

### The Direct Method and Statement of Cash Flows

The direct method starts with sales, i.e. at the top of the profit and loss account, adding and subtracting the various cash items, some of which need to be calculated or collected separately. This method is more common in firms' internal treasury management, where the necessary data is readily available and can be reconciled with bank accounts, and it is also preferred by standard-setting bodies which tend to focus on the particular way in which cash flows within the company. This, in turn, impacts the manner in which cash flow is reported in public documents such as annual reports, where it takes the form of a separate **statement of cash flows**.

Accordingly, this statement assumes cash receipts from customers and subtracts cash paid to suppliers and employees as well as income taxes related to operations, which results in the **cash flow from operating activities**. Purchases or sales of assets, received dividends and loans made to suppliers or received from customers represent **cash flow from investing activities**. Finally, payments of dividends, sale or repurchase of the company's stock and increase in borrowings net of debt interest and principal repayments constitute **cash flow from financing activities**.<sup>15</sup>

The total of the three cash flow categories determines **net cash flow**, i.e. the net increase in cash and cash equivalents between the beginning and the end of the year. In itself, this value is inconsequential, as it can be inferred directly from the opening and closing balance sheets.

For the purpose of business analysis and valuation, the operating activities category is fundamental, and commonly referred to as simply **operating cash flow (OCF)** or **free cash flow from operations (FCFO)**. It can be simply perceived as the net amount of cash the company generates from its revenues, excluding costs associated with long-term investment in capital items or investment in securities.

### The Indirect Method and Free Cash Flows

The indirect method, in contrast to the direct method, starts with net earnings (i.e. at the bottom of the profit and loss account), adding non-cash expenses and subtracting non-cash incomes. Typically, the most substantial non-cash expense that has to be added to net income when calculating cash flow using the indirect method is depreciation. This method is particularly suitable whenever analyzing

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<sup>15</sup> Alternatively, interest may be reported under operating activities. There are some differences in the treatment of particular items under various accounting standards.

public reports, but is typically preferred by company managers as well, who find it much easier to employ.

Using the indirect method, **operating cash flow** (*OCF*) can be calculated from net operating profit after tax (*NOPAT*),<sup>16</sup> which represents earnings before interest and taxes (*EBIT*) upon applying the income tax rate *T* as in

$$NOPAT = EBIT \times (1 - T) \quad (1-1)$$

adding depreciation and net changes in non-cash operating current assets and liabilities (trade receivables, inventory, trade payables and accruals), derived from their beginning- and end-of-period balance sheet values. Summarily,

$$OCF = NOPAT + \text{depreciation} + \text{increase in operating current assets} - \text{increase in operating current liabilities} \quad (1-2)$$

When performing valuation, a particularly useful way of analyzing cash flows is from the perspective of capital investors, observing the amount of cash that is available for payouts without causing any disruption to operations. Such a value is called **free cash flow** (*FCF*) and can be derived from operating cash flow by subtracting capital expenditure (*CAPEX*), i.e. the investments into new long-term operating assets and their upgrades net of any sales of such assets, as in

$$FCF = OCF - CAPEX \quad (1-3)$$

Free cash flow may then be **distributed** among the different classes of investors, as appropriate, including possibly long-term creditors and bond holders, preferred stock holders, convertible security holders and common stock holders.

In the rudimentary case of capital investors comprising just creditors and shareholders, free cash would first flow to creditors in the form of net interest and debt repayment, with the residual given by Equation (1-4) and called **free cash flow to equity** (*FCFE*) available to shareholders.<sup>17</sup> This may then be distributed in the form of dividends or share repurchases, or remain in the firm as a net change in non-operating assets and liabilities.

$$FCFE = FCF - \text{interest expense} \times (1 - T) - \text{principal repayments} + \text{new debt issues} \quad (1-4)$$

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<sup>16</sup> Alternatively, after-tax earnings (*EAT*) may be adjusted for the after-tax interest expense, resulting in  $NOPAT = EAT + \text{interest expense} \times (1 - T)$ .

<sup>17</sup> To highlight the distinction, free cash flow is also sometimes called free cash flow to the firm (*FCFF*). An alternative designation of free cash flow to equity is levered cash flow, in contrast to free cash flow, which may then be designated unlevered free cash flow.

1.2 Financial Characteristics of a Company

Adapting the previous equations, free cash flow to equity can obviously also be calculated forthright as

$$\begin{aligned}
 FCFE = & \text{net income} + \text{depreciation} - \text{CAPEX} + \text{net new debt} \\
 & + \text{increase in operating current assets} - \text{increase in operating} \\
 & \text{current liabilities} \qquad \qquad \qquad (1-5)
 \end{aligned}$$

**Case #1.1** Calculating cash flows from accounting statements

A company published the following set of financial statements for 2017 (in \$ million):

Balance sheet

	2017	2016		2017	2016
Cash	3,787	3,504	Accounts payable	2,843	2,980
Marketable securities	1,415	1,625	Short term debt	3,058	3,290
Accounts receivable	4,043	3,504	Accruals	3,073	3,113
Inventory	4,810	4,935	Long term debt	4,381	4,105
Fixed assets	10,384	9,969	Total equity	15,992	14,498
Other assets	4,908	4,449			
Total assets	29,347	27,986	Total liabilities and equity	29,347	27,986

Profit and loss account

	2017
Sales	36,067
Operating expenses	-29,298
Depreciation	-1,307
EBIT	5,462
Interest expense	-1,664
EBT	3,798
Income tax	-1,057
Net income	2,741

The company had 180 million common shares and paid a \$4.40 dividend per share.

Cash, receivables and inventory are considered operating current assets (\$12.6 bil. in 2017) and they constitute current assets (\$14.1 bil.) together with marketable securities. Payables and accruals are operating current liabilities (\$5.9 bil.), current liabilities (\$9.0 bil.) include short term debt. Fixed assets are operating long-term assets, other assets are non-operating long-term assets. The firm therefore has  $12.6 - 5.9 = \$6.7$  bil. working capital and  $6.7 + 10.4 = \$17.1$  bil. operating capital.

## 1 Background and Central Concepts

Using the balance sheet and profit and loss account, the statement of cash flows can be constructed using the indirect method and the following reasoning: Purchases of long-term assets combine the net investment in fixed assets  $CAPEX = 10,384 - 9,969 - 1,307 = \$1,722$  million and the increase in other assets (i.e. non-operating long-term assets)  $4,908 - 4,449 = \$459$  million. The company paid  $180 \times 4.40 = \$792$  million dividends, but made a total distribution of net income equal to the difference between net income and retained earnings, i.e.  $2,741 - (15,992 - 14,498) = \$1,247$  million. The remaining  $1,247 - 792 = \$455$  million therefore had to be stock repurchases. The company faced an effective tax rate  $T = 1,057 / 3,798 = 27.83\%$ .

### Statement of cash flows

EBIT $\times (1 - T)$	3,942
Depreciation	1,307
Increase in accounts receivable	-539
Decrease in inventory	125
Decrease in accounts payable	-137
Decrease in accruals	-40
Net cash from operations	4,658
Purchase of long-term assets	-2,181
Sale of marketable securities	210
Net cash from investing	-1,971
Decrease in short-term debt	-232
Increase in long-term debt	276
Interest expense $\times (1 - T)$	-1,201
Stock repurchases	-455
Dividends	-792
Net cash from financing	-2,404
Net cash flow	<b>283</b>

As expected, net cash flow, summarizing that from operations, investing and financing, equals the difference between the cash balance at end of year and its beginning, i.e.  $3,787 - 3,504 = \$283$  million.

Free cash flow can be calculated by subtracting  $CAPEX$  from operating cash flow, i.e.  $FCF = 4,658 - 1,722 = \$2,936$  million.

After adjusting for new debt from investors and net interest paid to them, the available free cash flow to equity  $FCFE = 2,936 - 1,201 + 44 = \$1,779$  million, of which \$792 million is used to pay dividends, \$455 million to repurchase stock and \$532 million to increase the net balance of non-operating assets and liabilities.