

Master of Financial Technology

Finance Concepts



The background features a series of vertical panels with rounded ends. The first panel on the left shows a person's hands typing on a laptop. The subsequent panels are semi-transparent and contain white line-art icons: a graduation cap, a play button, a target with an arrow, an open book, and a magnifying glass. The overall color palette is warm, with shades of brown, orange, and gold.

Financial Statements Analysis

Chapter 4

Chapter
04

Intended Learning Outcomes

1. Compute a company's profits, as reflected by its income statement.
2. Determine a firm's financial position at a point in time based on its balance sheet.
3. Measure a company's cash flows.
4. Explain the purpose and importance of financial analysis.
5. Calculate and use a comprehensive set of measurements to evaluate a company's performance.
6. Describe the limitations of financial ratio analysis.

Introduction

The goal of this chapter is not to make you an accountant, but instead to provide you with the tools to **understand a firm's financial situation**.

With this knowledge, you will be able to understand the financial **consequences of a company's decisions and actions**—as well as your own.

The financial performance of a firm **matters to a lot of groups**—the company's management, its employees, and its investors, just to name a few.

This is true whether you are in the firm's marketing, finance, or human resources department.

So regardless of your position in the firm, it is in your own best interest to know the basics of financial statements—even if accounting is not your greatest love.



3. The Cash Flow Statement

Profits Versus Cash Flows

- You need to be aware that the profits shown on a company's income statement are not the same as its cash flows!
- In the words of author Jan Norman, “**Even profitable companies can go broke.** That's a difficult truth for start-up business owners to swallow.
- Many a profitable business on paper has had to file bankruptcy because the amount of cash coming in did not compare with the amount of cash going out.
- An income statement is not a measure of cash flows because it is calculated on an accrual basis rather than a cash basis.
 - In **accrual basis accounting**, profits are recorded when earned—whether or not the profits have been received in cash—and expenses are recorded when they are incurred—even if money has not actually been paid out.
 - In **cash basis accounting**, profits are reported when cash is received, and expenses are recorded when they are paid.



Profits Versus Cash Flows

- For a number of reasons, profits based on an accrual accounting system will differ from the firm's cash flows. These reasons include the following:
 1. **Sales reported in an income statement include both cash sales and credit sales.** Thus, total sales do not correspond to the actual cash collected. A company may have had sales of \$1 million for the year but not collected all these sales. If accounts receivable increased \$80,000 from the beginning of the year to the end of the year, then we would know that only \$920,000 of the sales had been collected ($\$920,000 = \$1,000,000 \text{ sales} - \$80,000 \text{ increase in accounts receivable}$).
 2. **Some inventory purchases are financed by credit, so inventory purchases do not exactly equal cash spent for inventory.** Consider a business that purchased \$500,000 in inventories during the year, but the supplier extended credit of \$100,000 for the purchases. The actual cash paid for inventories would only be \$400,000 ($\$400,000 = \$500,000 \text{ total inventory purchases} - \$100,000 \text{ additional credit granted by the supplier}$).
 3. **The depreciation expense shown in the income statement is a noncash expense.** It reflects the costs associated with using an asset that benefits the firm's operations over a period of multiple years, such as a piece of equipment used over 5 years. Thus, if a business had profits of \$250,000 that included depreciation expenses of \$40,000, then the cash flows would be \$290,000 ($\$250,000 \text{ profits} + \$40,000 \text{ depreciation expense}$).

Determining Sources and Uses of Cash

- we need to understand that changes in a firm's balance sheets have implications for its cash flows.
- To determine whether a change in a balance sheet account is a source or a use of cash, you need to understand the following relationships:

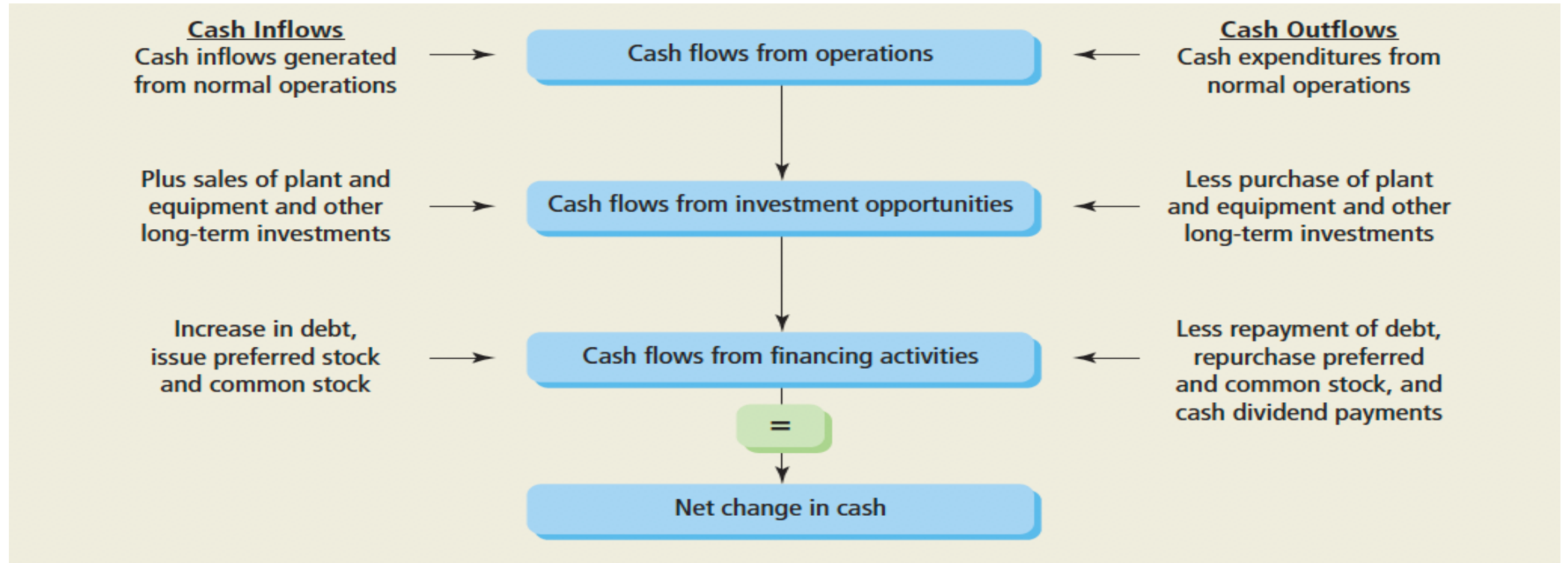
Sources of Cash	Uses of Cash
Decrease in an Asset <i>Example: Selling inventories or collecting receivables provides cash.</i>	Increase in an Asset <i>Example: Investing in fixed assets or buying more inventories uses cash.</i>
Increase in Liability or Equity <i>Example: Borrowing funds or selling stock provides the firm with cash.</i>	Decrease in a Liability or Equity <i>Example: Paying off a loan or buying back stock uses cash.</i>

Cash Flow Statement

- Statement of cash flows focuses on identifying the sources and uses of cash that explain the change in a firm's cash balance reported in the balance sheet.
- There are three key activities that determine the cash inflows and outflows of a business:
 1. **Generating cash flows from day-to-day business operations.** It is informative to know how much cash is being generated in the normal course of operating a business, beginning with purchasing inventories on credit, selling on credit, paying for the inventories, and finally collecting on the sales made on credit.
 2. **Investing in fixed assets and other long-term investments.** When a company purchases or sells fixed assets, like equipment and buildings, there can be significant cash inflows from selling these assets and outflows from purchasing these assets.
 3. **Financing the business.** Cash inflows and outflows occur from borrowing or repaying debt, paying dividends, and from issuing stock (equity) or repurchasing stock from the shareholders.

If we know the cash flows from the activities above, we can combine them to determine a company's change in cash and prepare a statement of cash flows.

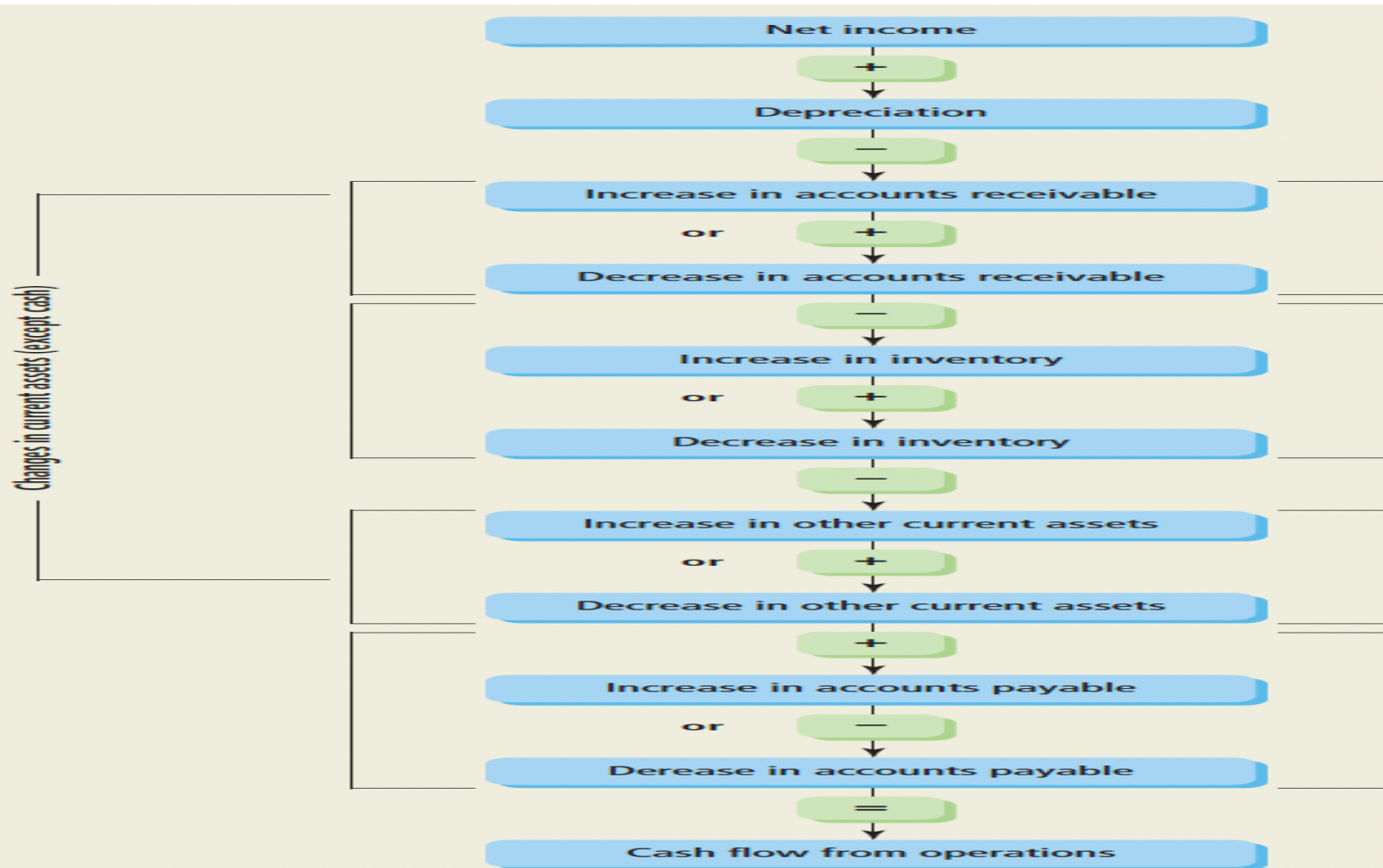
Cash Flow Statement



Cash Flow Activity 1: Cash Flows from Day-to-Day Operations



- Here we want to convert the company's income statement from an accrual basis to a cash basis. This conversion can be accomplished in five steps.
- We begin with the firm's net income and then we:
 - 1. Add back depreciation expense since it is not a cash expense;
 - 2. Subtract (add) any increase (decrease) in accounts receivable;
 - 3. Subtract (add) any increase (decrease) in inventory;
 - 4. Subtract (add) any increase (decrease) in other current assets;
 - 5. Add (subtract) any increase (decrease) in accounts payable and other accrued expenses.



Cash Flow Activity 2: Investing in Long-Term Assets



- Long-term assets include fixed assets and other long-term assets.
- For example, when a company purchases (sells) fixed assets, such as equipment or buildings, these activities are shown as an increase (decrease) in gross fixed assets in the balance sheet and are cash outflows and cash inflows, respectively.

Cash Flow Activity 3: Financing the Business

Cash Inflow:

The firm borrows more money (an increase in short-term and/or long-term debt)

Owner(s) invest in the business (an increase in stockholders' equity)

Cash Outflow:

The firm repays debt (a decrease in short-term and/ or long-term debt)

The firm pays dividends to the owner(s) or repurchases the owners' stocks (a decrease in equity)

- When we talk about borrowing or repaying debt in financing activities, **we do not include accounts payable and any accrued operating expenses.**
- These items were included in cash-flow activity 1 when we computed cash flows from operations. Here in activity 3, we include only debt from such sources as banks in the form of short-term notes and long-term debt.

Example

- Given the following information for Menielle, Inc., prepare a statement of cash flows.

- Increase in accounts receivable \$13 (CA)	-Dividends \$ 5 E
- Increase in inventories 25 (CA)	Change in common stock 0 E
Net income 33 *	- Increase in gross fixed assets 55 LTA
Beginning cash 15 *	Depreciation expense 7*
+ Increase in accounts payable 20 (CL)	+Increase in accrued expenses 5
CL	
+Increase in long-term notes payable 28 (LTL)	

STEP 1: FORMULATE A SOLUTION STRATEGY

The cash flow statement uses information from the firm's balance sheets and income statement to identify the net sources and uses of cash for a specific period of time. Moreover, the sources and uses are organized into cash from operating activities, from investing activities, and from financing activities.

	Cash flow from operating activities
Plus/Minus:	Cash flow from investing activities
Plus/Minus:	Cash flow from financing activities
Equals:	Change in cash
Plus:	Beginning cash balance
Equals:	Ending cash balance

STEP 2: CRUNCH THE NUMBERS

Your results should be as follows:

Net income		\$33
Adjustments:		
Depreciation expense	\$ 7	
Less increase in accounts receivable	(13)	
Less increase in inventories	(25)	
Plus increase in accounts payable	20	
Plus increase in accrued expense	<u>5</u>	
Total adjustments		(\$ 6)
Cash flow from operating activities		\$27
Investing activity:		
Increase in gross fixed assets		(\$55)
Financing activities:		
Increase in long-term notes payable	\$28	
Change in common stock	0	
Common stock dividends	<u>(5)</u>	
Total financing activities		\$23
Change in cash		(\$ 5)
Beginning cash		<u>15</u>
Ending cash		<u>\$10</u>

STEP 3: ANALYZE YOUR RESULTS

Menielle's cash decreased \$5 from \$15 to \$10 because of (1) a \$27 cash inflow from operations, (2) less a \$55 cash outflow in investing, and (3) plus a \$23 cash inflow from financing activities. The cash-flow statement portrays a firm that is investing in fixed assets at a pace that is roughly twice the firm's operating cash flows, which requires the firm to finance the difference.

The Purpose of Financial Analysis

The Purpose of Financial Analysis



- The **fundamental objective of financial management** is not to focus on accounting numbers like earnings, **but to create shareholder value**.
- In a **perfect world**, we would rely totally on **market values** of a firm's assets to guide decision-making, rather than on its accounting data.
- However, since **we rarely have market values** for all of a firm's assets, accounting information can be a very useful substitute.

The Purpose of Financial Analysis

- To begin, realize that financial analysis is about more than reviewing financial statements; it can be used both to **evaluate historical performance** and to serve as the basis for **making projections** about and improving future financial performance.
- The analysis helps us **see critical relationships** that might not otherwise be readily identifiable.
- Ratios are used to **standardize financial information** so that we can make comparisons.
- Otherwise, it is really difficult to compare the financial statements of two firms of different sizes or even of the same firm at different times.

Financial ratios

- Financial ratios give us two ways of making meaningful comparisons of a firm's financial data:
 - We can examine the ratios **across time** (say, for the past 5 years) to compare a firm's current and past performance; and
 - we can **compare** the firm's ratios **with** those of **other firms**.
- In comparing a firm with other companies, we could select a **peer group** of companies, or we could use industry norms published by firms

Financial analysis

- Financial analysis is not a tool just for financial managers; it can also be used effectively by investors, lenders, suppliers, employees, and customers.
- **Within the firm, managers use financial ratios to:**
 - Identify deficiencies in the firm's performance and take corrective action.
 - Evaluate employee performance and determine incentive compensation.
 - Compare the financial performance of the firm's different divisions.
 - Prepare, at both the firm and division levels, financial projections, such as those associated with the launch of a new product.
 - Understand the financial performance of the firm's competitors.
 - Evaluate the financial condition of a major supplier.

Financial analysis

- **Outside the company, financial ratios can be used by:**
 - Lenders to decide whether or not to make a loan to the company.
 - Credit-rating agencies to determine the firm's creditworthiness.
 - Investors to decide whether or not to invest in a company.
 - Major suppliers to decide whether or not to grant credit terms to a company.

Measuring Key Financial Relationships

1. Firm Liquidity

Measuring Key Financial Relationships

- **The following five questions to help you map out the process of using financial ratios:**
 1. How liquid is the firm?
 2. Are the firm's managers generating adequate operating profits from the company's assets?
 3. How is the firm financing its assets?
 4. Are the firm's managers providing a good return on the capital provided by the shareholders?
 5. Are the firm's managers creating shareholder value?

Question 1

How Liquid Is the Firm—Can It Pay Its Bills?

TABLE 4-1 The Home Depot, Inc. Income Statement for Year Ending January 30, 2011 (\$ millions)

Sales	\$ 67,997
Cost of goods sold	<u>(44,693)</u>
Gross profits	\$ 23,304
Operating expenses:	
Marketing expenses and general and administrative expenses	(\$ 15,885)
Depreciation expenses	<u>(1,616)</u>
Total operating expenses	<u>(\$ 17,501)</u>
Operating income	\$ 5,803
Interest expense	<u>(530)</u>
Earnings before taxes	\$ 5,273
Income taxes	<u>(1,935)</u>
Net income (earnings available to common stockholders)	<u><u>\$ 3,338</u></u>
Additional information:	
Numbers of common shares outstanding (millions)	1,623
Earnings per share (net income ÷ number of shares)	\$ 2.06
Dividends paid to stockholders	\$ 1,569
Dividends per share (total dividends ÷ number of shares)	\$ 0.97

TABLE 4-2 The Home Depot, Inc. Balance Sheets (\$ millions) January 30, 2011

Assets	
Cash	\$ 545
Account receivables	1,085
Inventories	<u>10,625</u>
Other current assets	1,224
Total current assets	\$13,479
Gross fixed assets	<u>\$38,471</u>
Accumulated depreciation	(13,411)
Net fixed assets	<u>\$25,060</u>
Other assets	<u>1,586</u>
Total assets	\$40,125
Liabilities and Equity	
Accounts payable	\$ 9,080
Short-term notes payable	1,042
Total current liabilities	<u>\$10,122</u>
Long-term debt	\$11,114
Total liabilities	\$21,236
Common equity:	
Common stock:	
Par value	\$ 86
Paid-in capital	7,001
Total common stock sold	<u>\$ 7,087</u>
Treasury stock	(3,193)
Total common stock	<u>\$ 3,894</u>
Retained earnings	<u>14,995</u>
Total common equity	<u>\$18,889</u>
Total liabilities and equity	\$40,125

Question 1: How Liquid Is the Firm—Can It Pay Its Bills?



- A liquid asset is one that can be converted quickly and routinely into cash at the current market price.
- So, the liquidity of a business is a function of its ability to have cash available when needed to meet its financial obligations.
- Very simply, can we expect a company to be able to pay creditors on a timely basis?
- We answer this question by comparing a firm's assets that can be converted quickly and easily into cash—namely its current assets—with the firm's current liabilities.
- In our analysis we are interested in both
 1. the amount of current assets relative to current liabilities and
 2. the quality of the individual current assets that will be used in meeting current debt payments.

1. Current Ratio

- When it comes to examining the relative size of current assets to current liabilities, the most commonly used measure of a firm's short-term solvency is the current ratio.
- **Current ratio** the firm's current assets divided by its current liabilities. This ratio indicates a company's degree of liquidity by comparing its current assets to its current liabilities.

Current ratio = current assets / current liabilities

- **For Home Depot:**

Current ratio =
current assets / current liabilities =
\$13,479M / \$10,122M = 1.33

1. Current Ratio

- **Lowe's current ratio = 1.40 (Main Competitor)**
- Based on the current ratio, Home Depot is less liquid than Lowe's. The company has \$1.33 in current assets for every \$1 in current liabilities, while Lowe's has \$1.40.
- When we use the current ratio, we assume that the firm's accounts receivable will be collected and turned into cash on a timely basis and that its inventories can be sold without any extended delay.

2. Quick Ratio

- Given that a company's inventory by its very nature is less liquid than its accounts receivable—it must first be sold before any cash can be collected—a more stringent measure of liquidity would exclude the inventories and include only the firm's cash and accounts receivable in the numerator. This revised ratio is called the acid-test (or quick) ratio.
- **Acid-test (quick) ratio** the sum of a firm's cash and accounts receivable divided by its current liabilities. This ratio is a more stringent measure of liquidity than the current ratio because it excludes inventories and other current assets (those that are least liquid) from the numerator.

- It is calculated as follows:

Acid-test ratio = (cash + accounts receivable) / current liabilities

- **For Home Depot:**

Acid-test ratio =

$$\begin{aligned} & (\text{cash} + \text{accounts receivable}) / \text{current liabilities} = \\ & (\$545\text{M} + \$1,085\text{M}) / \$10,122\text{M} = 0.16 \end{aligned}$$

2. Quick Ratio

- **Lowe's acid-test ratio 0.12**
- Based on the acid-test ratio, Home Depot appears to be more liquid than Lowe's. It has \$0.16 in cash and accounts receivable per \$1 in current debt, compared to \$0.12 for Lowe's.
- **So what should we conclude?** The current ratio suggests that Lowe's is more liquid, while the acid-test ratio tells us that Home Depot is. The difference must come from the amount of inventories each firm has relative to their current liabilities; that is, the higher current ratio for Lowe's indicates that it has relatively more inventory than Home Depot.
- Thus, we will want to know more about the quality of Lowe's inventories compared to Home Depot's. That answer will come shortly.

2. Quick Ratio

- We now want to evaluate the quality of a firm's accounts receivable and inventories in terms of the firm's ability to convert these assets into cash on a timely basis.
- A firm might have a higher current ratio, as Lowe's does relative to Home Depot, but have more uncollectible receivables and/or be carrying a lot of obsolete inventory.
- So knowing the quality of these assets is necessary if we are to have a complete understanding of a firm's liquidity.

3. Days in receivables

- Converting Accounts Receivable to Cash The conversion of accounts receivable into cash can be measured by computing how long it takes to collect the firm's receivables on average.
- We can answer this question by computing a firm's days in receivables (or average collection period) as follows:

$$\begin{aligned}\text{Days in receivables} &= \text{accounts receivable} / \text{daily credit sales} \\ &= \text{accounts receivable} / (\text{annual credit sales} / 365)\end{aligned}$$

- **Days in receivables (average collection period)** a firm's accounts receivable divided by the company's average daily credit sales. This ratio expresses how many days on average it takes to collect receivables.

3. Days in receivables

- Note that in this equation, we are including only sales where the customer purchases on credit, omitting cash sales. As you would expect, businesses like Home Depot have mostly cash sales.
- Specifically, we estimate that only 30 percent of their sales are on credit, so credit sales amounted to about \$20.399 billion (\$20.399 billion = \$67.997 billion total sales * 30% credit sales).
- Thus, Home Depot's days in receivables is 19.41 days, computed as follows:

$$\text{Days in receivables} = \text{accounts receivable} / (\text{annual credit sales} / 365) = \\ \$1,085\text{M} / (\$20,399\text{M} / 365) = \$1,085\text{M} / \$55.89\text{M} = 19.41 \text{ days}$$

3. Days in receivables

- **Lowe's days in receivables 16 days**
- So on average Home Depot collected its accounts receivable in about 19.4 days compared to 16 days for Lowe's.
- Thus, Home Depot is slower at collecting its receivables than Lowe's, suggesting that its receivables are less liquid than Lowe's.

4. Accounts receivable turnover ratio

- We could have reached the same conclusion by measuring how many times accounts receivable are “rolled over” during a year, using the accounts receivable turnover ratio.
- If Home Depot collects its accounts receivable every 19.41 days, then it is collecting 18.8 times per year (18.8 times = 365 days/ 19.41 days). The accounts receivable turnover can also be calculated as follows:

Accounts receivable turnover = annual credit sales /accounts receivable

- **Accounts receivable turnover ratio** a firm’s credit sales divided by its accounts receivable. This ratio expresses how often accounts receivable are “rolled over” during a year.

- **For Home Depot:**

$$\begin{aligned}\text{Accounts receivable turnover} &= \text{annual credit sales} / \text{accounts receivable} \\ &= \$20,399\text{M} / \$1,085\text{M} = 18.80 \text{ times}\end{aligned}$$

4. Accounts receivable turnover ratio

- **Lowe's accounts receivable turnover 22.81 times**
- Whether we use the days in receivables or the accounts receivable turnover ratio, the conclusion is the same.
- Home Depot collects its accounts receivable more slowly than Lowe's.
- In other words, Home Depot's accounts receivable are of lesser quality. (Think about this: If Home Depot's days in receivables were as low as Lowe's, it would have less accounts receivable and its current ratio would be lower.)

5. Days in inventory

- Converting Inventories to Cash We now want to know the quality of Home Depot's inventory, as indicated by how long the inventory is held before being sold.
- This is called days in inventory, which is computed as follows:

Days in inventory = inventory / daily cost of goods sold = / inventory / (annual cost of goods sold / 365)

- **Days in inventory** measures the number of days a firm's inventories are held on average before being sold; it also indicates the quality of the inventory.

- **For Home Depot:**

$$\begin{aligned}\text{Days in inventory} &= \text{inventory} / (\text{annual cost of goods sold} / 365) \\ &= \$10,625\text{M} / (\$44,693\text{M} / 365) \\ &= \$10,625\text{M} / \$122.45\text{M} = 86.77 \text{ days}\end{aligned}$$

5. Days in inventory

- **Lowe's days in inventory 95.80 days**
- Note that when we calculated accounts receivable turnover or days in receivables, we use sales in our computation.
- But when calculating days in inventory or inventory turnover, we use cost of goods sold.
- We do this because inventory is measured at cost.

6. Inventory Turnover

- As we did with days in receivables and accounts receivable turnover, we can restate days in inventory as inventory turnover, which is calculated as follow

Inventory turnover = cost of goods sold / inventory

- **Inventory turnover** a firm's cost of goods sold divided by its inventory. This ratio measures the number of times a firm's inventories are sold and replaced during the year, that is, the relative liquidity of the inventories.
- ***For Home Depot:***

$$\text{Inventory turnover} = \$44,693\text{M} / \$10,625\text{M} = 4.21\text{X}$$

6. Inventory Turnover

- **Lowe's inventory turnover 3.81 tiimes**
- Hence, we see that Home Depot is moving (turning over) its inventory more quickly than Lowe's—4.21 times per year, compared with 3.81 times for Lowe's. This suggests that Home Depot's inventory is more liquid than Lowe's.

Liquidity Analysis

- To conclude, the current ratio indicates that Home Depot is less liquid than Lowe's, but this result assumes that Home Depot's accounts receivable and inventory are of similar quality to Lowe's.
- However, this is not the case given Home Depot's lower accounts receivable turnover (more days in receivables) and higher inventory turnover (fewer days in inventory).
- The acid-test ratio, on the other hand, suggests that Home Depot is more liquid than Lowe's, but we know that Home Depot's accounts receivable are a bit less liquid than Lowe's.
- We therefore have a mixed outcome, and cannot say definitively whether Home Depot is more or less liquid.
- Thus, we have to conclude that Home Depot's liquidity and Lowe's liquidity are probably very similar.

FINANCIAL DECISION TOOLS

Name of Tool	Formula	What It Tells You
Current ratio	$\frac{\text{current assets}}{\text{current liabilities}}$	Measures a firm's liquidity. A higher ratio means greater liquidity.
Acid-test ratio	$\frac{\text{cash} + \text{accounts receivable}}{\text{current liabilities}}$	Gives a more stringent measure of liquidity than the current ratio in that it excludes inventories and other current assets from the numerator. A higher ratio means greater liquidity.
Days in receivables	$\frac{\text{accounts receivable}}{\text{annual credit sales} \div 365}$	Indicates how rapidly a firm is collecting its receivables. A longer (shorter) period means a slower (faster) collection of receivables and that the receivables are of lesser (greater) quality.
OR		
Accounts receivable turnover	$\frac{\text{annual credit sales}}{\text{accounts receivable}}$	Tells how many times a firm's accounts receivable are collected, or <i>turned over</i> , during a year. Provides the same information as the <i>days in receivables</i> , just expressed differently, where a high (low) number indicates fast (slow) collections.
Days in inventory	$\frac{\text{inventory}}{\text{annual cost of goods sold} \div 365}$	Measures how many days a firm's inventories are held on average before being sold; the more (less) days required, the lower (higher) the quality of the inventory.
OR		
Inventory turnover	$\frac{\text{cost of goods sold}}{\text{inventory}}$	Gives the number of times a firm's inventory is sold and replaced during the year; as with days in inventory, serves as an indicator of the quality of the inventories; the higher the number, the better the inventory quality.



Thank You