

Practice Midterm

Formulas:

Performance Measures	
Market value added (\$ millions)	market value of equity – book value of equity
Market-to-book ratio	market value of equity ÷ book value of equity
Profitability Measures	
Return on assets (ROA)	after-tax operating income/total assets
Return on capital (ROC)	after-tax operating income/(long-term debt + equity)
Return on equity (ROE)	net income/equity
EVA* (\$ millions)	after-tax operating income – cost of capital × capital
Operating profit margin	after-tax operating income/sales
Efficiency Measures	
Asset turnover	sales/total assets at start of year
Receivables turnover	sales/receivables at start of year
Average collection period (days)	receivables at start of year/daily sales
Inventory turnover	cost of goods sold/inventory at start of year
Days in inventory	inventories at start of year/daily cost of goods sold
Leverage Measures	
Long-term debt ratio	long-term debt/(long-term debt + equity)
Long-term debt-equity ratio	long-term debt/equity
Total debt ratio	total liabilities/total assets
Times interest earned	EBIT/interest payments
Cash coverage ratio	(EBIT + depreciation)/interest payments
Liquidity Measures	
Net working capital to assets	net working capital/total assets
Current ratio	current assets/current liabilities
Quick ratio	(cash + marketable securities + receivables)/current liabilities
Cash ratio	(cash + marketable securities)/current liabilities
Growth Measure	
Payout ratio	dividends/earnings

3 factor DuPont decomposition:

$$ROE = \frac{\text{Net income} + \text{after tax interest}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}$$

ROE= Operating profit margin x Asset turnover x measure of leverage

- Present value of a cashflow:
- Present value of a perpetuity:
- Present value of a perpetuity received t years in the future:
- Present value of an annuity received for t years:

$$\sum_{t=1}^n \frac{C_t}{(1+r)^t}$$

$$\frac{C}{r}$$

$$\frac{C}{r(1+r)^t}$$

$$\frac{C}{r} - \frac{C}{r(1+r)^t}$$

Part 2 – Quantitative questions (20 points each)

5. An analyst looks at the following common size summary of financial statement and says. Both firms seem equally profitable, they have the same Net Income + ATI / Sales ratio. Use a 3 factor DuPont decomposition to find additional insights regarding the source of profitability of each company. Comment your findings.

(all figures expressed as % of sales)

	Block	Chain
Sales	100	100
Net income + after tax interest	20	20
Assets	50	25
Debt	25	0
Equity	25	25

6. A local bank advertises the following deal: “Pay us \$100 a year for 10 years and then we will pay you (or your beneficiaries) \$100 a year forever.” .

a. Explain and prove why this is not good deal if the interest rate available on other deposits is 10%?

b. What should be the future annual payment in order to make this a good deal?

Part 3 – Long quantitative question (40 points)

7. Using the following information and a discount rate of 10%, determine for each project:

Project Bit				
Year	0	1	2	3
After tax income		20	30	40
Depreciation		10	10	10
Capex	-50			2.8
Changes in NWC		0	0	0
FCF	-50	30	40	52.8

Project Coin				
Year	0	1	2	3
After tax income		4	5	40
Depreciation		10	10	10
Capex	-30			0.4
Changes in NWC		0	0	0
FCF	-30	14	15	50.4

a. NPV :

b. Profitability index:

c. Payback period

d. If you can only invest \$50, which project would you invest on? Why?