

M339W: November 19th, 2021.

Equity vs. Debt Financing.

Capital Structure: Relative proportions of debt, equity, and other securities that a company has outstanding.

Financing a firm w/ Equity

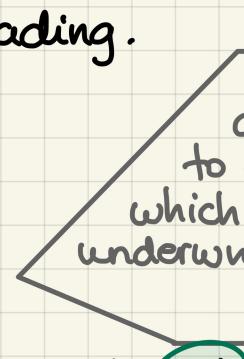
... equity in the firm w/ no debt is called unlevered equity.

Financing a firm w/ Debt & Equity

... equity in a firm which also has debt outstanding is called levered equity.

Promised pmts to debt holders are to be made before the promised pmts to equity holders.

Perfect Capital Markets (PCM).

1. Investors and firms can trade in the same set of securities @ competitive market prices equal to the present value of their future cashflows.
2. There are no taxes, no transaction costs, or issuance costs associated w/ security trading.


When a firm takes out a loan or issues securities to raise capital, the bank which lends them the money or underwrites the sale will charge these fees.
3. A firm's financing decisions do not change the cashflows generated by its investments, nor do they reveal any new information about them.

Miller-Modigliani Proposition I -

In a perfect capital market, the total value of the firm's securities is equal to the market value of the total cashflows generated by its assets and it is not affected by its capital structure.

31) Determine which one of the following statements is **TRUE** with respect to a perfect capital market:

- (A) Taxes and transaction costs can exist.
- (B) A firm's choice of capital structure will have an effect on its cost of capital.
- (C) A firm's choice of capital structure will always have an effect on the firm's value.
- (D) Leverage has no effect on the risk of equity, even where there is no default risk.
- (E) The total value of a levered firm is equal to the total value of the firm without leverage..

7. A firm has the following capital structure:

	Market Value
Debt	5,000
Equity	10,000
Total	15,000

Current Share Price: 50
 Expected Earnings Per Share (EPS): 6
 Cost of New Debt: 5%

The firm would like to issue new debt and use the proceeds to repurchase equity.

Using the assumptions in Modigliani and Miller's Proposition I, determine the amount of new debt the firm must issue to achieve an expected ROE of 15%.

(A) 2000

(B) 3000

(C) 4000

(D) 5000

(E) 6000

return on equity

→: We want the firm's new RoE to be 15%

$$0.15 = \text{new ROE} = \frac{\text{"net money in"}}{\text{"MV of equity after new debt"}}$$

$$= \frac{\text{expected earnings} - \text{interest on new debt}}{\text{MV of equity} - \text{new debt}}$$

Let D be the amount of new debt.

$$0.15 = \text{new ROE} = \frac{\text{expected earnings} - D(0.05)}{\text{MV of equity} - D}$$

" 10,000 (from the table in problem).

$$\text{expected earnings} = (\text{expected earnings per share}) \times (\# \text{ of shares})$$
$$= 6 \times \frac{\text{MV of equity}}{\text{price per share}}$$
$$= 6 \cdot \frac{10,000}{50} = 6(200) = 1200$$

$$0.15 = \frac{1200 - 0.05D}{10000 - D}$$

$$0.15(10000 - D) = 1200 - 0.05D$$

$$1500 - 0.15D = 1200 - 0.05D$$

$$0.1D = 300$$

$$\underline{D = 3000}$$

3. A company is financed by 1000 shares of stock with a current market value of 100 per share. The company decides to issue 50 5-year bonds with a par value of 100 and an annual coupon rate of 8% and use the proceeds to pay a cash dividend to the company's shareholders. The bonds sell at a market value that provides an annual effective yield of 10%

Assuming that Modigliani-Miller Proposition I holds, what is the market value per share of the company's stock immediately after the dividend payment?

- (A) 95.0
- (B) 95.4**
- (C) 100.0
- (D) 104.6
- (E) 105.0

→: The MV of equity prior to the bond is

$$(\# \text{ of shares}) \times (\text{price per share}) = \\ = 1000 (100) = 100,000$$

By Miller-Modigliani I,

MV of equity (prior to bond) =

= MV of equity (after the bond)

+ **value of bonds**

aka the value
of the dividend

Value of a single bond:

$$\text{coup} \cdot a_{\bar{n}} + C(1+i)^{-n} = 8 \cdot a_{\bar{5}} + 100 (1.1)^{-5} \\ = 8 \cdot \frac{1 - (1.1)^{-5}}{0.10} + 100 (1.1)^{-5} \\ = 92.41843$$

$$\Rightarrow \text{MV of equity (after the bond)} = 100,000 - 50 (92.41843) \\ = 95,379.08$$

3 ⇒ the new value per share: 95.37908.