

CFA® Level I

One-Page Learning Module Summaries

Financial Statement Analysis

12 learning modules · one page each · built from CFA Program Level I curriculum, Volume 4

How each page works

■ Module banner	Exact module title, exam relevance (High/Medium/Low-yield) and whether it is calculation- or concept-heavy.
■ The big picture	Two or three sentences of intuition: why the module exists.
■ Learning outcomes	Every LOS of the module, in book order, rewritten as what you must know or do.
■ Key formulas / key facts	Formulas in curriculum notation with every variable defined; fact tables for concept modules.
■ Worked example	One numerical example (or a short Ethics case). Tagged [CFA curriculum] when taken from the curriculum, [illustrative] when made up by RBei.
■ What examiners like to test	Traps, key distinctions and typical question angles.

Notes. (1) The curriculum lists LOS without letters; “LOS 1, 2, 3” follows the order in the book. (2) Exam relevance is RBei’s judgement from the number of LOS, the calculation LOS and the weight of worked examples and practice problems in each module; the curriculum does not rate modules. (3) [India context, not curriculum] marks Indian examples added for context; they are not curriculum. (4) [Note: ...] marks places where the curriculum is inconsistent or offers two framings.

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Module 1 — Introduction to Financial Statement Analysis

Topic: Financial Statement Analysis · Exam relevance: **Low-yield** · **Concept-heavy**

The big picture

Financial statement analysis turns reported numbers into decisions: buy the equity, lend to the company, assign a rating? The analyst follows a six-phase framework, relies on regulated sources (filings, notes, MD&A, audit report), knows where IFRS and US GAAP still differ, and adds information from issuers, third parties and own research.

Learning outcomes in plain language

- LOS 1 Describe the six steps** of the framework: (1) articulate purpose and context, (2) collect data, (3) process data (adjusted statements, common-size statements, ratios), (4) analyze/interpret, (5) develop and communicate conclusions (report; Standard V(B)), (6) follow-up. Know each phase's output.
- LOS 2 Describe the role** of the analysis: use financial reports plus other information to evaluate past, current and potential performance and financial position in order to make investment, credit and other economic decisions.
- LOS 3 Describe the importance** of regulatory filings (SEC forms), notes and supplementary schedules (policies, estimates, segments), management commentary/MD&A (usually unaudited) and the audit report (reasonable, not absolute, assurance).
- LOS 4 Describe the implications** of alternative reporting systems: IFRS and US GAAP have converged on major new standards but still differ; reconciliations are not required, so compare with caution. **Monitor developments** via new products/transactions, standard setters and CFA Institute, and critical accounting policy disclosures.
- LOS 5 Describe other information sources:** issuer (earnings calls, investor days, press releases, management/IR, website, visits), public third-party (whitepapers, government/industry data, news, social media), proprietary third-party (sell-side and rating agency reports, data platforms, consultancies), proprietary primary research (surveys, product comparisons).

Key facts

Curriculum Exhibit 6	US GAAP	IFRS
Developed by; based on	FASB; rules	IASB; principles
Interest paid (cash flow)	Operating activities	Financing <i>or</i> operating activities
Inventory valuation	FIFO, LIFO, weighted average	FIFO, weighted average
Development cost	Treated as an expense	Capitalized, only if certain conditions are satisfied
Reversal of inventory write-down	Prohibited	Permissible, if specified conditions are met

Segment reporting: report a segment if $\geq 10\%$ of combined revenue, assets or profit (absolute profit/loss vs the greater of total profits and total losses); add segments until reportable segments cover $\geq 75\%$ of external revenue; disclose any single customer $\geq 10\%$ of revenue (not its identity).

Audit opinions: unqualified ("clean"/unmodified); qualified (scope limitation or exception); adverse (materially departs, not fairly presented); disclaimer (unable to issue an opinion). Key Audit Matters (international) / Critical Audit Matters (US).

Worked example (CFA curriculum)

Sea Ltd. segment note (USD 000s). Revenue: digital entertainment 4,320,013; e-commerce 5,122,959; total 9,955,190. Operating income (loss): digital entertainment 2,500,081; e-commerce (2,766,566).

E-commerce share of revenue = $5,122,959 / 9,955,190 = 51.5\%$ ("just over 50 percent"); digital entertainment = 43.4%, so the two segments give 94.9% of revenue.

Operating margin: digital entertainment $2,500,081 / 4,320,013 = +57.9\%$; e-commerce $-2,766,566 / 5,122,959 = -54.0\%$.

Interpretation: the largest segment loses money while the only profitable segment funds it, so the analyst spends most time on these two.

What examiners like to test

- **Which phase?** Ratios and common-size statements are outputs of *processing* data; forecasts and valuations come from *analyzing/interpreting*; revised forecasts belong to follow-up.
- **Audit assurance** is *reasonable*, not absolute (sampling, estimates); MD&A is generally unaudited.
- **Filing names:** 10-K (US annual), 20-F (other non-US annual), 40-F (certain Canadian), 10-Q/6-K (interim), 8-K (material events), DEF-14A (proxy: executive pay, votes).
- **IFRS vs US GAAP:** no reconciliation is required, so adjustments are often impossible; compare with caution. [India context, not curriculum] Ind AS is largely converged with IFRS, so these issues arise when comparing Indian firms with US peers.

Module 2 — Analyzing Income Statements

Topic: Financial Statement Analysis · Exam relevance: **High-yield** · **Calculation + concept**

The big picture

The income statement tells you *when* revenue and expense are recognised, not when cash moves. Most analysis here is about judgement: which revenue policy, which expense policy, which items will recur. The one mechanical skill the exam always tests is **EPS**: basic EPS, then diluted EPS by the if-converted and treasury stock methods, leaving out any antidilutive security.

Learning outcomes in plain language

- LOS 1 Revenue recognition.** Converged IFRS 15 / US GAAP five steps: (1) identify the contract, (2) identify distinct performance obligations, (3) determine the transaction price, (4) allocate it to the obligations, (5) recognise revenue when (or as) each obligation is satisfied, i.e. when **control** transfers. Know principal vs agent (gross vs net), licence vs SaaS, over-time recognition on long-term contracts, bill-and-hold, contract assets/liabilities.
- LOS 2 Expense recognition.** Three models: matching (COGS), expensing as incurred (period costs) and capitalise-then-depreciate/amortise. Estimates (bad debts, warranties, lives, salvage) change income. **Capitalising** raises current profit, CFO and assets but lowers later profit; **expensing** does the reverse. Adjust for capitalised interest and development costs.
- LOS 3 Non-recurring items and accounting changes.** Unusual or infrequent items stay in continuing operations but are shown separately; discontinued operations are shown net of tax below continuing operations. Changes in **policy** are applied retrospectively; changes in **estimate** prospectively; prior-period **errors** are corrected by restating prior periods.
- LOS 4 Basic and diluted EPS.** Weighted average shares (splits/stock dividends retroactive), basic EPS, and diluted EPS by the if-converted method (convertibles) and treasury stock method (options, warrants). Exclude **antidilutive** securities: diluted EPS ≤ basic EPS.
- LOS 5 Common-size income statement and ratios.** Each line as a % of revenue (tax vs pretax income); gross, operating, pretax and net margins across time and companies.

Key formulas

$$\text{Basic EPS} = \frac{\text{Net income} - \text{Preferred dividends}}{\text{Weighted average number of shares outstanding}}$$

$$\text{Diluted EPS} = \frac{\text{Net income} + \text{After-tax interest on convertible debt} - \text{Preferred dividends}}{\text{Weighted avg. shares} + \text{Additional common shares that would have been issued at conversion}}$$

Convertible preferred only: numerator = net income (no preferred dividends would be paid). Conversion is assumed at the beginning of the period. **Treasury stock method** (numerator unchanged): add (New shares issued at option exercise – Shares that could have been purchased with the cash received upon exercise, at the *average* market price) × (proportion of year outstanding). Net profit margin = Net income/Revenue; Gross profit margin = Gross profit/Revenue.

IFRS vs US GAAP (as the curriculum states): collectability for a contract to exist is “probable” under both, but probable = *more likely than not* (IFRS) vs *likely to occur* (US GAAP). Options: US GAAP names the *treasury stock method*; IFRS uses the same calculation (“inferred shares” at average price) without naming it, and the result is identical. Expensed interest: operating CF (US GAAP) vs operating or financing CF (IFRS).

Worked example (CFA curriculum)

Weighted shares (Angler). 1,000,000 shares; +200,000 on 1 April; –100,000 on 1 October: $1,000,000(3/12) + 1,200,000(6/12) + 1,100,000(3/12) = 1,125,000$. Basic EPS = $(2,500,000 - 200,000)/1,125,000 = \text{USD}2.04$. A 2-for-1 split on 1 December is applied from the start of the year: 2,250,000 shares, EPS = **USD1.02**.

Convertible debt (Oppnox). NI USD750,000; 690,000 shares; USD50,000 of 6% bonds convertible into 10,000 shares; tax 30%. After-tax interest = $3,000(1 - 0.30) = 2,100$. Basic = $750,000/690,000 = 1.09$; diluted = $752,100/700,000 = 1.07$.

Options (Hihotech). NI USD2.3m; 800,000 shares; 30,000 options at USD35; average price USD55. Proceeds 1,050,000 buy back 19,091 shares, so 10,909 incremental. Basic = **2.88**; diluted = $2,300,000/810,909 = 2.84$.

Antidilutive (Dim-Cool). NI 1,750,000; pref. dividends 200,000; 500,000 shares; preferred converts into 60,000 shares. Basic = $1,550,000/500,000 = 3.10$; if-converted = $1,750,000/560,000 = 3.13 > 3.10$, so excluded: **diluted EPS = USD3.10**.

What examiners like to test

- **Capitalise vs expense (CAP vs NOW):** total net income and total cash flow over the asset’s life are identical; capitalising gives higher early profit, ROE and CFO (outlay in investing CF); expensing gives a better-looking growth trend.
- **EPS traps:** forgetting to subtract preferred dividends in basic EPS; not tax-effecting convertible bond interest; weighting a split by date instead of restating from the start; including an antidilutive security.
- **Principal vs agent:** same gross profit, but the agent reports lower revenue and higher margins.

Module 3 — Analyzing Balance Sheets

Topic: Financial Statement Analysis · Exam relevance: **Medium-yield** · **Calculation + concept**

The big picture

The balance sheet is a mix of measurement bases: some items at historical or amortised cost, some at fair value, and some valuable resources (reputation, skilled staff) not recognised at all. Know how each item got there before computing liquidity and solvency ratios.

Learning outcomes in plain language

- LOS 1 Intangible assets.** Identifiable non-monetary assets without physical substance. Finite life: amortise, review method and life at least annually. Indefinite life: no amortisation, impairment test at least annually. Purchased intangibles are capitalised; internally created ones are generally expensed (see table).
- LOS 2 Goodwill.** Arises only in an acquisition: purchase cost minus fair value of net identifiable assets (a bargain purchase gain goes to profit or loss). Not amortised; tested for impairment annually. Accounting vs economic goodwill; analysts often exclude goodwill (and its impairment) from ratios and trends.
- LOS 3 Financial instruments.** Measured at amortised cost, fair value through OCI, or fair value through profit or loss. Know which category each asset falls into under IFRS and US GAAP and how interest and unrealised gains flow to profit, OCI and equity.
- LOS 4 Non-current liabilities.** Loans and bonds are usually at amortised cost (a discount or premium is amortised to face value at maturity); fair value for trading liabilities, derivative liabilities and some hedged items. Deferred tax liabilities arise when taxable income is below accounting income (e.g. accelerated tax depreciation).
- LOS 5 Common-size balance sheet and ratios.** Express each item as a % of total assets; compute and interpret current, quick and cash ratios (liquidity) and long-term debt-to-equity, debt-to-equity, total debt and financial leverage ratios (solvency).

Key formulas and IFRS vs US GAAP

$\text{Current} = \frac{\text{Current assets}}{\text{Current liabilities}} \quad \text{Quick} = \frac{\text{Cash} + \text{Mkt. securities} + \text{Receivables}}{\text{Current liabilities}} \quad \text{Cash} = \frac{\text{Cash} + \text{Mkt. securities}}{\text{Current liabilities}}$		
$\text{LT debt-to-equity} = \frac{\text{Total LT debt}}{\text{Total equity}} \quad \text{Debt-to-equity} = \frac{\text{Total debt}}{\text{Total equity}} \quad \text{Total debt} = \frac{\text{Total debt}}{\text{Total assets}} \quad \text{Financial leverage} = \frac{\text{Total assets}}{\text{Total equity}}$		
Item	IFRS	US GAAP
Intangibles measurement	Cost or revaluation model (revaluation needs an active market)	Cost model only
Internally developed	Research expensed; development capitalised if criteria met (technological feasibility, ability to use or sell, ability to complete)	Most costs of internally developed intangibles and R&D expensed
Amortised cost	Cash flows solely principal and interest and business model is to hold	“Held-to-maturity”
Fair value through OCI	Debt: collect and sell. Equity: irrevocable election at acquisition	“Available-for-sale” — debt only, not equity
Fair value through P&L	Anything not in the other two, or elected at acquisition	All equity securities (unless significant influence); “trading” debt

Worked example (CFA curriculum)

SAP Group (EUR millions), latest year vs prior year (in brackets). Current assets 11,930 vs 11,564; current liabilities 10,210 vs 9,674; cash 4,011 vs 3,702; other financial assets (taken as marketable securities) 990 vs 1,124; receivables 5,899 vs 5,924; financial liabilities: current 1,561 vs 1,813, non-current 5,034 vs 6,481; equity 25,540 vs 26,397; total assets 42,497 vs 44,277. Current = 11,930/10,210 = **1.17** (1.20); quick = (4,011 + 990 + 5,899)/10,210 = **1.07** (1.11); cash = 5,001/10,210 = **0.49** (0.50). LT debt-to-equity = 5,034/25,540 = **19.7%** (24.6%); debt-to-equity = (1,561 + 5,034)/25,540 = **25.8%** (31.4%); financial leverage = 42,497/25,540 = **1.66** (1.68). Liquidity slightly weaker, leverage lower. Goodwill (21,274) is 50.1% of total assets — a flag for an analyst.

What examiners like to test

- **Where does the unrealised gain go?** Amortised cost/HTM: nowhere (only interest in P&L). FVOCI/AFS: OCI, asset at fair value. FVPL/trading: P&L. In the curriculum’s EUR100m bond example, profit is 2.5m, 2.5m and 4.5m respectively.
- **Research vs development (Alpha Inc.):** IFRS capitalises only the development-stage project’s direct costs (620 + 320 + 470 = EUR1,410 thousand; administrative costs excluded); US GAAP capitalises nothing.
- **Goodwill impairment** is non-cash, cuts earnings and assets, and can raise future ROA; it signals that the acquirer overpaid.

Module 4 — Analyzing Statements of Cash Flows I

Topic: Financial Statement Analysis · Exam relevance: **High-yield** · Calculation + concept

The big picture

Accrual accounting and cash differ only through balance sheet accounts: every gap between revenue and cash collected sits in receivables or deferred revenue, and every gap between expense and cash paid sits in inventory, payables, prepaids or accruals. Master the account “T” logic (beginning + additions – reductions = ending) and you can build either format of the cash flow statement from an income statement and two balance sheets.

Learning outcomes in plain language

- LOS 1 Link the statements.** The cash flow statement reconciles beginning to ending cash (and cash equivalents, restricted cash); the income statement and statement of changes in equity link the two balance sheets. Accruals show up as changes in current operating assets and liabilities (e.g. revenue > cash collected $\Rightarrow$ receivables rise).
- LOS 2 Prepare direct and indirect CFO; compute CFI and CFF.** Direct: cash from customers, to suppliers, to employees, for other expenses, interest and taxes. Indirect: net income, remove non-operating items (gains/losses), add back non-cash items (depreciation), adjust for working capital. CFI and CFF are the same under both methods; reconstruct cash from asset sales, debt/stock changes and dividends from account analysis.
- LOS 3 Convert indirect to direct.** (1) Aggregate all revenues and all expenses; (2) remove non-cash and non-operating items and split into cash-flow line items; (3) convert each accrual amount to cash by adjusting for the related working capital changes.
- LOS 4 IFRS vs US GAAP.** IFRS allows more classification choice for interest, dividends and taxes, and treats bank overdrafts as cash equivalents (table below).

Key relationships and IFRS vs US GAAP

Cash from customers = Revenue – Δ Receivables (+ Δ Deferred revenue) Purchases = COGS + Δ Inventory
 Cash paid to suppliers = Purchases – Δ Accounts payable Cash paid for interest = Interest expense – Δ Interest payable
 Indirect: CFO = NI + non-cash charges – gains (+ losses) – Δ current operating assets + Δ current operating liabilities
 Cash from asset sale = (Historical cost – Accumulated depreciation on asset sold) + Gain (or – Loss)
 Dividends paid = Beginning retained earnings + Net income – Ending retained earnings

Topic (Exhibit 34)	IFRS	US GAAP
Interest received	Operating or investing	Operating
Interest paid	Operating or financing	Operating
Dividends received	Operating or investing	Operating
Dividends paid	Operating or financing	Financing
Bank overdrafts	Considered part of cash equivalents	Not part of cash and cash equivalents; classified as financing
Taxes paid	Generally operating, but a portion can be allocated to investing or financing if specifically identified with them	Operating
Format	Direct or indirect; direct is encouraged	Direct or indirect; direct is encouraged. Reconciliation of NI to CFO must be provided regardless of method

Worked example (CFA curriculum)

Acme Corporation (USD), indirect to direct. Revenue 23,598 (Δ AR +55) $\Rightarrow$ customers **23,543**. COGS 11,456 + Δ inventory 707 – Δ AP 263 $\Rightarrow$ suppliers **11,900**. Wages 4,123 – 10 = **4,113**. Other opex 3,577 – 23 (prepaids fell) – 22 (accruals rose) = **3,532**. Interest 246 + 12 (payable fell) = **258**. Tax 1,139 – 5 = **1,134**. CFO = 23,543 – 11,900 – 4,113 – 3,532 – 258 – 1,134 = **2,606**.
Indirect check: 2,210 + 1,052 – 205 – 55 – 707 + 23 + 263 + 10 – 12 + 5 + 22 = **2,606**.
Investing: equipment sold at cost 8,555 + 1,300 – 8,798 = 1,057; accumulated depreciation on it 2,891 + 1,052 – 3,443 = 500; cash received = 557 + 205 = **762**; CFI = 762 – 1,300 = **–538**. **Financing:** dividends = 2,876 + 2,210 – 3,966 = 1,120; CFF = –500 – 600 – 1,120 = **–2,220**. Net change = –152 (1,163 $\rightarrow$ 1,011).

What examiners like to test

- **Signs on working capital:** an increase in a current operating *asset* is subtracted; an increase in a current operating *liability* is added. A gain on sale is subtracted from NI (its cash goes to CFI).
- **Classification questions** are almost free marks: under US GAAP interest paid and dividends received are operating, dividends paid are financing; under IFRS both have a choice.
- **Asset sale cash:** a common trap is to report the gain (or the book value) instead of book value plus gain.

Module 5 — Analyzing Statements of Cash Flows II

Topic: Financial Statement Analysis · Exam relevance: **High-yield** · Calculation + concept

The big picture

Once the cash flow statement is built, the analyst reads it: where does cash come from, where does it go, and is operating cash flow large enough to pay for capital expenditure, service debt and reward owners? Free cash flow (FCFF, FCFE) and a small set of performance and coverage ratios turn that reading into numbers that can be compared over time and across companies, and fed into valuation.

Learning outcomes in plain language

- LOS 1 Analyze reported and common-size cash flow statements.** Four steps: (1) major sources and uses of cash (is CFO positive and enough to cover capital expenditure? depends on life-cycle stage); (2) determinants of CFO (working capital changes; CFO vs net income, which signals earnings quality; consistency); (3) determinants of CFI (capex, acquisitions, asset sales, liquid investments); (4) determinants of CFF (borrowing vs repayment, dividends, buybacks). Common-size by **% of total inflows/total outflows** (with the indirect method only net CFO appears) or by **% of net revenue** (useful for forecasting).
- LOS 2 Calculate and interpret FCFF, FCFE and cash flow ratios.** FCFF = cash available to debt and equity holders after operating expenses (including taxes) and required investment in working and fixed capital; FCFE = cash available to common shareholders after also paying borrowing costs and principal. Compute performance ratios (cash flow to revenue, cash ROA, cash ROE, cash to income, cash flow per share) and coverage ratios (debt coverage, interest coverage, reinvestment, debt payment, dividend payment, investing and financing).

Key formulas

$$\text{FCFF} = \text{NI} + \text{NCC} + \text{Int}(1 - \text{Tax rate}) - \text{FCInv} - \text{WCInv}$$

$$\text{FCFF} = \text{CFO} + \text{Int}(1 - \text{Tax rate}) - \text{FCInv}$$

$$\text{FCFE} = \text{CFO} - \text{FCInv} + \text{Net borrowing} \quad (\text{or } \text{CFO} - \text{FCInv} - \text{Net debt repayment})$$

NI = net income; NCC = non-cash charges (e.g. depreciation and amortization); Int = interest expense; FCInv = capital expenditures (fixed capital); WCInv = working capital expenditures. **IFRS adjustments:** if interest paid is in CFF, do not add back $\text{Int}(1 - t)$; if interest/dividends received are in CFI, add them back to CFO; if dividends paid are in CFO, add them back.

Performance	Coverage
Cash flow to revenue = $\text{CFO}/\text{Net revenue}$	Debt coverage = $\text{CFO}/\text{Total debt}$
Cash return on assets = $\text{CFO}/\text{Average total assets}$	Interest coverage = $(\text{CFO} + \text{Interest paid} + \text{Taxes paid})/\text{Interest paid}$
Cash return on equity = $\text{CFO}/\text{Average shareholders' equity}$	Reinvestment = $\text{CFO}/\text{Cash paid for long-term assets}$
Cash to income = $\text{CFO}/\text{Operating income}$	Debt payment = $\text{CFO}/\text{Cash paid for long-term debt repayment}$
Cash flow per share = $(\text{CFO} - \text{Preferred dividends})/\text{Common shares}$	Dividend payment = $\text{CFO}/\text{Dividends paid}$; Investing and financing = $\text{CFO}/\text{Cash outflows for investing and financing}$

Worked example (CFA curriculum)

Acme Corporation (USD). CFO 2,606; interest paid 258; tax rate $1,139/3,349 = 0.34$; capex 1,300; proceeds from equipment sale 762; debt repaid 500.

$\text{FCFF} = 2,606 + 258(1 - 0.34) - (1,300 - 762) = 2,606 + 170 - 538 = \text{USD}2,238$. $\text{FCFE} = 2,606 - 538 - 500 = \text{USD}1,568$ (positive: available for distribution to owners).

Common-size (inflows/outflows, direct format): receipts from customers $23,543/24,305 = 96.86\%$ of inflows; dividends $1,120/24,457 = 4.58\%$ of outflows. Net-revenue approach: $\text{CFO} = 11.04\%$ of revenue. [Note: the curriculum says the net-revenue common-size statement uses 23,543 (cash from customers), but its percentages (e.g. 9.37% for NI, 11.04% for CFO) are computed on revenue of 23,598. Its direct-method statement also prints CFF as (2,120); the items sum to (2,220).]

[Illustrative] Using the same data: reinvestment = $2,606/1,300 = 2.0$; debt payment = $2,606/500 = 5.2$; dividend payment = $2,606/1,120 = 2.3$; interest coverage = $(2,606 + 258 + 1,134)/258 = 15.5$.

What examiners like to test

- **FCFF from CFO:** add after-tax interest and deduct capex (not the reverse). Under IFRS check where interest was classified before adjusting.
- **Quality signal:** for a mature company CFO should exceed net income; high NI with weak CFO suggests aggressive accounting. Negative CFO can be normal for a growth company but is not sustainable.
- **Common-size choices:** a statement can be common-sized on total inflows/outflows or on net revenue — *not* on total assets.

Module 6 — Analysis of Inventories

Topic: Financial Statement Analysis · Exam relevance: **Medium-yield** · Calculation + concept

The big picture

Inventory sits between the balance sheet and the income statement: whatever cost is not left in ending inventory becomes cost of sales. So the cost formula (FIFO, weighted average, LIFO) and any write-down to net realisable value move profit, assets and almost every ratio at the same time. When prices change, two identical companies can look very different purely because of their accounting method.

Learning outcomes in plain language

- LOS 1 Lower of cost and NRV.** IFRS: inventory at the lower of cost and **net realisable value** (estimated selling price less estimated costs to complete and sell); write-downs are expensed and later **reversed** if value recovers (limited to the original write-down, as a reduction in cost of sales). US GAAP: lower of cost and NRV except for LIFO and retail methods, which use lower of cost or **market** (replacement cost, capped at NRV, floored at NRV less a normal profit margin); **reversals prohibited**. A write-down lowers profitability, liquidity and solvency ratios but *raises* activity ratios (inventory and asset turnover). Agricultural, forest and mineral producers and commodity broker-traders may carry inventory at NRV with changes in profit or loss.
- LOS 2 Inflation and deflation by method.** Rising costs and stable or rising quantities: FIFO gives lower cost of sales, higher gross profit and higher (closer to current) inventory; LIFO gives cost of sales closer to replacement cost, old costs in inventory and higher inventory turnover. Falling costs: the effects reverse. LIFO liquidation (selling more units than bought) releases old low costs and boosts gross profit.
- LOS 3 Presentation, disclosures and analysis.** IFRS requires: policies and cost formula; carrying amounts by classification; amounts at fair value less costs to sell; cost of sales; write-downs; reversals and why; inventory pledged. US GAAP is similar but has no reversal disclosures, and adds significant estimates and income from LIFO liquidation. Use the valuation allowance, raw materials/WIP/finished goods mix, MD&A and industry data to judge inventory management.

Key formulas

$$\text{Inventory turnover} = \frac{\text{Cost of sales}}{\text{Average inventory}} \quad \text{Days of inventory on hand} = \frac{\text{Days in period}}{\text{Inventory turnover}} \quad \text{GPM} = \frac{\text{Gross profit}}{\text{Net sales}}$$

Historical cost of inventory = reported (net) carrying amount + valuation allowance. High turnover can mean efficient management *or* too little inventory / write-downs; low turnover can mean slow-moving or obsolete stock — check sales growth vs industry.

Worked example (CFA curriculum)

Write-down, IFRS vs US GAAP (Hatsumei). Cost EUR5.2m; NRV EUR4.9m; replacement cost EUR4.7m (above NRV less normal margin). **IFRS:** write down to 4.9, expense **0.3m**; next year NRV rises by 0.5m $\Rightarrow$ reverse only **0.3m** (reduces cost of sales). **US GAAP with LIFO:** write down to market 4.7, expense **0.5m** in COGS; **no reversal**. Agricultural products at NRV: record a **gain of 0.5m**.

LIFO vs FIFO under 4% inflation (Year 2). Base inventory 2,000 units at USD8; units sold rise 10%/yr; Year 1: 20,000 units at USD15, cost USD8. Year 2 sales = $300,000(1.10)(1.04) = 343,200$. LIFO cost of sales = $160,000(1.10)(1.04) = 183,040$; FIFO = $16,000 + 183,040 - 16,640 = 182,400$. Gross profit 160,160 (LIFO) vs 160,800 (FIFO); margin 46.7% vs 46.9%. Inventory turnover (ending inventory) $183,040/16,000 = 11.4$ vs $182,400/16,640 = 11.0$ — LIFO only *looks* more efficient.

Volvo: turnover 5.04 as reported vs 4.71 without the obsolescence allowance; days on hand 72.4 vs 77.5.

What examiners like to test

- **Reversal of write-downs:** allowed under IFRS; prohibited under US GAAP. [Note: the IAS 2 section says reversal "is required"; the module overview and LM1 Exhibit 6 say "permissible". Either way, IFRS reverses and US GAAP does not.] Market value (LIFO/retail) has a ceiling of NRV and a floor of NRV less normal profit.
- **Direction questions:** with rising prices, FIFO vs weighted average/LIFO $\Rightarrow$ higher gross margin, current ratio, ROA and equity; lower inventory turnover and higher days on hand; lower debt-to-equity.
- LIFO companies are less likely to need write-downs because inventory is already carried at the oldest, lowest costs.

Module 7 — Analysis of Long-Term Assets

Topic: Financial Statement Analysis · Exam relevance: **Medium-yield** · **Calculation + concept**

The big picture

How an intangible asset is *acquired* decides whether it appears on the balance sheet at all: bought assets are capitalised, home-grown ones are mostly expensed, and acquisitions bring in both identifiable intangibles and goodwill. Once recognised, long-lived assets can be impaired or derecognised, and IFRS and US GAAP test and measure impairment differently. Disclosures let the analyst estimate asset age and reinvestment needs.

Learning outcomes in plain language

- LOS 1 Purchased, internally developed, acquired in a business combination.** *Purchased* (outside a business combination): recorded at fair value = purchase price; group price allocated by fair value; investing cash outflow. *Internally developed*: generally expensed (operating cash outflow). IFRS: research expensed, development capitalised if criteria met (technical feasibility, intent to use or sell). US GAAP: R&D expensed, but software for sale is capitalised after technological feasibility and internal-use software once completion is probable. *Business combination*: acquisition method — identifiable intangibles at fair value, residual is goodwill.
- LOS 2 Impairment and derecognition.** PP&E and finite-life intangibles are tested only when there are indications; indefinite-life intangibles at least annually. Impairment reduces assets, equity and net income, is non-cash (no CFO effect) and flatters later ROA and turnover. Held-for-sale assets are written down to fair value less costs to sell and are no longer depreciated. On sale: gain or loss = proceeds — carrying amount (proceeds in CFI). Abandonment = loss of the carrying amount; exchange at fair value; spin-off gives no gain or loss.
- LOS 3 Disclosures and ratios.** Use notes (measurement basis, methods, useful lives, gross amounts and accumulated depreciation/amortisation, impairments) to estimate asset age and remaining life, compare capex with depreciation, and compute fixed asset turnover.

Key formulas and IFRS vs US GAAP

Estimated total useful life = $\frac{\text{Historical cost}}{\text{Annual depreciation expense}}$	Estimated age = $\frac{\text{Accumulated depreciation}}{\text{Annual depreciation expense}}$
Estimated remaining life = $\frac{\text{Net PPE}}{\text{Annual depreciation expense}}$	Fixed asset turnover = $\frac{\text{Total revenue}}{\text{Average net fixed assets}}$
	IFRS
Impairment test	Loss = carrying amount — recoverable amount (higher of fair value less costs to sell and value in use, a PV of cash flows)
Reversal	Permitted (held for use or for sale), only up to the loss; no write-up above the previous carrying amount
Development costs	Capitalised if criteria met (all types)
Disclosures	Impairment losses and reversals by class and the events behind them
	US GAAP
Impairment test	Step 1 recoverability: carrying amount > <i>undiscounted</i> expected cash flows? Step 2 loss = carrying amount — fair value
Reversal	Held for use: prohibited. Held for sale: permitted
Development costs	Expensed, except certain software development costs
Disclosures	Impaired asset, cause, fair value method, loss; estimated amortisation for next five years

Worked example (CFA curriculum)

Essex machine (GBP): carrying amount 18,000; undiscounted cash flows 16,000; PV of cash flows 14,000; fair value 10,000; costs to sell 2,000. **IFRS:** recoverable amount = $\max(10,000 - 2,000, 14,000) = 14,000 \Rightarrow$ loss **4,000**. **US GAAP:** $18,000 > 16,000$, not recoverable $\Rightarrow$ write down to fair value 10,000, loss **8,000**. (Sussex: undiscounted CF 19,000 > 18,000, so *no* US GAAP loss, while IFRS writes down 2,000 to value in use 16,000.)

Verizon (USD millions): cost 246,498; accumulated depreciation 157,930; net PPE 88,568 (beginning 84,751); depreciation 14,741; capex 17,247; revenue 126,034. Total life = $246,498 / 14,741 = 16.7$ yrs; age = **10.7**; remaining = **6.0**; capex/depreciation $\approx 120\%$; fixed asset turnover = $126,034 / 86,659.5 = 1.5$.

What examiners like to test

- **Same asset, different loss:** IFRS can recognise an impairment that US GAAP does not (undiscounted test passes), and US GAAP's loss can be larger (fair value vs value in use).
- **Develop vs buy:** a company that develops intangibles internally shows fewer assets and lower CFO (spending is operating, not investing) than one that buys them.
- **Gain on sale:** proceeds — (cost — accumulated depreciation), e.g. $3.1 - (5.1 - 3.2) = \text{USD}1.2\text{m}$ gain; the full USD3.1m is an investing inflow.

Module 8 — Topics in Long-Term Liabilities and Equity

Topic: Financial Statement Analysis · Exam relevance: **Medium-yield** · Calculation + concept

The big picture

Leases, pensions and share-based pay are all ways of using resources now and paying later. The accounting puts most leases on the balance sheet as a right-of-use asset and a lease liability, shows the funded status of defined benefit plans as a net asset or liability, and expenses the grant-date fair value of share-based awards — with small but testable IFRS vs US GAAP differences.

Learning outcomes in plain language

- LOS 1 Leases (lessee and lessor).** A lease identifies a specific asset, gives the customer largely all its economic benefits and the right to direct its use. **Finance lease** if any one of five criteria holds (same for IFRS/US GAAP, lessee and lessor): ownership transfers; purchase option reasonably certain; term is a major part of useful life; PV of payments $\geq$ substantially all of fair value; no alternative use to the lessor. Otherwise operating. Lessee exemptions: term $\leq$ 12 months (both) or low-value asset up to USD5,000 (IFRS only) — expense payments straight-line. **Lessor** (substantially the same under both): finance lease = derecognise asset, recognise lease receivable (gain/loss), interest income; operating lease = keep and depreciate asset, straight-line lease revenue; all receipts in CFO.
- LOS 2 Pensions and share-based pay.** DC plan: expense = contribution; employee bears investment and actuarial risk. DB plan: employer bears the risks; balance sheet shows PV of obligation — fair value of plan assets (deficit = net liability). Share-based compensation (stock grants, restricted stock/RSUs, performance shares, options, SARs, phantom stock): fair value at grant date, expensed over the vesting (service) period; later price changes ignored. Option value rises with volatility, expected life and risk-free rate; falls with dividend yield.
- LOS 3 Presentation and disclosures.** Lessees: ROU assets by class, lease cash outflow, interest, depreciation, maturity analysis. Lessors: selling profit, finance income, lease income, five-year maturity analysis. DB plans (IAS 19): reconciliation of net asset/liability, sensitivity to assumptions, plan asset mix, future cash flows. Share-based pay (IFRS 2): terms, option roll-forward (granted, forfeited, exercised, expired, exercisable), fair value inputs.

Key facts: IFRS vs US GAAP

	IFRS	US GAAP
Lessee model	Single model for all leases: ROU asset and lease liability = PV of payments; amortise ROU (often straight-line); interest and amortisation shown separately; principal in CFF, interest in CFO or CFF	Finance lease: same as IFRS. Operating lease: same asset/liability at inception, but ROU amortisation = payment – interest, so one straight-line “lease expense” in operating expenses and the whole payment in CFO
DB pension cost	In P&L: service cost (incl. past service cost) + net interest (discount rate $\times$ net liability/asset). In OCI: remeasurements (actuarial gains/losses; actual return – return in net interest), never amortised to P&L	In P&L: service cost + interest on obligation – <i>expected</i> return on plan assets. Past service costs and actuarial gains/losses go to OCI and are amortised to P&L over time (immediate recognition of actuarial gains/losses permitted)
Interest expense _t = Lease liability _{t-1} $\times$ r; Principal = Payment – Interest. Option exercise: equity rises by grant-date fair value (already in paid-in capital) + cash received; expensing options leaves total equity unchanged.		

Worked example (CFA curriculum)

Proton lessee: 5-year lease, EUR100,000 paid at year-end, rate 10%. PV = **379,079** (ROU asset = liability). Year 1 interest = 37,908, principal = 62,092, liability = 316,987. Year 2 interest = **31,699**, principal 68,301, liability 248,685. **IFRS / US GAAP finance lease:** straight-line amortisation 379,079/5 = **75,816**; Year 1 total expense 113,724, Year 2 107,515 (front-loaded; lower in Years 4–5); CFO –37,908, CFF –62,092 in Year 1. **US GAAP operating lease:** lease expense **100,000** every year; ROU asset = liability (316,987 at end of Year 1); CFO –100,000. Operating classification gives lower EBITDA margin, lower asset turnover and lower cash flow per share.

Lessor view (carrying amount 350,000): finance lease $\Rightarrow$ receivable 316,987 and interest revenue 37,908 in Year 1; operating lease $\Rightarrow$ PP&E 280,000 and lease revenue 100,000. CFO +100,000 in both.

Coca-Cola: unrecognised compensation USD335m over 1.9 years $\Rightarrow$ about USD176m in the next year and USD159m in the year after.

What examiners like to test

- **Classification test:** PV 186 vs fair value 190 (98%) $\Rightarrow$ finance lease; if fair value were 300 and no other criterion is met $\Rightarrow$ operating lease.
- **Who bears the risk?** DC: employee; DB: employer. Under IFRS remeasurements go to OCI permanently; under US GAAP actuarial gains/losses are “smoothed” through amortisation.
- **Share-based pay** is measured at *grant date* fair value; the market price at exercise is irrelevant to the expense.

Module 9 — Analysis of Income Taxes

Topic: Financial Statement Analysis · Exam relevance: **Medium-yield** · **Calculation + concept**

The big picture

Tax law and accounting standards measure income differently. When the difference will reverse (a *temporary* difference), the company records a deferred tax asset or liability so that income tax expense matches accounting profit; when it never reverses (a *permanent* difference), the effective tax rate simply moves away from the statutory rate. The analyst reads the tax note to separate recurring from one-off effects and to forecast both tax expense and cash taxes.

Learning outcomes in plain language

- LOS 1 Accounting profit vs taxable income; temporary vs permanent.** Accounting profit = pretax income under accounting standards; taxable income = income under tax law and drives **income tax payable**; **income tax expense** = payable + Δ DTL – Δ DTA. Compare each item's carrying amount with its tax base: temporary differences reverse (and create deferred taxes); permanent differences (non-deductible fines, tax credits, tax-exempt income) never reverse and create no deferred tax.
- LOS 2 Creation and analytical treatment of DTAs and DTLs.** Taxable temporary differences $\Rightarrow$ DTL; deductible temporary differences and loss carryforwards $\Rightarrow$ DTA (only if future taxable profits are expected). Remeasure when tax rates change (a rate cut lowers both DTA and DTL). Treat a DTL as a **liability** if expected to reverse with cash tax paid, as **equity** if not expected to reverse, and exclude it from both if timing and amount are uncertain.
- LOS 3 Statutory, effective and cash tax rates.** Compute and explain why they differ (foreign rate mix, tax credits, non-deductible items, deferrals); use the effective rate to forecast earnings and the cash rate to forecast cash flows; normalise for one-off items and equity-method income.
- LOS 4 Tax disclosures.** Read the current/deferred split of the provision, the components of DTAs and DTLs (and the valuation allowance), and the reconciliation from statutory to effective rate; assess effects on net income, equity, leverage and earnings quality.

Key formulas

$$\text{Income tax expense} = \text{Income tax payable} + \Delta\text{DTL} - \Delta\text{DTA}$$

$$\text{Effective tax rate} = \frac{\text{Income tax expense}}{\text{Pretax income}} \quad \text{Cash tax rate} = \frac{\text{Cash taxes paid}}{\text{Pretax income}}$$

Statutory rate = corporate income tax rate in the country of domicile. Deferred tax = temporary difference $\times$ tax rate; the table gives the sign.

Carrying amount vs tax base	Asset	Liability
Carrying amount > tax base	Deferred tax liability	Deferred tax asset
Carrying amount < tax base	Deferred tax asset	Deferred tax liability

IFRS vs US GAAP (doubtful DTA): under IFRS an existing deferred tax asset is *reversed*; under US GAAP a **valuation allowance** reduces it to the amount “more likely than not” to be realised. Changes in the allowance change reported tax expense but not taxes actually paid.

Worked example (CFA curriculum)

Reston Partners (GBP): equipment cost 20,000; accounting depreciation 20,000/10 = 2,000 per year; tax depreciation 20,000/7 = 2,857; tax rate 30%. End of Year 1: carrying amount 18,000, tax base 17,143 $\Rightarrow$ DTL = $857 \times 0.30 = 257$ (Year 2: 514; Year 3: 771). Year 1 taxable income 3,843 $\Rightarrow$ tax payable = **1,153**; tax expense = $1,153 + 257 = 1,410 = 30\% \times$ accounting profit 4,700. Year 3: payable 7,753 + 257 = 8,010 = $30\% \times 26,700$.

Walmart (USD millions): pretax income 18,696; total provision 4,756 (current 5,515, deferred –759). Effective rate = $4,756/18,696 = 25.4\%$; cash tax rate (current provision as the proxy for cash taxes) = $5,515/18,696 = 29.5\%$.

Rate mix (Neutrino): USD1,000 at 21% and USD1,000 at 12% $\Rightarrow$ ETR = $330/2,000 = 16.5\%$.

What examiners like to test

- **Direction of deferred tax:** straight-line for books, accelerated for tax $\Rightarrow$ asset carrying amount > tax base $\Rightarrow$ DTL. Revenue received in advance (taxed now) $\Rightarrow$ liability carrying amount > tax base $\Rightarrow$ DTA.
- **Permanent differences** (e.g. non-deductible expenses, tax credits) create no deferred tax but move the effective rate away from the statutory rate.
- **DTL: debt or equity?** Expected to reverse $\Rightarrow$ liability; not expected to reverse $\Rightarrow$ equity; both timing and amount uncertain $\Rightarrow$ exclude from both.

Module 10 — Financial Reporting Quality

Topic: Financial Statement Analysis · Exam relevance: **Medium-yield** · **Concept-heavy**

The big picture

Two different questions: is the *reporting* faithful (financial reporting quality), and are the *results* good and sustainable (earnings quality)? You can only judge the second once the first is adequate. Managers have motives and many legal choices to shade the numbers; the analyst's job is to spot the trail.

Learning outcomes in plain language

- LOS 1 Reporting quality vs results quality.** Reporting quality = decision-useful information (relevant, faithfully represented). Results/earnings quality = sustainable earnings and cash flow giving an adequate return. High reporting quality can depict low-quality earnings (Toyota's yen-driven profit).
- LOS 2 Quality spectrum (best to worst).** GAAP, decision-useful, sustainable, adequate returns → GAAP, decision-useful but not sustainable? → within GAAP but biased choices → within GAAP but earnings management (real or accounting) → non-compliant accounting → fictitious transactions.
- LOS 3 Conservative vs aggressive.** Aggressive choices raise current revenue, earnings, CFO or reduce expenses/debt (and hurt later periods); conservative choices do the reverse. Both are bias; neutrality is the goal. Conservatism appears in standards (research expensed, probable litigation losses, insurance recoveries) and in application (big bath, cookie-jar reserves, smoothing).
- LOS 4 Motivations and conditions.** Motives: mask poor performance, meet or beat forecasts, career concerns and incentive pay, avoid covenant breaches. Conditions (fraud triangle): **opportunity** (weak controls, board, flexible standards), **pressure/motivation**, **rationalization**.
- LOS 5 Disciplining mechanisms and limits.** Markets (cost of capital), regulators (registration, disclosure, audit, responsibility statements, review, enforcement), auditors (limits: rely on company data, sampling, "expectations gap", client pays the fee), private contracts (covenants, which can also create motives).
- LOS 6 Presentation choices and non-GAAP measures.** Adjusted EBITDA, "core" or "underlying" earnings, constant-currency growth; exclusion of recurring items (Groupon's marketing costs) is a red flag.
- LOS 7 Accounting methods and estimates.** Revenue timing (FOB terms, channel stuffing, bill-and-hold), inventory method, bad debt and warranty reserves, DTA valuation allowance, depreciation method/life/salvage, capitalisation (WorldCom), acquisition fair values and goodwill tests; CFO can be managed by stretching payables and by classification (IAS 7 choice for interest and dividends).
- LOS 8 Warning signs.** Revenue out of line with peers; receivables or inventory growing faster than sales (rising DSO, falling turnover); unusual capitalisation; CFO/NI persistently < 1; lengthening depreciable lives; fourth-quarter surprises; related-party deals; recurring "non-recurring" items; minimal disclosure; earnings fixation; serial acquisitions.

Key facts: rules to know

- **Non-GAAP in SEC filings:** show the most directly comparable GAAP measure with *equal prominence* and a reconciliation; cannot exclude cash-settled charges from liquidity measures (other than EBIT/EBITDA) or smooth items likely to recur within two years. **IFRS** (Management Commentary practice statement): define and explain non-IFRS measures and reconcile them to IFRS amounts.
- **Conservatism differs by standard:** impairment — IFRS writes down when recoverable amount < carrying amount; US GAAP only if undiscounted cash flows < carrying amount. Factory: carrying USD10m, fair value/recoverable amount USD6m, undiscounted CF USD10m ⇒ IFRS charge USD4m, US GAAP none. IFRS allows later reversal; US GAAP prohibits write-up.
- **Earnings quality check:** CFO/Net income over time, receivables turnover/DSO, inventory turnover, asset turnover vs peers.

Worked example (CFA curriculum)

Covenant pressure (ABC Co.). Required interest coverage 2.0. EBIT USD1,200, interest USD600 ⇒ **2.00**. A longer useful life cut depreciation by USD150; without it EBIT = 1,050 and coverage = **1.75** — a breach.

Beating consensus (DEF Co.). Consensus EPS USD2.50; NI USD3,458,780; 1,378,000 shares ⇒ EPS **2.51**. Shifting revenue from the service contract to hardware added USD27,000 after tax; without it EPS = 3,431,780/1,378,000 = **2.49**.

Inventory choice. 25 units bought at rising prices for USD4,350; 20 sold at USD250. FIFO: ending inventory 1,200, COGS 3,150, gross margin **37.0%**; weighted average (4,350/25 = 174): inventory 870, COGS 3,480, margin **30.4%**.

What examiners like to test

- **Reporting vs earnings quality:** a one-off gain clearly disclosed = high reporting quality, low earnings quality; an unexplained life extension = questionable on both.
- **Conservative ≠ good:** big-bath charges and cookie-jar reserves are biased too; neutral reporting is optimal.
- **Fraud triangle** = opportunity, motivation/pressure, rationalization. [India context, not curriculum] SEBI is India's IOSCO-member regulator.

Module 11 — Financial Analysis Techniques

Topic: Financial Statement Analysis · Exam relevance: **High-yield** · **Calculation-heavy**

The big picture

Ratios turn financial statements into comparable measures of efficiency, liquidity, solvency and profitability. A ratio tells you *what* happened, never *why*; the analyst compares it with the company's past, with peers and with expectations, reads several ratios together, and uses DuPont analysis to trace ROE back to margins, efficiency, taxes, interest and leverage.

Learning outcomes in plain language

- LOS 1 Tools and their limits.** Ratios, vertical and horizontal common-size statements, graphs, regression; cross-sectional vs trend analysis; TTM data. Limits: diversified businesses, conflicting signals, need for judgement, different accounting methods (inventory method, depreciation, equity vs cost method).
- LOS 2 Calculate and interpret ratios.** Activity, liquidity, solvency and profitability ratios in the table below; know which direction is “good” and the alternative explanations (e.g. high inventory turnover can mean efficiency *or* stock-outs).
- LOS 3 Relationships among ratios.** Read ratios together: a rising current ratio with a falling quick ratio points to inventory build-up (DOH up); a very negative cash conversion cycle can mean a company that cannot pay suppliers.
- LOS 4 DuPont analysis.** Decompose ROE into $\text{ROA} \times \text{leverage}$, then $\text{margin} \times \text{turnover} \times \text{leverage}$, then five factors; identify which factor drove a change in ROE.
- LOS 5 Industry-specific ratios.** Business risk (coefficient of variation of operating income, net income, revenue); banks (capital adequacy, cash reserve ratio, liquid asset requirement, net interest margin); retail (same-store sales, sales per square metre); services (revenue or net income per employee); hotels (average daily rate, occupancy); subscription (ARPU).
- LOS 6 Modelling and forecasting.** Build forecasts from common-size and ratio relationships (e.g. expenses as % of revenue, receivables from DSO) and use sensitivity, scenario and simulation analysis for a range of outcomes.

Key formulas

Activity (averages)	Liquidity (period-end)	Solvency / Profitability
Inventory turnover = $\text{COGS}/\text{Avg inventory}$; $\text{DOH} = 365/\text{turnover}$	Current = CA/CL	Debt-to-assets = $\text{Total debt}/\text{Total assets}$
Receivables turnover = $\text{Revenue}/\text{Avg receivables}$; $\text{DSO} = 365/\text{turnover}$	Quick = $(\text{Cash} + \text{ST mkt. inv.} + \text{Receivables})/\text{CL}$	Debt-to-capital = $\text{Debt}/(\text{Debt} + \text{Equity})$; Debt-to-equity = $\text{Debt}/\text{Equity}$
Payables turnover = $\text{COGS}/\text{Avg payables}$; days payables = $365/\text{turnover}$	Cash = $(\text{Cash} + \text{ST mkt. inv.})/\text{CL}$	Financial leverage = $\text{Avg assets}/\text{Avg equity}$; Debt-to-EBITDA
Working capital, fixed asset, total asset turnover = $\text{Revenue}/\text{Avg (WC, net FA, TA)}$	Defensive interval = $(\text{Cash} + \text{ST mkt. inv.} + \text{Receivables})/\text{Daily cash expenditures}$	Interest coverage = $\text{EBIT}/\text{Interest payments}$; Fixed charge = $(\text{EBIT} + \text{Lease pmts})/(\text{Interest} + \text{Lease pmts})$
	Cash conversion cycle = $\text{DOH} + \text{DSO} - \text{Days of payables}$	$\text{ROA} = \text{NI}/\text{Avg TA}$; Operating ROA = $\text{Op. income}/\text{Avg TA}$; ROIC = $\text{EBIT}(1 - t)/\text{Avg (debt + equity)}$; ROE = $\text{NI}/\text{Avg equity}$

$$\text{ROE} = \underbrace{\frac{\text{NI}}{\text{EBT}}}_{\text{Tax burden}} \times \underbrace{\frac{\text{EBT}}{\text{EBIT}}}_{\text{Interest burden}} \times \underbrace{\frac{\text{EBIT}}{\text{Revenue}}}_{\text{EBIT margin}} \times \underbrace{\frac{\text{Revenue}}{\text{Avg total assets}}}_{\text{Asset turnover}} \times \underbrace{\frac{\text{Avg total assets}}{\text{Avg equity}}}_{\text{Leverage}}$$

$\text{ROE} = \text{ROA} \times \text{Leverage} = \text{Net profit margin} \times \text{Total asset turnover} \times \text{Leverage}.$

Worked example (CFA curriculum)

DuPont (Anson Industries, FY5). Tax burden 0.70, interest burden 0.90, EBIT margin 5.29%, asset turnover 1.11, leverage 1.60. Net profit margin = $0.70 \times 0.90 \times 5.29\% = 3.33\%$; ROA = $3.33\% \times 1.11 = 3.70\%$; ROE = $3.70\% \times 1.60 = 5.92\%$ (up from -0.62% in FY2 with leverage flat at about 1.6, so profitability and efficiency drove it). Clarence's higher ROE of 9.28% comes from leverage 2.00 and margin 4.38%, not turnover (1.06).

Activity (Lenovo, USD 000). Revenue 45,349,943; receivables 4,468,392 and 4,972,722. Receivables turnover = $45,349,943/4,720,557 = 9.6$; DSO = $365/9.6 = 38.0$ days.

What examiners like to test

- **Driver questions:** a lower tax burden ratio means a *higher* tax rate; higher leverage raises ROE only if the return on assets exceeds the cost of borrowing.
- **Averages vs period-end:** activity and return ratios use averages; liquidity ratios use period-end balances. TTM earnings = $1,200 - 550 + 750 = 1,400$.
- [Note: the ratio-limitations list in this module says lease type matters “for lessors” and that operating lease treatment “is not applicable” under IFRS; LM8 says lessor accounting is substantially the same under both, and it is IFRS lessees that use a single model.]

Module 12 — Introduction to Financial Statement Modeling

Topic: Financial Statement Analysis · Exam relevance: **Medium-yield** · Calculation + concept

The big picture

A financial statement model starts with revenue and lets almost everything else follow: costs as margins or ratios, working capital from days ratios, the cash flow statement from net income and investment, and a balance sheet that must balance. The hard part is judgement: avoiding behavioural biases, reading the industry's competitive structure, handling inflation, and choosing a forecast horizon and a normalised terminal year.

Learning outcomes in plain language

- LOS 1 Sales-based pro forma model.** Revenue by segment from volume $\times$ price/mix (organic growth), plus scope and FX effects $\rightarrow$ COGS via gross margin $\rightarrow$ SG&A (% of sales or fixed growth) $\rightarrow$ EBIT (check against a segment build-up) $\rightarrow$ interest (rate $\times$ debt), taxes (effective rate), shares $\rightarrow$ EPS. Cash flow: NI + D&A + share-based pay – working capital investment – capex, then dividends, buybacks, debt. Working capital from DOH, DSO and days payable; balance sheet by linking; FCF for valuation.
- LOS 2 Behavioural biases and remedies.** *Overconfidence* (record and review forecasts; scenario analysis); *illusion of control* (fewer, disclosed, high-impact variables; talk only to sources with unique views); *conservatism/anchoring* (regular team reviews; flexible models); *representativeness/base-rate neglect* (combine the “outside view” of industry base rates with the “inside view”); *confirmation* (seek bearish analysts and uninvested colleagues).
- LOS 3 Porter's five forces.** Threat of substitutes, rivalry, bargaining power of suppliers, bargaining power of buyers, threat of new entrants. Weak forces (e.g. cognac, Brazilian beer) support pricing power, higher margins and ROIC; strong buyer power and rivalry (UK beer) mean price competition and lower margins. Government is not a sixth force: analyse how policy changes the five forces.
- LOS 4 Inflation and deflation.** Revenue = volume $\times$ price: pass-through depends on price elasticity, competitors, substitutes and industry structure; use geographic mix of inflation (high inflation abroad usually weakens that currency). Costs: segment by category and region; hedges and fixed-price contracts delay the effect; companies with low gross margins (high COGS) lose more margin from input inflation.
- LOS 5 Forecast horizon and long-term projections.** Horizon depends on investment strategy (holding period = $1/\text{turnover}$), industry cyclicality, company events (acquisitions, restructuring) and employer preference. Beyond it, use **normalised** (mid-cycle) revenue, earnings and FCF; do not start a perpetuity from a boom or trough year; watch for inflection points (economic disruption, regulation, technology) and realistic long-term growth.

Key formulas

$$\text{Organic growth} = (1 + \text{volume growth})(1 + \text{price/mix}) - 1 \quad \text{FCFF} = \text{EBIT}(1 - t) + \text{D\&A} - \Delta \text{Working capital} - \text{Capex}$$

Working capital lines: Inventory = DOH $\times$ COGS/365; Receivables = DSO $\times$ Sales/365; Payables = days payable $\times$ COGS/365. ROIC = net operating profit less adjusted taxes/(operating assets – operating liabilities). Average holding period = $1/\text{portfolio turnover}$ (3–5 years $\Leftrightarrow$ 20–33% turnover).

Worked example (CFA curriculum)

Rémy Cognac segment: 7% volume and 4% price/mix $\Rightarrow$ organic growth = $1.07 \times 1.04 - 1 = 11.3\%$ in the first forecast year, then $1.06 \times 1.04 - 1 = 10.2\%$.

Passing on 4% input inflation (Carrefour: revenue EUR72,150m, COGS 56,705m, gross margin 21.4%).

Analyst	A: price 0%, vol. +5%	B: price 2%, vol. +2%	C: price 3%, vol. +1%	D: price 4%, vol. –4%
Revenue	75,758	75,065	75,058	72,035
COGS [56,705(1 + v)(1.04)]	61,922	60,153	59,563	56,614
Gross profit / margin	13,836 / 18.3%	14,912 / 19.9%	15,495 / 20.6%	15,420 / 21.4%

Full pass-through (D) protects the *margin*; partial pass-through that keeps some volume growth (C) gives the highest gross *profit*.

What examiners like to test

- **Name the bias:** sticking near an old estimate after new guidance = conservatism (anchoring); building ever more granular models = illusion of control; talking only to bulls and management = confirmation bias.
- **Elasticity:** with a 10% retail price rise, elasticity 0.8 cuts volume 8% (EuroAlco net sales $29 \times 0.92 \times 215 \approx 5,736$); fixed costs make operating profit fall faster than sales.
- **Terminal value:** for a cyclical firm use a mid-cycle margin (Turkish Airlines: about 6%, not a recent high such as 9.9%; the actual peak was 10.8%).