Fundamentals of Corporate Finance 12th edition Ross Solutions Manual

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CHAPTER 2
FINANCIAL STATEMENTS, TAXES, AND CASH FLOW

Answers to Concepts Review and Critical Thinking Questions

1. Liquidity measures how quickly and easily an asset can be converted to cash without significant loss in value. It's desirable for firms to have high liquidity so that they have a large factor of safety in meeting short-term creditor demands. However, since liquidity also has an opportunity cost associated with it—namely that higher returns can generally be found by investing the cash into productive assets—low liquidity levels are also desirable to the firm. It's up to the firm's financial management staff to find a reasonable compromise between these opposing needs.

2. The recognition and matching principles in financial accounting call for revenues, and the costs associated with producing those revenues, to be "booked" when the revenue process is essentially complete, not necessarily when the cash is collected or bills are paid. Note that this way is not necessarily correct; it's the way accountants have chosen to do it.

3. Historical costs can be objectively and precisely measured whereas market values can be difficult to estimate, and different analysts would come up with different numbers. Thus, there is a trade-off between relevance (market values) and objectivity (book values).

4. Depreciation is a noncash deduction that reflects adjustments made in asset book values in accordance with the matching principle in financial accounting. Interest expense is a cash outlay, but it's a financing cost, not an operating cost.

5. Market values can never be negative. Imagine a share of stock selling for –$20. This would mean that if you placed an order for 100 shares, you would get the stock along with a check for $2,000. How many shares do you want to buy? More generally, because of corporate and individual bankruptcy laws, net worth for a person or a corporation cannot be negative, implying that liabilities cannot exceed assets in market value.

6. For a successful company that is rapidly expanding, for example, capital outlays will be large, possibly leading to negative cash flow from assets. In general, what matters is whether the money is spent wisely, not whether cash flow from assets is positive or negative.

7. It's probably not a good sign for an established company, but it would be fairly ordinary for a start-up, so it depends.

8. For example, if a company were to become more efficient in inventory management, the amount of inventory needed would decline. The same might be true if it becomes better at collecting its receivables. In general, anything that leads to a decline in ending NWC relative to beginning would have this effect. Negative net capital spending would mean that more long-lived assets were liquidated than purchased.

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9. If a company raises more money from selling stock than it pays in dividends in a particular period, its cash flow to stockholders will be negative. If a company borrows more than it pays in interest, its cash flow to creditors will be negative.

10. The adjustments discussed were purely accounting changes; they had no cash flow or market value consequences unless the new accounting information caused stockholders to revalue the derivatives.

11. Enterprise value is the theoretical takeover price. In the event of a takeover, an acquirer would have to take on the company's debt but would pocket its cash. Enterprise value differs significantly from simple market capitalization in several ways, and it may be a more accurate representation of a firm's value. In a takeover, the value of a firm's debt would need to be paid by the buyer. Thus, enterprise value provides a much more accurate takeover valuation because it includes debt in its value calculation.

12. In general, it appears that investors prefer companies that have a steady earnings stream. If true, this encourages companies to manage earnings. Under GAAP, there are numerous choices for the way a company reports its financial statements. Although not the reason for the choices under GAAP, one outcome is the ability of a company to manage earnings, which is not an ethical decision. Even though earnings and cash flow are often related, earnings management should have little effect on cash flow (except for tax implications). If the market is "fooled" and prefers steady earnings, shareholder wealth can be increased, at least temporarily. However, given the questionable ethics of this practice, the company (and shareholders) will lose value if the practice is discovered.

Solutions to Questions and Problems

NOTE: All end of chapter problems were solved using a spreadsheet. Many problems require multiple steps. Due to space and readability constraints, when these intermediate steps are included in this solutions manual, rounding may appear to have occurred. However, the final answer for each problem is found without rounding during any step in the problem.

Basic

1. To find owners' equity, we must construct a balance sheet as follows:

	Balance Sheet		
CA	$ 4,900	CL	$ 4,100
NFA	27,300	LTD	10,200
		OE	??
TA	$32,200	TL & OE	$32,200

We know that total liabilities and owners' equity (TL & OE) must equal total assets of $32,200. We also know that TL & OE is equal to current liabilities plus long-term debt plus owners' equity, so owners' equity is:

Owners' equity = $32,200 – 10,200 – 4,100 = $17,900

NWC = CA – CL = $4,900 – 4,100 = $800

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2. The income statement for the company is:

Income Statement	
Sales	$796,000
Costs	327,000
Depreciation	42,000
EBIT	$427,000
Interest	34,000
EBT	$393,000
Taxes (21%)	82,530
Net income	$310,470

3. One equation for net income is:

Net income = Dividends + Addition to retained earnings

Rearranging, we get:

Addition to retained earnings = Net income – Dividends = $310,470 – 95,000 = $215,470

4. EPS = Net income/Shares = $310,470/80,000 = $3.88 per share

DPS = Dividends/Shares = $95,000/80,000 = $1.19 per share

5. To calculate OCF, we first need the income statement:

Income Statement	
Sales	$46,200
Costs	23,100
Depreciation	2,200
EBIT	$20,900
Interest	1,700
Taxable income	$19,200
Taxes (22%)	4,224
Net income	$14,976

OCF = EBIT + Depreciation – Taxes = $20,900 + 2,200 – 4,224 = $18,876

6. Net capital spending = $NFA_{end} – NFA_{beg}$ + Depreciation
Net capital spending = $3,300,000 – 2,400,000 + 319,000
Net capital spending = $1,219,000

7. Change in NWC = $NWC_{end} – NWC_{beg}$
Change in NWC = $(CA_{end} – CL_{end}) – (CA_{beg} – CL_{beg})$
Change in NWC = ($5,360 – 2,970) – ($4,810 – 2,230)
Change in NWC = $2,390 – 2,580 = –$190

8. Cash flow to creditors = Interest paid – Net new borrowing
Cash flow to creditors = Interest paid – $(LTD_{end} – LTD_{beg})$
Cash flow to creditors = $255,000 – ($2,210,000 – 1,870,000)
Cash flow to creditors = –$85,000

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9. Cash flow to stockholders = Dividends paid – Net new equity
Cash flow to stockholders = Dividends paid – [($Common_{end}$ + $APIS_{end}$) – ($Common_{beg}$ + $APIS_{beg}$)]
Cash flow to stockholders = $545,000 – [($805,000 + 4,200,000) – ($650,000 + 3,980,000)]
Cash flow to stockholders = $170,000

Note, APIS is the additional paid-in surplus.

10. Cash flow from assets = Cash flow to creditors + Cash flow to stockholders
= –$85,000 + 170,000 = $85,000

Cash flow from assets = $85,000 = OCF – Change in NWC – Net capital spending
= $85,000 = OCF – (–$45,000) – 1,250,000

Operating cash flow = $85,000 – 45,000 + 1,250,000
Operating cash flow = $1,290,000

Intermediate

11. To find the book value of current assets, we use: NWC = CA – CL. Rearranging to solve for current assets, we get:

CA = NWC + CL = $235,000 + 895,000 = $1,130,000

The market value of current assets and fixed assets is given, so:

Book value CA	= $1,130,000	Market value CA	= $1,150,000
Book value NFA	= 3,400,000	Market value NFA	= 5,100,000
Book value assets	= $4,530,000	Total	= $6,250,000

12. To find the OCF, we first calculate net income.

Income Statement	
Sales	$305,000
Costs	176,000
Other expenses	8,900
Depreciation	18,700
EBIT	$101,400
Interest	12,900
Taxable income	$88,500
Taxes	23,345
Net income	$ 65,155
Dividends	$19,500
Additions to RE	$45,655

a. OCF = EBIT + Depreciation – Taxes = $101,400 + 18,700 – 23,345 = $96,755

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b. CFC = Interest – Net new LTD = $12,900 – (–4,900) = $17,800

Note that the net new long-term debt is negative because the company repaid part of its long-term debt.

c. CFS = Dividends – Net new equity = $19,500 – 6,400 = $13,100

d. We know that CFA = CFC + CFS, so:

CFA = $17,800 + 13,100 = $30,900

CFA is also equal to OCF – Net capital spending – Change in NWC. We already know OCF. Net capital spending is equal to:

Net capital spending = Increase in NFA + Depreciation = $46,000 + 18,700 = $64,700

Now we can use:

CFA = OCF – Net capital spending – Change in NWC
$30,900 = $96,755 – 64,700 – Change in NWC
Change in NWC = $1,155

This means that the company increased its NWC by $1,155.

13. The solution to this question works the income statement backwards. Starting at the bottom:

Net income = Dividends + Addition to retained earnings = $1,980 + 5,700 = $7,680

Now, looking at the income statement:

EBT – EBT × Tax rate = Net income

Recognize that EBT × Tax rate is the calculation for taxes. Solving this for EBT yields:

EBT = NI/(1 – Tax rate) = $7,680/(1 – .22) = $9,846

Now you can calculate:

EBIT = EBT + Interest = $9,846 + 4,400 = $14,246

The last step is to use:

EBIT = Sales – Costs – Depreciation
$14,246 = $64,000 – 30,700 – Depreciation
Depreciation = $19,054

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14. The balance sheet for the company looks like this:

Balance Sheet			
Cash	$ 127,000	Accounts payable	$ 210,000
Accounts receivable	115,000	Notes payable	155,000
Inventory	286,000	Current liabilities	$ 365,000
Current assets	$ 528,000	Long-term debt	830,000
		Total liabilities	$1,195,000
Tangible net fixed assets	$1,610,000		
Intangible net fixed assets	660,000	Common stock	??
		Accumulated ret. earnings	1,368,000
Total assets	$2,798,000	Total liab. & owners' equity	$2,798,000

Total liabilities and owners' equity is:

TL & OE = CL + LTD + Common stock + Retained earnings

Solving this equation for common stock gives us:

Common stock = $2,798,000 – 1,195,000 – 1,368,000 = $235,000

15. The market value of shareholders' equity cannot be negative. A negative market value in this case would imply that the company would pay you to own the stock. The market value of shareholders' equity can be stated as: Shareholders' equity = Max[(TA – TL), 0]. So, if TA are $9,400, equity is equal to $1,600, and if TA are $6,700, equity is equal to $0. We should note here that the book value of shareholders' equity can be negative.

16.

Income Statement	
Sales	$705,000
COGS	445,000
A&S expenses	95,000
Depreciation	140,000
EBIT	$25,000
Interest	70,000
Taxable income	–$45,000
Taxes (25%)	0
a. Net income	–$45,000

b. OCF = EBIT + Depreciation – Taxes = $25,000 + 140,000 – 0 = $165,000

c. Net income was negative because of the tax deductibility of depreciation and interest expense. However, the actual cash flow from operations was positive because depreciation is a non-cash expense and interest is a financing expense, not an operating expense.

17. A firm can still pay out dividends if net income is negative; it just has to be sure there is sufficient cash flow to make the dividend payments.

Change in NWC = Net capital spending = Net new equity = 0. (Given)
Cash flow from assets = OCF – Change in NWC – Net capital spending
Cash flow from assets = $165,000 – 0 – 0 = $165,000
Cash flow to stockholders = Dividends – Net new equity = $102,000 – 0 = $102,000

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Cash flow to creditors = Cash flow from assets – Cash flow to stockholders
Cash flow to creditors = $165,000 – 102,000 = $63,000
Cash flow to creditors = Interest – Net new LTD
Net new LTD = Interest – Cash flow to creditors = $70,000 – 63,000 = $7,000

18. *a.*

Income Statement	
Sales	$33,106
Cost of goods sold	23,624
Depreciation	5,877
EBIT	$ 3,605
Interest	2,650
Taxable income	$ 955
Taxes (22%)	210
Net income	$ 745

b. OCF = EBIT + Depreciation – Taxes
= $3,605 + 5,877 – 210 = $9,272

c. Change in NWC = $NWC_{end} - NWC_{beg}$
= $(CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
= ($8,612 – 4,575) – ($6,970 – 3,920)
= $4,037 – 3,050 = $987

Net capital spending = $NFA_{end} - NFA_{beg}$ + Depreciation
= $24,394 – 19,820 + 5,877 = $10,451

CFA = OCF – Change in NWC – Net capital spending
= $9,272 – 987 – 10,451 = –$2,166

The cash flow from assets can be positive or negative, since it represents whether the firm raised funds or distributed funds on a net basis. In this problem, even though net income and OCF are positive, the firm invested heavily in both fixed assets and net working capital; it had to raise a net $2,166 in funds from its stockholders and creditors to make these investments.

d. Cash flow to creditors = Interest – Net new LTD = $2,650 – 0 = $2,650

Cash flow to stockholders = Cash flow from assets – Cash flow to creditors
= –$2,166 – 2,650 = –$4,816

We can also calculate the cash flow to stockholders as:

Cash flow to stockholders = Dividends – Net new equity

Solving for net new equity, we get:

Net new equity = $1,888 – (–4,816) = $6,704

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The firm had positive earnings in an accounting sense (NI > 0) and had positive cash flow from operations. The firm invested $987 in new net working capital and $10,451 in new fixed assets. The firm had to raise $2,166 from its stakeholders to support this new investment. It accomplished this by raising $6,704 in the form of new equity. After paying out $1,888 of this in the form of dividends to shareholders and $2,650 in the form of interest to creditors, $2,166 was left to meet the firm's cash flow needs for investment.

19. *a.* $\text{Total assets}_{2017} = \$1,206 + 4,973 = \$6,179$
$\text{Total liabilities}_{2017} = \$482 + 2,628 = \$3,110$
$\text{Owners' equity}_{2017} = \$6,179 - 3,110 = \$3,069$

$\text{Total assets}_{2018} = \$1,307 + 5,988 = \$7,295$
$\text{Total liabilities}_{2018} = \$541 + 2,795 = \$3,336$
$\text{Owners' equity}_{2018} = \$7,295 - 3,336 = \$3,959$

b. $\text{NWC}_{2017} = \text{CA}_{2017} - \text{CL}_{2017} = \$1,206 - 482 = \$724$
$\text{NWC}_{2018} = \text{CA}_{2018} - \text{CL}_{2018} = \$1,307 - 541 = \$766$
$\text{Change in NWC} = \text{NWC}_{2018} - \text{NWC}_{2017} = \$766 - 724 = \$42$

c. We can calculate net capital spending as:

$\text{Net capital spending} = \text{Net fixed assets}_{2018} - \text{Net fixed assets}_{2017} + \text{Depreciation}$
$\text{Net capital spending} = \$5,988 - 4,973 + 1,363 = \$2,378$

So, the company had a net capital spending cash flow of $2,378. We also know that net capital spending is:

$\text{Net capital spending} = \text{Fixed assets bought} - \text{Fixed assets sold}$
$\$2,378 = \$2,496 - \text{Fixed assets sold}$
$\text{Fixed assets sold} = \$2,496 - 2,378 = \$118$

To calculate the cash flow from assets, we must first calculate the operating cash flow. The income statement is:

Income Statement

Sales	$15,301
Costs	7,135
Depreciation expense	1,363
EBIT	$ 6,803
Interest expense	388
EBT	$ 6,415
Taxes (21%)	1,347
Net income	$ 5,068

So, the operating cash flow is:

$\text{OCF} = \text{EBIT} + \text{Depreciation} - \text{Taxes} = \$6,803 + 1,363 - 1,347 = \$6,819$

And the cash flow from assets is:

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Cash flow from assets = OCF – Change in NWC – Net capital spending.
= $6,819 – 42 – 2,378 = $4,399

d. Net new borrowing = LTD18 – LTD17 = $2,795 – 2,628 = $167
Cash flow to creditors = Interest – Net new LTD = $388 – 167 = $221
Net new borrowing = $167 = Debt issued – Debt retired
Debt retired = $504 – 167 = $337

Challenge

20. Net capital spending $= NFA_{end} - NFA_{beg} + \text{Depreciation}$
$= (NFA_{end} - NFA_{beg}) + (\text{Depreciation} + AD_{beg}) - AD_{beg}$
$= (NFA_{end} - NFA_{beg}) + AD_{end} - AD_{beg}$
$= (NFA_{end} + AD_{end}) - (NFA_{beg} + AD_{beg})$
$= FA_{end} - FA_{beg}$

21.

Balance sheet as of Dec. 31, 2017

Cash	$8,676	Accounts payable	$6,269
Accounts receivable	11,488	Notes payable	1,674
Inventory	20,424	Current liabilities	$7,943
Current assets	$40,588		
		Long-term debt	$29,060
Net fixed assets	$72,770	Owners' equity	$76,355
Total assets	$113,358	Total liab. & equity	$113,358

Balance sheet as of Dec. 31, 2018

Cash	$9,247	Accounts payable	$6,640
Accounts receivable	13,482	Notes payable	1,641
Inventory	21,862	Current liabilities	$8,281
Current assets	$44,591		
		Long-term debt	$35,229
Net fixed assets	$77,610	Owners' equity	$78,691
Total assets	$122,201	Total liab. & equity	$122,201

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2017 Income Statement	
Sales	$16,549.00
COGS	5,690.00
Other expenses	1,353.00
Depreciation	2,376.00
EBIT	$7,130.00
Interest	1,110.00
EBT	$6,020.00
Taxes (21%)	1,264.20
Net income	$4,755.80
Dividends	$1,979.00
Additions to RE	2,776.80

2018 Income Statement	
Sales	$18,498.00
COGS	6,731.00
Other expenses	1,178.00
Depreciation	2,484.00
EBIT	$8,105.00
Interest	1,325.00
EBT	$6,780.00
Taxes (21%)	1,423.80
Net income	$5,356.20
Dividends	$2,314.00
Additions to RE	3,042.20

22. OCF = EBIT + Depreciation – Taxes = $8,105 + 2,484 – 1,424 = $9,165

Change in NWC = $NWC_{end} - NWC_{beg} = (CA - CL)_{end} - (CA - CL)_{beg}$
= ($44,591 – 8,281) – ($40,588 – 7,943)
= $3,665

Net capital spending = $NFA_{end} - NFA_{beg}$ + Depreciation
= $77,610 – 72,770 + 2,484 = $7,324

Cash flow from assets = OCF – Change in NWC – Net capital spending
= $9,165 – 3,665 – 7,324 = –$1,824

Cash flow to creditors = Interest – Net new LTD
Net new LTD = $LTD_{end} - LTD_{beg}$
Cash flow to creditors = $1,325 – ($35,229 – 29,060) = –$4,844

Net new equity = Common $stock_{end}$ – Common $stock_{beg}$
Common stock + Retained earnings = Total owners' equity
Net new equity = $(OE - RE)_{end} - (OE - RE)_{beg}$
= $OE_{end} - OE_{beg} + RE_{beg} - RE_{end}$
$RE_{end} = RE_{beg}$ + Additions to RE18
∴ Net new equity = $OE_{end} - OE_{beg} + RE_{beg} - (RE_{beg}$ + Additions to RE18)
= $OE_{end} - OE_{beg}$ – Additions to RE
Net new equity = $78,691 – 76,355 – 3,042 = –$706

CFS = Dividends – Net new equity
CFS = $2,314 – (–706) = $3,020

As a check, cash flow from assets is –$1,824.

CFA = Cash to from creditors + Cash flow to stockholders
CFA = –$4,844 + 3,020 = –$1,824

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Chapter 2
FINANCIAL STATEMENTS, TAXES, AND CASH FLOW

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2.3	IRS: www.irs.gov

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CHAPTER ORGANIZATION

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2.5 Summary and Conclusions

ANNOTATED CHAPTER OUTLINE

Slide 1: *Chapter 2*
Slide 2: *Key Concepts and Skills*
Slide 3: *Chapter Outline*

2.1. The Balance Sheet

Slide 4: *Balance Sheet*
Slide 5: *The Balance Sheet (Figure 2.1)*

A. Assets: The Left Side

Assets are divided into several categories. Make sure that students recall the difference between current and fixed assets, as well as tangible and intangible assets.

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B. Liabilities and Owners' Equity: The Right Side

The right-hand side is categorized by the firm's debt and ownership. Make sure that students recall the difference between current and long-term liabilities.

Recall the balance sheet identity:
Assets = Liabilities + Owners' equity

Lecture Tip: *Students sometimes find it difficult to see the relationship between the decisions made by financial managers and the values that subsequently appear on the firm's balance sheet. One way to help them see the "big picture" is to emphasize that all finance decisions are either investment decisions or financing decisions. Investment decisions involve the purchase and sale of any assets (not just financial assets). Investment decisions show up on the left-hand side of the balance sheet. Financing decisions involve the choice of whether to borrow money to buy the assets or to issue new ownership shares. Financing decisions show up on the right-hand side of the balance sheet.*

Lecture Tip: *You may find it useful at this point to spend a few minutes reinforcing the concepts of owners' equity and retained earnings. The students should recall that owners' equity consists of the common stock account, paid-in surplus, and treasury stock. It is important to remind students that the firm's net income belongs to the owners. It can either be paid out in dividends or reinvested in the firm. When it is reinvested in the firm, it becomes additional equity investment and shows up in the retained earnings account.*

C. Net Working Capital

Slide 6: *Net Working Capital and Liquidity*

The difference between a firm's current assets and its current liabilities.
Assets are listed on a balance sheet in order of how long it takes to convert them to cash. Liability order reflects time to maturity.

D. Liquidity

It is important to point out to students that liquidity has two components: how long it takes to convert to cash and the value that must be relinquished to convert to cash quickly. Any asset can be converted to cash quickly if you are willing to lower the price.

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It is also important to point out that more-liquid assets also provide lower returns. Consequently, too much liquidity can be just as detrimental to shareholder wealth maximization as too little liquidity.

Lecture Tip: *Some students get a little confused when they try to understand that excessive cash holdings can be undesirable. Occasionally, they leave an accounting principles class with the belief that a large current ratio is, in and of itself, a good thing. Short-term creditors like a company to have a large current ratio, but that doesn't mean that excess cash is good for the firm.*

You may wish to mention that a cash balance is a use of funds and, therefore, has an opportunity cost. Ask what a company could do with cash if it were not sitting idle. It could be paid to stockholders, invested in productive assets, or used to reduce debt. Students need to understand that a change in a firm's cash account is not the same as cash flow, regardless of what the "Statement of Cash Flows" may imply.

E. Debt versus Equity

Slide 7: *U.S. Corporation Balance Sheet (Table 2.1)*

Interest and principal payments on debt have to be paid before cash may be paid to stockholders. The company's gains and losses are magnified as the company increases the amount of debt in the capital structure. This is why we call the use of debt "financial leverage."

The balance sheet identity can be rewritten to illustrate that owners' equity is just what's left after all debts are paid.

$$\text{Owners' equity} = \text{Assets} - \text{Liabilities}$$

F. Market Value versus Book Value

Slide 8: *Market Value vs. Book Value*
Slide 9: *Example 2.2 (Klingon Corporation)*

Book values are generally not all that useful for making decisions about the future because of the historical nature of the numbers. Also, some of the most important assets and liabilities don't show up on the balance sheet. For example, the people that work for a firm can be very valuable assets, but they aren't included on the

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balance sheet. This is especially true in service industries.

Lecture Tip: *Accounting, or historical costs, are not very important to financial managers, while market values are. Some students have difficulty recognizing that the passage of time and changing circumstances will almost always mean that the price an asset would fetch if sold today is quite different from its book value. Sometimes an example or two of familiar instances are enough to make the point. For example, pointing out the differences between market values and historical costs of used cars and houses may help.*

Some students recognize the difference between book values and market values, but do not understand why market values are the more important numbers for decision-making. The simplest answer is that market value represents the cash price people are willing and able to pay. After all, it is cash that must ultimately be paid or received for investments, interest, principal, dividends, and so forth.

Lecture Tip: *The above example also provides a rationale for the accounting practice of "marking-to-market." Firm value is better reflected in the financial statements. However, students should be reminded that this occurs with only a portion of the firm's assets – primarily marketable securities, inventory, and derivatives positions. As such, it is unlikely that the aggregate balance sheet values provided by the firm will accurately reflect market values, even when prepared by the most scrupulous of accountants.*

Lecture Tip: *Finance practitioners (and professors) throw around terms like "mid-cap," "small-cap," etc. But what is the generally accepted definition of a "mid-cap" firm? According to CFO magazine, "small-caps" are firms with market capitalization less than $1 billion, "mid-caps" fall in the $1 billion to $5 billion range, and "large-caps" have total market value of equity in excess of $5 billion.*

2.2. The Income Statement

Slide 10: *Income Statement*
Slide 11: *U.S. Corporation Income Statement (Table 2.2)*

Lecture Tip: *Previously, it was noted that investment decisions are reflected on the left-hand side of the balance sheet and financing decisions are reflected on the right-hand side of the balance sheet. You could also point out that the income statement reflects*

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investment decisions in the "top half," from sales to EBIT. Financing decisions are reflected in the "bottom half," from EBIT to net income and earnings per share.

Slide 12: *Work the Web Example*

A. GAAP and the Income Statement

Remember that GAAP requires that we recognize revenue when it is earned, not when the cash is received and we match costs to revenues. This introduces noncash deductions such as depreciation and amortization. Consequently, net income is NOT the same as cash flow.

Lecture Tip: *In March 2004, Global Crossing reported record quarterly earnings of $24.88* ***billion*** *on revenues of $719* ***million****. These earnings came about because of GAAP rules regarding non-cash items related to the firm's emergence from bankruptcy. According to* The Wall Street Journal Online *(Global Crossing Scores A Bankruptcy Bonanza, March 11, 2004), $8 billion of the profit came from the ability to eliminate the liabilities associated with contracts with equipment vendors that were renegotiated during bankruptcy. Another $16 billion came from eliminating common and preferred shares that previously existed. The remainder of the "profit" came from the liabilities associated with contracts between Global Crossing and other phone companies that were eliminated during the bankruptcy proceedings. If these non-cash "revenues" were eliminated from the calculations, then the firm would have had a net loss of approximately $3 million. Clearly, GAAP will not always provide a clear view of a firm's earnings.*

Ethics Note: *Publicly traded firms have to file audited annual reports, but that doesn't mean that "accounting irregularities" never slip by the auditors. Companies that deliberately manipulate financial statements may benefit in the short run, but it eventually comes back to haunt them. Cendant Corporation is a good example. Cendant was created when CUC International and HFS, Inc. merged in late 1997. The combined company owns businesses in the real estate and travel industries. In April 1998, the combined company announced that accounting irregularities had been found in the CUC financial statements and earnings would need to be restated for 1997 and possibly 1995 and 1996 as well. Cendant's stock price dropped 47 percent the day after the announcement was made (it was announced after the market closed). The problems haunted Cendant throughout 1998. In July, it was*

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announced that the problem was much worse than originally expected and the stock price plummeted again. By the end of July 1998, the stock price had dropped more than 60 percent below the price before the original announcement. The company also had to take a $76.4 million charge in the third quarter of 1998 for the costs of investigating the accounting irregularities. Criminal charges were filed against several former executives of CUC International and several class action lawsuits were filed against Cendant. The stock was trading around $41 per share prior to the announcement and dropped to as low as $7.50 per share in October 1998. The price finally started to rebound toward the end of 2003, but the price as of November 4, 2004 ($22.10) was still only about 54% of what it had been prior to the announcement.

Other companies, such as Enron, WorldCom, etc., and their investors have fared much worse. There were a string of accounting problems at the start of this century, and these, along with the terrorist attacks, aided the market decline during the early 2000s.

B. Noncash Items

The largest noncash deduction for most firms is depreciation. It reduces a firm's taxes and its net income. Noncash deductions are part of the reason that net income is not equivalent to cash flow.

Lecture Tip: *Students sometimes fail to grasp the distinction between the economic life of an asset, the useful life of an asset for accounting purposes, and the useful life of an asset for tax purposes. "Economic life" refers to the period of time that the asset is expected to generate cash flows and must be considered when capital budgeting decisions are made. "Useful life" for accounting purposes is largely determined by the firm's accountants, with guidance from GAAP, and it affects the depreciation expense on the balance sheets and income statements that are used for business purposes. Useful life for tax purposes is determined by the Internal Revenue Service and is based on different asset categories. This is also important for capital budgeting because it determines the tax consequences of depreciation, which affects cash flow.*

C. Time and Costs

We need to plan for both short-run cash flows and long-run cash flows. In the short-run, some costs are fixed regardless of output and other costs are variable. In the long run, all costs are variable.

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It is important to identify these costs when doing a capital budgeting analysis.

Lecture Tip: *Distinguishing between fixed and variable costs can have important implications for estimating cash flows. It is sometimes helpful to remind students that variable costs are cash outflows that vary with the level of output, while fixed costs are outflows that do not vary. Another important thing to point out is that the definition of short run and long run varies for different types of businesses.*

2.3. Taxes

Slide 13: *Taxes*

Lecture Tip: *The text notes the ever-changing nature of the tax code. This can be illustrated by the changes in the Investment Tax Credit (ITC) between 1962 and 1986.*
1962 – Seven percent ITC created to stimulate capital investment
1966 – ITC suspended
1967 – Seven percent ITC reinstated
1969 – ITC eliminated
1971 – Seven percent ITC reinstated
1975 – Credit increased to 10 percent
1986 – ITC eliminated

A. Corporate Tax Rates

It's important to point out to students that corporations (and individuals) have not historically paid a flat rate on their income, but corporate rates were not strictly increasing either. However, with the passage of the Tax Cuts and Jobs Act of 2017, the corporate tax rate will be 21 percent, regardless of income. Prior to this change, the U.S. corporate tax rate was among the highest in the world, while the new rate is around the middle.

B. Average versus Marginal Tax Rates

Slide 14: *Example: Marginal vs. Average Rates*

The average tax rate is your tax bill divided by your taxable income, while the marginal tax rate is the rate on the next dollar of income. Under the previous tax structure, the average rate rose to the marginal rate at $50 million of taxable income. The "surcharges" at 39% and 38% offset the initial lower marginal rates.

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With a flat tax (such as the 21% enacted in 2018), the marginal and average rate would, theoretically, be equivalent. However, in reality the tax code is more complex, and various deductions and "loopholes" may make the average rate much different.

Lecture Tip: *It is useful to stress the situations in which marginal tax rates are relevant and those in which average tax rates are relevant. For purposes of computing a company's total tax liability, the average tax rate is the correct rate to apply to before tax profits. However, in evaluating the cash flows that would be generated from a new investment, the marginal tax rate is the appropriate rate to use. This is because the new investment will generate cash flows that will be taxed above the company's existing profit.*

Lecture Tip: *The op-ed page of the March 11, 1998, issue of* The Wall Street Journal *contains an article guaranteed to generate class discussion. In "Abolish the Corporate Income Tax," the author provides a quick overview of the situation that brought the current income tax into being in the early 1900s, and contends that the corporate and personal income tax systems began life as "two separate and completely uncoordinated tax systems." With the passage of time, the tax code has, of course, become extremely complex and the author illustrates this by noting that "Chrysler Corporation's tax returns comprise stacks of paper six feet high, prepared by more than 50 accountants who do nothing else." And, he points out, "the Internal Revenue Service, meanwhile, has a team of auditors who do nothing but monitor Chrysler's returns." Given the complexity and wasted effort, the author suggests that the rational thing to do is to abolish the corporate income tax. Do you agree?*

2.4. Cash Flow

Slide 15: *The Concept of Cash Flow*

A. Cash Flow from Assets (CFFA)

Slide 16: *Cash Flow from Assets*

The cash flow identity is similar to the balance sheet identity:

Cash flow from Assets = Cash flow to creditors + Cash flow to stockholders

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CFFA = Operating cash flow − Net capital spending − Changes in net working capital

Operating cash flow (OCF) = EBIT + Depreciation − Taxes

Net capital spending (NCS) = Ending fixed assets − Beginning fixed assets + Depreciation

Changes in NWC = Ending NWC − Beginning NWC

Slide 17: *Example: U.S. Corporation – Part I*
Slide 18: *Example: U.S. Corporation – Part II*

B. Cash Flow to Creditors and Stockholders

Cash flow to creditors = Interest paid − Net new borrowing = Interest paid − (Ending long-term debt − Beginning long-term debt)

Cash flow to stockholders = Dividends paid − Net new equity raised = Dividends paid − (Ending common stock, APIC, & Treasury stock − Beginning common stock, APIC, & Treasury stock)

It is important to point out that changes in retained earnings are not included in "net new equity raised." The effect of this increase is captured in changes in net working capital and net capital spending.

C. An Example: Cash Flows for Dole Cola

Slide 19: *Cash Flow Summary (Table 2.6)*

Lecture Tip: *Textbooks make financial statement analysis seem reasonably straightforward. However, it is not always as easy to classify the numbers that appear on the consolidated financial statements of an actual corporation. In fact, often times the cash flow identity does not appear to hold when applied in a reasonable fashion based on the information provided. It is important to point out that financial managers have a lot more information available to them than what is provided in the consolidated statements of an annual report. The manager will have the information available to compute cash flow from assets and, if it is done carefully, the cash flow identity will hold.*

2.5. Summary and Conclusions

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Slide 20: *Example: Balance Sheet and Income Statement Info*
Slide 21: *Example: Cash Flows*
Slide 22: *Quick Quiz*
Slide 23: *Ethics Issues*
Slide 24: *Comprehensive Problem*
Slide 25: *End of Chapter*

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CHAPTER 2
CASH FLOWS AND FINANCIAL STATEMENTS AT SUNSET BOARDS

Below are the financial statements that you are asked to prepare.

1. The income statement for each year will look like this:

Income Statement

	2017	*2018*
Sales	$501,441	$611,224
Cost of goods sold	255,605	322,742
Selling and administrative	50,268	65,610
Depreciation	72,158	81,559
EBIT	$123,410	$141,313
Interest	15,687	17,980
EBT	$107,723	$123,333
Taxes	22,622	25,900
Net income	$85,101	$97,433
Dividends	$34,040	$38,973
Addition to retained earnings	$51,061	$58,460

2. The balance sheet for each year will be:

Balance Sheet as of Dec. 31, 2017

Cash	$36,884	Accounts payable	$26,186
Accounts receivable	26,136	Notes payable	29,712
Inventory	50,318	Current liabilities	$55,898
Current assets	$113,338		
		Long-term debt	$160,689
Net fixed assets	$318,345	Owners' equity	$215,096
Total assets	$431,683	Total liab. and equity	$431,683

In the first year, equity is not given. Therefore, we must calculate equity as a plug variable. Since total liabilities and equity is equal to total assets, equity can be calculated as:

Equity = $431,683 – 55,898 – 160,689
Equity = $215,096

Balance Sheet as of Dec. 31, 2018

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Cash	$55,725	Accounts payable	$44,318
Accounts receivable	33,901	Notes payable	32,441
Inventory	67,674	Current liabilities	$76,759
Current assets	$157,300		
		Long-term debt	$175,340
Net fixed assets	$387,855	Owners' equity	$293,056
Total assets	$545,155	Total liab. and equity	$545,155

The owner's equity for 2018 is the beginning of year owners' equity, plus the addition to retained earnings, plus the new equity, so:

Equity = $215,096 + 58,460 + 19,500
Equity = $293,056

3. Using the OCF equation:

OCF = EBIT + Depreciation – Taxes

The OCF for each year is:

OCF2017 = $123,410 + 72,158 – 22,622
OCF2017 = $172,946

OCF2018 = $141,313 + 81,559 – 25,900
OCF2018 = $196,972

4. To calculate the cash flow from assets, we need to find the capital spending and change in net working capital. The capital spending for the year was:

Capital spending	
Ending net fixed assets	$387,855
– Beginning net fixed assets	318,345
+ Depreciation	81,559
Net capital spending	$151,069

And the change in net working capital was:

Change in net working capital	
Ending NWC	$80,541
– Beginning NWC	57,440
Change in NWC	$23,101

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So, the cash flow from assets was:

Cash flow from assets	
Operating cash flow	$196,972
– Net capital spending	151,069
– Change in NWC	23,101
Cash flow from assets	$22,802

5. The cash flow to creditors was:

Cash flow to creditors	
Interest paid	$17,980
– Net new borrowing	14,651
Cash flow to creditors	$3,329

6. The cash flow to stockholders was:

Cash flow to stockholders	
Dividends paid	$38,973
– Net new equity raised	19,500
Cash flow to stockholders	$19,473

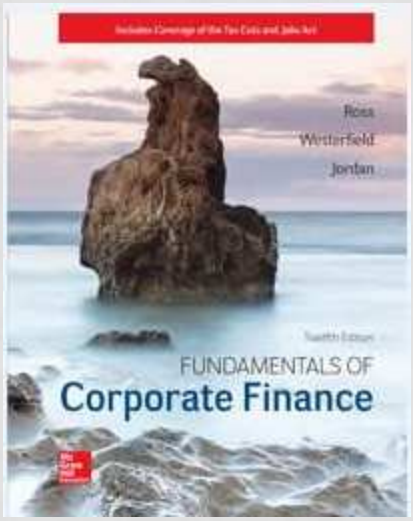
Answers to questions

1. The firm had positive earnings in an accounting sense (NI > 0) and had positive cash flow from operations. The firm invested $23,101 in new net working capital and $151,069 in new fixed assets. The firm gave $22,802 to its stakeholders. It paid $3,329 to bondholders and paid $19,473 to stockholders.

2. The expansion plans may be a little risky. The company does have a positive cash flow, but a large portion of the operating cash flow is already going to capital spending. The company has had to raise capital from creditors and stockholders for its current operations. So, the expansion plans may be too aggressive at this time. On the other hand, companies do need capital to grow. Before investing or loaning the company money, you would want to know where the current capital spending is going, and why the company is spending so much in this area already.

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CHAPTER 2

FINANCIAL STATEMENTS, TAXES, AND CASH FLOW

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KEY CONCEPTS AND SKILLS

- Describe the difference between accounting value (or "book" value) and market value
- Describe the difference between accounting income and cash flow
- Describe the difference between average and marginal tax rates
- Determine a firm's cash flow from its financial statements

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CHAPTER OUTLINE

- The Balance Sheet
- The Income Statement
- Taxes
- Cash Flow

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BALANCE SHEET

- The balance sheet is a snapshot of the firm's assets and liabilities at a given point in time.
- Assets are listed in order of decreasing liquidity.
  - Ease of conversion to cash
  - Without significant loss of value
- Balance Sheet Identity
  - Assets = Liabilities + Stockholders' Equity

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THE BALANCE SHEET
FIGURE 2.1

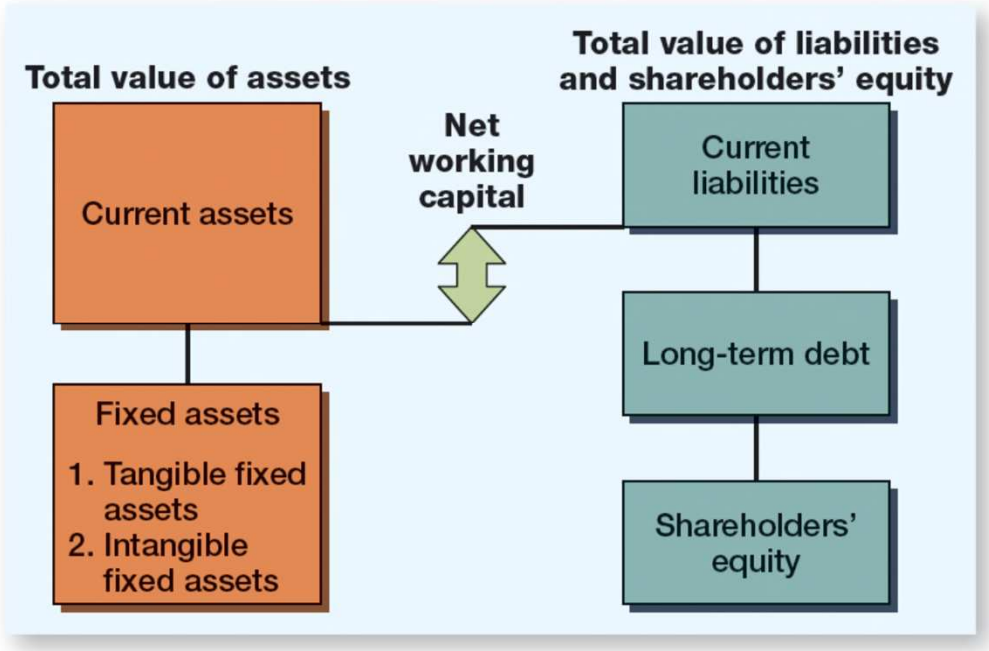


FIGURE 2.1

The Balance Sheet.
Left Side: Total Value of Assets.
Right Side: Total Value of Liabilities and Shareholders' Equity.

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NET WORKING CAPITAL AND LIQUIDITY

- Net Working Capital
  - = Current Assets - Current Liabilities
  - Positive when the cash that will be received over the next 12 months exceeds the cash that will be paid out
  - Usually positive in a healthy firm

- Liquidity
  - Ability to convert to cash quickly without a significant loss in value
  - Liquid firms are less likely to experience financial distress.
  - But liquid assets typically earn a lower return.
  - Trade-off to find balance between liquid and illiquid assets

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U.S. CORPORATION BALANCE SHEET TABLE 2.1

U.S. CORPORATION
2017 and 2018 Balance Sheets
($ in millions)

Assets	2017	2018	Liabilities and Owners' Equity	2017	2018
Current assets			Current liabilities		
Cash	$ 104	$ 221	Accounts payable	$ 232	$ 266
Accounts receivable	455	688	Notes payable	196	123
Inventory	553	555	Total	$ 428	$ 389
Total	$1,112	$1,464			
Fixed assets					
Net plant and equipment	$1,644	$1,709	Long-term debt	$ 408	$ 454
			Owners' equity		
			Common stock and paid-in surplus	600	640
			Retained earnings	1,320	1,690
			Total	$1,920	$2,330
Total assets	$2,756	$3,173	Total liabilities and owners' equity	$2,756	$3,173

TABLE 2.1
Balance Sheets

To I/S

Back to Example

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MARKET VALUE VS. BOOK VALUE

- The balance sheet provides the book value of the assets, liabilities, and equity.
- Market value is the price at which the assets, liabilities, or equity can actually be bought or sold.
- Market value and book value are often very different. Why?
- Which is more important to the decision-making process?

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EXAMPLE 2.2
KLINGON CORPORATION

KLINGON CORPORATION
Balance Sheets
Market Value versus Book Value

Assets			Liabilities and Shareholders' Equity		
	Book	Market		Book	Market
Net working capital	$ 400	$ 600	Long-term debt	$ 500	$ 500
Net fixed assets	700	1,000	Shareholders' equity	600	1,100
	$1,100	$1,600		$1,100	$1,600

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INCOME STATEMENT

- The income statement is more like a video of the firm's operations for a specified period of time.
- You generally report revenues first and then deduct any expenses for the period.
- Matching principle – GAAP says to show revenue when it accrues and match the expenses required to generate the revenue

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U.S. CORPORATION INCOME STATEMENT – TABLE 2.2

TABLE 2.2
Income Statement

U.S. CORPORATION 2018 Income Statement ($ in millions)		
Net sales		$1,509
Cost of goods sold		750
Depreciation		65
Earnings before interest and taxes		$ 694
Interest paid		70
Taxable income		$ 624
Taxes (21%)		131
Net income		$ 493
Dividends	$123	
Addition to retained earnings	370	

To B/S Back to Example

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WORK THE WEB EXAMPLE

- Publicly traded companies must file regular reports with the Securities and Exchange Commission.
- These reports are usually filed electronically and can be searched at the SEC public site called EDGAR.
- Visit EDGAR to search for company filings.

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TAXES

- The one thing we can rely on with taxes is that they are always changing.
  - In fact, the Tax Cuts and Jobs Act of 2017 will drop the corporate tax rate to a flat 21 percent beginning in 2018.
- Marginal vs. average tax rates
  - Marginal tax rate – the percentage paid on the next dollar earned
  - Average tax rate – the tax bill / taxable income
  - Average tax rates vary widely across different companies and industries
- Check out the IRS website for up-to-date information.

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EXAMPLE: MARGINAL VS. AVERAGE RATES

- Suppose your firm earns $4 million in taxable income.
  - What is the firm's tax liability?
  - What is the average tax rate?
  - What is the marginal tax rate?

- If you are considering a project that will increase the firm's taxable income by $1 million, what tax rate should you use in your analysis?

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THE CONCEPT OF CASH FLOW

- Cash flow is one of the most important pieces of information that a financial manager can derive from financial statements.
- The statement of cash flows does not provide us with the same information that we are looking at here.
- We will look at how cash is generated from utilizing assets and how it is paid to those that finance the purchase of the assets.

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CASH FLOW FROM ASSETS

- Cash Flow From Assets (CFFA) =
  Cash Flow to Creditors
  + Cash Flow to Stockholders

- Cash Flow From Assets = Operating Cash Flow
  - Net Capital Spending
  - Changes in NWC

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EXAMPLE: U.S. CORPORATION – PART I

- OCF (I/S) = EBIT + depreciation - taxes = $628
- NCS (B/S and I/S) = ending net fixed assets - beginning net fixed assets + depreciation = $130
- Changes in NWC (B/S) = ending NWC - beginning NWC = $391
- CFFA = 628 - 130 - 391 = $107

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EXAMPLE: U.S. CORPORATION – PART II

- CF to Creditors (B/S and I/S) = interest paid - net new borrowing = $24
- CF to Stockholders (B/S and I/S) = dividends paid - net new equity raised = $83
- CFFA = 24 + 83 = $107

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CASH FLOW SUMMARY - TABLE 2.6

TABLE 2.6
Cash Flow Summary

I. The cash flow identity	
Cash flow from assets	= Cash flow to creditors (bondholders)
	+ Cash flow to stockholders (owners)
II. Cash flow from assets	
Cash flow from assets	= Operating cash flow
	– Net capital spending
	– Change in net working capital (NWC)
where:	
Operating cash flow	= Earnings before interest and taxes (EBIT)
	+ Depreciation – Taxes
Net capital spending	= Ending net fixed assets – Beginning net fixed assets
	+ Depreciation
Change in NWC	= Ending NWC – Beginning NWC
III. Cash flow to creditors (bondholders)	
Cash flow to creditors	= Interest paid – Net new borrowing
IV. Cash flow to stockholders (owners)	
Cash flow to stockholders	= Dividends paid – Net new equity raised

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EXAMPLE: BALANCE SHEET AND INCOME STATEMENT INFO

- Current Accounts
  - 2018: CA = 3,625; CL = 1,787
  - 2017: CA = 3,596; CL = 2,140
- Fixed Assets and Depreciation
  - 2018: NFA = 2,194; 2014: NFA = 2,261
  - Depreciation Expense = 500
- Long-term Debt and Equity
  - 2018: LTD = 538; Common stock & APIC = 462
  - 2017: LTD = 581; Common stock & APIC = 372
- Income Statement
  - EBIT = 1,014; Taxes = 193
  - Interest Expense = 93; Dividends = 460

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EXAMPLE: CASH FLOWS

- OCF = 1,014 + 500 - 193 = 1,321
- NCS = 2,194 - 2,261 + 500 = 433
- Changes in NWC =
  (3,625 - 1,787) - (3,596 - 2,140) = 382
- CFFA = 1,321 - 433 - 382 = **506**

- CF to Creditors = 93 - (538 - 581) = 136
- CF to Stockholders = 460 - (462 - 372) = 370
- CFFA = 136 + 370 = **506**
- The CF identity holds.

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QUICK QUIZ

- What is the difference between book value and market value? Which should we use for decision-making purposes?
- What is the difference between accounting income and cash flow? Which do we need to use when making decisions?
- What is the difference between average and marginal tax rates? Which should we use when making financial decisions?
- How do we determine a firm's cash flows? What are the equations, and where do we find the information?

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ETHICS ISSUES

- Why is manipulation of financial statements not only unethical and illegal, but also bad for stockholders?

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COMPREHENSIVE PROBLEM

- Current Accounts
  - 2018: CA = 4,400; CL = 1,500
  - 2017: CA = 3,500; CL = 1,200
- Fixed Assets and Depreciation
  - 2018: NFA = 3,400; 2014: NFA = 3,100
  - Depreciation Expense = 400
- Long-term Debt and Equity (R.E. not given)
  - 2018: LTD = 4,000; Common stock & APIC = 400
  - 2017: LTD = 3,950; Common stock & APIC = 400
- Income Statement
  - EBIT = 2,000; Taxes = 300
  - Interest Expense = 350; Dividends = 500
- **Compute the CFFA**

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END OF CHAPTER

CHAPTER 2

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