CHAPTER 2

FINANCIAL STATEMENTS, TAXES, AND CASH FLOWS

Learning Objectives

LO1 The difference between accounting value (or "book" value) and market value.
LO2 The difference between accounting income and cash flow.
LO3 How to determine a firm's cash flow from its financial statements.
LO4 The difference between average and marginal tax rates.
LO5 The basics of Capital Cost Allowance (CCA) and Undepreciated Capital Cost (UCC).

Answers to Concepts Review and Critical Thinking Questions

1. **(LO1)** 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. **(LO2)** 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 incorrect; it's the way accountants have chosen to do it.

3. **(LO1)** 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 tradeoff between relevance (market values) and objectivity (book values).

4. **(LO3)** 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. **(LO1)** Market values for corporations 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 bankruptcy laws, net worth for a corporation cannot be negative, implying that liabilities cannot exceed assets in market value.

6. **(LO3)** 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. **(LO3)** 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. **(LO3)** 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 more long-lived assets were liquidated than purchased.

9. **(LO3)** 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. **(LO1)** 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 when taking over a company. This enterprise value provides a much more accurate takeover valuation because it includes debt in its value calculation.

Solutions to Questions and Problems

Basic

1. **(LO1)** To find shareholder's equity, we must construct a Statement of Financial Position as follows:

Statement of Financial Position			
CA	$4,900	CL	$4,200
NFA	27,500	LTD	10,500
		SE	??
TA	$32,400	TL & SE	$32,400

We know that total liabilities and owner's equity (TL & SE) must equal total assets of $32,400. We also know that TL & SE is equal to current liabilities plus long-term debt plus shareholder's equity, so shareholder's equity is:

SE = $32,400 – 4,200 – 10,500 = $17,700

NWC = CA – CL = $4,900 – 4,200 = $700

2. **(LO1)** The Statement of Comprehensive Income for the company is:

Statement of Comprehensive Income	
Sales	$734,000
Costs	315,000
Depreciation	48,000
EBIT	$371,000
Interest	35,000
EBT	$336,000
Taxes (35%)	117,600
Net income	$218,400

3. **(LO1)** One equation for net income is:

Net income = Dividends + Addition to retained earnings
Rearranging, we get:
Addition to retained earnings = Net income – Dividends = $218,400 – 85,000 = $133,400

4. (LO1)

EPS = Net income / Shares = \$218,400 / 110,000 = \$1.985 per share
DPS = Dividends / Shares = \$85,000 / 110,000 = \$0.773 per share

5. (LO1)

NWC = CA – CL;
CA = \$380K + 1.1M = \$1.48M

Book value CA = \$1.48M	Market value CA = \$1.6M
Book value NFA = \$3.7M	Market value NFA = \$4.9M
Book value assets= \$1.48M + 3.7M = \$5.18M	Market value assets = \$1.6M + 4.9M = \$6.5M

6. (LO4)

Tax bill = 0.14 x \$255,000 = \$35,700

7. (LO4) The average tax rate is the total tax paid divided by net income, so:

Average tax rate = \$33,040 / \$236,000 = 14%

The marginal tax rate is the tax rate on the next \$1 of earnings, so again the marginal tax rate = 14% because this corporation has earnings well below \$500,000. If the firm had an income of \$500,000, its marginal tax rate will rise to 25% for its next dollar of income.

8. (LO3) To calculate OCF, we first need the Statement of Comprehensive Income:

Statement of Comprehensive Income	
Sales	\$39,500
Costs	18,400
Depreciation	1,900
EBIT	\$19,200
Interest	1,400
Taxable income	\$17,800
Taxes (35%)	\$6,230
Net income	\$11,570

OCF = EBIT + Depreciation – Taxes = \$19,200+ 1,900 – 6,230 = \$14,870

9. (LO3)

Net capital spending = $NFA_{end} – NFA_{beg}$ + Depreciation
Net capital spending = \$3.6M – 2.8M + 0.345 M
Net capital spending = \$1.145M

10. (LO3)

Change in NWC = $NWC_{end} – NWC_{beg}$
Change in NWC = $(CA_{end} – CL_{end}) – (CA_{beg} – CL_{beg})$
Change in NWC = (\$3,460– 1,980) – (\$3,120 – 1,570)
Change in NWC = \$1,480 – 1,550 = -\$70

11. (LO3)

Cash flow to creditors = Interest paid – Net new borrowing
Cash flow to creditors = Interest paid – $(LTD_{end} – LTD_{beg})$
Cash flow to creditors = \$190K – (\$2.55– 2.3M)
Cash flow to creditors = \$190K - 250K
Cash flow to creditors = -\$60K

12. (LO3)

Cash flow to shareholders = Dividends paid – Net new equity
Cash flow to shareholders = \$490K – [$Common_{end}$ – $Common_{beg}$]
Cash flow to shareholders = \$490K – [\$815K – \$740K]
Cash flow to shareholders = \$490K – [\$75K] = \$415K

Intermediate

13. (LO3)

Cash flow from assets	= Cash flow to creditors + Cash flow to shareholders
	= \$-60K + 415K = \$355K
Cash flow from assets	= \$355K = OCF – Change in NWC – Net capital spending
	= \$355K = OCF – (–55K) – 1,300K
Operating cash flow	= \$355K – 55K + 1,300K
Operating cash flow	= \$1,600K

14. (LO3) To find the OCF, we first calculate net income.

Statement of Comprehensive Income	
Sales	\$235,000
Costs	141,000
Depreciation	17,300
Other expenses	7,900
EBIT	\$68,800
Interest	12,900
Taxable income	\$55,900
Taxes	19,565
Net income	\$36,335
Dividends	\$12,300
Additions to RE	\$24,035

a. OCF = EBIT + Depreciation – Taxes = \$68,800 + 17,300 – 19,565 = \$66,535

b. CFC = Interest – Net new LTD = \$12,900 – (–4,500) = \$17,400

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 = \$12,300 – 6,100= \$6,200

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

CFA = \$17,400 + 6,200 = \$23,600

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 = \$25,000 + \$17,300 = \$42,300

Now we can use:

CFA = OCF – Net capital spending – Change in NWC
\$23,600 = \$66,535 – \$42,300 – Change in NWC
Change in NWC = \$23,600 - \$66,535 + \$42,300

Solving for the change in NWC gives $635, meaning the company increased its NWC by $635.

15. **(LO1)** The solution to this question works the Statement of Comprehensive Income backwards. Starting at the bottom:

Net income = Dividends + Addition to ret. earnings = $1,800 + 5,300 = $7,100

Now, looking at the income statement:

EBT – (EBT × Tax rate) = Net income

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

EBT = NI / (1– tax rate) = $7,100 / (1 – 0.35) = $10,923.08

Now you can calculate:

EBIT = EBT + Interest = $10,923.08 + 4,900 = $15,823.08

The last step is to use:

EBIT = Sales – Costs – Depreciation
EBIT = $52,000 – 27,300 – Depreciation = $15,823.08

Solving for depreciation, we find that depreciation = $8,876.92

16. **(LO1)** The balance sheet for the company looks like this:

	Statement of Financial Position		
Cash	$127,000	Accounts payable	$210,000
Accounts receivable	105,000	Notes payable	160,000
Inventory	293,000	Current liabilities	$370,000
Current assets	$525,000	Long-term debt	845,000
		Total liabilities	$1,215,000
Tangible net fixed assets	1,620,000		
Intangible net fixed assets	630,000	Common stock	??
		Accumulated ret. earnings	1,278,000
Total assets	$2,775,000	Total liab. & owners' equity	$2,775,000

Total liabilities and owners' equity is:

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

Solving for this equation for equity gives us:

Common stock = $2,775,000 – 1,215,000 – 1,278,000 = $282,000

17. **(LO1)** The **market value** of shareholders' equity cannot be zero. 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 is $7,100, equity is equal to $1,300, and if TA is $5,200, equity is equal to $0. We should note here that the **book value** of shareholders' equity can be negative.

18. (LO4)

a. Taxes Growth = 0.14($88,000) = $12,320
Taxes Income = 0.25($8,800,000) = $2,200,000

b. The firms have different marginal tax rates. Corporation Growth pays an additional $1,400 of taxes and in general pays 14% of its next dollar of taxable income in taxes. Corporation Income pays $2,500 of taxes and in general pays 25.0% of its next dollar of taxable income in taxes.

19. (LO2)

	Statement of Comprehensive Income
Sales	$850,000
COGS	610,000
A&S expenses	110,000
Depreciation	140,000
EBIT	–$10,000
Interest	85,000
Taxable income	–$95,000
Taxes (35%)	0
a. Net income(Loss)	–$95,000

b. OCF = EBIT + Depreciation – Taxes = –$10,000 + 140,000 – 0 = $130,000

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.

20. (LO3

A firm can still pay out dividends if net income is negative; it just has to be sure there are sufficient cash reserves or 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 = $130K – 0 – 0 = $130K
Cash flow to shareholders = Dividends – Net new equity = $63K – 0 = $63K
Cash flow to creditors = Cash flow from assets – Cash flow to shareholders
Cash flow to creditors = $130K – 63K = $67K
Cash flow to creditors = Interest – Net new LTD
Net new LTD = Interest – Cash flow to creditors = $85K – 67K = $18K

21. (LO2)

a.

Statement of Comprehensive Income	
Sales	$22,800
Cost of goods sold	16,050
Depreciation	4,050
EBIT	$ 2,700
Interest	1,830
Taxable income	$ 870
Taxes (34%)	295.80
Net income	$ 574.20

b. OCF = EBIT + Depreciation – Taxes
= $2,700 + 4,050 – 295.80 = $6,454.20

c. Change in NWC = $NWC_{end} - NWC_{beg}$
= $(CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
= ($5,930 – 3,150) – ($4,800 – 2,700)
= $2,780 – 2,100 = $680

Net capital spending = $NFA_{end} - NFA_{beg}$ + Depreciation
= $16,800 – 13,650 + 4,050 = $7,200

CFA = OCF – Change in NWC – Net capital spending
= $6,454.20 – 680 – 7,200 = –$1,425.80

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 $1,425.80 in funds from its shareholders and creditors to make these investments.

d. Cash flow to creditors = Interest – Net new LTD = $1,830 – 0 = $1,830
Cash flow to shareholders = Cash flow from assets – Cash flow to creditors
= -$1,425.80 – 1,830 = –$ 3,255.80

We can also calculate the cash flow to shareholders as:
Cash flow to shareholders = Dividends – Net new equity

Solving for net new equity, we get:
Net new equity = $1,300 – (–3,255.80) = $4,555.8

The firm had positive earnings in an accounting sense (NI > 0) and had positive cash flow from operations. The firm invested $680 in new net working capital and $7,200 in new fixed assets. The firm had to raise $1,425.80 from its stakeholders to support this new investment. It accomplished this by raising $4,555.8 in the form of new equity. After paying out $1,300 of this in the form of dividends to shareholders and $1,830 in the form of interest to creditors, $1,425.80 was left to meet the firm's cash flow needs for investment.

22. (LO3)

a. Total assets 2014 = $914 + 3,767 = $4,681
Total liabilities 2014 = $365 + 1,991 = $2,356
Owners' equity 2014 = $4,681 – 2,356 = $2,325

Total assets 2015 = $990 + 4,536 = $5,526
Total liabilities 2015 = $410 + 2,117 = $2,527
Owners' equity 2015 = $5,526 – 2,527 = $2,999

b. NWC 2014 = CA14 – CL14 = $914 – 365 = $549
NWC 2015 = CA15 – CL15 = $990– 410 = $580
Change in NWC = NWC15 – NWC14 = $580 – 549 = $31

c. We can calculate net capital spending as:

Net capital spending = Net fixed assets 2015 – Net fixed assets 2014 + Depreciation
Net capital spending = $4,536 – 3,767 + 1,033= $1,802

So, the company had a net capital spending cash flow of $1,802. We also know that net capital spending is:

Net capital spending = Fixed assets bought – Fixed assets sold
$1,802 = $1,890 – Fixed assets sold
Fixed assets sold = $1,890 – 1,802 = $88

To calculate the cash flow from assets, we must first calculate the operating cash flow. The operating cash flow is calculated as follows (you can also prepare a traditional income statement):

EBIT = Sales – Costs – Depreciation = $11,592 – 5,405 – 1,033= $5,154
EBT = EBIT – Interest = $5,154 – 294 = $4,860
Taxes = EBT × 0.35 = $4,860 × 0.35 = $1,701
OCF = EBIT + Depreciation – Taxes = $4,860 + 1,033 – 1,701 = $4,192
Cash flow from assets = OCF – Change in NWC – Net capital spending.
= $4,192 – 31 – 1,802 = $2,359

d. Net new borrowing = LTD15 – LTD14 = $2,117 – 1,991 = $126
Cash flow to creditors = Interest – Net new LTD = $294 – 126 = $168
Net new borrowing = $126 = Debt issued – Debt retired
Debt retired = $378 – 126 = $252

Challenge

23. (LO3)

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

24. (LO1)

Statement of Financial Position as of Dec. 31, 2014

Cash	$6,067	Accounts payable	$4,384
Accounts receivable	8,034	Notes payable	1,171

Inventory	14,283	Current liabilities	$5,555
Current assets	$28,384		
		Long-term debt	$20,320
Net fixed assets	$50,888	Owners' equity	53,397
Total assets	$79,272	Total liab. & equity	$79,272

Statement of Financial Position as of Dec. 31, 2015

Cash	$6,466	Accounts payable	$4,644
Accounts receivable	9,427	Notes payable	1,147
Inventory	15,288	Current liabilities	$5,791
Current assets	$31,181		
		Long-term debt	$24,696
Net fixed assets	$54,273	Owners' equity	54,967
Total assets	$85,454	Total liab. & equity	$85,454

2014 Statement of Comprehensive Income

Sales	$11,573.00
COGS	3,979.00
Other expenses	946.00
Depreciation	1,661.00
EBIT	$4,987.00
Interest	776.00
EBT	$4,211.00
Taxes (34%)	1,431.74
Net income	$2,779.26
Dividends	$1,411.00
Additions to RE	1,368.26

2015 Statement of Comprehensive Income

Sales	$12,936.00
COGS	4,707.00
Other expenses	824.00
Depreciation	1,736.00
EBIT	$5,669.00
Interest	926.00
EBT	$4,743.00
Taxes (34%)	1,612.62
Net income	$3,130.38
Dividends	$1,618.00
Additions to RE	1,512.38

25. (LO3)

OCF = EBIT + Depreciation – Taxes = $5,669 + 1,736 – 1612.62 = $5,792.38

Change in NWC = $NWC_{end} - NWC_{beg} = (CA - CL)_{end} - (CA - CL)_{beg}$
= ($31,181 – 5,791) – ($28,384 – 5,555)
= $2,561

Net capital spending = $NFA_{end} - NFA_{beg}$ + Depreciation
= $54,273 – 50,888 + 1,736 = $5,121

Cash flow from assets = OCF – Change in NWC – Net capital spending
= $5,792.38 – 2,561 – 5,121 = -$1,889.62

Cash flow to creditors = Interest – Net new LTD
Net new LTD = $LTD_{end} – LTD_{beg}$
Cash flow to creditors = $926 – ($24,696 – 20,320) = –$3,450

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 RE12
∴ Net new equity $= OE_{end} – OE_{beg} + RE_{beg} – (RE_{beg}$ + Additions to RE12)
$= OE_{end} – OE_{beg}$ – Additions to RE
Net new equity = $54,967– 53,397 – 1,512.38 = $57.62

CFS = Dividends – Net new equity
CFS = $1,618 – (57.62) = $1,560.38

As a check, cash flow from assets is -$1,889.62

CFA = Cash flow from creditors + Cash flow to shareholders
CFA = –$3,450 + $1,560.38= -$1,889.62

26. (LO4)

DIVIDENDS		INTEREST		CAPITAL GAINS	
Dividend	$40,000	Interest	$20,000	Capital Gain	$20,000
Combined Marginal Rate (top bracket)Table 2.6	19.29%	Federal Tax (29%)	5,800	Fed. Tax (1/2 x 29%)	2,900
		Prov. Tax (10%)	2,000	Prov. Tax (1/2 x10%)	1,000
Tax Payable	$7,716	Tax Payable	$7,800	Tax Payable	$3,900

Cash Flow from Dividends = $40,000 - $7,716 = $32,284
Cash Flow from Interest = $20,000 - $7,800 = $12,200
Cash Flow from Capital Gains = $20, 000 - $3,900 = $16,100

27. (LO4)

a. After Tax Rate of Return on Dividends = $32,284/$75,000 = 43.05%
b. After Tax Rate of Return on Interest = $12,200/$75,000 = 16.27%
c. After Tax Rate of Return on Capital Gains = $16,100/$75,000 = 21.47%

28. (LO5)

Year	Beginning UCC	30% CCA	Ending UCC
1	$250,000.00*	$75,000.00	$175,000.00
2	$425,000.00	$127,500.00	$297,500.00
3	$297,500.00	$89,250.00	$208,250.00
4	$208,250.00	$62,475.00	$145,775.00
5	$145,775.00	$43,732.50	$102,042.50

*50% of $500,000 to incorporate the half-year rule.

29. (LO5)

Year	Beginning UCC	20% CCA	Ending UCC
1	$500,000*	$100,000	$400,000
2	$900,000	$180,000	$720,000

3	$720,000	$144,000	$576,000
4	$576,000	$115,200	$460,800
5	$460,800	$92,160	$368,640

*50% of $1,000,000 to incorporate the half-year rule.

30. (LO5)

Year	Beginning UCC	30% CCA	Ending UCC
1	$50,000*	$15,000	$35,000
2	$85,000	$25,500	$59,500
3	$59,500	$17,850	$41,650
4	$41,650	$12,495	$29,155
5	$29,155	$8,746.50	$408.50**

*50% of $100,000 to incorporate the half-year rule
**($29,155)(0.7) – (0.2) ($100,000) = $408.50

If the asset class is continued, there will be no tax consequences - the after-tax proceeds from the sale will be $100,000 x 0.20 = $20,000.

31. (LO5)

CCA on equipment

Year	Beginning UCC	20% CCA	Ending UCC
2014	$2,100,000*	$420,000	$1,680,000
2015	$3,780,000	$756,000	$3,024,000

*50% of $4,200,000 (includes the installation cost) to incorporate the half-year rule

CCA on building

Year	Beginning UCC	5% CCA	Ending UCC
2014	$2,000,000*	$100,000	$1,900,000
2015	$3,900,000	$195,000	$3,705,000

*50% of $4,000,000

CCA for 2014 = $420,000 + $100,000 = $520,000
CCA for 2015 = $756,000 + $195,000 = $951,000

32. (LO5)

Year	Beginning UCC	50% CCA	Ending UCC
2011	$170,000.00	$85,000.00	$85,000.00
2012	$255,000.00	$127,500.00	$127,500.00
2013	$127,500.00	$63,750.00	$63,750.00
2014	$741,250.00	$370,625.00	$370,625.00
2015	$1,048,125.00	$524,062.50	$524,062.50

*50% of $340,000
**UCC_{2014} = 0.5 ($1,500,000 – 145,000) + $63,750 = $741,250

33. (LO4) Using Table 2.6 in text

a. Combined Federal & Provincial tax = 0.39($57,000)(0.05) = $1,111.50
After tax income = $2,850 – $1,111.50 = $1,738.50

b. Dividend Income = $25 x 250 = $6,250 x 19.29% = Tax on Dividend Income = 1,205.63
After tax income = $25(250) – $1,205.63 = $5,044.37

c. Combined Federal & Provincial tax on capital gain = $15(500)(0.195) = $1,462.50
After tax income = $7,500 - $1,462.50 = $6,037.50

OR Federal $15(500)(0.5)(0.29) = $1,087.50 + Provincial $15(500)(0.5)(0.1) = $375 = $1,462.50 taxes
After tax income = $7,500 – $1,462.50 = $6,037.50

34. (LO4) Carry the ($600) loss in 2012 back 3 years and the remaining loss is carried forward 7 years: (in 1,000's) total carry backs = $116 + $140 + $168 = $424 leaving $176 ($600 – $424) to carry forward which effectively reduces taxable income to zero for all years through 2015. At that time, remaining carry-forward is $56.

35. (LO5)

a. UCC_0=99,200(1/2) = 49,600
CCA_1=14,880
UCC_1=84,320
UCC_5=84,320(1-0.30)^4 = $20,245.23

b. Since the asset has no value and the asset pool remains open, there are no tax consequences.