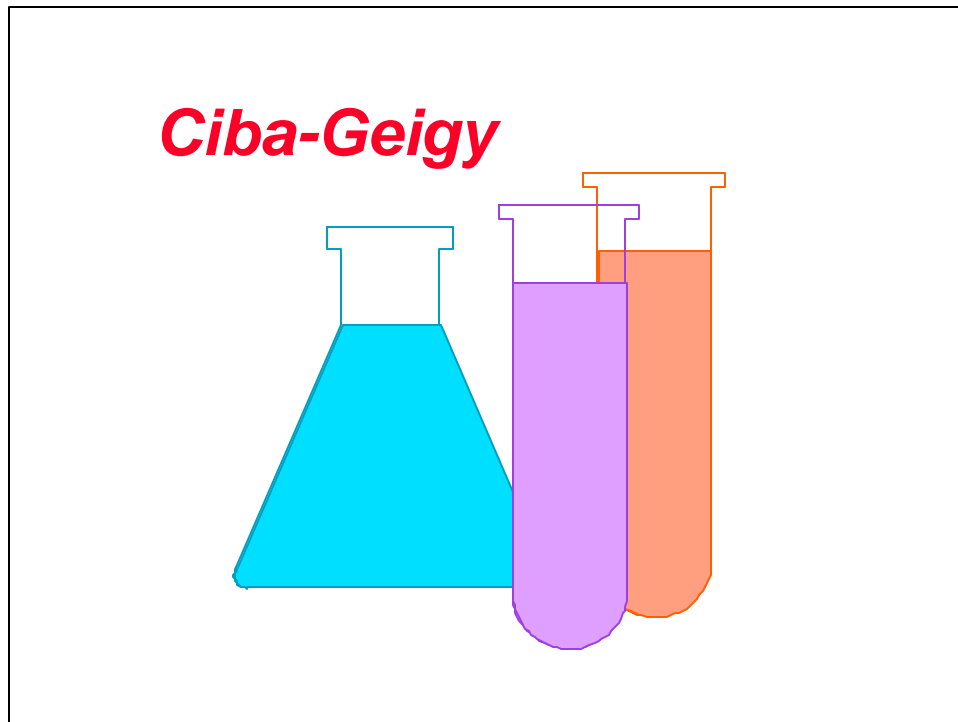
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Debt?  
Equity?  
What kind?

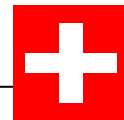
### FINANCING ALTERNATIVES AVAILABLE TO MAJOR CORPORATIONS





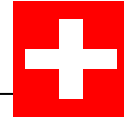


### **Case Study: Financing Ciba**



- 1) What is Ciba's debt-to-equity ratio, and what might one advise the company about what it should be?
- (2) How much of Ciba's debt is fixed-rate borrowing, and should this proportion change?
- (3) How much of the company's debt should be long term?
- (4) What is the composition, by currency, of Ciba's debt? What should it be?

### Case Study: Financing Ciba

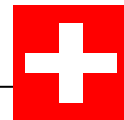


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### Case Study: Financing Ciba



- Could Ciba benefit from more debt?
- ◆ Tax shield?
- Could Ciba be hurt by more debt?
- ◆ Risks of financial distress?
  - ◆ Costs of financial distress?

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### Ciba: How Much Debt?

Consideration	General	In Ciba's case
Tax shield	Interest on debt is tax deductible, so more leverage is better, other things being equal.	Ciba is profitable, and has been so since 1982, so it needs as much of a tax shield as it can get.
Risk of financial distress	Volatility of operating earnings increases probability of bankruptcy, which involves out-of-pocket and other costs.	Ciba's earnings are diversified (health care, agricultural and industrial chemicals and materials) and relatively stable (see chart below), unlike some large, capital-intensive firms. Thus it can tolerate more debt.
Intangible assets	Firms with intangible assets such as reputation, patents and human capital suffer greater losses when under financial stress.	Ciba relies heavily on research, reputation, and ongoing customer relationships, much of which could be lost if bankruptcy threatened.

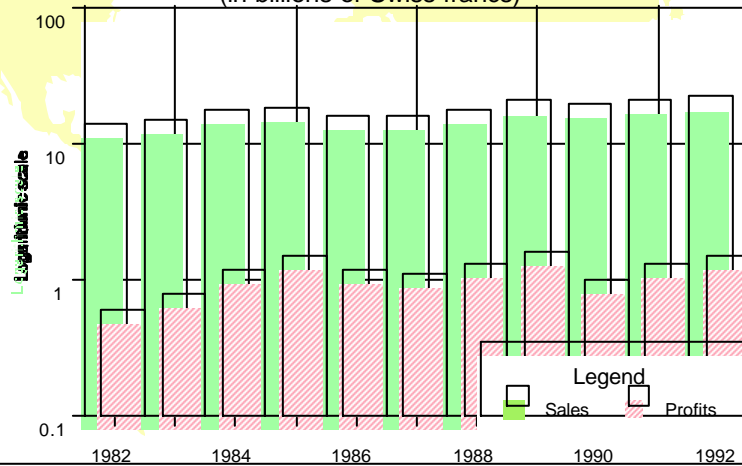
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### Ciba: Are Revenues Stable?

#### Ciba Sales and Earnings

(in billions of Swiss francs)



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### **Short Term or Long Term?**

- λ In 1992, Ciba had fixed assets of SF13.9 billion and capital expenditures of SF1.9 billion.
- λ Yet the majority of Ciba's debt is in the short-term commercial paper, bank debt, and suppliers-credit markets.
- λ This suggests that if the proportion of debt financing as a whole is increased, much of it should be in the form of long-term debt.

### **Currency of Denomination of Ciba's Debt? What Should It Be?**

- λ Geographic location of sales and capital assets.
- λ Currency distribution of sales.
- λ Nature of the company's businesses

## Currency of Ciba's Assets and Debt

	Geographic distribution of		Currency distribution of sales	Remarks on economic exposure	Estimated currency distribution of debt
	Fixed assets	Sales			
Switzerland	41%		2.4%	Net short position because much of production, but little of sales, here	9%
U.K.		43%	5.4%	Part of sales effectively U.S. dollar denominated	7%
Other Europe	27%		34.6%		21%
U.S. and Canada	23%	32%	41.3%		54%
Latin America	4%	7%	5.3%	Most of sales effectively dollar denominated	2%
Asia	4%	13%	10.9%	Part of sales effectively U.S. dollar denominated	6%
Rest of the world	1%	5%		Most of sales effectively dollar denominated	1%

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## Guidelines for Financing

- λ Liabilities to match assets: **economic exposure** of the firm determines base financing choices.
- λ Decision on whether or not to fully match depends on company's **view** relative to the view implied by market prices.
- λ When strategy is chosen, use the **financing/hedging** techniques that offer the **lowest effective cost**.

