Financial Statement Analysis

Analyzing Statements of Cash Flows

Exam Focus

- Definition of CFO, CFI, and CFF
- U.S. GAAP vs. IFRS
- Computation of:
  - CFO (direct and indirect methods)
  - CFI
  - CFF
- Analysis and free cash flows

Usefulness to the Analyst

Benefits for the analyst

- Do regular operations generate enough cash to sustain the business?
- Is enough cash generated to pay off maturing debt?
- Highlights the need for additional finance
- Ability to meet unexpected obligations
- The flexibility to take advantage of new business opportunities
- Investment in productive capacity

The Cash Flow Statement

Net income from accrual accounting does not tell us about the **sources and uses of cash** to meet liabilities and operating needs.

The statement of cash flows has **three components** under both IFRS and U.S. GAAP:

Cash provided or used by operating activities
Cash provided or used by investing activities
Cash provided or used in financing activities

} Total = change in balance sheet cash

Operating Cash Flow (CFO or OCF)

NI ≠ cash due to the accruals process

Cash generated and spent in day-to-day core operations

Computed by adjusting income statement:

- Removing noncash charges
- Adjusting for changes in working capital

$$CFO = NI + NCC - WC_{INV}$$

Cash received from customers	X
Cash dividends received	X
Cash interest received	X
Other cash income	X
Cash payments to suppliers	(X)
Cash expenses	(X)
Cash interest paid	(X)
Cash taxes paid	(X)
CFO (U.S. GAAP)	X/(X)

Cash Flow From Investing: CFI

- Purchases of property, plant, and equipment
- Proceeds from sales of assets
- Investments in joint ventures and affiliates (associates)
- Payments for businesses acquired
- Purchases and sales of intangibles
- Purchases or sales of marketable securities

Excludes:

- Trading securities (part of CFO)
- Cash equivalents (part of balance sheet cash)

Cash Flow From Financing: CFF

- Common (ordinary shares) stock issuance
- Treasury stock repurchases
- Preferred stock issuance and redemption
- Debt issuance and redemption (principal flows)
- Dividend payments (dividends rec'd CFO—U.S. GAAP)

Excludes indirect financing via accounts payable (CFO)

IFRS vs. U.S. GAAP

Type	U.S. GAAP	IFRS
Interest received	CFO	CFO or CFI
Interest paid	CFO	CFO or CFF
Dividends received	CFO	CFO or CFI
Dividends paid	CFF	CFO or CFF
Taxes paid	CFO	CFO/CFI/CFF
Bank overdrafts	CFF	Part of B/S cash
Format	Direct or indirect	Direct or indirect
Reconciliation NI to CFO	Required	N/A

Noncash Charges and Gains

- Depreciation/amortization
- Impairments
- Gains and losses on asset disposals
- Changes in DTA and DTL
- Unrealized gains and losses on trading/FVPL investments
- Inventory write-downs and write-offs
- Amortization of bond premiums and discounts
- Provisions (doubtful debt, warranties, restructuring, etc.)
- Defined benefit pension expenses

Calculation of CFO

The direct versus indirect method refers only to the calculation of CFO; the value of CFO is the same for both methods. CFI and CFF are unaffected.

- Direct method: identify actual cash inflows and outflows (e.g., collections from customers, amounts paid to suppliers)
- Indirect method: begin with net income and make necessary adjustments to get operating cash flow

U.S. GAAP and IFRS prefer the direct method, but they allow indirect.

Direct Method: CFO

1. Working down the I/S, take each income statement item in turn (e.g., sales).
2. Move to the balance sheet and identify asset and liability accounts that relate to that income statement item (e.g., accounts receivable).
3. Calculate the change in the balance sheet item during the period (ending balance – opening balance).
4. Apply the rule:

Increases in an asset: deduct (use of cash)
Increase in a liability: add (source of cash)
Decrease in an asset: add (source of cash)
Decrease in a liability: deduct (use of cash)

Direct Method: CFO

5. Adjust the income statement amount by the change in the balance sheet. For the adding/subtracting rules to work, items that increase net income must be treated as positive values, and items that decrease net income must be treated as negative items.
6. Move to the next item on the income statement and repeat.
7. Ignore depreciation/amortization and gains/losses on the disposal of assets as these are noncash charges or non-CFO items.
8. Keep moving down the income statement until all items included in net income have been addressed, applying Steps 1–8.
9. Total up the amounts, and you have CFO.

Direct Method: Example

Ruby Dog Toys AG is a merchandizing company based in Germany. It reports the following financial statements:

Footnote disclosure reveals interest paid will be treated as a CFO and dividends paid as a CFF.

Use the income statement and balance sheet data to compute CFO using the direct method.

Income Statement: 20X2	€
Net revenue	225,000
Cost of goods sold	(124,000)
Gross profit	101,000
Operating expenses	(25,000)
Depreciation	(14,000)
Interest expense	(3,000)
Gain on disposal of PP&E	18,000
Earnings before tax	77,000
Tax provision	(40,000)
Net income	37,000

Direct Method: Example

Balance Sheet	20X2 €	20X1 €
Net PP&E	221,000	202,000
Current assets		
Accounts receivable	23,000	18,000
Inventory	10,000	14,000
Cash	84,000	18,000
Total	117,000	50,000
Total assets	338,000	252,000

Footnotes to PP&E reveal that gross PP&E and accumulated depreciation were €309,000 and €88,000, respectively, in 20X2. In 20X1, gross PP&E was €282,000 and accumulated depreciation was €80,000.

Additionally, assets were acquired for cash costing €45,000.

Direct Method: Example

Balance Sheet (cont.)	20X2 €	20X1 €
Current liabilities		
Accounts payable	28,000	10,000
Other operating liabilities	24,000	16,000
Interest payable	8,000	6,000
Tax payable liability	6,000	8,000
Dividends payable	12,000	2,000
Unearned revenue	34,000	4,000
Total	112,000	46,000

Direct Method: Example

Balance Sheet (cont.)	20X2 €	20X1 €
Long-term liabilities		
Bonds issued	30,000	20,000
Deferred tax	40,000	30,000
Total	70,000	50,000
Common stock and APIC	80,000	100,000
Retained earnings	76,000	56,000
Total liabilities and shareholders' equity	338,000	252,000

Direct Method: Solution

		€	Cash Flow €
Step 1	Net revenue	225,000	
Steps 2–5	Δ accounts receivable		
	Δ unearned revenue		
	Cash collected from customers		
Step 6	Cost of goods sold	(124,000)	
Steps 2–5	Δ inventory		
	Purchases		
	Δ accounts payable		
	Cash paid to suppliers		

Direct Method: Solution

		€	Cash Flow €
Step 6	Operating expenses	(25,000)	
Steps 2–5	Δ other operating liabilities		
	Cash expenses paid		
Step 7	Depreciation noncash charge:		
Step 6	Interest expense	(3,000)	
Steps 2–5	Δ interest payable		
	Cash interest paid		
Step 7	Gain on disposal of PP&E noncash gain:		

Direct Method: Solution

		€	Cash Flow €
Step 6	Tax provision	(40,000)	
Steps 2–5	Δ deferred tax liability		
	Tax payable		
	Δ tax payable liability		
	Cash taxes paid		
Steps 7–8	CFO		

Indirect Method: CFO

1. Start with **net income**.
2. Working down the I/S, **adjust net income** for changes in relevant balance sheet items:

   Increases in an asset: deduct (use of cash)
   Increase in a liability: add (source of cash)
   Decrease in an asset: add (source of cash)
   Decrease in a liability: deduct (use of cash)

3. Add back noncash charges and deduct noncash gains.
4. Total this to compute CFO.

Indirect Method: Example

Using the Ruby Dog Toys AG financial statement, calculate CFO:

CFO 20X2	€	
Net income	37,000	I/S
Δ accounts receivable		Working capital
Δ unearned revenue liability		Working capital
Δ inventory		Working capital
Δ accounts payable		Working capital
Δ other operating liabilities		Working capital
Deprecation		Non-cash charge
Δ interest payable liability		Working capital
Subtotal		

Indirect Method: Solution

CFO 20X2 (cont.)	€	
Subtotal (previous slide)	108,000	
Gain on disposal of PP&E		Noncash gain
Δ deferred tax liability		Noncash charge
Δ tax payable liability		Working capital
CFO		

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Indirect Method: Alternative

$CFO = NI + NCC - WC_{INV}$

CFO = €37,000 + +

CFO =

Noncash Charges and Gains	€
Depreciation	
Gain on asset disposal	
Δ deferred tax liability	
Net NCC	

Working Capital Investment	€	€
Current assets	117,000	50,000
– cash and investments		
Total		
Current liabilities	112,000	46,000
– STD & dividends pay		
Total		
Working capital		

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Cash Flow From Investing Activities: Example

CFI = proceeds from disposals – cash paid for additions

Selected data from Ruby Dog Toys AG:

Selected PP&E Disclosure	20X2 €	20X1 €
Gross P&E	309,000	282,000
Accumulated depreciation	88,000	80,000
Carrying value	221,000	202,000
Additions to PP&E totaled €45,000*		

*CFAI assumption: additions paid for during year

Use the data to compute CFI

Cash Flow From Investing Activities: Solution

Cost of Equipment Sold	€
Gross cost y/e 20X1	282,000
Additions	
Gross cost of disposed assets	
Gross cost y/e 20X2	309,000

Accumulated Depreciation	€
Accumulated depⁿ y/e 20X1	80,000
Depreciation expense	
Accumulated depⁿ disposal	
Accumulated depⁿ y/e 20X2	88,000

Cash Received on Sale	€
Proceeds	30,000
Carrying value before disposal	
Gain on disposal	18,000

CFI = – =

Cash Flow From Financing: Example

CFF	€
Cash dividends paid	(X)
Equity issued (repurchased)	X/(X)
Debt principal raised (paid)	X/(X)
Total	X/(X)

Use the financial statements of Ruby Dog Toys AG to compute CFF

Dividend declared	€
Retained earnings y/e 20X1	56,000
Net Income	
Dividend proposed	
Retained earnings y/e 20X2	76,000

Dividend paid	€
Proposed dividend	
Δ dividend payable liability	
cash dividend paid	

CFF = =

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The Cash Flow Statement: Example

Produce the cash flow statement for the period ending 20X2 for Ruby Dog Toys AG.

	€
Operating cash flows (CFO or OCF)	
Cash flows from investing activities (CFI)	
Cash flow from financing activities (CFF)	
Δ in cash flows during 20X2	
B/S cash y/e 20X1	
B/S cash y/e 20X2	

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Cash Flow Statement: Analysis

1. Analyze the major sources and uses of cash flow (CFO, CFI, CFF):
   - Where are the major sources and uses?
   - Is CFO positive and sufficient to cover capex?
2. Analyze CFO:
   - What are the major determinants of CFO?
   - Is CFO higher or lower than NI?
   - How consistent is CFO?

Cash Flow Statement: Analysis

3. Analyze CFI:
   - What is cash being spent on?
   - Is the company investing in PP&E?
   - What acquisitions have been made?
4. Analyze CFF:
   - How is the company financing CFI and CFO?
   - Is the company raising or repaying capital?
   - What dividends are being returned to owners?

Common Size Statements

Two Approaches

Show each item as a % of net revenue	Show each inflow as a % of total inflows Show each outflow as a % of total outflows
Useful for:	Useful for:
Forecasting future cash flows (% of net revenue)	Trend analysis (time series)

Free Cash Flow

FCF is cash available for discretionary uses

Frequently used to value firms (reflects control)

FCFF = NI + NCC – WC_{Inv} + Int (1–T) – FC_{Inv}

FCFF = CFO + Int (1–T) – FC_{Inv}

FCFE = CFO – FC_{Inv} + net debt increase

Free Cash Flow: Ruby Dog Toys AG

Assuming Ruby Dog Toys AG has a marginal tax rate of 35%, compute FCFF and FCFE.

FCFF = CFO + Int (1 – T) – FCInv

\+ – =

FCFE = CFO – FCInv + net debt increase

– + =

FCFE = FCFF – Int (1 – T) + net debt increase

– + =

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Cash Flow Ratios

Performance ratios:

$$\text{cash flow to revenue} = \frac{\text{CFO}}{\text{revenue}}$$

$$\text{cash return on assets} = \frac{\text{CFO}}{\text{average total assets}}$$

$$\text{cash return on equity} = \frac{\text{CFO}}{\text{Average total equity}}$$

$$\text{cash to income} = \frac{\text{CFO}}{\text{Operating income}}$$

$$\text{cash flow per share} = \frac{\text{CFO} - \text{preferred dividends}}{\text{N}^{\text{o}}\text{ of common share outstanding}}$$

Cash Flow Ratios

Coverage ratios:

$$\text{debt coverage} = \frac{\text{CFO}}{\text{total debt}}$$

$$\text{interest coverage} = \frac{\text{CFO+ interest + tax}}{\text{interest paid}}$$

$$\text{reinvestment} = \frac{\text{CFO}}{\text{cash paid for long-term assets}}$$

$$\text{debt payment} = \frac{\text{CFO}}{\text{cash paid for long-term debt repayment}}$$

$$\text{dividend payment} = \frac{\text{CFO}}{\text{dividends paid}}$$

$$\text{investing and financing} = \frac{\text{CFO}}{\text{cash outflows for investing and financing activities}}$$

Solutions

Direct Method: Solution

		€	Cash Flow €
Step 1	Net revenue	225,000	
Steps 2–5	Δ accounts receivable	(5,000)	
	Δ unearned revenue	30,000	
	Cash collected from customers		250,000
Step 6	Cost of goods sold	(124,000)	
Steps 2–5	Δ inventory	4,000	
	Purchases	(120,000)	
	Δ accounts payable	18,000	
	Cash paid to suppliers		(102,000)

Direct Method: Solution

		€	Cash Flow €
Step 6	Operating expenses	(25,000)	
Steps 2–5	Δ other operating liabilities	8,000	
	Cash expenses paid		(17,000)
Step 7	Depreciation noncash charge: ignore		
Step 6	Interest expense	(3,000)	
Steps 2–5	Δ interest payable	2,000	
	Cash interest paid		(1,000)
Step 7	Gain on disposal of PP&E noncash gain: ignore		

Direct Method: Solution

		€	Cash Flow €
Step 6	Tax provision	(40,000)	
	Δ deferred tax liability	10,000	
	Tax payable	(30,000)	
Steps 2–5	Δ tax payable liability	(2,000)	
	Cash taxes paid		(32,000)
Steps 7–8	CFO		98,000

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Indirect Method: Example

Using the Ruby Dog Toys AG financial statement, calculate CFO:

CFO 20X2	€	
Net income	37,000	I/S
Δ accounts receivable	(5,000)	Working capital
Δ unearned revenue liability	30,000	Working capital
Δ inventory	4,000	Working capital
Δ accounts payable	18,000	Working capital
Δ other operating liabilities	8,000	Working capital
Deprecation	14,000	Noncash charge
Δ interest payable liability	2,000	Working capital
Subtotal	108,000	

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Indirect Method: Solution

CFO 20X2 (cont.)	€	
Subtotal (previous slide)	108,000	
Gain on disposal of PP&E	(18,000)	Noncash gain
Δ deferred tax liability	10,000	Noncash charge
Δ tax payable liability	(2,000)	Working capital
CFO	98,000	

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Indirect Method: Alternative

$CFO = NI + NCC - WC_{INV}$

CFO = €37,000 + €6,000 + €55,000

CFO = €98,000

Noncash Charges and Gains	€
Depreciation	14,000
Gain on asset disposal	(18,000)
Δ deferred tax liability	10,000
Net NCC	6,000

Working Capital Investment	€	€
Current assets	117,000	50,000
– Cash and investments	(84,000)	(18,000)
Total	33,000	32,000
Current liabilities	112,000	46,000
– STD & dividends pay	(12,000)	(2,000)
Total	100,000	44,000
Working capital	(67,000)	(12,000)

Δ –€55,000

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Cash Flow From Investing Activities: Solution

Cost of Equipment Sold	€
Gross cost y/e 20X1	282,000
Additions	45,000
Gross cost of disposed assets	(18,000)
Gross cost y/e 20x2	309,000

Accumulated Depreciation	€
Accumulated depⁿ y/e 20X1	80,000
Depreciation expense	14,000
Accumulated depⁿ disposal	(6,000)
Accumulated depⁿ y/e 20X2	88,000

Cash Received on Sale	€
Proceeds	30,000
Carrying value before disposal	(12,000)
Gain on disposal	18,000

CFI = €30,000 – €45,000 = –€15,000

Cash Flow From Financing: Example

CFF	€
Cash dividends paid	(X)
Equity issued (repurchased)	X/(X)
Debt principal raised (paid)	X/(X)
Total	X/(X)

Use the financial statements of Ruby Dog Toys AG to compute CFF

Dividend declared	€
Retained earnings y/e 20X1	56,000
Net Income	37,000
Dividend proposed	(17,000)
Retained earnings y/e 20X2	76,000

Dividend paid	€
Proposed dividend	(17,000)
Δ dividend payable liability	10,000
cash dividend paid	(7,000)

CFF = –7,000 – 20,000 + 10,000 = –17,000

The Cash Flow Statement: Example

Produce the cash flow statement for the period ending 20X2 for Ruby Dog Toys AG.

	€
Operating cash flows (CFO or OCF)	98,000
Cash flows from investing activities (CFI)	(15,000)
Cash flow from financing activities (CFF)	(17,000)
Δ in cash flows during 20X2	66,000
B/S cash y/e 20X1	18,000
B/S cash y/e 20X2	84,000

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Free Cash Flow: Ruby Dog Toys AG

Assuming Ruby Dog Toys AG has a marginal tax rate of 35%, compute FCFF and FCFE.

FCFF = CFO + Int (1 – T) – FCInv

€98,000 + €1,000 (1 – 0.35) – €15,000 = €83,650

FCFE = CFO – FCInv + net debt increase

€98,000 – €15,000 + €10,000 = €93,000

FCFE = FCFF – Int (1 – T) + net debt increase

€83,650 – €1,000 (1 – 0.35) + €10,000 = €93,000

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