

WORKING WITH FINANCIAL STATEMENTS

Chapter 3

OUTLINE

1. Cash Flows: A Closer Look
 - A. Sources and Uses of Cash
 - B. The Statement of Cash Flow
2. Standardized Financial Statements
3. Ratio Analysis
4. The DuPont Identity



CASH FLOWS: A CLOSER LOOK

SOURCES AND USES OF CASH

Firms generate cash by selling goods or products and use cash by paying for inputs and labor.

These activities are known as *sources* and *uses* of cash.

SOURCES AND USES OF CASH

J. Alfred Prufrock Corporation			
Balance Sheet			
(\$ in millions)			
Assets			
	2016	2017	Change
Current Assets			
Cash	\$ 84	\$ 98	14
Accounts Receivable	165	188	23
Inventory	393	422	29
Total	\$ 642	\$ 708	66
Fixed Assets			
Net Plant and Equipment	\$ 2731	\$ 2880	149
Total Assets	\$ 3373	\$ 3588	215
Liabilities and Owners' Equity			
Current Liabilities			
Accounts Payable	\$ 312	\$ 344	32
Notes Payable	231	196	(35)
Total	\$ 543	\$ 540	(3)
Long-term Debt	\$ 531	\$ 457	(74)
Owners' Equity			
Commons Stock and Paid-In Surplus	\$ 500	\$ 550	50
Retained Earnings	1799	2041	242
Total	\$ 2299	\$ 2591	292
Total Liabilities and Owners' Equity	\$ 3373	\$ 3588	215

An increase in non-cash assets → A use of cash. (Buying more inventory, building more factories.)

An increase in liabilities → A source of cash. (Money coming in through borrowing.)

SOURCES AND USES OF CASH

J. Alfred Prufrock Corporation			
Balance Sheet			
(\$ in millions)			
Assets			
	2016	2017	Change
Current Assets			
Cash	\$ 84	\$ 98	14
Accounts Receivable	165	188	23
Inventory	393	422	29
Total	\$ 642	\$ 708	66
Fixed Assets			
Net Plant and Equipment	\$ 2731	\$ 2880	149
Total Assets	\$ 3373	\$ 3588	215
Liabilities and Owners' Equity			
Current Liabilities			
Accounts Payable	\$ 312	\$ 344	32
Notes Payable	231	196	(35)
Total	\$ 543	\$ 540	(3)
Long-term Debt	\$ 531	\$ 457	(74)
Owners' Equity			
Commons Stock and Paid-In Surplus	\$ 500	\$ 550	50
Retained Earnings	1799	2041	242
Total	\$ 2299	\$ 2591	292
Total Liabilities and Owners' Equity	\$ 3373	\$ 3588	215

A decrease in non-cash assets → A source of cash. (Selling inventory, borrowers paying off their accounts which decreases A/R.)

A decrease in liabilities → A use of cash. (Paying off your accounts and notes payable)

THE STATEMENT OF CASH FLOWS

Summarizes a firm's uses and sources of cash over a period.

1. Operating
2. Investing
3. Financing

THE STATEMENT OF CASH FLOWS

J. Alfred Prufrock Corporation	
2017 Statement of Cash Flows	
(\$ in millions)	
Cash, beginning of year	\$ 84
Operating Activity	
Net Income	363
Plus:	
Depreciation	276
Increase in Accounts Payable	32
Less:	
Increase in Accounts Receivable	-23
Increase in Inventory	-29
Net cash from Operating Activity	619
Investment Activity	
Fixed Asset Acquisitions	-425
Net Cash for Investment Activity	-425
Financing Activity	
Decrease in Notes Payable	-35
Decrease in Long Term Debt	-74
Dividends Paid	-121
Increase in Common Stock	50
Net Cash from Financing Activity	-180
Net Increase in Cash	14
Cash, end of year	\$ 98

Notice that the net increase in cash on this statement is the same as the change in cash on the balance sheet.

REAL-WORLD EXAMPLE: ROYAL CARIBBEAN



1. What is the largest single source and use of cash?
2. Why is depreciation and amortization added back to net income?
3. Where are most of the cash flows coming from (operating, investing, or financing activities)?

CONSOLIDATED STATEMENTS OF CASH FLOWS

	Year Ended December 31,		
	2017	2016	2015
	(in thousands)		
Operating Activities			
Net income	\$ 1,625,133	\$ 1,283,388	\$ 665,783
Adjustments:			
Depreciation and amortization	951,194	894,915	827,008
Impairment of Pullmantur related assets	—	—	411,267
Net deferred income tax expense (benefit)	1,730	2,608	(10,001)
Share-based compensation expense	69,459	32,659	36,073
Equity investment income	(156,247)	(128,350)	(81,026)
Amortization of debt issuance costs	45,943	52,795	52,153
Gain on sale of property and equipment	(30,902)	—	—
(Gain) loss on derivative instruments not designated as hedges	(61,704)	45,670	59,162
Changes in operating assets and liabilities:			
(Increase) decrease in trade and other receivables, net	(32,043)	4,759	63,102
Decrease (increase) in inventories	2,424	(1,679)	1,197
Decrease (increase) in prepaid expenses and other assets	20,859	11,519	(2,262)
Increase (decrease) in accounts payable	36,780	29,564	(25,278)
Increase (decrease) in accrued interest	1,303	7,841	(10,749)
Increase in accrued expenses and other liabilities	34,215	20,718	33,859
Increase (decrease) in customer deposits	274,705	188,632	(92,849)
Dividends received from unconsolidated affiliates	109,677	75,942	33,338
Other, net	(17,960)	(4,291)	(14,411)
Net cash provided by operating activities	2,874,566	2,516,690	1,946,366
Investing Activities			
Purchases of property and equipment	(564,138)	(2,494,363)	(1,613,340)
Cash received (paid) on settlement of derivative financial instruments	63,224	(213,202)	(178,597)
Investments in and loans to unconsolidated affiliates	(10,396)	(9,155)	(56,163)
Cash received on loans to unconsolidated affiliates	62,303	38,213	124,253
Proceeds from sale of property and equipment	230,000	—	—
Other, net ⁽¹⁾	5,415	(46,385)	(19,128)
Net cash used in investing activities	(213,592)	(2,724,892)	(1,742,975)
Financing Activities			
Debt proceeds	5,866,966	7,338,560	4,399,501
Debt issuance costs	(51,590)	(88,241)	(68,020)
Repayments of debt	(7,835,087)	(6,365,570)	(4,118,553)
Purchase of treasury stock	(224,998)	(299,960)	(200,000)
Dividends paid	(437,455)	(346,487)	(280,212)
Proceeds from exercise of common stock options	2,525	2,258	11,252
Other, net	3,843	3,249	2,520
Net cash (used in) provided by financing activities	(2,675,796)	243,809	(253,512)
Effect of exchange rate changes on cash	2,331	(24,569)	(17,555)
Net (decrease) increase in cash and cash equivalents	(12,491)	11,038	(67,676)

TO SUMMARIZE

At the most fundamental level, firms generate and spend cash. The Statement of Cash Flows presents the sources and uses of cash.



STANDARDIZED FINANCIAL STATEMENTS

COMMON SIZE STATEMENTS

These statements present items in percentage terms, allowing for comparison to firms of different sizes or to the past.

THE COMMON SIZE BALANCE SHEET

J. Alfred Prufrock Corporation					
Balance Sheet					
(\$ in millions)					
Assets					
Current Assets	2016		2017		Change
Cash	\$ 84	2.5%	\$ 98	2.7%	0.2%
Accounts Receivable	165	4.9	188	5.2	.3
Inventory	393	11.7	422	11.8	.1
Total	\$ 642	19.0	\$ 708	19.7	.7
Fixed Assets					
Net Plant and Equipment	\$ 2731	81.0	\$ 2880	80.3	(0.7)
Total Assets	\$ 3373	100.0	\$ 3588	100.0	.0
Liabilities and Owners' Equity					
Current Liabilities					
Accounts Payable	\$ 312	9.2%	\$ 344	9.6%	0.3%
Notes Payable	231	6.8	196	5.5	(1.4)
Total	\$ 543	16.1	\$ 540	15.1	(1.0)
Long-term Debt	\$ 531	15.7	\$ 457	12.7	(3.0)
Owners' Equity					
Commons Stock and Paid-In Surplus	\$ 500	14.8	\$ 550	15.3	.5
Retained Earnings	1799	53.3	2041	56.9	3.5
Total	\$ 2299	68.2	\$ 2591	72.2	4.1
Total Liabilities and Owners' Equity	\$ 3373	100.0	\$ 3588	100.0	.0

Presented as a % of total assets.

Notice that *Net Plant and Equipment* increased from 2016 to 2017, but that it fell as a percentage of assets.

THE COMMON SIZE INCOME STATEMENT

J. Alfred Prufrock Corporation
2017 Income Statement

Sales	100.0%
Cost of Goods Sold	58.2
Depreciation	11.9
Earnings before interest and taxes (EBIT)	29.9
Interest paid	6.1
Taxable income	23.8
Taxes (34%)	8.1
Net Income	15.7%
Dividends	5.2%
Addition to retained earnings	10.5%

Presented as a % of Sales.

For every \$1 of sales, \$0.58 goes to paying for inputs. \$0.15 is profit (net income).

COMMON SIZE STATEMENTS EXAMPLE

Walgreen's had \$118.21B in sales in 2017. Its cost of goods sold was \$90.71B. CVS had \$184.77B in sales in 2017. Its cost of goods sold was \$156.22B. Which firm is better at keeping costs down?

Walgreens: $\text{COGS}/\text{Sales} = 76.7\%$

CVS: $\text{COGS}/\text{Sales} = 84.5\%$

Walgreens costs are lower as a percentage of sales.

TO SUMMARIZE

Common size statements put the value of financial statement items into perspective, relative to past years or other firms.



RATIO ANALYSIS

FINANCIAL RATIOS

Relationships used for assessing the health of the firm and comparative standing of the firm.

There are many ratios. We focus on a few more important ones here that fit into these categories:

- Short Term Solvency & Liquidity
- Leverage & Long Term Solvency
- Turnover
- Market Value
- Profitability

SHORT TERM SOLVENCY & LIQUIDITY

Measures of short term liquidity. Generally, the higher the better for short term creditors.

$$\textit{Current} = \frac{\textit{Current Assets}}{\textit{Current Liabilities}}$$

$$\textit{Quick} = \frac{\textit{Current Assets} - \textit{Inventory}}{\textit{Current Liabilities}}$$

SHORT TERM SOLVENCY & LIQUIDITY EXAMPLE

Interpret J. Alfred Prufrock's 2017 (1) Current Ratio of 1.31 and (2) Quick Ratio of 0.53.

1. The firm has \$1.31 of current assets for every \$1 in current liabilities, or the firm covered its current liabilities 1.31 over with current assets.
2. Net of inventory, which may be difficult to sell off immediately, it can only cover 53% of its current liabilities with current assets.

LEVERAGE & LONG TERM SOLVENCY

Address a firm's long-term ability to meet its obligations. Shows the *financial leverage*—the use of debt—of the firm.

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

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

LEVERAGE & LONG TERM SOLVENCY

$$\text{Equity Multiplier} = \frac{\text{Total Assets}}{\text{Total Equity}} = 1 + \frac{\text{Debt}}{\text{Total Equity}}$$

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

LEVERAGE & LONG TERM SOLVENCY EXAMPLE

Interpret J. Alfred Prufrock's 2017 (1) Total Debt Ratio of 0.28, (2) Debt to Equity Ratio of 0.38, (3) Equity Multiplier of 1.38, and (4) Cash Coverage Ratio of 6.9.

1. The firm uses 28% debt (and thus $1 - 0.28 = 72\%$ equity).
2. Debt is 38% of equity. Look to the industry to determine if this is high or low.
3. The equity multiplier is $1 +$ the Debt to Equity Ratio. The company's assets are worth 1.38 times its equity, highlighting the use of leverage.
4. Cash earnings before interest and taxes can pay the interest expense 6.9 times over.

TURNOVER

Measures asset utilization, or how efficiently or intensively a firm uses its assets to generate sales.

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

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

TURNOVER EXAMPLE

Interpret J. Alfred Prufrock's 2017 (1) Inventory Turnover Ratio of 3.2 and (2) Total Asset Turnover of 0.64.

1. The firm “sold through” its inventory 3.2 times.
2. For every dollar in assets, the firm generated \$0.64 in sales.

MARKET VALUE

Calculated for publicly-traded firms only, these ratios can tell the relative value of a share or how attractive the firms is as an investment.

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

$$\text{Price to Earnings} = \frac{\text{Price per Share}}{\text{Earnings per Share}}$$

$$\text{Tobin's } Q = \frac{\text{Market Value of Assets}}{\text{Replacement Cost of Assets}}$$

MARKET VALUE EXAMPLE

Interpret J. Alfred Prufrock's 2017 (1) Earnings per Share of 11, (2) Price to Earnings Ratio of 8, and (3) Tobin's Q of 1.08.

1. Net income amounts to \$11 per share.
2. Each of the firm's shares trades for 8 times more than the earnings associated with it, indicating potential for future growth opportunities.
3. A Q above 1 indicates that the assets of the firm are worth more than what it would take to replace them; therefore, it is likely the firm has attractive investment opportunities.

PROFITABILITY

Measures how efficiently a firm uses its assets and manages operations.

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

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

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

PROFITABILITY EXAMPLE

Interpret J. Alfred Prufrock's 2017 (1) Profit Margin of 15.71%, (2) ROA of 10.12%, and (3) ROE of 14.01%.

1. The firm generates a little less than \$0.16 in profit for every dollar in sales.
2. The firm generates \$0.10 for every dollar of (book) assets.
3. The firm generates \$0.14 for every dollar of (book) equity. This is important given that the goal is to maximize the value of the firm per share for shareholders.

USING RATIOS AND FINANCIAL STATEMENTS

Ratios and financial statements are used *internally* for performance evaluation and planning/budgeting and *externally* by creditors, suppliers, investors, customers, and stockholders.

BENCHMARKING

Firms can be compared to *the past* by benchmarking against its past ratios and to *peers* within the same SIC or NAICS code.

But these SIC and NAICS groupings are not perfect.

OTHER ISSUES

- Conglomerates are hard to classify
- Differences in accounting measures for multinational firms
- Seasonality and timing of fiscal years can present issues

TO SUMMARIZE

Ratios are useful tools for internal and external parties to determine performance, efficiency, and profitability of a firm relative to its past or other similar firms.



DUPONT ANALYSIS

THE DUPONT IDENTITY

An expression that shows the Return on Equity (ROE) can be represented as the product of the Profit Margin, the Total Asset Turnover, and the Equity Multiplier.

Thus, the ROE can be decomposed into Operating Efficiency (controlling costs), Asset Use Efficiency (managing productive resources), and Leverage (use of debt financing).

THE DUPONT IDENTITY

$$ROE = \frac{\text{Net Income}}{\text{Equity}}$$

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

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

THE DUPONT IDENTITY

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

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

$$ROE = \text{Operating Efficiency} \times \text{Asset Use Efficiency} \times \text{Leverage}$$

EXAMPLE: VERA BRADLEY INC.

Obtain [Vera Bradley's Financial Statements](#) and find the ROE by calculating the profit margin, total asset turnover, and equity multiplier for 2018. Compare to 2017 and discuss where the difference is.

EXAMPLE: VERA BRADLEY INC.

2018: Net Income=7.02M, Sales=454.65M, Assets= 350.67M
Equity=285.28M

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

$$ROE_{2018} = 0.015 \times 1.30 \times 1.23 = 0.024$$

EXAMPLE: VERA BRADLEY INC.

2017: Net Income=19.76M, Sales=485.94M, Assets= 373.51,
Equity=283.79M

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

$$ROE_{2017} = 0.04 \times 1.30 \times 1.32 = 0.07$$

EXAMPLE: VERA BRADLEY INC.

$$ROE_{2017} = 0.04 \times 1.30 \times 1.32 = 0.07$$

$$ROE_{2018} = 0.015 \times 1.30 \times 1.23 = 0.024$$

Profit margin fell most substantially. Vera Bradley is less *operationally efficient* than it was in 2017.

TO SUMMARIZE

By breaking down the ROE into its component parts, we can see what specifically contributes to satisfactory or unsatisfactory levels of return on equity.

	ROE		Profit margin		Total asset turnover		Equity multiplier
Yahoo!							
2013	10.4%	=	29.2%	×	.279	×	1.29
2012	8.0	=	23.4	×	.292	×	1.17
2011	8.4	=	21.0	×	.368	×	1.18
Google							
2013	14.8%	=	21.6%	×	.539	×	1.27
2012	15.0	=	21.5	×	.535	×	1.31
2011	16.7	=	25.7	×	.522	×	1.25



TAKEAWAYS

TAKEAWAYS

1. Firms generate and use cash, and the sources and uses of cash are important to identify.
2. The Statement of Cash Flow identifies where cash is coming from and where it is going.
3. As a measure of performance, cash flow may be better than net income because it doesn't include non-cash expenses such as depreciation and amortization.
4. Standardized financial statements and ratios help us to compare a firm to its past self or to peer firms.
5. The DuPont Identity allows us to decompose ROE into operating efficiency, asset use efficiency, and financial leverage.

END.

