Solutions for Corporate Finance Core Principles and Applications 5th Edition by Ross

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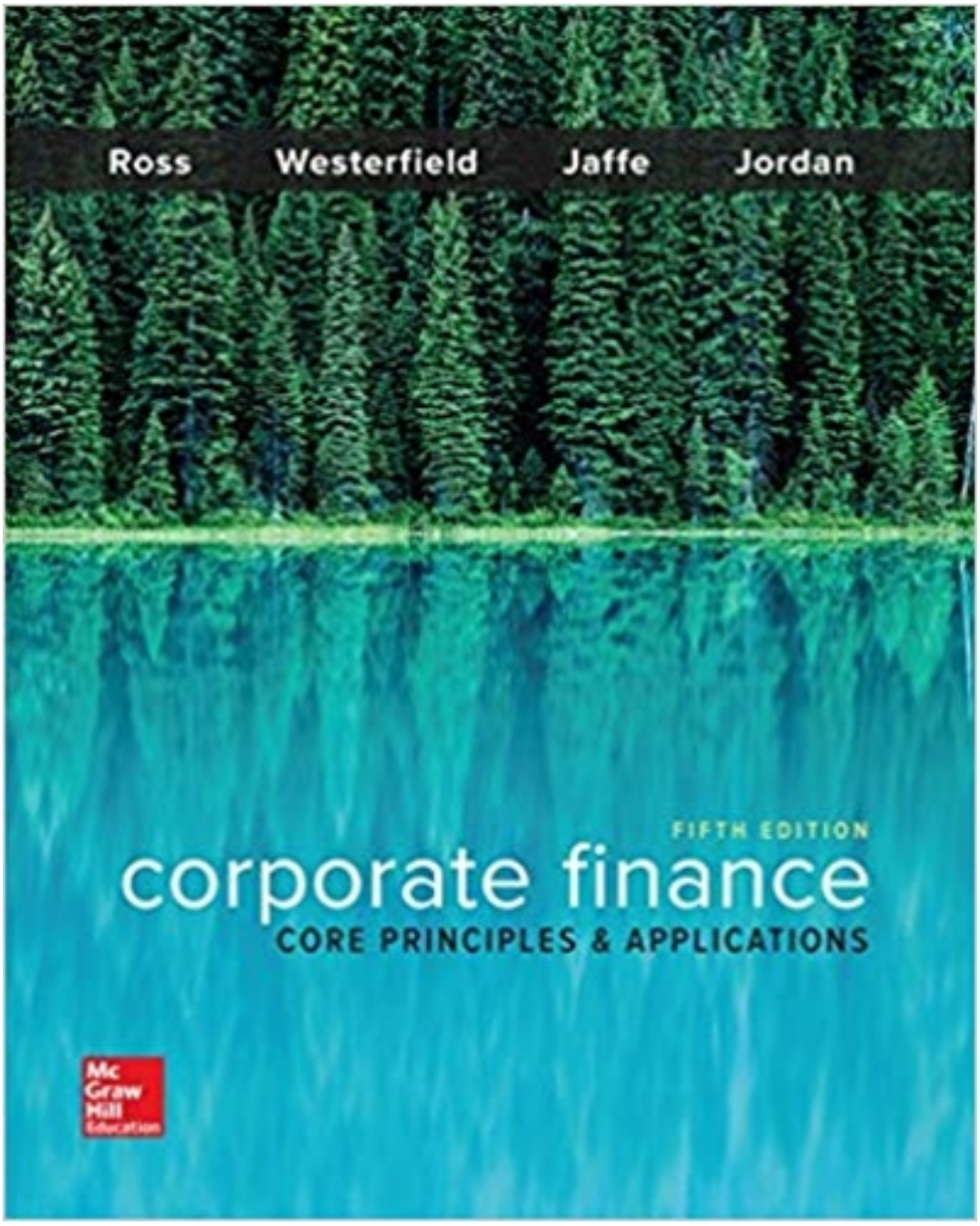

Solutions

Chapter 2
FINANCIAL STATEMENTS AND CASH FLOW

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CHAPTER WEB SITES

Section	*Web Address*
2.1	Yahoo Finance Website: finance.yahoo.com
2.1	CNN Money Website: money.cnn.com
2.1	SEC Website: www.sec.gov
2.1	FASB Website: www.fasb.org
2.3	IRS Website: www.irs.gov
End-of-chapter material	Yahoo Finance Website: finance.yahoo.com Coca-Cola Website: www.coca-cola.com Cooper Tires Website: www.coopertires.com

CHAPTER ORGANIZATION

2.1 The Balance Sheet
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- Debt versus Equity
- Value versus Cost

2.2 The Income Statement
- Generally Accepted Accounting Principles
- Noncash Items
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- Corporate Tax Rates
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2.4 Net Working Capital

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ANNOTATED CHAPTER OUTLINE

Slide 2.1 Chapter 2 Title Slide

Slide 2.2 Key Concepts and Skills

Slide 2.3 Chapter Outline

Slide 2.4 The Balance Sheet

The balance sheet provides a snapshot of the firm's financial position at a specific point in time. Thus, it is commonly referred to as a "stock" statement, whereas the income statement would be considered a "flow" statement since it covers a period of time.

The balance sheet identity is: Assets ≡ Liabilities + Stockholders' Equity

Slide 2.5 Take Notice! (on the following Balance Sheet)

Some key points for students to learn from the balance sheet include the facts that:

Assets exactly equal liabilities + equity

Assets are listed in order of liquidity

Cash and A/R, for example, are more liquid than property plant and equipment

Liabilities are listed in the order in which they come due

Slide 2.6 U.S. Composite Corporation Balance Sheet

Assets exactly equal the sum of liabilities and equity.

Assets: The Left-Hand 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.

Assets are listed in order of liquidity or how long it typically takes for the specific asset to be converted to cash, with those taking the shortest time being listed first.

Liabilities and Equity: The Right-Hand Side
This portion of the balance sheet represents the sources of funds used to finance the purchase of assets. (Refer to Chapter 1 for a lengthier discussion of this point.)

***Lecture Tip**: It may be helpful to review the slide from Chapter 1, which highlights the general composition of a balance sheet.*
Since sources and uses must equal, the balance sheet is an equality:
Assets ≡ Liabilities + Stockholders' 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. A useful example might be the purchase of a house or car where the acquisition can be divided into asset, liability and equity components.*

Slide 2.7 Balance Sheet Analysis

There are three primary concerns that need to be addressed when analyzing a balance sheet: liquidity, debt versus equity, and market value versus historical cost.

Slide 2.8 Accounting Liquidity

Liquidity is a measure of how easily an asset can be converted to cash. Since assets are listed in ascending order of how long it takes to be converted to cash, they are, by definition, listed in descending order of liquidity (i.e., most liquid listed first). The listed order of liabilities, however, reflects time to maturity.

It is important to point out to students that liquidity has two components: (1) how long it takes to convert to cash and (2) 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 enough.

It is also important to point out that owning more liquid assets makes it easier to meet short-term obligations; however, they 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.

Slide 2.9 Debt versus Equity

Interest and principal payments on debt are required by law 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 is left after all debts are paid.

Owners' Equity ≡ Assets – Liabilities

Therefore, equity holders are referred to as residual claimants.

Since debt and equity may have different costs (i.e., interest rates or returns), then the selection of how the business is capitalized has substantial impact on profitability.

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, retained earnings 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.*

Slide 2.10 Value versus Cost

Under current accounting standards, financial statements are reported on a historical cost (i.e., book value) basis. However, book values are generally not all that useful for making decisions about the future because of the historical nature of the numbers.

Example: A piece of property purchased years ago may be reflected on the books at a very low historical value even though it is presently worth far more than previously recorded.

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 balance sheet. This is especially true in service industries.

Market value is the value of an asset at present. It may be higher or lower than reflected historically in a firm's books. Market value is a more accurate basis on which to make financial decisions, but is not in accordance with US GAAP.

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. The key, particularly in later chapters, is to recognize that market values are a better measure of opportunity costs.

Slide 2.11 The Income Statement

As mentioned earlier, the income statement measures flows over a period of time. Specifically, it measures revenues collected relative to the costs associated with those revenues (matching principle). The difference between these two is the firm's income. Thus, the income statement takes the following form:
Revenue – Expenses ≡ Income

Slide 2.12 – Slide 2.14 U.S.C.C. Income Statement

This series of slides walks through the various sections of the income statement, pointing out that the general operation of the business is reflected in the top portion, with non-operating impacts (including taxes) being reflected in the lower portion.

The "bottom line" is net income, which provides a measure of the overall earnings of the firm.

Lecture Tip: *It was noted previously 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 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 2.15 Income Statement Analysis

As with the balance sheet, there are things to remember when trying to interpret the income statement: GAAP, non-cash items, and time and costs.

Slide 2.16 GAAP

Remember that GAAP requires that we recognize revenue when it is earned, not

when the cash is received, and we match costs to revenues (i.e., the matching principle). Thus, income is reported when it is earned, not when cash is actually generated from the transaction. Consequently, net income is NOT cash flow.

Slide 2.17 Noncash Items

The matching principle also creates the recognition of noncash items. For example, when we purchase a machine, the cash flow occurs immediately, but we recognize the expense of the machine over time as it is used in the production process (i.e., depreciation).

The largest noncash deduction for most firms is depreciation; however, other noncash items include amortization and deferred taxes. Noncash expenses reduce taxes and net income, but do not actually represent a cash outflow. Noncash deductions are part of the reason that net income is not equivalent to 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 GAAP allowed recognition of 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 was from the ability to eliminate the liabilities associated with contracts with equipment vendors that were renegotiated during bankruptcy. Another $16 billion came from eliminating the common and preferred shares that previously existed. Most of 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 doesn't always provide a clear view of earnings.*

Arthur Levitt, former chair of the SEC referred to the use of improving accounting results by manipulating non-cash accounts as "cookie jar accounting". When income is higher than anticipated, a company might make an entry to add a" cookie" to the jar, reducing income. When you need extra income to meet market expectations, you take a "cookie" from the jar, increasing income. Cookie jar accounting, or manipulation of non-cash accounts has been the downfall of many substantial companies.

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. Toshiba is a great example of accounting problems. In April of 2015, a committee was established to examine potential accounting problems. On July 20, 2015, the company announced it would revise operating profits down by more than $1 billion. The next day, the president, Hisao Tanaka, resigned. However, that wasn't the end. In November, the company revealed $1.3 billion in impairment losses at a U.S. nuclear subsidiary. It was widely reported that subordinates were pushed to cover up weak financial results. However, by 2016, Toshiba was able to round a corner and turn a profit.
Other companies, such as Enron, WorldCom, etc. have fared much worse. There was a string of accounting problems at the start of this century, and these, along with the terrorist attacks, led to much of the market decline during the early 2000s. As discussed in a prior lecture tip, these issues have led to the adoption of Sarbanes-Oxley, which although potentially beneficial from an information standpoint, has come with its own problems.

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.*

Slide 2.18 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. For example, fixed assets are generally fixed in the short run, while inputs such as labor and raw materials are variable. In the long run, all costs are variable. 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 do not. Another important thing to point out is that the definition of short run and long run varies for different types of businesses.

Slide 2.19 Costs and Purpose

Generally, financial accountants don't distinguish between costs as fixed and variable. Rather, they treat costs as product cost or period costs. Product costs are all of the costs of producing a firm's good or service such as raw materials, direct labor and manufacturing overhead. Period costs are costs that are allocated to a time period such as selling, general and administrative costs.

Lecture Tip: *Students often have difficulty comprehending the difference between product and period costs. Sometimes it is useful to present them as inventoriable and non-inventoriable costs.*

Slide 2.20 Taxes

You can go the IRS website and show the students how to search for the most up-to-date tax information.

The tax code is constantly changing with the decisions of Congress. Since corporations pay taxes, we need to be aware of these changes.

Lecture Tip: *The text notes the ever-changing nature of the tax code. This can be illustrated by the changes in the dividend tax rate. From 1913-1936, dividends were not taxed. From 1936-1939, dividends were taxed at the individual's income tax rate. From 1939-1953, dividends were exempt from tax once more. From 1954-2003, they went back to being taxed at the individual's income tax rate. However, starting in 2003, dividends are now taxed at 15%.*

Tax rates affect the firm's cash flow and, therefore, the firm's value. Since we want to maximize firm value, we need to include taxes in our decisions.

Marginal tax rate – rate paid on next dollar of income
Average tax rate = tax bill / taxable income

Since decisions create incremental income, we want to use the marginal rate in our decisions.

A. Corporate Tax Rates

It's important to point out to students that corporations (and individuals) do not pay a flat rate on their income, but corporate rates are not strictly increasing either. Rates are progressive to a point, then decline to a point, such that the largest firms end up paying a rate (marginal = average) of 35 percent.

The average rate rises to the marginal rate at $50 million of taxable income. The "surcharges" at 39% and 38% offset the initial lower marginal rates.

B. Average versus Marginal Tax Rates

Slide 2.21 Marginal versus Average Tax Rates

This slide provides an in-class example for calculating taxes and rates, with the answers given in the notes to the slide. Appropriate tax rates may be found in Table 2.3.

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.*

Slide 2.22 Net Working Capital

The difference between a firm's current assets and its current liabilities.

Slide 2.23 U.S.C.C. Balance Sheet: Net Working Capital

Since a firm needs current assets (e.g., inventory) to generate sales, as the firm grows, so generally does its net working capital.
Net Working Capital is crucially important to a firm because it is the pool of funds that enable day to day operation. If NWC becomes imbalanced, it is because one of the three responsibilities of the financial manager, short term asset and liability management, has become ineffective.

Slide 2.24 Cash Flow of the Firm

Cash is the lifeblood of a business and is, therefore, the most important item that can be extracted from financial statements.

We generate cash flow from assets, then use this cash flow to reward creditors and stockholders. In conjunction with the balance sheet identity, we know that the cash flow from assets must, therefore, equal the cash flows to creditors and stockholders:

$CF(A) \equiv CF(B) + CF(S)$

Stated explicitly, the cash flow identity is:

Cash Flow from Assets = Cash Flow to Creditors + Cash Flow to Stockholders

Slide 2.25– Slide 2.30 U.S.C.C. Financial Cash Flow

These slides provide a walkthrough of the calculation of the components of cash flow.

CF(A) = operating cash flow – net capital spending – changes in net working capital

Operating cash flow (OCF) = EBIT + depreciation – taxes

Net capital spending (NCS) = purchases of fixed assets – sales of fixed assets

or

NCS = ending net fixed assets – beginning net fixed assets + depreciation

Changes in NWC = ending NWC – beginning NWC

Cash Flow to Creditors and Stockholders

Cash flow to creditors = interest paid + retirement of debt – proceeds from new debt

or

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 + stock repurchases – proceeds from new stock issues

or

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."

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.*

Consider the 2013 McGraw-Hill Education Annual Report. (or the most recent one available)You can go to the McGraw-Hill website (http://www.mheducation.com).

1. *The following questions may arise from looking at the financial statements:*
   How do you account for "prepublication costs," "investments and other assets," and "goodwill and other intangible assets?" Are they included in net capital spending, or are they accounting numbers with no real impact on cash flows?
2. *How should the "other liabilities" be accounted for? Again, which accounts truly provide changes in cash flows, and which accounts are just used for accounting purposes without an actual change in cash flows.*
3. *How do "accumulated other comprehensive income" and "unearned compensation on restricted stock" affect cash flows?*

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.

Slide 2.31 The Statement of Cash Flows

There is an official accounting statement called the Statement of Cash Flows, which explains the change in the cash account on the firm's balance sheets between two periods. The statement typically has three components: cash flows

from operating activities, cash flows from investing activities, and cash flows from financing activities.

It is helpful to think of cash inflows and outflows:
Sources and Uses of cash

Activities that bring cash in are *sources*. Firms raise cash by selling assets, borrowing money, or selling securities.

Activities that involve cash outflows are *uses*. Firms use cash to buy assets, pay off debt, repurchase stock, or pay dividends.

There are some mechanical rules for determining Sources and Uses:

Sources:
- Decrease in asset account
- Increase in liabilities or equity account

Uses:
- Increase in asset account
- Decrease in liabilities or equity account

Slide 2.32 U.S.C.C. Cash Flow from Operating Activities

Operating Activities
- + Net Income
- + Depreciation
- ± Deferred Taxes
- + Decrease in current asset accounts (except cash)
- + Increase in current liability accounts (except notes payable)
- - Increase in current asset accounts (except cash)
- - Decrease in current liability accounts (except notes payable)

It may be good to note that cash flow from operations effectively accounts for interest expense since it is subtracted prior to net income; however, this flow is more generally related to financing activities.

Slide 2.33 U.S.C.C. Cash Flow from Investing Activities

Investment Activities
- + Ending net fixed assets

- Beginning net fixed assets
+ Depreciation

Slide 2.34 U.S.C.C. Cash Flow from Financing Activities

Financing Activities
± Change in notes payable
± Change in long-term debt
± Change in common stock
- Dividends

Slide 2.35 U.S.C.C. Statement of Cash Flows

Putting it all together:
± Net cash flow from operating activities
± Net cash flow from investing activities
± Net cash flow from financing activities
= Net increase (decrease) in cash over the period

Slide 2.36 Quick Quiz

Slide 2.37 Sources of Information

This slide provides hyperlinks to a variety of sources of financial information.

CHAPTER 2
FINANCIAL STATEMENTS AND CASH FLOW

Answers to Concept 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. The bottom-line number shows the change in the cash balance on the balance sheet. As such, it is not a useful number for analyzing a company.

4. The major difference is the treatment of interest expense. The accounting statement of cash flows treats interest as an operating cash flow, while the financial statement of cash flows treats interest as a financing cash flow. The logic of the accounting statement of cash flows is that since interest appears on the income statement, which shows the operations for the period, it is an operating cash flow. In reality, interest is a financing expense, which results from the company's choice of debt/equity. We will have more to say about this in a later chapter. When comparing the two cash flow statements, the financial statement of cash flows is a more appropriate measure of the company's operating performance because of its treatment of interest.

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 productively, 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 more long-lived assets were liquidated than purchased.

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 and principal, 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.

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	$6,800	CL	$5,400
NFA	29,400	LTD	13,100
		OE	??
TA	$36,200	TL & OE	$36,200

We know that total liabilities and owners' equity (TL & OE) must equal total assets of $36,200. We also know that TL & OE is equal to current liabilities plus long-term debt plus owners' equity, so owners' equity is:

Owners' equity = $36,200 – 13,100 – 5,400 = $17,700

NWC = CA – CL = $6,800 – 5,400 = $1,400

2. The income statement for the company is:

Income Statement	
Sales	$528,600
Costs	264,400
Depreciation	41,700
EBIT	$222,500
Interest	20,700
EBT	$201,800
Taxes (35%)	70,630
Net income	$131,170

One equation for net income is:

Net income = Dividends + Addition to retained earnings

Rearranging, we get:

Addition to retained earnings = Net income – Dividends
Addition to retained earnings = $131,170 – 27,000
Addition to retained earnings = $104,170

3. To find the book value of current assets, we use the NWC equation, that is:

NWC = CA – CL

Rearranging to solve for current assets, we get:

CA = NWC + CL
CA = $320,000 + 1,075,000
CA = $1,395,000

So, the book value balance sheet will be:

Book Value Balance Sheet	
Current assets	$1,395,000
Fixed assets	3,900,000
Total assets	$5,295,000

The market value of current assets is given, so the market value balance sheet is:

Market Value Balance Sheet	
NWC	$ 410,000
Fixed assets	5,300,000
Total assets	$5,710,000

4. Taxes = .15($50,000) + .25($25,000) + .34($25,000) + .39($328,500 – 100,000)
Taxes = $111,365

The average tax rate is the total tax paid divided by taxable income, so:

Average tax rate = $111,365 / $328,500
Average tax rate = .3390, or 33.90%

The marginal tax rate is the tax rate on the next $1 of earnings, so the marginal tax rate is 39 percent.

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

Income Statement	
Sales	$30,700
Costs	11,100
Depreciation expense	2,100
EBIT	$17,500
Interest expense	1,140
EBT	$16,360
Taxes (40%)	6,544
Net income	$ 9,816

Using the equation for OCF, we get:

OCF = EBIT + Depreciation – Taxes
OCF = $17,500 + 2,100 – 6,544
OCF = $13,056

6. The net capital spending is the increase in fixed assets, plus depreciation, so:

Net capital spending = $NFA_{end} - NFA_{beg}$ + Depreciation
Net capital spending = $4,450,000 – 3,750,000 + 395,000
Net capital spending = $1,095,000

7. The long-term debt account will increase by $9.5 million, the amount of the new long-term debt issue. Since the company sold 4 million new shares of stock with a $1 par value, the common stock account will increase by $4 million. The capital surplus account will increase by $22 million, the value of the new stock sold above its par value. Since the company had a net income of $15.3 million, and paid $3.1 million in dividends, the addition to retained earnings was $12.2 million, which will increase the accumulated retained earnings account. So, the new long-term debt and stockholders' equity portion of the balance sheet will be:

Long-term debt	$ 46,500,000
Total long-term debt	$ 46,500,000
Shareholders' equity	
Preferred stock	$ 2,100,000
Common stock ($1 par value)	12,900,000
Capital surplus	63,000,000
Accumulated retained earnings	87,500,000
Total equity	$ 165,500,000

8. The cash flow to creditors is the interest paid minus the change in long-term debt, so:

Cash flow to creditors = Interest paid – Net new borrowing
Cash flow to creditors = \$187,000 – (LTD_{end} – LTD_{beg})
Cash flow to creditors = \$187,000 – (\$2,530,000 – 2,400,000)
Cash flow to creditors = \$57,000

9. The cash flow to stockholders is the dividends paid minus any new equity purchased by shareholders, so:

Cash flow to stockholders = Dividends paid – Net new equity
Cash flow to stockholders = \$270,000 – [($Common_{end}$ + $APIS_{end}$) – ($Common_{beg}$ + $APIS_{beg}$)]
Cash flow to stockholders = \$270,000 – [(\$595,000 + 6,180,000) – (\$540,000 + 5,600,000)]
Cash flow to stockholders = –\$365,000

Note: APIS is the additional paid-in surplus.

10. We know that the cash flow from assets must be equal to the cash flow to creditors plus the cash flow to stockholders, so:

Cash flow from assets = Cash flow to creditors + Cash flow to stockholders
Cash flow from assets = \$57,000 – 365,000
Cash flow from assets = –\$308,000

Now, we can use the relationship between the cash flow from assets and the operating cash flow, change in net working capital, and capital spending to find the operating cash flow. Doing so, we find:

Cash flow from assets = –\$308,000 = OCF – Change in NWC – Net capital spending
–\$308,000 = OCF – (–\$65,000) – 640,000
Operating cash flow = \$267,000

Intermediate

11. *a.* The accounting statement of cash flows explains the change in cash during the year. The accounting statement of cash flows will be:

Statement of cash flows	
Operations	
Net income	$148
Depreciation	77
Changes in other current assets	–12
Change in accounts payable	6
Total cash flow from operations	$219
Investing activities	
Acquisition of fixed assets	–$211
Total cash flow from investing activities	–$211
Financing activities	
Proceeds of long-term debt	$44
Dividends	–40
Total cash flow from financing activities	$4
Change in cash (on balance sheet)	$ 12

b. The change in net working capital is the ending net working capital minus the beginning net working capital, so:

$$\begin{aligned}\text{Change in NWC} &= NWC_{end} - NWC_{beg} \\ &= (CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg}) \\ &= [(\$93 + 265) - 301] - [(\$81 + 253) - 295) \\ &= \$57 - 39 \\ &= \$18\end{aligned}$$

c. To find the cash flow generated by the firm's assets, we need the operating cash flow, and the capital spending. Since there are no interest payments, EBIT is the same as EBT. Calculating each of these, we find:

Operating cash flow	
EBT	$246
Depreciation	77
–Taxes	98
Operating cash flow	$225

Next, we will calculate the capital spending, which is:

Capital spending	
Ending fixed assets	$824
–Beginning fixed assets	690
Depreciation	77
Capital spending	$211

Now we can calculate the cash flow generated by the firm's assets, which is:

Cash flow from assets	
Operating cash flow	$225
–Capital spending	211
–Change in NWC	18
Cash flow from assets	–$4

Notice that the accounting statement of cash flows shows a positive cash flow, but the financial cash flows show a negative cash flow. The financial cash flow is a better number for analyzing the firm's performance.

12. To construct the cash flow identity, we will begin cash flow from assets. Cash flow from assets is:

Cash flow from assets = OCF – Change in NWC – Net capital spending

So, the operating cash flow is:

OCF = EBIT + Depreciation – Taxes
OCF = $153,769 + 66,513 – 45,671
OCF = $174,611

Next, we will calculate the change in net working capital which is:

Change in NWC = $NWC_{end} - NWC_{beg}$
Change in NWC = $(CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
Change in NWC = ($66,284 – 32,978) – ($57,026 – 29,342)
Change in NWC = $5,622

Now, we can calculate the capital spending. The capital spending is:

Net capital spending = $NFA_{end} - NFA_{beg}$ + Depreciation
Net capital spending = $498,312 – 415,289 + 66,513
Net capital spending = $149,536

Now, we have the cash flow from assets, which is:

Cash flow from assets = OCF – Change in NWC – Net capital spending
Cash flow from assets = $174,611 – 5,622 – 149,536
Cash flow from assets = $19,453

The company generated $19,453 from its assets. The cash flow from operations was $174,611, and the company spent $5,622 on net working capital and $149,536 in fixed assets.

The cash flow to creditors is:

Cash flow to creditors = Interest paid – New long-term debt
Cash flow to creditors = Interest paid – (Long-term debt$_{end}$ – Long-term debt$_{beg}$)
Cash flow to creditors = $23,280 – ($179,400 – 165,300)
Cash flow to creditors = $9,180

The cash flow to stockholders is a little trickier in this problem. First, we need to calculate the new equity sold. The equity balance increased during the year. The only way to increase the equity balance is to add addition to retained earnings or sell equity. To calculate the new equity sold, we can use the following equation:

New equity = Ending equity – Beginning equity – Addition to retained earnings
New equity = $352,218 – 277,673 – 69,618
New equity = $4,927

What happened was the equity account increased by $74,545. Of this increase, $69,618 came from addition to retained earnings, so the remainder must have been the sale of new equity. Now we can calculate the cash flow to stockholders as:

Cash flow to stockholders = Dividends paid – Net new equity
Cash flow to stockholders = $15,200 – 4,927
Cash flow to stockholders = $10,273

The company paid $9,180 to creditors and $10,273 to its stockholders.

Finally, the cash flow identity is:

Cash flow from assets	=	Cash flow to creditors	+	Cash flow to stockholders
$19,453	=	$4,927	+	$10,273

The cash flow identity balances, which is what we expect.

13. With the information provided, the cash flows from the firm are the capital spending and the change in net working capital, so:

Cash flows from the firm	
Capital spending	–$19,200
Additions to NWC	–2,700
Cash flows from the firm	–$21,900

And the cash flows to the investors of the firm are:

Cash flows to investors of the firm	
Sale of long-term debt	–$16,500
Sale of common stock	–2,700
Dividends paid	7,100
Cash flows to investors of the firm	–$12,100

14. *a.* The interest expense for the company is the amount of debt times the interest rate on the debt. So, the income statement for the company is:

Income Statement	
Sales	$757,000
Cost of goods sold	249,800
Selling expenses	146,000
Depreciation expense	87,000
EBIT	$274,200
Interest expense	40,500
EBT	$233,700
Taxes	81,795
Net income	$151,905

b. And the operating cash flow is:

OCF = EBIT + Depreciation – Taxes
OCF = $274,200 + 87,000 – 81,795
OCF = $279,405

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

Income Statement	
Sales	$225,000
Costs	103,200
Other expenses	6,100
Depreciation expense	15,300
EBIT	$100,400
Interest expense	11,200
EBT	$89,200
Taxes	31,227
Net income	$57,973
Dividends	$18,100
Addition to retained earnings	$39,873

a. The operating cash flow was:

OCF = EBIT + Depreciation – Taxes
OCF = $100,400 + 15,300 – 31,227
OCF = $84,473

b. The cash flow to creditors is the interest paid minus any net new long-term debt, so:

CFC = Interest – Net new LTD
CFC = $11,200 – (–$8,500)
CFC = $19,700

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

c. The cash flow to stockholders is the dividends paid minus any net new equity, or:

CFS = Dividends – Net new equity
CFS = $18,100 – 6,000
CFS = $12,100

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

CFA = $19,700 + 12,100
CFA = $31,800

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
Net capital spending = $33,000 + 15,300
Net capital spending = $48,300

Now we can use:

CFA = OCF – Net capital spending – Change in NWC
$31,800 = $84,473 – 48,300 – Change in NWC

Solving for the change in NWC yields $4,373, meaning the company increased its NWC by $4,373.

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

Net income = Dividends + Addition to retained earnings
Net income = $5,200 + 8,100
Net income = $13,300

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)
EBT = $13,300 / (1 – .35)
EBT = $20,462

Now we can calculate:

EBIT = EBT + Interest
EBIT = $20,462 + 2,050
EBIT = $22,512

The last step is to use:

EBIT = Sales – Costs – Depreciation
$22,512 = $57,900 – 28,600 – Depreciation
Depreciation = $6,788

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

	Balance Sheet		
Cash	$168,000	Accounts payable	$429,000
Accounts receivable	237,000	Notes payable	171,000
Inventory	385,000	Current liabilities	$600,000
Current assets	$790,000	Long-term debt	1,985,000
		Total liabilities	$2,585,000
Tangible net fixed assets	3,410,000		
Intangible net fixed assets	827,000	Common stock	??
		Accumulated ret. earnings	2,084,000
Total assets	$5,027,000	Total liab. & owners' equity	$5,027,000

Total liabilities and owners' equity is:

TL & OE = CL + LTD + Common stock

Solving this equation for equity gives us:

Common stock = $5,027,000 – 2,084,000 – 2,585,000
Common stock = $358,000

18. 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 is $15,100, equity is equal to $3,500, and if TA is $9,900, equity is equal to $0. We should note here that the book value of shareholders' equity can be negative.

19. *a.* Taxes Growth = .15($50,000) + .25($25,000) + .34($4,500) = $15,280
Taxes Income = .15($50,000) + .25($25,000) + .34($25,000) + .39($235,000)
+ .34($7,950,000 – 335,000)
= $2,703,000

b. Each firm has a marginal tax rate of 34 percent on the next $10,000 of taxable income, despite their different average tax rates, so both firms will pay an additional $3,400 in taxes.

20. *a.* The income statement for the company is:

Income Statement	
Sales	$809,000
Costs	549,000
Administrative and selling expenses	136,000
Depreciation expense	85,000
EBIT	$ 39,000
Interest expense	67,000
EBT	–$28,000
Taxes	0
Net income	–$28,000

b. OCF = EBIT + Depreciation – Taxes
OCF = $39,000 + 85,000 – 0
OCF = $124,000

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.

21. 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 = $124,000 – 0 – 0 = $124,000

Cash flow to stockholders = Dividends – Net new equity
Cash flow to stockholders = $75,000 – 0 = $75,000

Cash flow to creditors = Cash flow from assets – Cash flow to stockholders
Cash flow to creditors = $124,000 – 75,000
Cash flow to creditors = $49,000

Cash flow to creditors is also:

Cash flow to creditors = Interest – Net new LTD

So:

Net new LTD = Interest – Cash flow to creditors
Net new LTD = $67,000 – 49,000
Net new LTD = $18,000

22. *a.* The income statement is:

Income Statement	
Sales	$44,600
Cost of goods sold	27,500
Depreciation	4,630
EBIT	$12,470
Interest	1,050
Taxable income	$11,420
Taxes (40%)	4,568
Net income	$ 6,852

b. OCF = EBIT + Depreciation – Taxes
OCF = $12,470 + 4,630 – 4,568
OCF = $12,532

c. Change in NWC = $NWC_{end} - NWC_{beg}$
= $(CA_{end} - CL_{end}) - (CA_{beg} - CL_{beg})$
= ($7,720 – 4,830) – ($6,840 – 4,580)
= $630

Net capital spending = $NFA_{end} - NFA_{beg}$ + Depreciation
= $35,610 – 27,510 + 4,630
= $12,730

CFA = OCF – Change in NWC – Net capital spending
= $12,532 – 630 – 12,730
= –$828

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 $828 in funds from its stockholders and creditors to make these investments.

d. Cash flow to creditors = Interest – Net new LTD
= $1,050 – 0
= $1,050

Cash flow to stockholders = Cash flow from assets – Cash flow to creditors
= –$828 – 1,050
= –$1,878

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 = $2,275 – (–1,878)
= $4,153

The firm had positive earnings in an accounting sense (NI > 0) and had positive cash flow from operations. The firm invested $630 in new net working capital and $12,730 in new fixed assets. The firm had to raise $828 from its stakeholders to support this new investment. It accomplished this by raising $4,153 in the form of new equity. After paying out $2,275 of this in the form of dividends to shareholders and $1,050 in the form of interest to creditors, $828 was left to meet the firm's cash flow needs for investment.

23. *a.* Total assets 2016 = $1,066 + 5,184 = $6,250
Total liabilities 2016 = $475 + 2,880 = $3,355
Owners' equity 2016 = $6,250 – 3,355 = $2,895

Total assets 2017 = $1,145 + 5,472 = $6,617
Total liabilities 2017 = $518 + 3,090 = $3,608
Owners' equity 2017 = $6,617 – 3,608 = $3,009

b. NWC 2016 = $CA_{2016} – CL_{2016}$ = $1,066 – 475 = $591
NWC 2017 = $CA_{2017} – CL_{2017}$ = $1,145 – 518 = $627
Change in NWC = $NWC_{2017} – NWC_{2016}$ = $627 – 591 = $36

c. We can calculate net capital spending as:

Net capital spending = Net fixed assets 2017 – Net fixed assets 2016 + Depreciation
Net capital spending = $5,472 – 5,184 + 1,339
Net capital spending = $1,627

So, the company had a net capital spending cash flow of $1,627. We also know that net capital spending is:

Net capital spending = Fixed assets bought – Fixed assets sold
$1,627 = $2,740 – Fixed assets sold
Fixed assets sold = $2,740 – 1,627
Fixed assets sold = $1,113

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
EBIT = $15,690 – 3,739 – 1,339
EBIT = $10,612

EBT = EBIT – Interest
EBT = $10,612 – 562
EBT = $10,050

Taxes = EBT × .35
Taxes = $10,050 × .35
Taxes = $3,518

OCF = EBIT + Depreciation – Taxes
OCF = $10,612 + 1,339 – 3,518
OCF = $8,434

Cash flow from assets = OCF – Change in NWC – Net capital spending
Cash flow from assets = $8,434 – 36 – 1,627
Cash flow from assets = $6,771

d. Net new borrowing = $LTD_{2017} - LTD_{2016}$
Net new borrowing = $3,090 – 2,880
Net new borrowing = $210

Net new borrowing = $210 = Debt issued – Debt retired
Debt retired = $634 – 210
Debt retired = $424

Cash flow to creditors = Interest – Net new LTD
Cash flow to creditors = $562 – 210
Cash flow to creditors = $352

24.

	Balance sheet as of Dec. 31, 2016		
Cash	$21,364	Accounts payable	$27,349
Accounts receivable	28,283		
Inventory	50,287	Long-term debt	71,550
Current assets	$99,934		
Net fixed assets	$179,166	Owners' equity	180,201
Total assets	$279,100	Total liab. & equity	$279,100

	Balance sheet as of Dec. 31, 2017		
Cash	$21,856	Accounts payable	$25,639
Accounts receivable	31,864		
Inventory	51,675	Long-term debt	83,476
Current assets	$105,395		
Net fixed assets	$183,440	Owners' equity	179,720
Total assets	$288,835	Total liab. & equity	$288,835

2016 Income Statement	
Sales	$40,743.00
COGS	14,020.00
Other expenses	3,322.00
Depreciation	5,853.00
EBIT	$17,548.00
Interest	2,098.00
EBT	$15,450.00
Taxes (35%)	5,407.50
Net income	$10,042.50
Dividends	$4,966.00
Additions to RE	$5,076.50

2017 Income Statement	
Sales	$43,277.00
COGS	15,912.00
Other expenses	2,776.00
Depreciation	5,858.00
EBIT	$18,731.00
Interest	3,142.00
EBT	$15,589.00
Taxes (35%)	5,456.15
Net income	$10,132.85
Dividends	$5,468.00
Additions to RE	4,664.85

25. OCF = EBIT + Depreciation – Taxes
OCF = $18,731 + 5,858 – 5,456.15
OCF = $19,132.85

Change in NWC = $NWC_{end} – NWC_{beg} = (CA – CL)_{end} – (CA – CL)_{beg}$
Change in NWC = ($105,395 – 25,639) – ($99,934 – 27,349)
Change in NWC = $7,171

Net capital spending = $NFA_{end} – NFA_{beg}$ + Depreciation
Net capital spending = $183,440 – 179,166 + 5,858
Net capital spending = $10,132

Cash flow from assets = OCF – Change in NWC – Net capital spending
Cash flow from assets = $19,132.85 – 7,171 – 10,132
Cash flow from assets = $1,829.85

Cash flow to creditors = Interest – Net new LTD
Net new LTD = $LTD_{end} – LTD_{beg}$
Cash flow to creditors = $3,142 – ($83,476 – 71,550)
Cash flow to creditors = –$8,784

Net new equity = Common $stock_{end}$ – Common $stock_{beg}$
Common stock + Retained earnings = Total owners' equity
Net new equity = $(OE – RE)_{end} – (OE – RE)_{beg}$
Net new equity = $OE_{end} – OE_{beg} + RE_{beg} – RE_{end}$
$RE_{end} = RE_{beg}$ + Additions to RE
Net new equity = $OE_{end} – OE_{beg} + RE_{beg} – (RE_{beg}$ + Additions to $RE_{2014})$
Net new equity = $OE_{end} – OE_{beg}$ – Additions to RE_{2014}
Net new equity = $179,720 – 180,201 – 4,664.85
Net new equity = –$5,145.85

Cash flow to stockholders = Dividends – Net new equity
Cash flow to stockholders = $5,468 – (–$5,145.85)
Cash flow to stockholders = $10,613.85

As a check, cash flow from assets is $1,829.85.

Cash flow from assets = Cash flow to creditors + Cash flow to stockholders
Cash flow from assets = –$8,784 + 10,613.85
Cash flow from assets = $1,829.85

Challenge

26. We will begin by calculating the operating cash flow. First, we need the EBIT, which can be calculated as:

EBIT = Net income + Current taxes + Deferred taxes + Interest
EBIT = $321 + 185 + 34 + 96
EBIT = $636

Now we can calculate the operating cash flow as:

Operating cash flow	
Earnings before interest and taxes	$636
Depreciation	177
– Current taxes	185
Operating cash flow	$628

The net capital spending is found in the investing activities portion of the accounting statement of cash flows, so:

Net capital spending	
Acquisition of fixed assets	$332
– Sale of fixed assets	42
Capital spending	$290

The net working capital cash flows are all found in the operations cash flow section of the accounting statement of cash flows. However, instead of calculating the net working capital cash flows as the change in net working capital, we must calculate each item individually. Doing so, we find:

Net working capital cash flow	
Cash	$27
Accounts receivable	52
Inventories	–41
Accounts payable	–33
Accrued expenses	17
Other	–4
NWC cash flow	$18

Except for the interest expense and notes payable, the cash flow to creditors is found in the financing activities of the accounting statement of cash flows. The interest expense from the income statement is given, so:

Cash flow to creditors	
Interest	$96
Retirement of debt	195
Debt service	$291
– Proceeds from sale of long-term debt	–105
Total	$186

And we can find the cash flow to stockholders in the financing section of the accounting statement of cash flows. The cash flow to stockholders was:

Cash flow to stockholders	
Dividends	$158
Repurchase of stock	26
Cash to stockholders	$184
– Proceeds from new stock issue	–50
Total	$134

27. Net capital spending $= NFA_{end} - NFA_{beg} + \text{Depreciation}$

$= (NFA_{end} - NFA_{beg}) + (\text{Depreciation} + AD_{beg}) - AD_{beg}$

$= (NFA_{end} - NFA_{beg}) + AD_{end} - AD_{beg}$

$= (NFA_{end} + AD_{end}) - (NFA_{beg} + AD_{beg}) = FA_{end} - FA_{beg}$

28. *a.* The tax bubble causes average tax rates to catch up to marginal tax rates, thus eliminating the tax advantage of low marginal rates for high income corporations.

b. Assuming a taxable income of $335,001, the taxes will be:

Taxes = .15($50,000) + .25($25,000) + .34($25,000) + .39($235,000)
Taxes = $113,900

Average tax rate = $113,900 / $335,000
Average tax rate = .34, or 34%

The marginal tax rate on the next dollar of income is 34 percent.

For corporate taxable income levels greater than $18,333,334, average tax rates are equal to marginal tax rates.

Taxes = .34($10,000,000) + .35($5,000,000) + .38($3,333,334)
Taxes = $6,416,667

Average tax rate = $6,416,667 / $18,333,334
Average tax rate = .35, or 35%

The marginal tax rate on the next dollar of income is 35 percent. For corporate taxable income levels over $18,333,334, average tax rates are again equal to marginal tax rates.

c.

Taxes	= .34($200,000) = $68,000
$68,000	= .15($50,000) + .25($25,000) + .34($25,000) + X($100,000)
X($100,000)	= $68,000 – 22,250 = $45,750
X	= $45,750 / $100,000
X	= .4575, or 45.75%

CHAPTER 2
CASH FLOWS AT EAST COAST YACHTS

The operating cash flow for the company is:

OCF = EBIT + Depreciation – Current taxes
OCF = $87,531,900 + 19,958,400 – 30,512,400
OCF = $76,877,900

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	$350,435,700
– Beginning net fixed assets	317,612,300
+ Depreciation	19,958,400
Net capital spending	$52,781,800

Alternatively, the company purchased $59.5 million in fixed assets and sold $6,718,200, for a total capital spending of $52,781,800.

And the change in net working capital was:

Change in net working capital	
Ending NWC	$538,300
– Beginning NWC	–1,142,400
Change in NWC	$1,680,700

So, the cash flow from assets was:

Cash flow from assets	
Operating cash flow	$76,877,900
– Net capital spending	52,781,800
– Change in NWC	1,680,700
Cash flow from assets	$22,415,400

The cash flow to creditors was:

Cash flow to creditors	
Interest	$11,000,900
Retirement of debt	22,600,000
Debt service	$33,600,900
– Proceeds from sale of long-term debt	–40,000,000
Total	–$6,399,100

Alternatively	
Beginning long-term debt	$151,860,000
Ending long-term debt	169,260,000
Interest	11,000,900
Total	–$6,399,100

The cash flow to stockholders was:

Cash flow to stockholders	
Dividends	$17,374,500
Repurchase of stock	35,640,000
Cash to stockholders	$53,014,500
– Proceeds from new stock issue	24,200,000
Total	$28,814,500

Alternatively	
Beginning total equity	$164,609,900
– Ending total equity	181,714,000
Dividends	17,374,500
Retained earnings	28,544,100
Total	$28,814,500

And the cash flow identity was:

Cash flow from assets	= Cash flow to creditors	+	Cash flow to stockholders
$22,415,400	= –$6,399,100	+	28,814,500

The accounting statement of cash flows for the year was:

Accounting Statement of Cash Flows

Operations	
Net income	$45,918,600
Depreciation	19,958,400
Changes in assets and liabilities	
Accounts receivable	243,300
Inventories	–3,059,550
Accounts payable	979,350
Accrued expenses	705,900
Other	–74,500
Total cash flow from operations	$64,671,500
Investing activities	
Acquisition of fixed assets	–$59,500,000
Sale of fixed assets	6,718,200
Total cash flow from investing activities	–$52,781,800
Financing activities	
Retirement of debt	–$22,600,000
Proceeds of long-term debt	40,000,000
Dividends	–17,374,500
Repurchase of stock	–35,640,000
Proceeds from new stock issues	24,200,000
Total cash flow from financing activities	–$11,414,500
Change in cash (on balance sheet)	$475,200

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 $1,680,700 in new net working capital and $52,781,800 in new fixed assets. The firm received $6,399,100 from its creditors, and paid $28,814,500 to its stockholders.

2. The financial cash flows statement presents a more accurate picture of the company since it accurately reflects interest cash flows as a financing decision rather than an operating decision.

3. The expansion plans look like they are probably a good idea since the company appears to have fairly strong operating cash flow, although the company already invested a significant amount in fixed assets during the past year. This decision will be discussed in more detail later in the book.

Ross Westerfield Jaffe Jordan

CHAPTER 2

FINANCIAL STATEMENTS ANALYSIS AND FINANCIAL MODELS

FIFTH EDITION

corporate finance

CORE PRINCIPLES & APPLICATIONS

Mc Graw Hill Education

KEY CONCEPTS AND SKILLS

- Understand the information provided by financial statements
- Differentiate between book and market values
- Know the difference between average and marginal tax rates
- Grasp the difference between accounting income and cash flow
- Calculate a firm's cash flow

CHAPTER OUTLINE

2.1 The Balance Sheet

2.2 The Income Statement

2.3 Taxes

2.4 Net Working Capital

2.5 Cash Flow of the Firm

2.6 The Accounting Statement of Cash Flows

2.1 THE BALANCE SHEET

- An accountant's snapshot of the firm's accounting value at a specific point in time
- The Balance Sheet Identity is:

Assets ≡ Liabilities + Stockholders' Equity

TAKE NOTICE! (ON THE FOLLOWING BALANCE SHEET)

- Assets exactly equal liabilities + equity
- Assets are listed in order of liquidity
  - The amount of time it would take to convert them to cash in an operating business
- Obviously cash and A/R are more liquid than property plant and equipment
- Liabilities are listed in the order in which they come due

U.S. COMPOSITE CORPORATION BALANCE SHEET (IN $ MILLIONS)

U.S. COMPOSITE CORPORATION
Balance Sheet
2016 and 2017
(in $ millions)

Assets	2016	2017	Liabilities (debt) and stockholders' equity	2016	2017
Current assets:			Current liabilities:		
Cash and equivalents	$ 157	$ 198	Accounts payable	$ 455	$ 486
Accounts receivable	270	294	Total current liabilities	$ 455	$ 486
Inventories	280	269			
Total current assets	$ 707	$ 761			
Fixed assets:			Long-term liabilities:		
Property, plant, and equipment	$1,274	$1,423	Deferred taxes	$ 104	$ 117
Less accumulated depreciation	460	550	Long-term debt*	458	471
Net property, plant, and equipment	$ 814	$ 873	Total long-term liabilities	$ 562	$ 588
Intangible assets and others	221	245			
Total fixed assets	$1,035	$1,118			
			Stockholders' equity:		
			Preferred stock	$ 39	$ 39
			Common stock ($1 par value)	32	55
			Capital surplus	327	347
			Accumulated retained earnings	347	390
			Less treasury stock†	20	26
			Total equity	$ 725	$ 805
Total assets	$1,742	$1,879	Total liabilities and stockholders' equity‡	$1,742	$1,879

BALANCE SHEET ANALYSIS

- When analyzing a balance sheet, the Finance Manager should be aware of three concerns:

1. Accounting liquidity
2. Debt versus equity
3. Value versus cost

ACCOUNTING LIQUIDITY

- Refers to the ease and quickness with which assets can be converted to cash—without a significant loss in value
- Current assets are the most liquid
- Some fixed assets are intangible
- The more liquid a firm's assets, the less likely the firm is to experience problems meeting short-term obligations
- Liquid assets frequently have lower rates of return than fixed assets

DEBT VERSUS EQUITY

- Creditors generally receive the first claim on the firm's cash flow.
- Shareholders' equity is the residual difference between assets and liabilities.
- Debt and equity have different costs; the relationship between them has an impact on the firm's profitability.

VALUE VERSUS COST

- Under Generally Accepted Accounting Principles (GAAP), financial statements of firms in the U.S. carry assets at historical cost.
- Market value is the price at which the assets, liabilities, and equity could actually be bought or sold, which is a completely different concept from historical cost.

2.2 THE INCOME STATEMENT

- Measures financial performance over a specific period of time
- The accounting definition of income is:

  Revenue – Expenses ≡ Income

U.S.C.C. INCOME STATEMENT 2017 OPERATIONS SECTION
(IN $ MILLIONS)

The operations section of the income statement reports the firm's revenues and expenses from principal operations.

Total operating revenues	$2,262
Cost of goods sold	1,655
Selling, general, and administrative expenses	327
Depreciation	90
Operating income	$190
Other income	29
Earnings before interest and taxes	$219
Interest expense	49
Pretax income	$170
Taxes	84
Current: $71	
Deferred: $13	
Net income	$86
Addition to retained earnings	$43
Dividends:	$43

U.S.C.C. INCOME STATEMENT 2017
NON-OPERATING SECTION
(IN $ MILLIONS)

The non-operating section of the income statement includes all financing costs, such as interest expense.

Total operating revenues	$2,262
Cost of goods sold	1,655
Selling, general, and administrative expenses	327
Depreciation	90
Operating income	$190
Other income	29
Earnings before interest and taxes	$219
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U.S.C.C. INCOME STATEMENT 2017
NET INCOME
(IN $ MILLIONS)

Total operating revenues	$2,262
Cost of goods sold	1,655
Selling, general, and administrative expenses	327
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Current: $71	
Deferred: $13	
Net income	$86
Retained earnings:	$43
Dividends:	$43

Net income is the "bottom line."

INCOME STATEMENT ANALYSIS

- There are three things to keep in mind when analyzing an income statement:
  1. Generally Accepted Accounting Principles (GAAP)
  2. Noncash Items
  3. Time and Costs

GAAP

- The matching principal of GAAP dictates that revenues be matched with expenses.
- Thus, income and expenses are reported when earned or incurred, even though no cash flow may have occurred.

NONCASH ITEMS

- Depreciation is the most apparent non-cash item. No firm ever writes a check for "depreciation."
- Other noncash accounts include uncollected sales on account, unpaid purchases on account and deferred taxes, none of which represent a cash flow.

Thus, net income does not equal cash flow

TIME AND COSTS

- Think of the future as having two parts: short run and long run
- In the short run some costs are fixed and others variable:
  - In the short run equipment and commitments are fixed
  - Production can only be varied by altering labor and materials
- In the long run all costs are variable

COSTS AND PURPOSE

- Financial accountants do not distinguish between variable costs and fixed costs
- Accounting costs are usually treated as period or product costs
  - Product Costs: Total production costs
    - i.e., raw materials, direct labor, manufacturing overhead
  - Period Costs: Costs allocated to a time period
    - i.e., selling, general and administrative costs
    - Such as accountant salaries, office supplies

2.3 TAXES

- Taxes impact income; important to financial decisions
- Taxes come from various sources:
  - Federal, state, excise
- Taxes are always changing
- Marginal vs. average tax rates
  - Marginal – the percentage paid on the next dollar earned
  - Average = the tax bill / taxable income
- Financial decisions are incremental; applicable tax rate is the marginal rate
- Other taxes

MARGINAL VERSUS AVERAGE TAX 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?

2.4 NET WORKING CAPITAL

- Net Working Capital ≡
  Current Assets – Current Liabilities

- NWC usually grows with the firm

U.S.C.C. BALANCE SHEET NET WORKING CAPITAL

$252m = $707- $455

	2017	2016
Current assets:		
Cash and equivalents	$198	$157
Accounts receivable	294	270
Inventories	269	280
Total current assets	$761	$707

	2017	2016
Current Liabilities:		
Accounts payable	$486	$455
Total current liabilities	$486	$455

$275m = $761m- $486m

Here we see NWC grow to $275 million in 2017 from $252 million in 2016.

$23 million

This increase of $23 million is an investment of the firm.

2.5 CASH FLOW OF THE FIRM

- In finance, the most important item that can be extracted from financial statements is the actual cash flow of the firm.
- Cash flow received from the firm's assets must equal the cash flows to the firm's creditors and stockholders.

$$CF(A) \equiv CF(B) + CF(S)$$

- In other words, the cash generated by assets enables the firm to pay its debts and provide a return to shareholders.
- Accounting cash flow and financial cash flow are not necessarily equal.

U.S.C.C. FINANCIAL CASH FLOW: OCF

Cash Flow of the Firm	$238
Operating cash flow (Earnings before interest and taxes plus depreciation minus taxes)	
Capital spending (Acquisitions of fixed assets minus sales of fixed assets)	-173
Additions to net working capital	-23
Total	$42
Cash Flow of Investors in the Firm	
Debt (Interest plus retirement of debt minus long-term debt financing)	$36
Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

Operating Cash Flow:

EBIT	$219
Depreciation	$90
Current Taxes	-$71
OCF	$238

U.S.C.C. FINANCIAL CASH FLOW: CAPITAL SPENDING

Cash Flow of the Firm	
Operating cash flow (Earnings before interest and taxes plus depreciation minus taxes)	$238
Capital spending (Acquisitions of fixed assets minus sales of fixed assets)	-173
Additions to net working capital	-23
Total	$42
Cash Flow of Investors in the Firm	
Debt (Interest plus retirement of debt minus long-term debt financing)	$36
Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

Capital Spending

Purchase of fixed assets	$198
Sales of fixed assets	-$25
Capital Spending	$173

U.S.C.C. FINANCIAL CASH FLOW: NET WORKING CAPITAL

Cash Flow of the Firm	
Operating cash flow (Earnings before interest and taxes plus depreciation minus taxes)	$238
Capital spending (Acquisitions of fixed assets minus sales of fixed assets)	-173
Additions to net working capital	-23
Total	$42
Cash Flow of Investors in the Firm	
Debt (Interest plus retirement of debt minus long-term debt financing)	$36
Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

NWC grew to $275 million in 2014 from $252 million in 2013.

This increase of $23 million is the addition to NWC.

U.S.C.C. FINANCIAL CASH FLOW: CASH FLOW TO CREDITORS

Cash Flow of the Firm

Operating cash flow (Earnings before interest and taxes plus depreciation minus taxes)	$238
Capital spending (Acquisitions of fixed assets minus sales of fixed assets)	-173
Additions to net working capital	-23
Total	$42

Cash Flow of Investors in the Firm

Debt (Interest plus retirement of debt minus long-term debt financing)	$36
Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

Cash Flow to Creditors

Interest	$49
Retirement of debt	73
Debt service	122
Proceeds from new debt sales	-86
Total	$36

U.S.C.C. FINANCIAL CASH FLOW: CASH FLOW TO STOCKHOLDERS

Cash Flow of the Firm	
Operating cash flow (Earnings before interest and taxes plus depreciation minus taxes)	$238
Capital spending (Acquisitions of fixed assets minus sales of fixed assets)	-173
Additions to net working capital	-23
Total	$42
Cash Flow of Investors in the Firm	
Debt (Interest plus retirement of debt minus long-term debt financing)	$36
Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

Cash Flow to Stockholders	
Dividends	$43
Repurchase of stock	6
Cash to Stockholders	49
Proceeds from new stock issue	-43
Total	$6

U.S.C.C. FINANCIAL CASH FLOW: RECONCILIATION

Cash Flow of the Firm

Operating cash flow (Earnings before interest and taxes plus depreciation minus taxes)	$238
Capital spending (Acquisitions of fixed assets minus sales of fixed assets)	-173
Additions to net working capital	-23
Total	$42

Cash Flow of Investors in the Firm

Debt (Interest plus retirement of debt minus long-term debt financing)	$36
Equity (Dividends plus repurchase of equity minus new equity financing)	6
Total	$42

The cash flow received from the firm's assets must equal the cash flows to the firm's creditors and stockholders:

$$CF(A) \equiv CF(B) + CF(S)$$

2.5 THE STATEMENT OF CASH FLOWS

- There is an official accounting statement called the Statement of Cash Flows.
- This helps explain the change in accounting cash, which for U.S. Composite is $33 million in 2014.
- The three components of the statement of cash flows are:
  - Cash flow from operating activities
  - Cash flow from investing activities
  - Cash flow from financing activities

U.S.C.C. CASH FLOW FROM OPERATING ACTIVITIES

To calculate cash flow from operations, start with net income, add back noncash items like depreciation and adjust for changes in current assets and liabilities (other than cash).

Operations	
Net Income	$86
Depreciation	90
Deferred Taxes	13
Changes in Current Assets and Liabilities	
Accounts Receivable	-24
Inventories	11
Accounts Payable	31
Total Cash Flow from Operating Activities	$207

U.S.C.C. CASH FLOW FROM INVESTING ACTIVITIES

Cash flow from investing activities involves changes in capital assets: acquisition of fixed assets and sales of fixed assets (*i.e.*, net capital expenditures).

Acquisition of fixed assets	-$198
Sales of fixed assets	25
Total Cash Flow from Investing Activities	-$173

U.S.C.C. CASH FLOW FROM FINANCING ACTIVITIES

Cash flows to and from creditors and owners include changes in equity and debt.

Retirement of debt	-$73
Proceeds from long-term debt sales	86
Change in notes payable	-3
Dividends	-43
Repurchase of stock	-6
Proceeds from new stock issue	43
Total Cash Flow from Financing Activities	$4

U.S.C.C. STATEMENT OF CASH FLOWS

The statement of cash flows is the addition of cash flows from operations, investing, and financing.

U.S. COMPOSITE CORPORATION
Statement of Cash Flows
2017
(in $ millions)

Operations	
Net income	$ 86
Depreciation	90
Deferred taxes	13
Changes in current assets and liabilities	
Accounts receivable	– 24
Inventories	11
Accounts payable	31
Total cash flow from operations	$207
Investing activities	
Acquisition of fixed assets	–$198
Sales of fixed assets	25
Total cash flow from investing activities	–$173
Financing activities	
Retirement of long-term debt	–$ 73
Proceeds from long-term debt sales	86
Dividends	– 43
Repurchase of stock	– 6
Proceeds from new stock issue	43
Total cash flow from financing activities	$ 7
Change in cash (on the balance sheet)	$ 41

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?

SOURCES OF INFORMATION

Financial information is abundant and readily accessible.

The following are some common sources:

- Annual reports
- *Wall Street Journal*
- Internet
  - NYSE
  - NASDAQ
  - Textbook
  - Yahoo! Finance
- SEC
  - EDGAR
  - 10K & 10Q reports