

Financial Statement Analysis & Valuation, 5th Edition
by Easton, McAnally, Sommers, & Zhang

Practice Quiz Solutions

Module 13 – Cash-Flow-Based Valuation

1. Penn Company reports net operating profit after tax (NOPAT) of \$3,306 million in 2017. Its net operating assets at the beginning of 2017 are \$10,215 million and are \$11,137 million at the end of 2017.

What are Penn's free cash flows to the firm (FCFF) for 2017?

- a. \$3,305 million
- b. \$2,441 million
- c. \$2,384 million
- d. \$5,176 million

Answer: c

$$\begin{aligned} \text{FCFF} &= \text{NOPAT} - \text{increase in NOA} \\ &= \$3,306 \text{ million} - (\$11,137 \text{ million} - \$10,215 \text{ million}) \\ &= \$2,384 \text{ million} \end{aligned}$$

2. Following are forecasts of Value-Mart Corporation's sales, net operating profit after tax (NOPAT), and net operating assets (NOA) as of January 31, 2017.

(in millions)	Reported 2017	Horizon Period				Terminal Period
		2018	2019	2020	2021	
Sales	\$51,271	\$57,526	\$64,544	\$72,418	\$81,253	\$82,878
NOPAT	2,694	2,876	3,227	3,621	4,063	4,144
NOA	22,429	25,121	28,185	31,624	35,482	36,191

Assuming a terminal period growth rate of 2%, discount rate (WACC) of 7%, shares outstanding of 874.1 million, and net nonoperating obligations (NNO) of \$8,224 million, estimate the value of a share of Value-Mart common stock using the discounted cash flow (DCF) model as of January 31, 2017.

- a. \$41.50
- b. \$43.21
- c. \$47.45
- d. \$51.26

Answer: d

Value-Mart (\$ millions)	Current	Forecast Horizon				Terminal Year
	2017	2018	2019	2020	2021	
Sales.....	\$51,271	\$57,526	\$64,544	\$72,418	\$81,253	\$82,878
NOPAT	2,694	2,876	3,227	3,621	4,063	4,144
NOA	22,429	25,121	28,185	31,624	35,482	36,191
DCF Model						
Increase in NOA		\$ 2,692	\$ 3,064	\$ 3,439	\$ 3,858	\$ 709
FCFF (NOPAT - Increase in NOA)		(184)	(163)	(182)	(205)	3,435
Discount factor $[1 / (1 + r_w)^t]$		0.93458	0.87344	0.81630	0.76290	
Present value of horizon FCFF.....		(172)	(142)	(149)	(156)	
Cum present value of horizon FCFF	\$ (619)					
Present value of terminal FCFF	52,411					
Total firm value	53,030					
Less NNO	8,224					
Firm equity value	<u>\$44,806</u>					
Shares outstanding (millions)	874.1					
Stock price per share	<u>\$ 51.26</u>					

3. Following are forecasts of sales, net operating profit after tax (NOPAT), and net operating assets (NOA) as of December 31, 2017 for Stellar Stores, Inc.

(in millions)	Reported 2017	Horizon Period				Terminal Period
		2018	2019	2020	2021	
Sales	\$37,006	\$44,777	\$54,180	\$65,558	\$79,325	\$80,912
NOPAT	1,292	1,563	1,891	2,288	2,768	2,824
NOA	10,007	102	14,643	17,718	21,439	21,868

Assuming a terminal period growth rate of 2%, a discount rate (WACC) of 8%, common shares outstanding of 814.3 million, and net nonoperating obligations (NNO) of \$1,676 million, estimate the value of a share of Stellar common stock using the discounted cash flow (DCF) model as of December 31, 2017.

- \$23.59
- \$32.95
- \$25.23
- \$31.06

Answer: d

Stellar Store, Inc. (\$ millions)	Current 2017	Forecast Horizon				Terminal Year
		2018	2019	2020	2021	
Sales.....	\$37,006	\$44,777	\$54,180	\$65,558	\$79,325	\$80,912
NOPAT	1,292	1,563	1,891	2,288	2,768	2,824
NOA.....	10,007	12,102	14,643	17,718	21,439	21,868
DCF Model						
Increase in NOA		\$ 2,095	\$ 2,541	\$ 3,075	\$ 3,721	\$ 429
FCFF (NOPAT – Increase in NOA)		(532)	(650)	(787)	(953)	2,395
Discount factor $[1 / (1 + r_w)^t]$		0.92593	0.85734	0.79383	0.73503	
Present value of horizon FCFF.....		(493)	(557)	(625)	(700)	
Cum present value of horizon FCFF	\$(2,375)					
Present value of terminal FCFF	29,340					
Total firm value	26,965					
Less NNO	1,676					
Firm equity value	<u>\$25,289</u>					
Shares outstanding (millions)	814.3					
Stock price per share.....	<u>\$ 31.06</u>					

4. Assume the following is the balance sheet for 3M Company.

Balance Sheet at December 31		
(\$ millions)	2016	2015
Assets		
Cash and cash equivalents	\$ 1,072	\$ 2,757
Accounts receivable, net	2,538	2,792
Inventories	2,162	1,897
Other current assets	<u>1,343</u>	<u>1,274</u>
Total current assets	7,115	8,720
Investments	272	227
Property, plant and equipment, net	5,593	5,711
Goodwill	3,473	2,655
Intangible assets, net	486	277
Prepaid pension and postretirement benefits	2,905	2,591
Other assets	<u>669</u>	<u>527</u>
Total assets	<u>\$20,513</u>	<u>\$20,708</u>
Liabilities and Stockholders' equity		
Current portion of long-term debt	\$ 1,072	\$ 2,094
Accounts payable	1,256	1,168
Accrued payroll	469	487
Accrued income taxes	989	867
Other current liabilities	<u>1,452</u>	<u>1,455</u>
Total current liabilities	5,238	6,071
Long-term debt	1,309	727
Other liabilities	<u>3,866</u>	<u>3,532</u>
Total liabilities	10,413	10,330
Stockholders' equity		
Common stock	9	9
Capital in excess of par value	267	287
Retained earnings	17,358	15,781
Treasury stock	(6,965)	(5,503)
Accumulated other comprehensive income	<u>(569)</u>	<u>(196)</u>
Stockholders' equity	<u>10,100</u>	<u>10,378</u>
Total liabilities and stockholders' equity	<u>\$20,513</u>	<u>\$20,708</u>

Compute net operating assets (NOA) for 2016.

- a. \$12,481 million
- b. \$13,465 million
- c. \$11,137 million
- d. \$16,075 million

Answer: c

$$\begin{aligned}
 \text{NOA} &= \$20,513 - 1,072 - \$272 - \$1,256 - \$469 - \$989 - \$1,452 - \$3,866 \\
 &= \$11,137 \text{ million}
 \end{aligned}$$

5. Assume the following is the income statement for 3M Company.

Income Statement Year Ended December 31 (\$ millions)	2016
Net sales	
Operating expenses	\$21,167
Cost of sales	10,381
Selling, general and administrative expenses	4,535
Research, development and related expenses	<u>1,242</u>
Total	<u>16,158</u>
Operating income	5,009
Interest expense, net	<u>26</u>
Income before taxes and noncontrolling interest	4,983
Provision for income taxes	1,694
Noncontrolling interest	<u>55</u>
Net income	<u>\$ 3,234</u>

Compute net operating profit after tax (NOPAT) for 2016, assuming a federal and state statutory tax rate of 37%.

- a. \$3,315 million
- b. \$3,305 million
- c. \$5,009 million
- d. \$3,289 million

Answer: b

$$\begin{aligned} \text{NOPAT} &= \$5,009 - (\$1,694 + [\$26 \times 37\%]) \\ &= \$3,305 \text{ million} \end{aligned}$$

6. Assume the following is the balance sheet for Intel Corporation.

Balance Sheet At December 31 (\$ millions)	2016	2015
Assets		
Cash and cash equivalents	\$ 7,324	\$ 8,407
Short-term investments	5,448	8,765
Accounts receivable, net	3,914	2,999
Inventories	3,126	2,621
Deferred tax assets	1,149	979
Other current assets	<u>233</u>	<u>287</u>
Total current assets	\$21,194	\$24,058
Property, plant and equipment, net	17,111	15,768
Marketable equity securities	537	656
Other long-term investments	4,135	2,563
Goodwill	3,873	3,719
Deferred taxes and other assets	<u>1,464</u>	<u>1,379</u>
Total assets	<u>\$48,314</u>	<u>\$48,143</u>
Liabilities and Stockholders' equity		
Current portion of long-term debt	\$ 313	\$ 201
Accounts payable	2,249	1,943
Accrued compensation	2,110	1,858
Accrued advertising	1,160	894
Deferred income on shipments to distributors	632	592
Other accrued liabilities	810	1,355
Income taxes payable	<u>1,960</u>	<u>1,163</u>
Total current liabilities	9,234	8,006
Long-term debt	2,106	703
Deferred tax liabilities	703	855
Other long-term liabilities	89	0
Stockholders' equity		
Preferred stock	--	--
Common stock	6,245	6,143
Accumulated other comprehensive income	127	148
Retained earnings	<u>29,810</u>	<u>32,288</u>
Stockholders' equity	<u>36,182</u>	<u>38,579</u>
Total liabilities and stockholders' equity	<u>\$48,314</u>	<u>\$48,143</u>

Compute Intel's net nonoperating assets (NNO) for year-end 2016.

- a. \$ (7,701) million
- b. \$ 3,879 million
- c. \$ 19,863 million
- d. \$(15,025) million

Answer: d

$$\begin{aligned}
 \text{2016 NNO} &= \text{Nonoperating liabilities} && - && \text{Nonoperating assets} \\
 &= (\$313 + \$2,106) && - && (\$7,324 + \$5,448 + \$537 + \$4,135) = \$ (15,025) \text{ million}
 \end{aligned}$$