

## FA Module 7 DuPont analysis Version 2 practice exam questions

covering interest coverage ratio, earnings before interest and taxes, total asset turnover, financial leverage, tax burden, interest burden, net profit margin, return on assets, asset turnover ratio, return on equity, return on assets, financial leverage

(The attached PDF file has better formatting.)

A firm has

- ! a tax burden of 83.7%
- ! an interest burden of 87.2%
- ! a net profit margin of 17.4%
- ! return on assets of 5.80%
- ! return on equity of 19.6%

Question 7.1: Effective tax rate

What is the firm's effective tax rate?

Answer 7.1:  $1 - 83.7\% = 16.3\%$

tax burden = net income / pre-tax income =

⇒ tax burden = pre-tax income × (1 – tax rate) / pre-tax income = (1 – tax rate)

⇒ tax burden = complement of tax rate

⇒ tax rate = complement of tax burden

Question 7.2: Interest coverage ratio

What is the firm's interest coverage ratio?

Answer 7.2:  $1 / (1 - 87.2\%) = 7.813$

EBT = earnings before taxes, or pre-tax income

EBIT = earnings before interest and taxes, or pre-tax income ⇒  $EBT = EBIT - \text{interest expense}$

interest coverage ratio = EBIT / interest expense

⇒ interest burden =  $EBT / EBIT = (EBIT - \text{interest expense}) / EBIT =$

$1 - \text{interest expense} / EBIT$

$1 - 1 / \text{interest coverage ratio}$

⇒ interest coverage ratio =  $1 / (1 - \text{interest burden})$

Question 7.3: EBIT margin

What is the firm's EBIT (earnings before interest and taxes) margin?

Answer 7.3:  $17.4\% / (83.7\% \times 87.2\%) = 23.84\%$

net profit margin = net income margin = net income / net revenue

EBIT margin = EBIT / net revenue

net income = EBIT × the interest burden × the tax burden

⇒ net income margin = the EBIT margin × the interest burden × the tax burden

⇒ EBIT margin = the EBIT margin / (the interest burden × the tax burden)

Question 7.4: Asset turnover

What is the firm's asset turnover?

Answer 7.4:  $(5.8\%) / (17.4\%) = 33.33\%$

return on assets = net income / average assets

asset turnover ratio = average assets / net revenue

⇒ return on assets = (net income / net revenue) / (average assets / net income)

⇒ return on assets = net profit margin × asset turnover ratio

⇒ asset turnover ratio = return on assets / net profit margin

Question 7.5: Financial leverage

What is the firm's financial leverage?

Answer 7.5:  $(19.6\%) / (5.80\%) = 3.379$

return on equity = net income / average equity

return on assets = net income / average assets

⇒ financial leverage = average assets / average equity

⇒ financial leverage = return on equity / return on assets

(Note: the textbook formula also shows financial leverage as *total assets / total equity* meaning *total average assets / total average equity*. End of the year assets and equity are sometimes used for ROA and ROE in other contexts, but Dupont analysis always uses average values.)