Chapter 12

Capital Structure: *Basic Concepts*

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Key Concepts and Skills

- Describe and interpret the effect of financial leverage (i.e., capital structure) on firm earnings
- Define and apply homemade leverage
- Explain capital structure theories with and without taxes
- Compute the value of the unlevered and levered firm

Chapter Outline

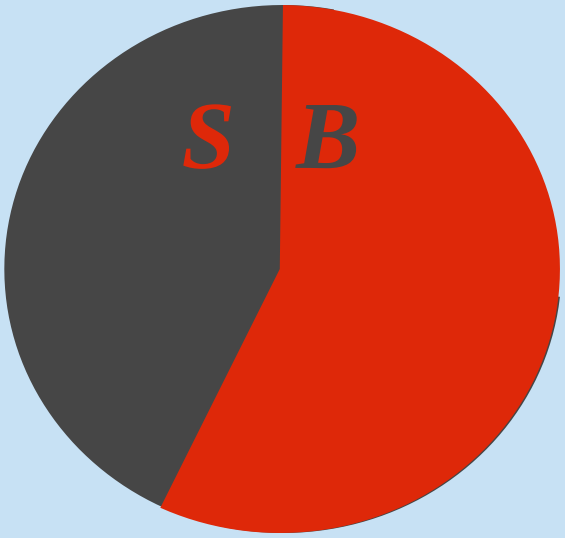
1. The Capital Structure Question and The Pie Theory
2. Maximizing Firm Value versus Maximizing Stockholder Interests
3. Financial Leverage and Firm Value: An Example
4. Modigliani and Miller: Proposition II (No Taxes)
5. Taxes

12.1 Capital Structure and the Pie

- The value of a firm is defined to be the sum of the value of the firm's debt and the firm's equity.

$$V = B + S$$

•If the goal of the firm's management is to make the firm as valuable as possible, then the firm should pick the debt-equity ratio that makes the pie as big as possible.



Value of the Firm

12.2 Stockholder Interests

There are two important questions:

1. Why should the stockholders care about maximizing *firm* value? Perhaps they should be interested in strategies that maximize *shareholder* value.
2. What is the ratio of debt-to-equity that maximizes the shareholder's value?

As it turns out, changes in capital structure benefit the stockholders *if and only if* the value of the firm increases.

12.3 Financial Leverage, EPS, and ROE

Consider an all-equity firm that is considering going into debt. (Maybe some of the original shareholders want to cash out.)

	Current	Proposed
Assets	$20,000	$20,000
Debt	$0	$8,000
Equity	$20,000	$12,000
Debt/Equity ratio	0.00	2/3
Interest rate	n/a	8%
Shares outstanding	400	240
Share price	$50	$50

EPS and ROE Under Current Structure

	Recession	Expected	Expansion
EBIT	$1,000	$2,000	$3,000
Interest	0	0	0
Net e	$1,000	$2,000	$3,000
EPS	$2.50	$5.00	$7.50
ROA	5%	10%	15%
ROE	5%	10%	15%

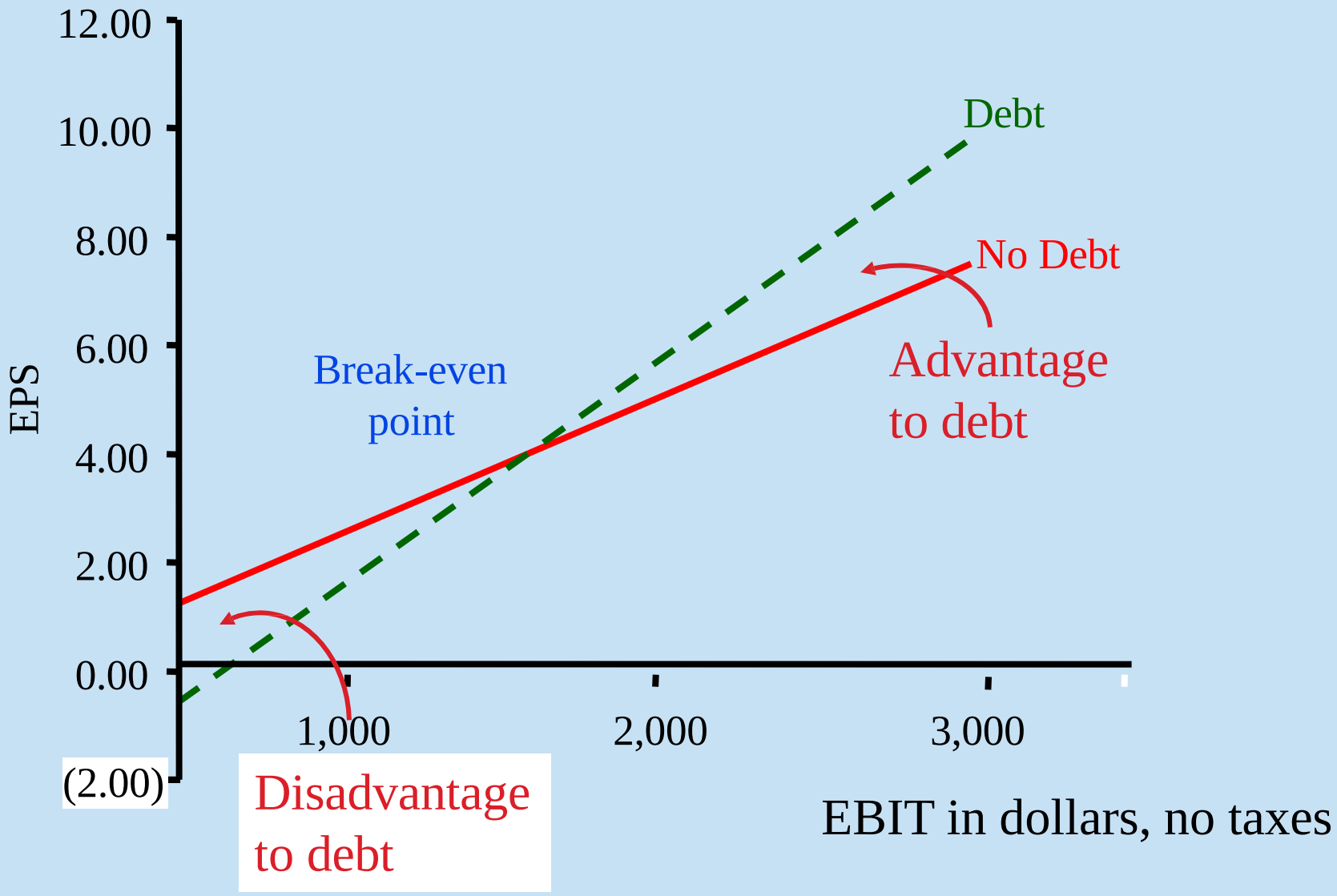
Current Shares Outstanding = 400 shares

EPS and ROE Under Proposed Structure

	Recession	Expected	Expansion
EBIT	$1,000	$2,000	$3,000
Interest	640	640	640
Net e	$360	$1,360	$2,360
EPS	$1.50	$5.67	$9.83
ROA	1.8%	6.8%	11.8%
ROE	3.0%	11.3%	19.7%

Proposed Shares Outstanding = 240 shares

Financial Leverage and EPS



Assumptions of the M&M Model

- Homogeneous Expectations
- Homogeneous Business Risk Classes
- Perpetual Cash Flows
- Perfect Capital Markets:
  - Perfect competition
  - Firms and investors can borrow/lend at the same rate
  - Equal access to all relevant information
  - No transaction costs
  - No taxes

Homemade Leverage: An Example

	Recession	Expected	Expansion
EPS of Unlevered Firm	*$2.50*	*$5.00*	*$7.50*
Earnings for 40 shares	$100	$200	$300
Less interest on $800 (8%)	$64	$64	$64
Net Profits	$36	$136	$236
ROE (Net Profits / $1,200)	3.0%	11.3%	19.7%

We are buying 40 shares of a $50 stock, using $800 in margin.
We get the same ROE as if we bought into a levered firm.

Our personal debt-equity ratio is: $\frac{B}{S} = \frac{\$800}{\$1,200} = 2/3$

Homemade (Un)Leverage: An Example

	Recession	Expected	Expansion
EPS *of* Levered Firm	$1.50	$5.67	*$9.83*
Earnings for 24 shares	$36	$136	$236
Plus interest on $800 (8%)	$64	$64	$64
Net Profits	$100	$200	$300
ROE (Net Profits / $2,000)	5%	10%	15%

Buying 24 shares of an otherwise identical levered firm along with some of the firm's debt gets us to the ROE of the unlevered firm.

This is the fundamental insight of M&M

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