

## BM mod16 ch17 debt policy - beta of debt and equity pps mcq practice exam questions

(The attached PDF file has better formatting.)

Assume capital markets are perfect (no corporate income taxes or other imperfections) and the Miller and Modigliani propositions hold.

At a debt-to-equity ratio of 34.2%, a firm has a debt beta of 17.1% and an equity beta of 114.5%. The firm issues more debt and repurchases equity to bring its debt-to-equity ratio to 50.6%, where its debt beta is 42.7%.

### Question 16.1: Debt-to-value ratio

What is the debt-to-value ratio at the debt-to-equity ratio of 34.2%?

Answer 16.1: If the debt-to-value ratio is  $z$ , the equity-to-value ratio is  $1 - z$ , so  $z / (1 - z) = 34.2\%$  and

$$z = 34.2\% / (1 + 34.2\%) = 25.48\%.$$

### Question 16.2: Beta of assets in perfect capital markets

What is the firm's beta of assets at the debt-to-equity ratio of 34.2%?

Answer 16.2: The firm's beta of assets is the debt-to-value ratio times the debt beta plus the equity-to-value ratio times the equity beta =  $25.48\% \times 17.1\% + (1 - 25.48\%) \times 114.5\% = 89.68\%$ .

### Question 16.3: Beta of assets in perfect capital markets

What is the firm's beta of assets at the debt-to-equity ratio of 50.6%?

In perfect capital markets the beta of assets and the project's opportunity cost of capital do not depend on the capital structure, so the firm's beta of assets at the debt-to-equity ratio of 50.6% is also 89.68%.

### Question 16.4: Debt-to-value ratio after refinancing

What is the firm's debt-to-value ratio at the new debt-to-equity ratio of 50.6%?

Answer 16.4: If the debt-to-value ratio is  $z$ , the equity-to-value ratio is  $1 - z$ , so  $z / (1 - z) = 50.6\%$  and

$$z = 50.6\% / (1 + 50.6\%) = 33.60\%$$

### Question 16.5: Beta of equity in perfect capital markets

What is the firm's beta of equity at the new debt-to-equity ratio of 50.6%?

Answer 16.5: The firm's beta of assets is the debt-to-value ratio times the debt beta plus the equity-to-value ratio times the equity beta, so

the equity beta = (the beta of assets – the debt-to-value ratio times the debt beta) / the equity-to-value ratio

$$= (89.68\% - 33.60\% \times 42.7\%) / (1 - 33.60\%) = 113.45\%$$

