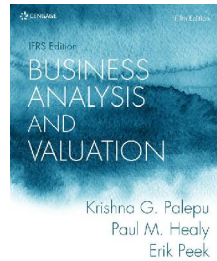


# Financial Analysis

## Chapter 5



## KEY CONCEPTS IN CHAPTER 5

- There are **two** primary tools in financial analysis:
  - **Ratio analysis** – to assess how various line items in financial statements relate to each other and to measure relative performance.
  - **Cash flow analysis** – to evaluate liquidity and the management of operating, investing, and financing activities as they relate to cash flow.

## DETERMINANTS OF FIRM VALUE AND RATIO ANALYSIS

- Profitability and growth drive firm value.
- Managers can employ four levers to achieve growth and profit targets:
  - Operating management
  - Investment management
  - Financing strategy
  - Dividend policy
- Ratio analysis seeks to evaluate the firm's effectiveness in these areas.

## DRIVERS OF PROFITABILITY AND GROWTH

FIGURE 5.1 Drivers of a firm's profitability and growth



## RATIO ANALYSIS

- Evaluating ratios requires comparison against some benchmark. Such benchmarks include:
  - Ratios over time from prior periods (time series)
  - Ratios of other firms in the industry (cross-sectional)
  - Some absolute benchmark
- Effective ratio analysis must attempt to relate underlying business factors to the financial numbers

The text illustrates ratio analysis by applying it to European fashion retailers: Hennes & Mauritz, Inditex, and other industry peer

## MEASURING OVERALL PROFITABILITY

- ROE is a comprehensive measure of firm profitability and is a good starting point to systematically analyze firm performance.

$$ROE = \frac{\text{Profit or loss}}{\text{Shareholders' Equity}}$$

TABLE 5.1 Return on equity for Hennes & Mauritz and its industry peers

Ratio	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016	Other peers 2017
Return on equity	26.8%	31.2%	25.7%	26.1%	21.1%

## DECOMPOSING PROFITABILITY: TRADITIONAL APPROACH

$$ROE = \frac{\text{ROA}}{\text{Total assets}} \times \frac{\text{Equity multiplier}}{\text{Equity}}$$

$$= \frac{\text{Profit or loss}}{\text{Total assets}} \times \frac{\text{Total assets}}{\text{Equity}}$$

TABLE 5.2 Traditional decomposition of ROE

Ratio	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016	Other peers 2017
Net profit margin (ROE) (%)	8.1	9.7	13.3	13.6	6.5
× Asset turnover	1.13	1.14	1.03	1.01	1.05
= Return on assets (ROA) (%)	9.2	11.0	13.7	13.7	6.8
× Equity multiplier	2.92	2.83	1.87	1.91	3.10
= Return on equity (ROE) (%)	26.8	31.2	25.7	26.1	21.2

## DECOMPOSING PROFITABILITY: ALTERNATIVE APPROACH

- The traditional approach has some limitations imposed by the composition of the denominator and numerator
- An alternative approach computes ROE as ultimately being equal to:

$$\text{Return on Business Assets} + \text{Spread} * \text{Financial leverage}$$

## DETAIL OF ALTERNATIVE ROE DECOMPOSITION

$$\begin{aligned}
 \text{ROE} &= \frac{\text{NOPAT} + \text{NIPAT}}{\text{Equity}} - \frac{\text{Interest expense after tax}}{\text{Equity}} \\
 &= \frac{\text{NOPAT} + \text{NIPAT}}{\text{Business assets}} \times \frac{\text{Business assets}}{\text{Equity}} - \frac{\text{Interest expense after tax}}{\text{Debt}} \times \frac{\text{Debt}}{\text{Equity}} \\
 &= \frac{\text{NOPAT} + \text{NIPAT}}{\text{Business assets}} \left( \frac{\text{Equity} + \text{Debt}}{\text{Equity}} \right) - \frac{\text{Interest expense after tax}}{\text{Debt}} \times \frac{\text{Debt}}{\text{Equity}} \\
 &= \frac{\text{NOPAT} + \text{NIPAT}}{\text{Business assets}} \left( 1 + \frac{\text{Debt}}{\text{Equity}} \right) - \frac{\text{Interest expense after tax}}{\text{Debt}} \times \frac{\text{Debt}}{\text{Equity}} \\
 &= \text{Return on business assets} + \\
 &\quad (\text{Return on business assets} - \text{Effective interest rate after tax}) \times \text{Financial leverage} \\
 &= \text{Return on business assets} + \text{Spread} \times \text{Financial leverage}
 \end{aligned}$$

## DETAIL OF ALTERNATIVE ROE DECOMPOSITION

$$\begin{aligned}
 \text{ROBA} &= \frac{\text{NOPAT}}{\text{Business Assets}} + \frac{\text{NIPAT}}{\text{Business Assets}} \\
 &= \frac{\text{NOPAT}}{\text{Operating assets}} \times \frac{\text{Operating assets}}{\text{Business assets}} + \frac{\text{NIPAT}}{\text{Investment assets}} \times \frac{\text{Investment assets}}{\text{Business assets}} \\
 &= \text{Return on operating assets} \times \frac{\text{Operating assets}}{\text{Business assets}} \\
 &\quad + \text{Return on investment assets} \times \frac{\text{Investment assets}}{\text{Business assets}} \\
 \\ 
 \text{Return on operating assets} &= \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Operating assets}}
 \end{aligned}$$

## INTERMEZZO: DEFINITIONS

Item	Definition
<b>Income statement items</b>	
Interest expense after tax	Interest expense × (1 – Tax rate) <sup>a</sup>
Net investment profit after tax (NIPAT)	(Investment income + Interest income) × (1 – Tax rate)
Net operating profit after taxes (NOPAT)	Profit or loss – Net investment profit after tax + Interest expense after tax
<b>Balance sheet items</b>	
Operating working capital	(Current assets – Excess cash and cash equivalents) – (Current liabilities – Current debt and current portion of non-current debt) <sup>b</sup>
Net non-current operating assets	Non-current tangible and intangible assets + (Net) derivatives – (Net) deferred tax liability – Non-interest-bearing non-current liabilities
Non-operating investments	Minority equity investments + Other non-operating investments + Excess cash and cash equivalents
Net operating assets	Operating working capital + Net non-current operating assets
Business assets	Net operating assets + Non-operating investments
Debt	Total interest-bearing non-current liabilities + Current debt and current portion of non-current debt
Invested capital	Debt + Group equity

a. This calculation treats interest expense as absolute value, independent of how this figure is reported in the income statement.  
b. Excess cash and cash equivalents is defined as total cash and cash equivalents minus the cash balance needed for operations. In the analysis of Hennessy & Mauritz and its peers, we set the cash balance needed for operations equal to 5 percent of revenue, the long-term average cash balance in the European apparel retail industry.

## H&M VERSUS INDUSTRY PEERS: COMPARISON OF ROE COMPONENTS

TABLE 5.4 Distinguishing operating, investment, and financing components in ROE decomposition

Ratio	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016	Other peers 2017
Net operating profit margin (%)	8.6	10.3	13.4	13.7	7.2
× Net operating asset turnover	1.43	1.42	2.09	2.02	1.73
= Return on net operating assets (%)	12.3	14.6	28.0	27.6	12.5
Return on net operating assets (%)	12.3	14.6	28.0	27.6	12.5
× (Net operating assets/invested capital)	0.99	0.98	0.67	0.68	0.74
+ Return on non-operating investments (%)	21.4	6.0	0.9	0.9	0.7
× (Non-operating investments/invested capital)	0.01	0.02	0.33	0.32	0.26
= Return on invested capital (%)	12.3	14.5	19.1	19.1	9.4
Spread (%)	10.8	12.8	17.5	17.4	7.6
× Financial leverage	1.34	1.31	0.37	0.40	1.55
= Financial leverage gain (%)	14.4	16.8	6.5	7.1	11.8
ROE = Return on invested capital + financial leverage gain (%)	26.8	31.2	25.7	26.1	21.2

## DISCUSSION OF RESULTS FROM PROFITABILITY ANALYSIS

Note the differences between key components of the traditional and alternative FY 2017 ROE decompositions:

	H&M Traditional	H&M Alternative	Inditex Traditional	Inditex Alternative
Asset Turnover	1.13	1.43	1.03	2.09
ROA	9.2%	12.3%	13.7%	28.0%
Financial Leverage	2.92	1.34	1.87	0.37

## ASSESSING OPERATING MANAGEMENT: INCOME STATEMENT RATIOS

- Common-sized income statements facilitate comparisons of key line items across time and different firms.
- Additionally, the following ratios are also helpful:
  - Gross profit margin (by function only)
  - EBITDA margin
  - NOPAT margin
  - Recurring NOPAT margin

## GROSS PROFIT MARGIN

- Measures the profitability of sales, less direct costs of sales:

The gross profit margin is an indicator of:

- The price premium that a firm's product commands in the market
- The efficiency of a firm's procurement and/or production process

$$\text{Gross profit margin} = \frac{\text{Revenue} - \text{Cost of Sales}}{\text{Revenue}}$$

## NOPAT AND EBITDA MARGINS

- The NOPAT margin provides a comprehensive measure of operations:

$$\text{NOPAT margin} = \frac{\text{NOPAT}}{\text{Revenue}}$$

- The EBITDA margin eliminates the significant non-cash expenses of depreciation and amortization along with interest and taxes:

$$\text{EBITDA margin} = \frac{\text{Earnings before interest, taxes, depreciation and amortization}}{\text{Revenue}}$$

## A COMPARISON OF KEY INCOME STATEMENT RATIOS FOR H&M AND ITS INDUSTRY PEERS

Ratio	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016	Other peers 2017
<b>Line items as a percentage of revenue (%)</b>					
Revenue	100.0	100.0	100.0	100.0	100.0
Net operating expense	(88.9)	(86.7)	(82.1)	(82.2)	(89.4)
Net non-recurring income or expense	0.0	0.0	(0.5)	(0.2)	0.1
Net operating profit before tax	11.1	13.3	17.3	17.7	10.6
Investment and interest income	0.1	0.1	0.3	0.3	0.2
Interest expense	(0.8)	(0.9)	(0.4)	(0.5)	(1.2)
Tax expense	(2.3)	(2.8)	(3.9)	(3.9)	(3.1)
Profit or loss	8.1	9.7	13.3	13.6	6.5
<b>Net operating expense line items as a percent of revenue (by nature) (%)</b>					
Personnel expense	(17.8)	(16.9)	(15.6)	(15.6)	N.A.
Cost of materials	(45.6)	(44.3)	(43.7)	(43.0)	N.A.
Depreciation and amortization	(13.0)	(13.8)	(10.5)	(11.8)	N.A.
Other operating income/expense	(12.5)	(11.7)	(12.3)	(11.7)	N.A.
<b>Key profitability ratios (%)</b>					
Gross profit margin	54.0	55.2	N.A.	N.A.	N.A.
EBITDA margin	24.2	27.2	28.1	29.7	N.A.
NOPAT margin	8.6	10.3	13.4	13.7	7.2
Net profit margin	8.1	9.7	13.3	13.6	6.5

## DECOMPOSING ASSET TURNOVER

- Asset management is a key indicator of how effective a firm's management is.
- Asset turnover may be broken into two primary components:
  - Working capital management
  - Non-current asset management

## WORKING CAPITAL MANAGEMENT

- Working capital is the difference between current assets and current liabilities.
- Key ratios useful to analyzing the management of working capital include:
  - Operating working capital to sales
  - Operating working capital turnover
  - Accounts receivable turnover
    - Day's receivables
  - Inventory turnover
    - Day's inventory
  - Accounts payable turnover
    - Day's payables

## ASSET MANAGEMENT RATIOS FOR H&M AND ITS PEERS

TABLE 5.6 Asset management ratios

Ratio	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016	Other peers 2017
Operating working capital/Revenue (%)	11.7	10.3	-1.4	-2.3	11.5
Net non-current operating assets/Revenue (%)	58.4	59.9	49.3	51.8	57.8
PP&E/Revenue (%)	57.0	58.9	49.5	51.9	44.8
Operating working capital turnover	8.56	9.69	-69.73	-42.89	8.71
Net non-current operating asset turnover	1.71	1.67	2.03	1.93	1.73
PP&E turnover	1.76	1.70	2.02	1.93	2.23
Trade receivables turnover	39.30	43.20	116.81	117.86	17.31
Days' receivables	9.2	8.3	3.1	3.1	20.8
Inventories turnover	2.79	3.01	4.23	4.23	3.96
Days' inventories	129.2	119.4	85.1	85.1	91.0
Trade payables turnover	12.60	12.86	3.14	3.10	6.52
Days' payables	28.6	28.0	114.5	116.0	55.2
Cash conversion cycle (in days)	109.8	99.8	-26.4	-27.8	56.6

## FINANCIAL LEVERAGE ANALYSIS

- Borrowing allows a firm to access to capital, but increases the risk of ownership for equity holders.
- Analysis of leverage can be performed on both current and non-current debts:
  - Liquidity analysis relates to evaluating current liabilities
  - Solvency analysis relates to longer term liabilities

## LIQUIDITY ANALYSIS

- There are several ratios useful to evaluate a firm's liquidity, including:
  - Current ratio
  - Quick ratio
  - Cash ratio
  - Operating cash flow ratio
- Each of these ratios attempts to measure the ability of a firm to pay its current obligations.

## LIQUIDITY ANALYSIS

- Knowing how the liquidity ratios are calculated allows the user to understand how to interpret them:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

$$\text{Quick ratio} = \frac{\text{Cash and marketable securities} + \text{Trade receivables (net)}}{\text{Current liabilities}}$$

$$\text{Cash ratio} = \frac{\text{Cash and marketable securities}}{\text{Current liabilities}}$$

$$\text{Operating cash flow ratio} = \frac{\text{Cash flow from operations}}{\text{Current liabilities}}$$

## COMPARISON OF H&M AND ITS PEERS - LIQUIDITY RATIOS

TABLE 5.7 Liquidity ratios

Ratio	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016	Other peers 2017
Current ratio	1.49	1.78	1.55	1.49	2.64
Quick ratio	0.42	0.59	0.89	0.86	1.65
Cash ratio	0.27	0.42	0.85	0.82	1.31
Operating cash flow ratio	1.14	1.65	1.10	1.17	0.60

## DEBT AND COVERAGE RATIOS

- Beyond short-term survival, solvency measures the ability of a firm to meet long-term obligations.
- Several useful ratios are used to analyze solvency. For example:

$$\text{Liabilities - to - equity ratio} = \frac{\text{Total liabilities}}{\text{Shareholders' equity}}$$

$$\text{Debt - to - equity ratio} = \frac{\text{Current debt} + \text{Non - current debt}}{\text{Shareholders' equity}}$$

$$\text{Debt - to - capital ratio} = \frac{\text{Current debt} + \text{Non - current debt}}{\text{Current debt} + \text{Non - current debt} + \text{Shareholders' equity}}$$

## MORE DEBT AND COVERAGE RATIOS

- Two ratios that specifically address the ability to pay interest on debts are:

$$\text{Interest coverage (earnings - based)} = \frac{\text{Profit or loss} + \text{Interest expense} + \text{Tax expense}}{\text{Interest expense}}$$

$$\begin{aligned} \text{Interest coverage (cash flow - based)} \\ = \frac{\text{Cash flow from operations} + \text{Interest expense} + \text{Taxes paid}}{\text{Interest expense}} \end{aligned}$$

## COMPARISON OF DEBT AND COVERAGE RATIOS

TABLE 5.8 Debt and coverage ratios

Ratio	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016	Other peers 2017
Liabilities-to-equity	1.92	1.83	0.87	0.91	2.12
Debt-to-equity	1.34	1.31	0.37	0.40	1.55
Debt-to-capital	0.57	0.57	0.27	0.29	0.61
Interest coverage (earnings-based)	14.02	15.10	41.57	39.39	8.85
Interest coverage (cash flow-based)	38.66	39.10	97.08	93.77	8.29

## ASSESSING THE SUSTAINABLE GROWTH RATE

- A comprehensive measure of a firm's ratios is the sustainable growth rate, which uses ROE:

$$\text{Sustainable growth rate} = \text{ROE} \times (1 - \text{Dividend payout ratio})$$

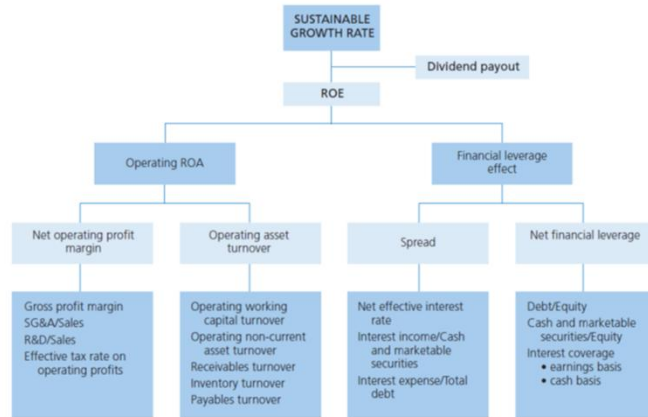
where

$$\text{Dividend payout ratio} = \frac{\text{Cash dividends paid}}{\text{Profit or loss}}$$

- Sustainable growth rate measures the ability of a firm to maintain its profitability and financial policies. Its components may be seen in Figure 5-2.

FIGURE 5.2

FIGURE 5.2 Sustainable growth rate framework for financial ratio analysis



SUSTAINABLE GROWTH RATES FOR H&M AND ITS PEERS

TABLE 5.9 Sustainable growth rate

Ratio (%)	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016	Other peers 2017
ROE	26.8	31.2	25.7	26.1	21.2
Dividend payout ratio	99.7	86.6	63.1	59.2	49.9
Sustainable growth rate	0.1	4.2	9.5	10.7	10.6

## CASH FLOW ANALYSIS

- The ratio analysis previously discussed used accrual accounting.
- Cash flow analysis can provide further insights into operating, investing, and financing activities.
- All companies using IFRS are required to include a statement of cash flows in their financial statements.

## ANALYZING CASH FLOW INFORMATION

- A number of questions can be answered through analysis of the statement of cash flows. For example:
  - Operating activities
    - How strong is the firm's internal cash flow generation?
    - How well is working capital being managed?
  - Investing activities
    - How much cash did the company invest in growth assets?
  - Financing activities
    - What type of external financing does the company rely on?
    - Did the company use internally generated funds for investments?
    - Did the company use internally generated funds to pay dividends?

## CASH FLOW ANALYSIS

- Differences in reporting cash flow information allow for variation across firms that complicate comparisons.
- Analysts can make adjustments to net income to arrive at free cash flows, a commonly used metric for financial analysis.
- Table 5.11 in the next slide illustrates the various calculations using financial information from H&M and Inditex.

## CASH FLOW ANALYSIS FOR H&M AND INDITEX

TABLE 5.11 Cash flow analysis

Line Item (SEK or € millions)	H&M 2017	H&M 2016	Inditex 2017	Inditex 2016
Profit before Interest and Tax	22,125.8	25,519.5	4,432.2	4,163.1
Taxes Paid plus Tax Shield on Interest Paid	(6,402.5)	(4,845.0)	(1,060.7)	(829.1)
Non-Operating Losses (Gains)	0.0	0.0	34.0	10.5
Non-Current Operating Accruals	26,059.2	26,471.5	2,869.8	2,835.8
Operating Cash Flow before Working Capital Investments	41,782.5	47,146.0	6,275.3	6,180.3
Net (Investments in) or Liquidation of Operating Working Capital	(1,648.0)	(3,390.0)	(449.0)	(274.7)
Operating Cash Flow before Investment in Non-Current Assets	40,134.5	43,756.0	5,826.3	5,905.6
Interest Received	281.0	224.0	26.0	21.5
Dividends Received	0.0	0.0	0.0	0.0
Net (Investments in) or Liquidation of Non-Current Operating or Investment Assets	(27,553.1)	(29,608.3)	(2,600.7)	(4,052.1)
Free Cash Flow Available to Debt and Equity	12,862.4	14,371.7	3,251.7	1,875.1
Interest Paid after Tax	(1,246.3)	(1,329.5)	(75.6)	(74.8)
Net Debt (Repayment) or Issuance	5,094.9	(697.2)	(107.1)	(46.8)
Free Cash Flow Available to Equity	16,711.0	12,345.0	3,069.0	1,753.5
Dividend (Payments)	(16,137.0)	(16,137.0)	(2,127.0)	(1,871.5)
Net Share (Repurchase) or Issuance	0.0	0.0	0.0	0.0
Net Increase (Decrease) in Cash Balance	574.0	(3,792.0)	942.0	(118.0)

## CONCLUDING COMMENTS

- There are two primary tools in financial analysis:
  - **Ratio analysis** – to assess how various line items in financial statements relate to each other and to measure relative performance.
  - **Cash flow analysis** – to evaluate liquidity and the management of operating, investing, and financing activities as they relate to cash flow.
  - Both forms of analyses must be evaluated while considering whether firm performance is consistent with the strategic initiatives of management.