



# **WORKING WITH FINANCIAL STATEMENTS**

**FIN 360: PRINCIPLES OF FINANCIAL MANAGEMENT**  
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## SOURCES AND USES OF CASH

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**Sources of cash** are activities that bring in cash, including:

- Decrease in an asset account:
  - Decrease in accounts receivable (receiving cash and decreasing money the firm has yet to be paid)
  - Decrease in inventory (selling inventories)
  - Decrease in fixed assets (selling off fixed assets)
  
- Increase in a liability or equity account:
  - Increase in accounts payable (effectively “borrowed” cash)
  - Increase in other current liabilities (effectively “borrowed” cash)
  - Increase in common stock (cash increases as stock issued)

**Uses of cash** are activities that result in cash expenditures, including:

- Increase in an asset account:
  - Increase in receivables (spending cash and increasing money to be paid to the firm later)
  - Increase in inventory (buying inventories)
  - Increase in fixed assets (purchasing fixed assets)
  
- Decrease in liability or equity account:
  - Decrease in accounts payable (cash paid, reducing amounts due)
  - Decrease in other current liabilities (cash paid for other previously due accounts)
  - Decrease in common stock ([firm repurchases its own stock](#))<sup>1</sup>



Think carefully about these relationships. They may seem counterintuitive at first.  
In sum:

*Sources: ↓Assets ↑Liabilities*

*Uses: ↑Assets ↓Liabilities*

## THE STATEMENT OF CASH FLOW

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The third major financial statement, the **Statement of Cash Flow**, summarizes the sources and uses of cash over a period, separated into three categories:

1. **Operating Activity:** adjustments to net income due to cash provided or used in the company's operations
2. **Investing Activity:** cash changes due to purchasing or disposal of long-term and fixed assets
3. **Financing:** cash changes from issuing or repaying debt, issuing or repurchasing stock, and paying dividends

$$\text{Change in cash} = \text{Cash Inflows} - \text{Cash Outflows}$$

The statement of cash flow translates income statement and balance sheet data into their relevant cash amounts.

Figure 1: Statement of Cash Flows



	Year Ended December 31,		
	2021	2020	2019
	(in thousands)		
<b>Operating Activities</b>			
Net (Loss) Income	\$ (5,260,499)	\$ (5,775,130)	\$ 1,907,600
Adjustments:			
Depreciation and amortization	1,292,878	1,279,254	1,245,942
Impairment and credit losses	82,001	1,566,380	—
Net deferred income tax (benefit) expense	(42,979)	(8,791)	7,745
(Gain) loss on derivative instruments not designated as hedges	(1,492)	49,316	(1,431)
Share-based compensation expense	63,638	39,779	75,930
Equity investment loss (income)	135,469	213,286	(230,980)
Amortization of debt issuance costs	125,116	89,442	31,991
Amortization of debt discounts and premiums	123,439	66,776	31,616
Loss on extinguishment of debt	138,759	41,109	6,326
Currency translation adjustment losses	—	69,044	—
Change in fair value of contingent consideration	—	(45,126)	18,400
Changes in operating assets and liabilities:			
(Increase) decrease in trade and other receivables, net	(181,707)	121,055	(9,898)
(Increase) decrease in inventories	(34,527)	27,077	(8,533)
(Increase) decrease in prepaid expenses and other assets	(152,071)	295,876	15,669
Increase (decrease) in accounts payable	188,518	(133,815)	75,281
(Decrease) increase in accrued interest	(694)	182,578	(4,460)
Increase (decrease) in accrued expenses and other liabilities	235,446	(180,479)	96,490
Increase (decrease) in customer deposits	1,426,647	(1,643,560)	280,139
Dividends received from unconsolidated affiliates	—	2,215	150,177
Other, net	(15,757)	12,061	28,362
Net cash (used in) provided by operating activities	(1,877,815)	(3,731,653)	3,716,366
<b>Investing Activities</b>			
Purchases of property and equipment	(2,229,704)	(1,965,131)	(3,024,663)
Cash received on settlement of derivative financial instruments	44,492	15,874	7,621
Cash paid on settlement of derivative financial instruments	(74,249)	(161,335)	(68,836)
Investments in and loans to unconsolidated affiliates	(70,228)	(100,609)	(25,569)
Cash received on loans to unconsolidated affiliates	31,334	21,086	32,870
Proceeds from the sale of property and equipment and other assets	176,039	27,796	—
Other, net	(22,423)	(16,247)	(12,829)
Net cash used in investing activities	(2,144,739)	(2,178,566)	(3,091,406)
<b>Financing Activities</b>			
Debt proceeds	4,467,789	13,547,189	3,525,564
Debt issuance costs	(201,698)	(374,715)	(50,348)
Repayments of debt	(2,296,990)	(3,845,133)	(4,060,244)
Premium on repayment of debt	(135,372)	—	—
Proceeds from issuance of commercial paper notes	—	6,765,816	26,240,540
Repayments of commercial paper notes	(414,570)	(7,837,635)	(25,613,111)
Purchase of treasury stock	—	—	(99,582)
Dividends paid	—	(326,421)	(602,674)
Proceeds from common stock issuances	1,621,860	1,431,375	—
Other, net	(442)	(10,688)	(10,516)
Net cash provided by (used in) financing activities	3,040,577	9,349,788	(670,371)
Effect of exchange rate changes on cash	(727)	1,167	1,297
Net (decrease) increase in cash and cash equivalents	(982,704)	3,440,736	(44,114)
Cash and cash equivalents at beginning of year	3,684,474	243,738	287,852
Cash and cash equivalents at end of year	\$ 2,701,770	\$ 3,684,474	\$ 243,738



Why is it important to view *operating*, *investing*, and *financing* activities separately? Consider the three firms below:

Cash Flows	Firm 1	Firm 2	Firm 3
<i>Operating</i>	\$400	\$0	(\$250)
<i>Investing</i>	(\$250)	\$400	\$0
<i>Financing</i>	\$0	(\$250)	\$400
<b>Net increase (decrease) in cash</b>	<b>\$150</b>	<b>\$150</b>	<b>\$150</b>

Based on only the information presented, which of these three firms appears to be most cash flow healthy? Where do you think these firms are in their life cycles?

## BUILDING THE STATEMENT OF CASH FLOW



**PRACTICE:** Given the Balance Sheet below, construct a Statement of Cash Flow. Use the Excel file [Statement of Cash Flow and Ratios](http://josephfarizo.com/fin360.html) available at [josephfarizo.com/fin360.html](http://josephfarizo.com/fin360.html) to see additional examples.



**SOLUTION:** First, find the difference in balance sheet items from the previous year to the current year.



Be careful with the signs in your “Difference” column! Subtract the prior year *from* the more recent year.

### CONSOLIDATED BALANCE SHEET

(in millions)

	<u>2022</u>	<u>2021</u>	<u>Difference</u>
<b>ASSETS</b>			
Current assets			
Cash and cash equivalents	\$ 726	\$ 576	
Accounts receivable	162	165	
Inventories	409	404	
Total current assets	1,297	1,145	
Fixed Assets			
Gross property and equipment	\$ 2,503	\$ 2,606	
Accumulated Depreciation	(314)	(161)	
Net plant and equipment	2,189	2,445	
<b>Total assets</b>	<b>\$ 3,486</b>	<b>\$ 3,590</b>	

**CONSOLIDATED BALANCE SHEET, cont.**  
(in millions)

	<u>2022</u>	<u>2021</u>	<u>Difference</u>
<b>LIABILITIES AND EQUITY</b>			
Current liabilities			
Accounts payable, other accrued	\$ 300	\$ 315	
Notes payable	198	202	
<b>Total current liabilities</b>	<b>498</b>	<b>517</b>	
Long term debt			
	\$ 496	\$ 501	
<b>Total liabilities</b>	<b>\$ 994</b>	<b>\$ 1,018</b>	
Owners' Equity			
Common stock and paid-in surplus	\$ 354	\$ 546	
Retained earnings	2,138	2,026	
<b>Total equity</b>	<b>\$ 2,492</b>	<b>\$ 2,572</b>	
<b>Total liabilities and equity</b>	<b>\$ 3,486</b>	<b>\$ 3,590</b>	

Next, identify if the change from one period to the next is a “source” or a “use” of cash. In this example, assume the firm pays dividends of \$318 and has a net income of \$430.

**SOURCES AND USES**  
(in millions)

	<u>Flow</u>	<u>S/U</u>	<u>Hint</u>
Accounts Receivable	(3)		A/R falls as firm collects
Accounts Payable	(15)		A/P falls as firm pays
Inventory	5		Firm pays to increase inventory
Gross Fixed Assets	(103)		Firm sells fixed assets
Notes Payable	(4)		N/P falls as firm pays
Long Term Debt	(5)		LTD falls as firm pays off loans
Common Stock	(192)		C/S falls as firm “repurchases” shares
Dividends	318		Dividends paid to investors



Now, complete the statement of cash flows by sorting the accounts into *Operating*, *Financing*, and *Investing* activities. Begin with “adding back” Depreciation to Net Income:



Again, be mindful of the signs here. Use the above table with *sources* and *uses* you've just created. *Sources* will be increases to cash while *uses* will be reductions in cash in the *Statement of Cash Flows*.

STATEMENT OF CASH FLOW (in millions)	
<u>Operating Activities</u>	
Net Income	\$
Depreciation	
Accounts Receivable	
Accounts Payable	
Inventory	
<b>CF from Operating Activities</b>	<b>\$ 566</b>
<u>Investing</u>	
Gross Fixed Assets	
<b>CF from Investing Activities</b>	<b>\$ 103</b>
<u>Financing</u>	
Notes Payable	
Long Term Debt	
Common Stock	
Dividends	
<b>CF from Financing Activities</b>	<b>\$ (519)</b>
<b>Cash Flow</b>	<b>\$ 150</b>

- ✓ We use **gross fixed assets** instead of net fixed assets because net fixed assets includes non-cash *depreciation*.
- ✓ The cash flow we compute in the Statement of Cash Flows matches the change in cash from 2021 to 2022 that we computed above.
- ✓ The retained earnings on the balance sheet in the most recent year is the retained earnings in the preceding year plus the net income earned and minus the dividends paid out.

## FINANCIAL STATEMENT ANALYSIS

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**Financial statement analysis** is analyzing a company's financial statements for decision making purposes. It has both *internal* and *external* uses:

Internal uses:

- Performance evaluation for managers, comparing divisions, and compensation
- Planning for the future, a guide for estimating future cash flows

External uses:

- Creditors (the lenders) assessing the financial strength of the firm and the likelihood they will be paid back
- Suppliers understanding the reliability of their customer
- Customers predicting the longevity of the firm
- Stockholders and investors determining the profitability and growth prospects of the firm

The dollar values on the financial statements are difficult to compare from one firm to another. Two ways that we overcome this challenge is with **common size statements** (or **standardized statements**) and **ratio analysis**.

**Common size statements** present balance sheet items *as a percentage of total assets* and income statement items *as a percentage of net revenue*. There's no clear "denominator" for the statement of cash flows, though you might present each source or use of cash as a percentage of total sources and total uses of cash.

Once we compute common size values, we can **benchmark** to the firm's (1) own past and to (2) its peers within its same industry. **Standard Industrial Classification (SIC)** Codes are US government codes used to classify a firm by its type of business. These have been largely replaced by the **North American Industry Classification System (NAICS)** codes, which is a collaborative effort by the governments of the US, Mexico, and Canada. These codes are generally self-assigned by the firm, with a primary code and additional codes possible.





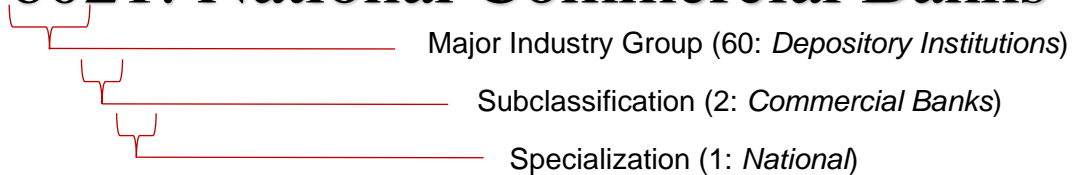
You can find a firm’s SIC code on the [Security and Exchange Commission’s website](#). After searching for a company, view the “Company Information” tab. NAICS codes can be found on the [NAICS Association’s](#) website (note that this website is not “official”, so verify what you find there.) The [US Department of Labor](#) is the official site for SIC codes while the [US Census Bureau](#) is the official site for NAICS codes.

Figure 2: SIC and NAICS Code Examples



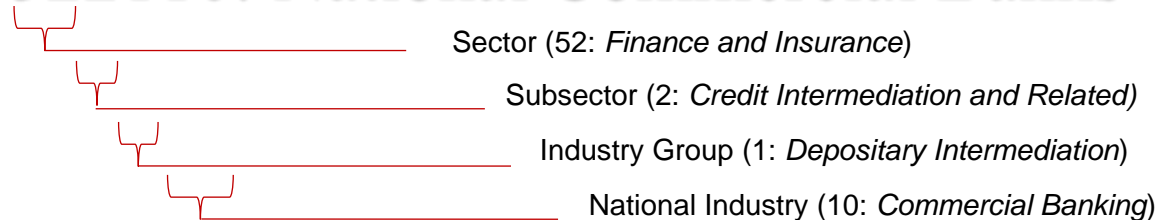
SIC CODE

## 6021: National Commercial Banks



NAICS CODE

## 522110: National Commercial Banks



## COMMON SIZE FINANCIAL STATEMENTS

**EXAMPLE:** Using the common size statements below, comment on how the firm's (1) liquidity, (2) selling/buying on credit, (3) use of long-term assets and growth, and (4) use of long-term debt and equity financing changes.

### CONSOLIDATED BALANCE SHEET (in millions)

	<u>2022</u>	<u>2021</u>	<u>2022</u>	<u>2021</u>	<u>Industry (2022)</u>
<b>ASSETS</b>					
Current assets					
Cash and cash equivalents	\$ 726	\$ 576	21%	16%	4%
Accounts receivable	162	165	5%	5%	4%
Inventories	409	404	12%	11%	28%
<b>Total current assets</b>	<b>1,297</b>	<b>1,145</b>	<b>37%</b>	<b>32%</b>	<b>36%</b>
Fixed Assets					
Gross property and equipment	\$2,503	\$2,606	72%	73%	73%
Accumulated Depreciation	(314)	(161)	-9%	-4%	-9%
<b>Net plant and equipment</b>	<b>2,189</b>	<b>2,445</b>	<b>63%</b>	<b>68%</b>	<b>64%</b>
<b>Total assets</b>	<b>3,486</b>	<b>3,590</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>
<b>LIABILITIES AND EQUITY</b>					
Current liabilities					
Accounts payable, other accrued liab.	\$ 300	\$ 315	9%	9%	15%
Notes payable	198	202	6%	6%	3%
<b>Total current liabilities</b>	<b>498</b>	<b>517</b>	<b>14%</b>	<b>14%</b>	<b>18%</b>
Long term debt	\$ 496	\$ 501	14%	14%	10%
<b>Total liabilities</b>	<b>\$ 994</b>	<b>\$1,018</b>	<b>29%</b>	<b>28%</b>	<b>28%</b>
Owners Equity					
Common stock and paid-in surplus	\$ 354	\$ 546	10%	15%	25%
Retained earnings	2,138	2,026	61%	56%	47%
<b>Total Equity</b>	<b>\$2,492</b>	<b>\$2,572</b>	<b>71%</b>	<b>72%</b>	<b>72%</b>
<b>Total liabilities and equity</b>	<b>\$3,486</b>	<b>\$3,590</b>	<b>100%</b>	<b>100%</b>	<b>100%</b>

**Liquidity:**

**Credit:**

*Fixed assets and growth:*

*Long term debt and equity financing:*

**EXAMPLE:** Looking to the income statement, comment on the profit margins and costs. How do these values compare to the industry?

<b>CONSOLIDATED STATEMENTS OF INCOME</b>			
<b>(in millions)</b>			
	<b><u>2022</u></b>	<b><u>2022</u></b>	<b><u>Industry (2022)</u></b>
Net sales	\$ 2,125	100%	100%
Cost of goods sold	1,201	57%	49%
Gross Profit	924	43%	51%
SG&A	102	5%	10%
Depreciation	153	7%	10%
Earnings before interest and taxes	669	31%	31%
Interest expense	125	6%	3%
Earnings before taxes	544	26%	28%
Tax Expense	114	5%	8%
Net Income	\$ 430	20%	20%

*Profit Margins (Gross, Operating, and Net):*

*Costs:*

**INTERPRETATION:** We can think of this firm as having an accounting profit of \$0.20 per every dollar of sales (the net income is 20% of the sales by the common size income statement in 2022.) While understanding these comparisons is important, note how in some ways the firm may be “better” than the industry, and in other ways “worse” than the industry. Common size statements are just a small part of analyzing a firm.

## RATIO ANALYSIS

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**Ratio analysis** is the evaluation of various financial metrics in relation to one another. Hundreds of ratios (with varying degrees of usefulness) can be computed, so we'll focus on the more relevant ones here. Just like with common size statements, we might use ratios to compare a firm to itself overtime, but more likely to compare the firm to its peers and its industry. We'll look at 5 categories:

1. Short-Term Solvency and Liquidity
2. Leverage and Long-Term Solvency
3. Turnover
4. Market Value
5. Profitability



The interpretations of these ratios is what matters! The computation is straightforward. Understand the classifications and categories of these ratios.

**1.) Short-Term Solvency and Liquidity:** measures of short-term liquidity and ability of the firm to meet its short-term borrowing obligations

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$$\text{Current Ratio} = \frac{\text{Current Assets}}{\text{Current Liabilities}}$$

$$\text{Quick Ratio (Acid Test)} = \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}$$



Think carefully about the *components* of current assets and current liabilities. Why do you think inventory is subtracted in the numerator for the quick ratio?

**2.) Leverage and Long-Term Solvency:** highlight a firm's debt levels (also known as **leverage**) and its ability to meet its long-term borrowing obligations.

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Leverage can be a *good* thing! Assume a young real estate development firm wants to invest \$100 million in property but doesn't have the money to do so. The firm borrows \$100M, agreeing to pay back the lender a total of \$110M. They invest in the property, and the property's value grows to \$150M after a few years. The firm sells the property for \$150M and pays back the lender \$110M, resulting in a \$40M profit. Had they not borrowed and "taken on leverage", they would have missed out on this opportunity to earn \$40M! *But what if that property fell in value to \$85M?*

$$\text{Total Debt} = \frac{\text{Total Assets} - \text{Total Equity}}{\text{Total Assets}}$$

$$\text{Debt to Equity} = \frac{\text{Debt}}{\text{Total Equity}}$$

$$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Total Equity}}$$

$$\text{Cash Coverage} = \frac{\text{EBIT} + \text{Depreciation}}{\text{Interest Expense}}$$

**3.) Turnover:** measures asset utilization, or how efficiently a firm uses its assets to generate sales.

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$$\text{Inventory Turnover} = \frac{\text{COGS}}{\text{Inventory}}$$

$$\text{Total Asset Turnover} = \frac{\text{Sales}}{\text{Total Assets}}$$



A firm that manufactures steel track and electrical components for roller coasters has an inventory turnover of 3.2 and total asset turnover of 0.64. Both are below average for its industry. How do you interpret this?

**4.) Market Value:** for publicly traded firms, tells the relative value of a share and may help to indicate the quality of a firm as an investment.

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$$\text{Earnings per Share} = \frac{\text{Net Income}}{\text{Shares Outstanding}}$$

$$\text{Price to Earnings (PE Ratio)} = \frac{\text{Price per Share}}{\text{Earnings per Share}}$$



Two similar software firms have an EPS of \$10 and \$100. Their Price to Earnings or PE ratios are 2 and 5, respectively. On the basis of these two ratios, compare these firms.

**5.) Profitability:** measures how efficiently a firm uses its assets and manages operations.

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$$\text{Profit Margin} = \frac{\text{Net Income}}{\text{Sales}}$$

$$\text{Return on Assets} = \frac{\text{Net Income}}{\text{Total Assets}}$$

$$\text{Return on Equity} = \frac{\text{Net Income}}{\text{Total Equity}}$$

## **THE DUPONT IDENTITY**

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The **Dupont Identity** lets us decompose a firm's ROE into its component parts. Doing this allows us to separately examine how operating efficiency (profitability), asset use efficiency, and financial leverage drive return to equity holders.

$$ROE = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}} = \frac{\text{Net Income}}{\text{Equity}} = ROE$$

Or,

$$ROE = \frac{\text{Net Income}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}} = \frac{\text{Net Income}}{\text{Equity}} = ROE$$

alternatively,

$$ROE = \text{Profit Margin} \times \text{Total Asset Turnover} \times \text{Equity Multiplier}$$

For our example:

$$ROE = \frac{430}{2,125} \times \frac{2,125}{3,486} \times \frac{3,486}{2,492} = \frac{430}{2,492} = 17.26\%$$

$$ROE = 20.2\% \times 0.61 \times 1.40 = 17.26\%$$



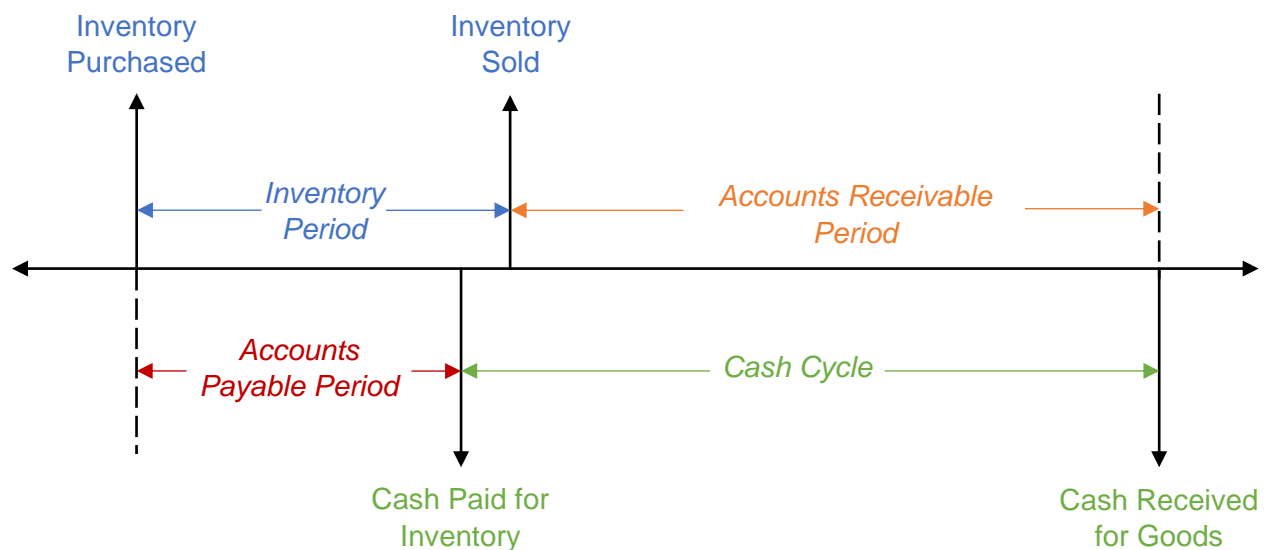
How do we interpret high and low values of each of the Dupont components? Do we generally wish to see high or low values of each? Suppose two firms have similar profit margin and total asset turnover, but one has a substantially higher equity multiplier. What might this imply?



## THE OPERATING CYCLE AND CASH CONVERSION

In short-term finance, there are a number of events and activities financial managers are concerned with in the **operating cycle**, the period between the acquisition of inventory and the collection of cash from receivables after selling products. For a typical firm, this may look something like this:

Figure 3: The Operating Cycle



The firm pays for inventory on account, beginning the accounts payable period and the inventory period, then pays the supplier in cash, ending the accounts payable period and beginning the **cash cycle**. Although the inventory is sold to a customer, it is done so on credit, with the cash cycle (and accounts receivable period) ending only once the cash is received.

The **cash conversion cycle** is therefore:

$$CCC = \underbrace{(Days\ in\ Inventory\ +\ Days\ in\ Accts\ Receivable)}_{Operating\ Cycle} - Days\ in\ Accts\ Payable$$

However, we'll need to deduce the number of days for each of these components using ratios:

$$\text{Days in Inventory} = \frac{365 \text{ Days}}{\text{COGS/Average Inventory}}$$

$$\text{Days in Accts Receivable} = \frac{365 \text{ Days}}{\text{Credit Sales/Average Accts Receivable}}$$

$$\text{Days in Accts Payable} = \frac{365 \text{ Days}}{\text{COGS/Average Accts Payable}}$$

Note that the *average* for inventory, accounts receivable, and accounts payable is the average between the beginning and ending balances for each (i.e., the average of last year's and this year's inventory, A/R, and A/P as listed on the balance sheet).

**EXAMPLE:** For the financial statements presented above, assuming 100% of sales on credit:

$$\text{CCC} = \left( \frac{365 \text{ Days}}{\text{COGS/Average Inventory}} + \frac{365 \text{ Days}}{\text{Credit Sales/Average Accts Receivable}} \right) - \frac{365 \text{ Days}}{\text{COGS/Average Accts Payable}}$$

$$\text{CCC} = \left( \frac{365}{1201/407} + \frac{365}{2125/164} \right) - \frac{365}{1201/308} = 58.17$$

On average, there are 58.17 days between the time the firm pays cash for inventory to the time the firm collects cash from customers for that sold inventory.



**PRACTICE:** We've covered several useful ratios for financial analysis. Use the Excel file [Statement of Cash Flow and Ratios](http://josephfarizo.com/fin360.html) available at [josephfarizo.com/fin360.html](http://josephfarizo.com/fin360.html) for randomized practice problems.



Be sure to understand the interpretation of each ratio!

## FINAL THOUGHTS ON RATIO ANALYSIS

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While ratios are useful in assessing firms, they are not perfect. Comparing to competitors and the industry can be challenging, particularly for **conglomerates** that operate in many industries (i.e., Apple and Netflix both offer streaming services, should they be compared?)

Some ratios are more relevant for certain industries than others (i.e., inventory turnover matters more for heavy manufacturing firms than service firms.) Different inventory valuation techniques or depreciation schedules may also make the comparison between firms difficult.

Ratios should be computed consistently and frequently for a firm, its competitors, and its industry, and tracked overtime. Understanding how the ratios are interpreted, and what might be considered a “healthy” ratio, is crucial.



Even within a firm, some ratios may appear healthy while other similar ratios for that same firm appear unhealthy. Ratios are part of the many tools a financial analyst can use. There is *never* a firm that will appear perfectly healthy (or unhealthy) in all measures. There will *always* be room for interpretation, and different analysts can and do reach different conclusions

## REFERENCES

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<sup>1</sup> Stock buybacks: <https://www.wsj.com/articles/stock-buybacks-what-every-investor-needs-to-know-11607185864>