

Solutions to E120 Midterm Exam, Fall, 2007
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1. Balance Sheet - 2005

Assets		Liabilities	
Cash	\$800	Notes payable	\$1,200
Marketable securities	\$400	Accounts payable	\$2,400
Accounts receivable	\$900	Subtotal, current liab	\$3,600
Inventory	\$1,800	Long-term debt	\$3,000
Subtotal, current assets	\$3,900		
<u>Fixed Assets</u>		Total Liabilities	\$6,600
Net plant and equipment	\$6,000	Equity and	
		Retained earnings	\$3,300
Total Assets	\$9,900	Total	\$9,900

Balance Sheet – 2006

Assets		Liabilities	
Cash	\$500	Notes payable	\$1,600
Marketable securities	\$300	Accounts payable	\$2,000
Accounts receivable	\$800	Subtotal, current liab	\$3,600
Inventory	\$2,000	Long-term debt	\$2,800
Subtotal, current assets	\$3,600		
<u>Fixed Assets</u>		Total Liabilities	\$6,400
Net plant and equipment	\$8,000	Equity and	
		Retained earnings	\$5,200
Total Assets	\$11,600	Total	\$11,600

Income Statement – 2006

Sales	\$1,000
Cost of Goods Sold	\$400
Depreciation	\$100
EBIT	\$500
Interest	\$150
Taxes (34% of \$350)	\$119
Net Income	\$231

- a. $OCF = EBIT + Depreciation - Taxes = \$500 + \$100 - \$119 = \$481$
- b. Net fixed assets increased from \$6,000 to \$8,000 and there was \$100 depreciation. So net capital spending must have been $\$8,000 - \$5,900 = \$2,100$.
- c. NWC at end of 2005 was $\$3,900 - \$3,600 = \$300$. NWC at end of 2006 was $\$3,600 - \$3,600 = 0$.
- d. Total cash flow from assets in 2006 = $OCF - NCS + \Delta NWC = \$481 - \$2,100 + (-\$300) = -\$1,319$.

2. a. Let X be loan amount. Then

$$X = PV = \sum_{t=1}^{12} \frac{0.10X}{(1+r)^t} \text{ or } 1 = \sum_{t=1}^{12} \frac{0.10}{(1+r)^t} \text{ or } 10 = \sum_{t=1}^{12} \frac{1}{(1+r)^t} \text{ or}$$

$$10 = \frac{1 - \frac{1}{(1+r)^{12}}}{r} \text{ or } \frac{1}{1-10r} = (1+r)^{12} .$$

b. 3% is closest.

c. $(1+0.03)^{12} = 1.426$ so the EAR is about 42.6%.

3. a. For a bond, $PV = C * \frac{1 - \frac{1}{(1+r)^T}}{r} + \frac{F}{(1+r)^T}$. After 5 years, our bond satisfies:

$$1,100 = 80 * \frac{1 - \frac{1}{(1+r)^{20}}}{r} + \frac{1,000}{(1+r)^T} .$$

b. 7% is closest.

4. a. For a stock with constant growth rate, $P_0 = \frac{D_1}{R-g} = \frac{\$10 * 1.05}{0.10 - 0.05} = \210 .

b. $P_1 = \frac{D_2}{R-g} = \frac{\$10 * (1.05)^2}{0.10 - 0.05} = \220.50 .

c. $P_{-1} = \frac{D_0}{R-g} = \frac{\$10}{0.10 - 0.05} = \$200$.