Sector Analysis (Hedge Funds)

Interview preparation summary · HF track

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INT.HS.1.a · Financial Services

Value a bank by relating return on tangible equity to price to tangible book, and test how rates, credit costs and capital change that return.

A bank earns the spread between what it lends at and what it pays for funding, then loses part of it to costs and bad loans. Net interest margin is net interest income divided by average earning assets. Its direction depends on repricing, because floating loans reset at once while the deposit beta, the share of a rate rise passed on to depositors, starts low and climbs as customers chase better rates. The mix of free funding matters as much as the beta, because non-interest-bearing current accounts are what a rate rise lifts and a rate cut removes. A structural hedge, which rolls fixed-rate swaps or bonds forward, smooths the margin but delays both the gain from higher rates and the pain from lower ones. Cost of risk is impairment charges divided by average loans, and it typically sits lowest when growth is fast and the cycle is young. Watch loans moved into stage two, meaning a significant rise in credit risk, and the coverage ratio of reserves to those loans, because charges follow those migrations. Cost-to-income shows operating leverage, but cutting branches to flatter it can hollow out the franchise. The CET1 ratio is common equity tier one capital divided by risk-weighted assets. The gap between that ratio and the level management targets is the surplus that can fund buybacks or growth. Return on tangible equity, or ROTE, is net income divided by average tangible equity, and it drives the valuation. A bank earning its cost of equity deserves about 1.0 times tangible book, and the justified multiple scales with the excess return. Here g is the long-run growth rate of tangible book. Justified multiple = (ROTE − g) ÷ (cost of equity − g). Interviewers want you to reverse the price into the ROTE it implies, then ask whether that ROTE rests on a peak margin or unusually low credit costs. The implied ROTE moves a lot with the cost of equity you assume, so show a range rather than one point. The common mistake is calling a bank cheap because price to tangible book is low when ROTE is about to fall. A short needs a visible driver, such as a margin peak, deteriorating credit or a capital shortfall. A generalist misses that a bank with a modest ROTE can still be a good long if it holds surplus capital and returns it, because tangible book per share then grows.

WORKED EXAMPLE: WEXCOMBE BANK: WHAT A RATE CUT DOES TO THE MARGIN, ROTE AND THE MULTIPLE

Wexcombe Bank, an invented lender, has earning assets of 60,000m, of which 55% float and reprice in full as rates move. Deposits are 48,000m, of which 30% pay nothing and the rest pays a deposit beta of 35% on any change in policy rates. Net interest margin is 3.0%, net income is 780m on tangible equity of 6,000m, and the shares trade at 1.55 times tangible book. Take a cost of equity of 10% and long-run growth of 3%. You expect policy rates to fall by 1.5 percentage points. Conventions: ignore the structural hedge, volumes, fees, costs and credit costs; tax at 25%; tangible equity is unchanged; justified multiple equals (ROTE minus g) ÷ (cost of equity minus g). Is Wexcombe a short ahead of the cuts?

Answer: At 1.55 times the shares price a ROTE of 13.85%, above today's 13.0%. A 1.5 point cut takes ROTE to between 8.1% and 9.0% depending on the deposit beta, so the justified multiple falls to between 0.72 and 0.86 times. The short has a clear driver, and the work to do is on the hedge and the timing.

> **Interview tip:** Say: the price already needs 13.85% ROTE, a 1.5 point cut takes it to about 8 to 9%, so the value is roughly 0.7 to 0.9 times, but I would check the structural hedge and the deposit beta on the way down before sizing.

INT.HS.1.b · Financial Services

Analyse an insurer through its underlying combined ratio, reserve development, float and catastrophe load, and an asset manager through flows, fee margin and market beta.

An insurer's combined ratio is the loss ratio plus the expense ratio. Below 100% it earns an underwriting profit, and the float, which is premium held before claims are paid and invested, adds income on top. Reported results flatter the truth in three ways. Favourable reserve releases lower the ratio without new profit, a benign catastrophe year lowers it below the budgeted catastrophe load, and an improving accident-year loss ratio may only reflect optimistic booking. So strip out releases and normalise catastrophes to get an underlying ratio. Reserve adequacy is the heart of the matter in long-tail lines such as liability, where claims take years to settle and the first estimate is rarely the last. Watch prior-year development, the ratio of paid to incurred claims, and whether premium growth in a long-tail line outpaces the market, because fast growth often means loose pricing. Shrinking releases, adverse development or a falling reserve-to-premium ratio are short signals. Investment income depends on the float and the reinvestment yield, so higher rates help only slowly as bonds mature. Solvency capital, the regulatory buffer, caps what can be returned to shareholders. Valuation usually pairs price to tangible book with return on equity and price to underlying earnings, while life insurers are valued on embedded value, the present value of in-force profits plus net assets. An asset manager earns assets under management times a fee margin in basis points, so revenue moves with markets, flows and fee compression. Net flows show whether clients are really adding money to the franchise. Organic growth = net flows ÷ opening assets. A manager can show rising assets and profit while flows are negative, so the market has done the work. Organic revenue growth can differ from organic asset growth, because inflows into cheap passive products and outflows from dear active ones shrink the average fee margin. Costs are largely fixed, so a market fall hits profit harder than revenue. Operating margin is therefore a poor guide to quality, because it peaks when markets do. Client concentration, key people and performance fees add further volatility. Hedge the market beta to isolate the idea.

WORKED EXAMPLE: LARKHILL ASSET MANAGEMENT: ASSETS UP 8%, PROFIT DOWN 7%

Larkhill Asset Management, an invented manager, starts the year with 40,000m in active funds earning 70 basis points and 20,000m in passive funds earning 8 basis points. Markets rise 5% on opening assets in both. Over the year active funds have net outflows of 4,000m and passive funds net inflows of 6,000m, both taken at the year end. Fixed costs are 170m a year. Conventions: revenue is run-rate, meaning assets at the date times the fee margin; ignore performance fees, tax and any change in costs. Is the growth in assets good news for earnings?

Answer: Organic asset growth is a healthy 3.3%, yet revenue is down 2.8% and profit down 6.7%, because outflows came from the dear active funds and inflows went to the cheap passive ones. The stock should be valued on the falling revenue base, and a market fall of 20% would halve profit.

> **Interview tip:** Say: assets are up 8% and flows are positive, but the flows are in the wrong product, so average fee margin falls from 49 to 44 basis points and revenue and profit fall. Always convert assets to revenue before calling a manager healthy.

INT.HS.1.c · Financial Services

Classify a financial company by what it earns on and what it risks, and analyse brokers, distributors and payments processors through organic growth, retention and take rate.

Before analysing a financial company, say what it sells and what it risks, because the engine decides the metrics. Balance sheet businesses such as banks and specialty lenders earn a spread and risk credit. Underwriters earn premium and float and risk claims. Asset managers and advisers earn fees on assets and risk markets and flows. Distributors and processors earn commissions and fees on volume and need little capital. Capital light does not mean risk free, because revenue then depends on activity, pricing and retention rather than on a balance sheet. An insurance broker earns a commission, typically a percentage of the premium it places, so its revenue rises with premium rates and volumes. Organic growth strips out acquisitions, disposals and currency, and it is the growth number to trust. Many brokers grow mainly by buying small firms, so compare reported growth with organic growth and ask how earn-out payments to sellers are treated. Retention, the share of client revenue kept from year to year, typically sits very high, so a small slip matters. Fiduciary cash, which is client money held before it is passed on, earns interest, so a broker has some rate exposure. Wealth advisers and platforms are read the same way, through net inflows, client retention and revenue per adviser. A payments company earns a small percentage of each payment it processes. Take rate = net revenue ÷ payment volume. Check whether revenue is gross or net of interchange, the fee passed to the card issuer, because gross reporting inflates revenue and shrinks the margin. Merchant churn, the mix of large and small merchants and pricing pressure on big accounts decide whether the take rate holds. Scale helps because

technology costs are largely fixed, so extra volume lifts margins. Valuation leans on enterprise value to EBITDA and free cash flow yield, after contingent payments and capitalised software. The common mistake is comparing take rates or growth rates across firms that define them differently. Short signals include organic growth far below reported growth, a falling take rate and rising capitalised development costs.

WORKED EXAMPLE: QUILLON PAY: VOLUME UP 12%, REVENUE UP 6%

Quillon Pay, an invented payments processor, handled 80,000m of payment volume last year. It reports gross revenue of 1,480m, of which 840m is interchange passed to card issuers, and EBITDA of 192m. Next year volume is expected to grow 12% but the take rate to fall by 4 basis points as large merchants renegotiate. Operating costs, measured against net revenue, are 40% variable with volume and 60% fixed. Enterprise value is 2,500m. Conventions: take rate is net revenue ÷ volume; costs exclude interchange; ignore tax and acquisitions. How should the growth be read?

Answer: Volume growth of 12% turns into net revenue growth of 6.4% and EBITDA growth of 10.1%, with the take rate as the swing factor. On net revenue the stock is on 3.9 times and 13.0 times EBITDA, and the 1.7 times gross revenue figure is a trap.

Interview tip: Say: I would put every payments name on net revenue and take rate first. Volume is up 12% but pricing takes half of it, and each basis point of take rate is about 9 million of revenue.

INT.HS.1.d · Financial Services

Analyse a specialty lender through risk-adjusted yield, funding access, vintage losses and reserve accounting, and judge whether growth is flattering earnings or hiding credit risk.

Specialty finance covers lenders and lessors that are not ordinary banks, such as consumer finance, credit card, auto and equipment lending companies. They earn a high yield and suffer high credit losses, so the first number to look at is the yield after losses. Take the margin after both costs. Risk-adjusted margin = portfolio yield − charge-off rate − funding cost. Funding is the other pillar, since most of these firms borrow through warehouse lines and securitisations rather than deposits. Check the advance rate, which is the share of a loan that lenders will fund, the covenants, and how much funding matures within a year, because a closed market can stop growth at once. Vintage curves plot cumulative losses by months since origination for each cohort of loans, and they show whether new lending performs worse than old lending at the same age. Roll rates, the share of balances moving from 30 days late to 60 and then 90, give early warning before charge-offs appear. Modern provisioning rules make a lender book expected losses when it makes the loan, and the current expected credit loss standard in the United States does so over the whole life of the loan. So fast growth depresses reported earnings as reserves are built, and a slowdown releases reserves and flatters profit. Profit can therefore rise just as growth slows and credit quality is about to turn. Gain-on-sale lenders originate loans and sell them, booking profit on a fair value estimate, so test the loss and prepayment assumptions behind it. Leverage, meaning debt to tangible equity, is typically high, so small changes in loss rates move return on equity a lot. Valuation uses price to earnings and price to tangible book against return on tangible equity, not growth alone. Adjusted earnings that exclude a different one-off item every year deserve doubt. The common mistake is trusting the allowance because it looks large, when it should be compared with the loss the latest vintages imply. A generalist misses that cheap and fast growing at the same time is a warning, because growth is easiest when underwriting is loosest. Short signals include loosened credit standards, lengthening loan terms, rising loan modifications, funding costs climbing faster than yields, and reserve coverage falling while delinquency rises.

WORKED EXAMPLE: FERNHILL CREDIT: PROFIT DOUBLES WHEN GROWTH STOPS

Fernhill Credit, an invented consumer lender, has receivables of 2,000m and grows them 25% to 2,500m during the year. Portfolio yield is 24% and charge-offs run at 7% of average receivables. Debt funds 80% of average receivables at 6% and equity funds the other 20%. Operating costs are 8% of average receivables. The allowance is held at 9% of closing receivables, set on lifetime expected losses. Conventions: use average receivables for income and costs; tax at 25%; charge-offs are paid out of the allowance, and the provision equals charge-offs plus the change in the allowance. Next year receivables stay at 2,500m with the same rates. Is rising profit a buy signal?

Answer: Profit rises 112% in the flat year, but 45m of the improvement is a reserve build that stopped, and a lifetime loss of 10% instead of 9% would remove 25m, a quarter of pre-tax profit. Treat the flat-year return of 15.8% as an upper bound until the vintage data confirm the allowance.

Interview tip: Say: earnings doubled because growth slowed and the reserve build stopped. I would value the stock on the earnings that survive a proper allowance, and ask what the newest vintages say about lifetime losses.

INT.HS.1.e · Financial Services

Build and present a long or short view in financials by finding the common factor, testing funding and liquidity, spotting warning signs and sizing against gap risk.

Financial stocks move together on a few common factors, so decide first which factor your idea really expresses. Banks respond to the level and slope of the yield curve and to credit spreads, insurers to catastrophe events and bond yields, asset managers to equity markets, and lenders to funding spreads. A good idea is stock specific, so hedge the factor with a sector index or a peer with the opposite exposure. Funding and liquidity decide who survives a shock. For banks, check the loan-to-deposit ratio, the share of deposits that are uninsured, the liquidity coverage ratio, and unrealised losses on bond holdings against tangible equity. Those losses typically shrink as bonds approach maturity, so they threaten confidence and forced sales rather than being a certain loss. Regulation creates catalysts and risks, such as stress test results, capital rule changes, conduct fines, rate caps and approvals for dividends and buybacks. A short in financials has gap risk, because a regulator, a bid or a rescue can move a price by tens of per cent in a day. Size it smaller than a similar short elsewhere, or express it with options. Check borrow cost and crowding too, since heavily shorted names squeeze on good news. Across the sub-sectors the warning signs repeat: growth that outruns the market, earnings propped up by reserve releases or one-off gains, and a widening gap between adjusted and reported profit. Another repeated sign is a buyback or dividend paid while capital is thin or funding is getting dearer. To present the view, state the variant perception, which is what you expect that the price does not. Then give the catalyst and its date, the value in each scenario, the size, and what would make you wrong. What would make you wrong should be observable, such as deposits stabilising or cost of risk staying below your threshold. Weigh the size of the gain against the loss you would accept. Risk/reward = gain to target ÷ loss to stop. A cheap multiple needs a reason to re-rate and an expensive one needs a reason to fall. Without a catalyst, a correct view can cost carry for a long time.

WORKED EXAMPLE: CORVANE BANCORP: A SHORT THAT FAILS ON RISK AND REWARD

Corvane Bancorp, an invented regional bank, has a market value of 2,640m against tangible equity of 2,400m and consensus net income of 276m. Deposits are 24,000m, of which 40% are uninsured. It holds 9,000m of held-to-maturity bonds with an unrealised loss of 1,350m, and 3,000m of liquid assets. Take a cost of equity of 10%, long-run growth of 3% and tax of 25%. In a stress, 20% of uninsured deposits leave and are replaced by wholesale funding at 5.5% against an old cost of 1.5%. Conventions: justified multiple equals (ROTE minus g) ÷ (cost of equity minus g); the bank does not sell bonds in the stress; scenario weights are judgement, set at 50% calm, 35% stress and 15% severe; the calm case earns consensus ROTE and the severe case a ROTE of 6.0%. Should you short it?

Answer: Weighted value is 2,343m against a market value of 2,640m, a fall of 11%, but the stop risks 15%, so risk and reward is about 0.75 to 1. The vulnerability is real yet the price already allows for some of it, so the right call is to wait for a catalyst or a higher price.

> **Interview tip:** Say: the balance sheet looks weak, but the price already implies a 10.7% ROTE and my weighted downside is only 11% against 15% to my stop, so I would pass and name the triggers that would change that.

INT.HS.2.a · Healthcare

Value a pharma or biotech company by risk-adjusting pipeline cash flows, work out the probability the price implies, and size a position around a binary readout.

A drug developer has little profit to value, so its worth sits in future sales that exist only if a drug is approved. The standard tool is risk-adjusted net present value, built asset by asset. For each drug, estimate peak sales, the margin at maturity and the launch costs still to come, then discount the result to today and multiply by the probability that the drug reaches the market. For a single-asset company the arithmetic is short. Value per share = p × value if it works + (1 − p) × value if it fails. The failure value is mostly cash, less wind-down costs, plus whatever the platform or other programmes are still worth. Check the runway too, because a company with under two years of cash will usually raise equity after good data, which dilutes you, or sell itself cheaply after poor data. Probability of success rises with each phase but varies by therapy area, mechanism and quality of evidence, and Phase 3 still fails often. So compare the evidence with a phase-appropriate base rate. Was the primary endpoint hit or only a secondary one, was the trial powered for the effect, is the endpoint a clinical outcome or a surrogate, and does the benefit appear only in a post hoc subgroup? Then reverse the price. Implied probability = (price − failure value) ÷ (success value − failure value). Compare it with your own estimate, and remember that a positive headline can still sink the shares if the effect size or safety falls short of what holders hoped for. For an established pharma company the key event is loss of exclusivity. When patents end, generics can take most of a tablet's sales within a year, while a complex biologic or injectable erodes more slowly, so test the erosion assumption drug by drug. Most of the cost of a mature

drug is already sunk, so lost sales carry a very high contribution margin and earnings fall far faster than revenue. A price to earnings ratio on current earnings therefore flatters the stock. Last, size by the loss if the readout fails, not by conviction. Being right more than half the time does not help if the loss is bigger than the gain.

WORKED EXAMPLE: VALUING CALDER BIO BEFORE ITS PHASE 3 READOUT

Calder Bio, an invented company, has a lead drug in Phase 3 for a chronic condition and an early drug in Phase 1. Your model for the lead drug has peak sales of 1,000m, a 30% after-tax margin at maturity, a multiple of 10 times those earnings at maturity, a factor of 0.55 to bring that value back to today, and 330m of launch costs still to come. The early drug is worth 600m if it works. Calder has 400m of cash, no debt, 100m shares priced at 9.00 and a cash burn of 150m a year. A typical Phase 3 success rate for this kind of drug is 55%. The fund allows a loss of 0.8% of NAV from one binary event. Conventions: ignore tax on gains, time value until the readout, borrow costs and trading costs; values in millions.

Answer: The price implies a 34% chance of success against your 45%, the shares are worth 10.42 against 9.00, and a 1.5% position keeps a failed readout inside the 0.8% loss limit.

> **Interview tip:** Say: the market is paying for about a one in three chance, I think it is nearer 45% because the primary endpoint was only hit in a subgroup, and I would hold 1.5% of the fund so that a failure costs less than 0.8%.

INT.HS.2.b · Healthcare

Analyse devices, services and tools companies through procedure volumes, reimbursement, installed base and consumables, and time positions around catalysts and policy decisions.

Healthcare services, devices and tools make money in different ways, so first ask what drives the volume and who pays. A device maker with an installed base earns recurring revenue from consumables. Consumables revenue = installed systems × procedures per system × price per procedure. Watch placements, utilisation per system and price separately, because falling utilisation shows that new placements are weaker or that hospitals are rationing use. Equipment sales are lumpy and follow hospital budgets, while consumables behave like an annuity, which is why investors pay more for them. Reimbursement and clinical evidence decide whether a procedure grows at all. A new procedure needs coverage and a payment code, so a coverage decision or a guideline update can move a stock more than a quarter of results. Watch the sales force as well, because surgeon adoption is a selling effort and training takes time. A services provider depends on same-site volume, payer mix and rates set by governments or insurers. Staff and sites cost the same whatever the rate, so a rate cut falls almost entirely to profit, and wage inflation does the same quietly. Check clinician hours and turnover, because capacity is people, not buildings. Tools companies depend on orders from laboratories, universities and drug developers. Book-to-bill = orders ÷ revenue. A ratio below one means the backlog is shrinking and revenue will follow with a lag, and the length of the order cycle tells you how long the lag is. For every company, separate acquired growth from organic growth, and price from volume, because a roll-up can show double-digit growth with flat same-site volume. For timing, find the catalyst, such as a final rate notice, a coverage decision or a quarterly order print. Policy is a risk to be weighted by probability and compared with what the price already assumes. The common mistake is applying a peer multiple to earnings that a policy change is about to cut.

WORKED EXAMPLE: WEIGHING A RATE NOTICE AT HARTWELL CARE GROUP

Hartwell Care Group, an invented hospital and clinic operator, has revenue of 2,000m, of which 60% is paid at government rates, and EBITDA of 300m. Net debt is 900m and the group is valued at 8.0 times EBITDA in enterprise value. The shares trade at a market capitalisation of 1,380m. The government's final rate notice, due in six weeks, proposes a 4% cut to government rates, and costs do not change. You think the cut has a 50% chance of being confirmed. Conventions: the multiple stays at 8.0 times, ignore tax and timing, values in millions.

Answer: The cut costs 16% of EBITDA and 25.6% of equity, the price implies a 31% chance of it, and at your 50% the shares are worth 1,308m, 5.2% below the price.

> **Interview tip:** Say: the market already prices about a one in three chance of the cut, I think one in two, so the expected edge is about 5%, which justifies a small position around the notice date but not a high conviction short.

INT.HS.2.c · Healthcare

Place a healthcare company in its sub-sector, name who pays and what repeats, and read the first numbers for services, drug, device, diagnostics, contract research and manufacturing, and software businesses.

Healthcare is not one industry, so the first thing a specialist does is say which kind of company this is. Pharma and biotech sell patented products, and value depends on pipeline events, exclusivity and drug pricing policy. Healthcare services, such as clinic, dental and hospital groups, sell care paid for by insurers and governments, so same-site volume, payer mix and rate decisions matter most. Medical devices sell equipment and consumables to hospitals, so check procedure volumes, installed base and reimbursement. A diagnostics business earns volume times revenue per test, so check test volumes, the price payers allow, and the collection rate, which is the share of billed tests actually paid. Contract research organisations run trials for drug developers and are paid by project, so the numbers are backlog, new bookings and cancellations. Contract manufacturers make drugs or biologic ingredients for others, so capacity utilisation, customer concentration and contract length matter. Both depend on the funding of small drug developers, which makes their bookings cyclical. Net book-to-bill = (new orders − cancellations) ÷ revenue. Healthcare software sells to providers and payers, so look at recurring revenue, retention, the time implementation takes, and whether growth comes from new clients or from more modules sold to existing ones. Four questions place any company quickly. Who pays, and can that payer change the price? What is sold, and does it repeat? What event could reset the value, and when? How much of the cost is fixed? The last answer sets operating leverage, which is high in a half-empty factory and low in a labour business. Healthcare is often called defensive, yet contract research slows when biotech funding dries up, tools when laboratory budgets are cut, and devices when elective procedures are deferred. The common mistake is applying one healthcare multiple, or one defensive growth story, to businesses that react to different cycles.

WORKED EXAMPLE: READING A CONTRACT MANUFACTURER: OSTREL BIOLOGICS

Ostrel Biologics, an invented contract manufacturer of biologic medicines, has revenue of 500m, plant capacity worth 625m of revenue, variable costs of 50% of revenue, fixed costs of 140m and a backlog of 1,100m. Its largest customer, a clinical-stage biotech, is 30% of revenue. Conventions: capacity is measured in revenue at current prices, ignore tax and capital spending, values in millions.

Answer: Ostrel runs at 80% utilisation with a 22% margin, each extra 100 of revenue brings 50 of EBITDA, and losing the largest customer would cut EBITDA by 68%, so concentration and backlog terms decide the risk.

> **Interview tip:** Say: this is a contract manufacturer, so I look at utilisation and who the customers are before anything else, and the key risk is that a 30% customer taking its work away removes more than two thirds of the profit.

INT.HS.2.d · Healthcare

Choose the valuation measure that fits each healthcare sub-sector, reverse the price into expected growth, value a group as a sum of the parts, and test whether the carry on a short is worth the expected move.

The right valuation measure depends on what the company is, so choose it before you compare. Profitable pharma and large device makers trade on price to earnings or enterprise value to EBITDA, but only after normalising for the patent cliff, one-off licence income and unusual margins. A loss-making biotech is valued on a risk-adjusted sum of the parts, and enterprise value, which strips out the cash, is what the market is paying for the pipeline. Services groups are valued on enterprise value to EBITDA, with leases and the debt of a roll-up included, because buying growth with borrowing flatters the multiple. Contract manufacturers and tools companies are cyclical, so use mid-cycle earnings rather than this year's. Software and diagnostics growth names use free cash flow, and revenue multiples only while margins are not yet meaningful. Free cash flow yield = free cash flow ÷ enterprise value. Where development costs are capitalised or share-based pay is large, free cash flow after stock compensation tells you more than adjusted EBITDA. Choose peers by business model, because comparing a clinic group with a patent-protected drug maker confuses a labour business with an intellectual property business. Then reverse the price to see what is expected. Implied growth = (EV × cost of capital − free cash flow) ÷ (EV + free cash flow). If that growth is more than the company can plausibly deliver, the shares are expensive however good the business is. A group with several businesses can be valued as a sum of the parts, but deduct central costs and ask what will narrow the discount. For a short, add the cost of carry. The borrow fee, plus any dividend you must repay, has to be smaller than the expected fall over the holding period, and an already high fee warns that the idea is crowded. A binary event adds squeeze risk, so a short into a readout is usually sized smaller than a long. Timing matters too, because a rate notice or an earnings print gives a date, while a valuation gap alone can last for years.

WORKED EXAMPLE: WHAT IS PRICED INTO QUILLON DIAGNOSTICS

Quillon Diagnostics, an invented testing company, has an enterprise value of 9,000m, free cash flow of 250m after share-based pay, no net debt and a cost of capital of 8.5%. You think free cash flow can grow at 3.5% a year for the long run. A payer's fee schedule review is due in four months. The borrow fee is 4% a year and there is no dividend. Conventions: perpetuity growth, free cash flow is this year's and grows from here, ignore tax on gains, values in millions.

Answer: The price implies 5.6% growth against your 3.5%, which values the company at 5,175m, 42.5% below the price, but after the 4% fee a half-closed gap pays about 1.2 times the risk, so size small until the review.

Interview tip: Say: the price needs growth of 5.6% for ever and I can defend 3.5%, but being right about value is not a trade, so I would size small and add after the fee schedule review shows the market the lower growth.

INT.HS.2.e · Healthcare

Spot healthcare accounting traps and short signals by sub-sector, then build a long or short view with scenarios, skew, sizing, a catalyst and the facts that would prove you wrong.

Healthcare has its own accounting traps, and each sub-sector hides them in a different place. In services, check days sales outstanding and bad debt, because revenue that is billed but not collected, or later clawed back by an insurer, is not earnings. Check how much growth is bought, and how many add-backs sit between reported and adjusted EBITDA. In pharma, look at the gap between gross and net sales, because rebates, discounts and returns can rise faster than list prices, and a one-off milestone or licence payment can make a weak year look strong. In devices, watch inventory held by distributors, since shipments ahead of procedures pull revenue forward. Judge contract research and manufacturing on cancellations and the age of the backlog, not only its size. Test healthcare software for capitalised development cost, and for implementation revenue booked before the work is done. Diagnostics can show strong volumes while revenue per test falls under a payer's new fee schedule or audit. Short signals come from several of these together. Receivables grow faster than revenue, margin gains are not confirmed by cash, an executive leaves before a cliff, investigations start, or guidance is trimmed in small steps. To build the view, state what the market expects, say what you expect that differs, and name the catalyst that will show it. Expected value = sum of probability × value across the bull, base and bear cases. Then check the skew, since a long often needs roughly two units of upside for each unit of downside, and a short needs a cost of carry that fits the time to the catalyst. Write down in advance what would make you wrong, such as a trial result, a rate decision or the loss of a large customer, and how much you will lose before you review. Present the call first, then the evidence, then the risks. The usual mistake is a story with no date, because a short on a stock that stays overvalued for years loses money on borrow fees and on every rally.

WORKED EXAMPLE: BUILDING THE SHORT CASE ON BRINDLE CARE

Brindle Care, an invented roll-up of outpatient clinics, reports revenue of 1,000m, up 18%, of which acquisitions added 12 points. Adjusted EBITDA is 220m after 45m of add-backs, net debt is 1,100m and receivable days rose from 52 to 61. The shares have a market capitalisation of 1,320m, so enterprise value is 2,420m, or 11.0 times adjusted EBITDA. The borrow fee is 1.5% a year. The fund limits the loss on any single short to 0.6% of NAV, with a stop 20% above entry. Conventions: ignore tax, values in millions.

Answer: Brindle is a short at about 3% of NAV: organic growth is only 6%, receivables are growing twice as fast as revenue, the expected equity value is 32% below the price, and the stop is 20% above entry.

Interview tip: Say: reported growth is 18% but only 6% is organic, receivables are up 38%, and leverage is 6.3 times real EBITDA, so I would short about 3% of the fund with a stop 20% above and review it at the next results.

INT.HS.3.a · Industrials

Locate an industrial company in its cycle from orders, book-to-bill, destocking and margin incrementals, and choose the earnings and multiple to value it on.

A cyclical industrial has to be placed in its cycle before it can be valued, because its price to earnings ratio is lowest when earnings peak and highest when they trough, which is the reverse of how cheapness should be judged. Start with orders, because orders lead revenue and revenue leads profit. Book-to-bill = orders ÷ revenue. A figure above one means the backlog is growing and a figure below one means it is shrinking, so track it by quarter and give most weight to the latest exit rate, not the annual average. Then convert the backlog into cover, which tells you how far ahead revenue is already booked. Backlog cover = backlog ÷ annual revenue. Long-cycle businesses such as capital equipment and aerospace often hold a year or more of cover, so their orders show you revenue well ahead of time. Short-cycle businesses such as components and distribution ship within weeks, so their orders are hardly visible and you lean on purchasing managers surveys, customer commentary and

sell-out data. A survey reading above 50 signals expansion, and the change in the reading matters more than the level. Next, separate real demand from stocking. A customer short of supply orders more than it uses, and when supply eases it destocks, which can hold orders below true consumption for several quarters. Compare orders with sell-out and with channel inventory days. Then model the profit. Incremental margin = change in EBIT ÷ change in revenue. Fixed costs do not flex quickly, so incremental margins on the way up and decremental margins on the way down are typically well above the average margin, and a small revenue change moves profit sharply. Management usually cuts cost after the first two or three quarters, so the decremental margin tends to improve as a downturn matures. Value the business on mid-cycle earnings, which are mid-cycle revenue multiplied by a mid-cycle margin, using a multiple taken from through-cycle history, and show the peak, mid-cycle and trough multiples side by side. A nuance a generalist misses is timing. Shares typically peak months before earnings do and recover before orders do, so the better entry is often when book-to-bill stops falling and the multiple looks highest. In an interview, say where the cycle is, which earnings you would capitalise, and why the headline multiple misleads.

WORKED EXAMPLE: IS A RECORD-MARGIN VALVE MAKER CHEAP?

Dorran Valves, an invented industrial, shows revenue of 800m, EBIT of 128m (16.0% margin), orders of 680m in the year and an opening backlog of 1,000m. The decremental margin on lost revenue is typically 35% for this business. Mid-cycle revenue is 720m. Net debt is 100m, there are 100m shares and enterprise value is 1,280m. A colleague says it is cheap at 10 times EBIT. Conventions: ignore tax, assume revenue next year falls to the level of orders, and use an 11 times through-cycle EV to EBIT multiple.

Answer: Dorran is not cheap: the 10 times multiple is on peak EBIT, while orders at 0.85 times sales point to EBIT of about 86m next year and a mid-cycle value of about 10.00 a share against 11.80 today, roughly 15% downside.

> **Interview tip:** Say it in this order: the order signal, the earnings the market will see next year, the earnings you would capitalise through the cycle, and then the multiple on that number. Always show the peak, mid-cycle and trough multiples side by side.

INT.HS.3.b · Industrials

Judge an industrial company's quality and find long and short signals from ROIC against cost of capital, aftermarket mix, pricing against input costs and inventory and order trends.

Once you know the cycle, ask whether the business deserves a premium multiple. The test is return on invested capital against the cost of capital. ROIC = after-tax operating profit ÷ (equity + net debt). A company earning above its cost of capital creates value as it grows and deserves a higher multiple of invested capital, while one below it destroys value however fast it grows. Check the definition, because impairments, leases, pensions and acquired goodwill change the capital base without changing the economics. A write-off lifts reported ROIC by shrinking the denominator, so compare returns on the cash originally invested, and look at ROIC with and without goodwill to separate the operating business from the price paid for acquisitions. Next look at mix. Aftermarket and service revenue on an installed base is typically higher margin, more recurring and less cyclical than new equipment, because the base keeps wearing and needs parts whatever the order cycle. A customer can still defer a repair in a downturn, so aftermarket is less cyclical, not immune. A rising aftermarket share supports a higher multiple, but check how it is earned, since fixed-price service contracts with penalty clauses can look recurring and still lose money. Then check pricing against input costs. Price-cost effect = extra revenue from price − extra cost of inputs. Steel, energy and freight costs usually hit within a quarter or two, while price increases follow with a lag set by contracts, indexation clauses and competition, so margins are squeezed first and recover later if the company has real pricing power. Short signals include inventory growing faster than sales, order slowdowns, discounting to win volume, receivables building, capex running below depreciation and margins at record highs. A nuance is that rising inventory is a stronger warning when it is finished goods, or when orders are falling at the same time, than when it is raw material bought ahead of a price rise. In an interview, tie each signal to a return or earnings consequence, not just a ratio.

WORKED EXAMPLE: WHAT RETURN DOES THE PRICE OF FENWICK COMPRESSORS REQUIRE?

Fenwick Compressors, an invented industrial, has EBIT of 150m, a tax rate of 25%, equity of 700m and net debt of 300m (invested capital 1,000m). Its cost of capital is 9% and long-run growth is 3%. Enterprise value is 2,000m. Conventions: use the steady-state relationship that enterprise value over invested capital equals (ROIC - g) / (WACC - g), which assumes returns on new capital equal ROIC and growth is constant.

Answer: Fenwick earns 11.25% against a 9% cost of capital, which supports about 1.4 times invested capital, but the market pays 2.0 times, which implies a ROIC near 15%. Unless a credible lever lifts returns, the shares are expensive.

> **Interview tip:** Use the implied-ROIC step: what return does the price require, and can I name the lever that delivers it? State your simplifying assumption (steady growth, new capital earns ROIC) before you give the number.

INT.HS.3.c · Industrials

Place a company in an industrial sub-sector (machinery, components, building products, aerospace and defence, distribution, transport equipment) and say how its cycle length, aftermarket, pricing and working capital differ from the others.

Industrials is not one business, so the first move in an interview is to say which kind of industrial you mean. Machinery and capital equipment sells large items to customers who fund them from capital budgets, so orders swing widely and backlog is long. The installed base generates parts and service that often provide a large share of profit even when they are a smaller share of revenue. Components and engineered products such as bearings, valves, fasteners and motion control sell through manufacturers and distributors, ship quickly and serve many end markets, so the cycle is short and destocking is the main hazard. Margin depends on content per machine and on designs that are hard to replace. Building products follow housing starts, repair and remodel, and non-residential construction, so interest rates, credit and weather drive volumes, and inputs such as timber, aluminium and gypsum make price-cost timing important. Aerospace and defence splits in two. Commercial aerospace follows aircraft build rates and flying hours, with new builds cyclical and the aftermarket tied to how much the fleet flies. Defence follows multi-year budgets and contract type, where cost-plus work protects margin and fixed-price development can lose it. Distribution buys and resells, so gross margin is thin, typically a quarter of sales or less, capital needs are light apart from inventory and receivables, and the profit swing comes from branch costs that do not flex. Transport equipment such as trucks, rail cars, trailers and ships is driven by fleet age, freight rates, customer financing and emissions rules that cause pre-buys, and its order books can be cancelled. Across all six, ask four questions. How long is the lead time between orders and revenue, how much profit comes from an installed base, how exposed are the company's inputs and prices, and how much working capital does growth absorb? The answers set which indicator you watch and which margin you call normal. A generalist applies one multiple to all six, but a specialist uses a different leading indicator and a different through-cycle margin for each.

WORKED EXAMPLE: WHY ONE 10% DEMAND FALL DOES NOT HIT HALDEN GROUP EVENLY

Halden Group, an invented industrial, has revenue of 1,000m and EBIT of 109.5m in three divisions. Equipment: revenue 400m, EBIT margin 14%, decremental margin 35%, backlog cover 1.2 years. Components: revenue 350m, margin 11%, decremental 30%, shipped within weeks. Distribution: revenue 250m, margin 6%, decremental 18%. End-demand falls 10% across the board. Conventions: assume equipment revenue falls only 2% over the next 12 months because its backlog is shipped, components fall 12% because customers also destock, distribution falls 8% because stock is bought as needed, and ignore tax and any cost action.

Answer: Halden's EBIT falls about 17% in the next 12 months (109.5m to 90.5m) because the short-cycle divisions take the fall now, while the equipment division defers about 11m of EBIT loss into the following year.

> **Interview tip:** When asked about an industrial, name the sub-sector first, then its lead time and its aftermarket share, and only then give the indicator and the margin you would use. Say that a backlog delays a downturn rather than avoids it.

INT.HS.3.d · Industrials

Convert industrial profit into free cash flow and test earnings quality from capex against depreciation, working capital and customer advances, long-contract accounting and adjusted EBITDA add-backs.

Industrial earnings are only as good as the cash behind them, so a specialist converts profit into cash before trusting a multiple. FCF conversion = free cash flow ÷ net income. Over a full cycle a healthy industrial typically converts most of its earnings into cash, but in an upswing inventory and receivables absorb cash and conversion falls, while in a downturn working capital releases cash and flatters conversion just as profit drops. Capex needs splitting into maintenance, which keeps existing capacity running, and growth, which adds capacity. Depreciation is only a rough proxy for maintenance, so a company spending well below depreciation for years is harvesting its assets. Working capital needs three lines, inventory days, receivable days and payable days, plus contract balances. Long-cycle manufacturers often take customer advances, which fund the business while orders rise and reverse when orders fall, so cash can drain faster than profit in a downturn. Revenue on long contracts is recognised over time using an estimate of cost to complete, so that estimate is where judgement hides. Look for repeated margin catch-ups, rising contract assets and unbilled receivables, loss provisions that arrive late, and a gap between cumulative profit and cash collected. Then check the adjustments. Restructuring charges called one-off in every year, capitalised development costs, adjusted EBITDA that adds back share pay, and warranty provisions that fall while

the installed base grows all raise earnings without raising cash. Debt-like items such as pension deficits, leases, factored receivables and supply chain finance belong in net debt. Clean EBITDA = adjusted EBITDA − recurring add-backs − capitalised operating spend. A nuance is that a modest multiple of adjusted EBITDA can become a full one on clean EBITDA, and a low free cash flow yield then tells you what the market is really paying. In an interview, show how you turn reported profit into free cash flow, name the one line you would test first, and say what number would change your mind.

WORKED EXAMPLE: WHAT DOES ARDENT RAIL SYSTEMS REALLY EARN IN CASH?

Ardent Rail Systems, an invented industrial, reports adjusted EBITDA of 180m. The adjustments include a restructuring charge of 15m that it has added back for the third year running and 10m of development spend that it capitalised. Depreciation is 50m and capex is 55m. Inventory and receivables absorbed 15m, customer advances fell by 10m, and cash tax was 25m. Enterprise value is 1,800m on reported net debt, and the company also has a pension deficit of 60m and 40m of receivables sold to a bank with recourse. Conventions: ignore interest and treat the recurring restructuring and capitalised development as operating costs.

Answer: Ardent looks cheap at 10.0 times adjusted EBITDA but trades at about 12.3 times clean EBITDA with a free cash flow yield of 2.6%, and its unwinding customer advances argue against paying more.

> **Interview tip:** Walk the bridge in order: clean the profit, fix the debt, restate the multiple, then build cash and name the one line you would test first. Say which adjustments recur, because a one-off that happens every year is a cost.

INT.HS.3.e · Industrials

Build and present a long or short in an industrial from variant perception, what is priced in, catalysts, scenarios, borrow cost, sizing and the evidence that would prove you wrong.

A long or short in an industrial is built from five parts: the variant perception, what is priced in, the catalyst, the risk and reward, and what would prove you wrong. Start with a variant perception, a specific difference between your forecast of orders, margin or pricing and the consensus estimate, backed by evidence you can name such as channel checks, order data, supplier commentary or pricing surveys. Then turn the share price into expectations. Ask what mid-cycle earnings and what multiple are in the price, and whether they need orders to recover, margins to hold at records or pricing to stay firm. A stock on a low multiple of peak earnings with book-to-bill under one may be priced for a soft landing, while a stock on a high multiple of trough earnings with orders turning may be priced for a recession that does not arrive. Next, name catalysts with dates, such as the quarterly order print, a guidance change, a price increase announcement, a survey turning above 50, the end of destocking or a contract award. Without a catalyst, a correct view can take years to pay. Build three scenarios, each with a price and a probability. Expected return = sum of probability × scenario return. Then compare the upside with the downside. For a short, subtract the borrow cost over the holding period and check short interest and days to cover, because a crowded short can be squeezed by a sharp order recovery or a takeover approach. Size the position so that a broken thesis costs a set share of capital, not according to conviction. Consider pairing against an aftermarket-heavy peer or hedging the sector so the bet is on your view, not on the cycle. Finally, write the thesis breaks before you enter, meaning the order, margin or price data that would make you exit. In an interview, finish with the position, the reward to risk and the evidence that would make you wrong.

WORKED EXAMPLE: TORVALD PUMPS: SHOULD YOU BUY AT 80?

Torvald Pumps, an invented industrial, trades at 80 a share with net debt of 10 a share, so enterprise value is 90 a share. Trough EBIT is 6.0 a share and mid-cycle EBIT is 9.0 a share. Book-to-bill has risen from 0.90 to 1.00 over two quarters while consensus expects orders to stay weak. The through-cycle multiple is 11 times EV to EBIT. Scenarios for 12 months: orders recover and EBIT is 11.0 (probability 25%), orders flat and EBIT is 9.0 (45%), destocking returns and EBIT is 6.5 (30%). Conventions: price = 11 x EBIT - 10, ignore dividends, and risk 0.5% of capital on the idea.

Answer: Torvald is a modest, starter-size long: expected return about 8%, reward to risk 1.7 times, about 2.9% of capital, with the next two order prints as catalysts and book-to-bill back under 0.95 as the thesis break.

> **Interview tip:** Show the structure in order: what is priced in, the variant view, three scenarios with probabilities, the reward to risk, the size and the exit rule. Admit when the expected return is only moderate and say what would make you add.

INT.HS.4.a · Consumer and Retail

Decompose same-store sales into traffic, ticket and price, read margin direction and guidance, and use channel checks and alternative data to form a view before results.

In consumer and retail stocks the share price follows same-store sales and margin direction against what the market expects, so the job is to judge their quality and predict the next print. Same-store or like-for-like sales count only stores open for a full comparable period, often twelve months, so they strip out the effect of opening and closing sites. Definitions differ between companies, for example on whether online sales are included and whether currency is held constant, so check the definition before comparing two retailers. Split the comp into traffic, meaning the number of transactions, and average ticket, then split ticket into price and items per basket. Comp = (1 + traffic) × (1 + ticket) − 1. A comp of 4% made of 6% price and falling traffic is weak, because volume is shrinking and price rises cannot be repeated for ever. Then judge the comparison base, because a comp is a growth rate on last year. Stack = this year's comp + last year's comp. Some analysts compound the two years instead, which changes little at low growth. The two-year stack removes the flattering effect of an easy base and shows whether the underlying trend is improving. Next look at margin direction, because costs do not move with sales. Promotions used to rescue traffic cut gross margin, while wages and rent are largely fixed in the short run, so a small margin change moves earnings sharply. A retailer earning a 10% operating margin that loses one point of gross margin, with costs unchanged, loses a tenth of its profit. Treat guidance as evidence of behaviour, not as a forecast. Compare the full-year guide with the year to date to see what the remaining quarters must deliver, and treat a guide that needs an unlikely acceleration as a warning. A company that repeatedly beats a low bar is managing expectations and tells you little about demand. Outside evidence lets you test the view before results. Card-spend panels, web traffic, footfall counters, app downloads and car-park counts all sample demand. Each is a biased sample, for example panels often miss cash and new stores, so check how closely a series tracked reported comps in past quarters before relying on it. Treat a gap between the data and consensus as a hypothesis to test, not a trade, because the price may already reflect it. Interview point: split the comp, judge the base and the margin, then say what the price already expects.

WORKED EXAMPLE: A +4% COMP THAT HIDES FALLING VOLUME

Larkfield Home, an invented homewares retailer, reports same-store sales up about 4.0%. Traffic fell 3.0% and average ticket rose 7.2%. List prices rose 6.0% over the year. Conventions: growth rates compound, so comp = (1 + traffic) x (1 + ticket) - 1, and ticket = (1 + price) x (1 + items per basket) - 1.

Answer: Larkfield's 4.0% comp is all price: traffic is down 3.0% and underlying volume is down about 1.9%, so the quality of the comp is poor and further price rises risk more lost traffic.

> **Interview tip:** Always say the comp in three parts: traffic, price and basket. Interviewers listen for whether you realise that a comp built on price with falling volume is a worse signal than the headline number.

INT.HS.4.b · Consumer and Retail

Spot consumer short and long signals from inventory and receivables against sales, markdown risk, fashion and fad risk, private label and trading down.

Consumer earnings tend to go wrong in a recognisable sequence. Stock builds first, then promotions or markdowns follow, then gross margin falls, then guidance is cut. The skill is to spot the first step while the share price still assumes the last one will not happen. Compare inventory growth with sales growth, and measure days of inventory against cost of sales, not sales. Days of inventory = inventory ÷ cost of sales × 365. The excess over last year's level, or over a normal level, is what may need clearing. Its composition matters, because seasonal fashion ages quickly while staples and basics keep their value. Inventory can also rise for good reasons, such as new stores, earlier buying ahead of a price rise, or a planned launch, so ask for the split by age and season. Check the provision too, because rising stock with a flat provision can mean profit is overstated. For brands that sell to retailers, compare receivables with sales. Days sales outstanding = receivables ÷ sales × 365. A rising collection period can mean extended terms, goods pushed into the channel at period end, or a customer in difficulty. Judge fashion and fad risk by asking how much revenue sits in one product, trend or customer, and whether repeat purchase and full-price sell-through are holding. Trading down helps private label and discounters and hurts mid-priced brands that lack a clear quality gap. Link each warning sign to a margin consequence, because the stock only falls when earnings are cut. Shorts need a catalyst and a cheap way to be wrong. Borrow cost, crowding and a squeeze after good news are real, so size small and add only when markdowns, weak sell-through or a guidance cut confirm the thesis. Interview point: name the warning sign, give the margin consequence, and say what evidence would show you are wrong.

WORKED EXAMPLE: WHAT DOES BRIGHTWELL'S STOCK BUILD COST?

Brightwell Outfitters, an invented fashion retailer, had sales of 1,000m last year and 1,060m this year. Cost of sales was 600m last year and 650m this year. Year-end inventory was 140m last year and 185m this year. EBIT this year is 90m. Conventions: days of inventory = inventory / cost of sales x 365; assume excess inventory is cleared at a loss of 30% of its cost; ignore tax.

Answer: Brightwell holds about 33m of excess stock, and a 30% clearance loss would cost about 10m, roughly 11% of EBIT, which supports a cautious or short view if the stock is seasonal fashion and no catalyst is priced in.

Interview tip: Give the three numbers in order: inventory growth against sales growth, days of inventory against last year, and the cost of clearing the excess. Then name the catalyst that would force the markdown.

INT.HS.4.c · Consumer and Retail

Identify which consumer sub-sector a company belongs to, state how its economics differ (gross margin, fixed cost share, capital intensity, cyclicality) and name the metric that leads for each.

A consumer company is not one business, so the first move in any answer is to say which kind it is. Branded consumer goods own a name, sell mostly through retailers, and often earn gross margins well above half of sales in beauty and spirits and lower in packaged food. Their lead numbers are organic growth split into price, volume and mix, and advertising as a share of sales. Food and beverage makers sell staples, so volume is steady and the debate is pricing against input costs such as grain, dairy, packaging and energy, which usually pass through with a lag of some months. Restaurants sell a perishable product with heavy labour and rent, so same-store sales, four-wall margin and the franchised share of the estate lead. A franchisor collects royalties and needs little capital, whereas an operator of owned sites carries leases and wage risk. Store-based retail buys and resells, so gross margin is thinner and the lead numbers are inventory turns, sales per square foot and rent as a share of sales. E-commerce swaps rent for delivery, returns and marketing, so contribution margin per order and repeat rate by cohort lead. Consumer services such as gyms, childcare and salons sell time or access, often by subscription, so members, churn, utilisation and price per member lead. Two differences drive most of the risk. The first is fixed cost share, which sets operating leverage. Operating leverage = contribution ÷ operating profit. A restaurant group or gym with mostly fixed costs sees profit move several times faster than sales, while a brand that spends flexibly on marketing moves less. The second is cyclicality, which sets how demand behaves in a downturn. Staples hold up, whereas discretionary categories such as apparel, dining out and travel fall faster, and trading down shifts volume between price tiers. A generalist applies one multiple or one metric to every consumer name, for example comparing revenue growth for an asset-light franchisor with a chain that grows by opening sites. A specialist also asks whether growth is organic, from new sites, or bought. Interview point: name the sub-sector, give its lead metric and its cost fixity, and only then offer a view.

WORKED EXAMPLE: THREE CONSUMER COMPANIES, THREE DIFFERENT RISKS

A portfolio manager asks you to compare three invented consumer companies, each with sales of 1,000m: Tarn Provisions (packaged food), Quillon Dining (owned restaurants) and Marlow Beauty (branded cosmetics). Variable costs are 70%, 45% and 63% of sales; fixed costs are 150m, 450m and 170m. Conventions: fixed costs stay fixed over the year, variable costs move one for one with sales, ignore tax and interest, and the downturn sales moves of −3%, −10% and −5% are illustrative, not forecasts.

Answer: Operating leverage is 2.0 for the food maker, 5.5 for the restaurant group and 1.85 for the beauty brand. In the same illustrative downturn, operating profit falls about 6%, 55% and 9%, so the restaurant group is the riskiest and needs a different question set.

Interview tip: Start with the kind of company, then give the lead metric and one number on cost fixity, such as operating leverage of 5.5, before any view. Say that you would test the sales assumption, because the profit result is only as good as it.

INT.HS.4.d · Consumer and Retail

Work out consumer unit economics: store four-wall profit and payback, restaurant and franchise economics, e-commerce order contribution and cohort payback, and brand price, volume and mix.

Growth in a consumer company is only worth paying for if each new store, restaurant or customer earns back its cost, so a specialist reads unit economics first. Four-wall profit is the profit of one site after its own costs, including rent, but before head office. Net investment is the build-out, fixtures and opening stock, less any landlord contribution. Payback = net investment ÷ annual four-wall profit. Healthy chains often pay back a new site in a few years, but the right figure depends on

lease length and format. New sites mature over two to four years, so judge them against the mature estate and by opening year. Check that recent openings are not weaker than early ones, because the best locations are taken first. Cannibalisation matters too, because a new site that takes sales from its neighbours adds less to the group than its own sales suggest. Restaurants add a cost split of food, labour and occupancy to the same test. A franchisor earns a royalty on franchisee sales, so it depends on the franchisee earning enough to stay open and keep investing. For e-commerce, start from the order. Contribution = order value − cost of goods − delivery − returns − payment fees. Marketing cost to win a customer is then recovered through repeat orders. Payback months = acquisition cost ÷ monthly contribution per customer. Always look at cohorts, because a blended repeat rate can hide that newer customers are weaker and costlier to win. Brands and food makers use a different bridge, which splits growth into price, volume and mix. Price is the list price change, volume is units sold, and mix is the shift between cheaper and dearer products. Gross margin then moves with price against input costs, so a price rise that only covers inflation adds revenue but no profit. The usual mistake is to extrapolate the best store, the best cohort or the best quarter. Interview point: give payback or cohort payback with the assumptions behind it, then say what would make it worse.

WORKED EXAMPLE: DOES OAKHURST'S ROLLOUT STILL PAY BACK?

Oakhurst Kitchenware, an invented homewares chain, plans 40 new stores. A new store costs 850k to build, 350k for fixtures and opening stock, and 60k to open, less a landlord contribution of 160k. Gross margin is 42%, site costs are 690k a year and a mature store sells 3,000k. Sales are 70%, 90% and 100% of mature in years 1 to 3. Conventions: ignore tax and head office costs, year-end cash flows, and all figures in thousands of pounds.

Answer: A mature Oakhurst store earns 570k on 1,100k invested and pays back in 2.81 years. Cannibalisation takes that to 3.11 years, and a weaker recent vintage to 4.73 years, so the rollout case depends on the vintage.

> **Interview tip:** Give the payback, then the two things that would lengthen it: cannibalisation and weaker new sites. Interviewers listen for payback by opening year, not a single average.

INT.HS.4.e · Consumer and Retail

Value a consumer stock on a consistent basis (lease treatment, free cash flow, what is priced in), then build a long or short view with scenarios, a catalyst, position size and a stated way to be wrong.

Valuation in this sector follows the business model, and the work is to put every company on a consistent basis before comparing it. Brands and food makers are valued on price to earnings and enterprise value to EBITDA against peers and their own history, with premiums for organic growth and returns. Leased estates need care, because current accounting standards put lease liabilities in debt and take rent out of EBITDA. Mixing the two bases is the common error, so either include leases in enterprise value and use EBITDA before rent, or exclude them and use EBITDA after rent. Free cash flow yield = free cash flow after rent, tax, interest and capital spending ÷ market value. This is the cleaner test, but split capital spending into maintenance and growth, and watch working capital swings at the year end. Early-stage e-commerce may be valued on revenue or gross profit, but only with a believable path to a contribution margin that covers fixed costs. Normalise margins before applying a multiple, because a peak margin makes a stock look cheap and a trough margin makes it look dear. Then reverse the price. Ask what comp, margin and growth the current valuation needs, and whether that is more or less than consensus. A stock can be cheap on a multiple and still be expensive against its expectations. A long idea needs a reason the market is wrong, such as a margin recovery it doubts or a brand it treats as dying. A short idea needs a reason earnings will fall, such as stock build or fading traffic, and a catalyst such as results, a trading update or the peak season. Check positioning, since heavy short interest, high borrow costs or a crowded long change how the stock reacts to news. Build scenarios with probabilities and compare upside with downside. Expected move = sum of probability × scenario price − current price. Size the position by the loss if wrong, not by conviction. Say in advance what would make you wrong, in measurable terms such as traffic turning positive or gross margin holding, and exit when it happens. Interview point: state the basis you used, what is priced in, the catalyst, the risk and reward, and the thing that would change your mind.

WORKED EXAMPLE: CHEAP ON THE MULTIPLE, BUT IS IT A LONG?

Hollis Home Stores, an invented retailer, trades at 4.00 with 500m shares. Net debt excluding leases is 300m, lease liabilities are 900m, EBITDA before rent is 600m and rent is 220m. Capital spending is 130m, tax 45m, interest 18m and working capital outflow 7m. Peers trade at 6.5 times enterprise value excluding leases to EBITDA after rent. Sales are 3,000m with gross margin 40% and other operating costs of 600m. Conventions: ignore tax effects on scenarios, 12-month horizon, one share price per scenario.

Answer: Hollis looks 7% cheaper than peers and offers a 9.0% free cash flow yield, yet the probability-weighted price is 3.94 against 4.00, with 32% downside against 19% upside, so there is no edge to buy until the catalyst improves the odds.

> **Interview tip:** State the basis you used for the multiple, then what the price implies, then the scenarios. Finish with the decision and the evidence that would change it, because cheap is not the same as mispriced.

INT.HS.5.a · Technology and Software

Judge a software stock on growth-adjusted multiples, net revenue retention and its direction, billings against revenue and the rule of 40.

Software investors pay for the durability of growth, so the first job is to see what a headline multiple is really buying. Enterprise value to sales is the usual starting point because many software companies report thin profit. Divide the multiple by growth to compare peers. Growth-adjusted multiple = EV to sales ÷ revenue growth in points. A lower figure is cheaper per point of growth, but it uses growth already delivered. Enterprise value to gross profit is a fairer yardstick when gross margins differ, because a pound of sales is worth more at an 85% margin than at 65%. The rule of 40 adds revenue growth to free cash flow margin and typically separates growth bought with heavy losses from growth that pays for itself. Treat it as a screen and not a verdict, because a score can rise when management cuts sales and marketing, which flatters margin while starving future growth. Net revenue retention (NRR) is this year's revenue from last year's customers, after upsell, downgrades and churn. A level above 110% is often healthy, but its direction matters more than its level. Revenue growth is roughly the NRR above 100% plus the contribution of new customers. A falling NRR behind a high multiple is the classic warning, especially when new customers are masking it. Gross revenue retention ignores upsell, so it shows how much of the base is lost, and a few large expanding customers can lift NRR while the broad base leaks. Billings, which is revenue plus the change in deferred revenue, leads reported revenue, so billings growing slower than revenue signals a slowdown before the income statement shows it. Check whether invoicing terms changed before reading demand into a billings gap, and compare it with remaining performance obligations, the contracted revenue not yet recognised. The common mistake is to call a stock cheap because its multiple is below peers without asking what the market sees in the retention data.

WORKED EXAMPLE: IS PELLAM CLOUD A LONG AT TEN TIMES SALES

Pellam Cloud is a listed software company with an enterprise value of 3,720m. Revenue was 300m last year and is 372m this year, with a gross margin of 78% and a free cash flow margin of 12%. Last year growth was 31% and the free cash flow margin was 4%. Net revenue retention is 108%, down from 119%. Deferred revenue was 110m at the start of last year, 130m at its end and 142m at the end of this year. Peers trade at about 0.40 turns of sales per point of growth. Conventions: growth is roughly the net revenue retention above 100% plus a contribution from new customers, and for next year assume retention slips to 106% with the new-customer contribution unchanged. Is Pellam a long, and how would you say it aloud?

Answer: Pellam is not an attractive long at ten times sales. It already costs 0.42 turns per point of growth, which rises to between 0.45 and 0.56 on forward growth of 22% to 18%, because retention fell from 119% to 108%, billings grew 20% against revenue growth of 24%, and a rule of 40 score of 36 hides a swing from growth to margin. It becomes interesting if retention stabilises.

> **Interview tip:** Say what the multiple buys first, then show that the score and the headline growth hide a weakening base, and finish with what would change your mind, such as retention stabilising or billings catching up with revenue.

INT.HS.5.b · Technology and Software

Assess the weak points of a software company: dilution from share-based pay, capitalised development, disruption and customer concentration, and turn them into short signals.

A software multiple is only as good as the profit it is applied to, so rebuild that profit before trusting it. Share-based compensation (SBC) is a real cost paid in shares. Measure it as a percentage of revenue and as annual dilution of the share count, and remember that buying shares back to offset it uses cash. Annual dilution = new shares issued ÷ shares in issue at the start. Capitalised development moves engineering cost from the income statement into investing cash flow and later into

amortisation. Watch whether the capitalised share of total development spend is rising, because that flatters EBITDA without changing what was spent. Free cash flow then looks better than the profit, so compare the two over several years. Disruption risk matters most where pricing is per seat and switching costs are low. A narrative is not a short, so look for the evidence in net retention, seat counts, discounting and win rates against the challenger. Switching costs sit in integrations, stored data and retraining, and they are what protect a renewal. Customer concentration means one renewal can reset the revenue base. Read the contract term, the termination rights and what the customer could do in house. A renewal at a lower price drops almost entirely to profit, so the damage to earnings is larger than the damage to revenue. A good short combines weak numbers that already exist, a dated catalyst, a tolerable borrow cost and a defined loss limit. Borrow cost and the share of the free float already sold short tell you whether the trade is crowded, because crowded shorts can rise sharply on good news. Position size = loss limit ÷ percentage move to the stop. The common mistake is to short a theme with no timing.

WORKED EXAMPLE: SIZING A SHORT ON TAMSIN WORKFLOW

Tamsin Workflow is a listed software company with revenue of 250m and adjusted EBITDA of 55m, which excludes share-based pay of 30m. It spent 80m on development this year, of which 28m was capitalised, and 74m last year, of which 18m was capitalised. Its largest customer, 28% of revenue, renews in seven months and has said it will seek a price 20% lower. The market capitalisation is 1,500m, net cash is 100m and the share price is 40. Borrowing the stock costs 3% a year and results are due in three months. You are considering a short with a target of 28 and a stop at 48, you give the thesis a 45% chance, and the loss limit is 0.5% of fund value. Conventions: ignore tax, assume a six-month hold, treat share-based pay and capitalised development as costs when computing economic EBITDA, and assume a price cut falls straight to profit.

Answer: Tamsin is a valid but modest short: the earnings are low quality, capitalisation is rising, and a 20% price cut would take adjusted EBITDA down by about a quarter, but the expected gain is only 0.40 a share against a break-even chance of 43%, so I would size it at about 2.5% of fund value with a stop at 48 and revisit it after results.

> **Interview tip:** Give the quality of earnings evidence first, then the catalyst, then the arithmetic of reward and risk and the size. Say what would make you wrong, such as the renewal at the old price.

INT.HS.5.c · Technology and Software

Classify a technology company into its sub-sector and name the economics, metrics and valuation yardstick that fit it.

A technology company is not one kind of business, so the first answer to any question about one is which kind. Software as a service sells subscriptions, typically earns high gross margins, and is judged on net revenue retention, billings and the rule of 40, usually against enterprise value to sales or to gross profit. Infrastructure and tools sell to developers and operations teams, often priced by usage, so revenue follows customer volumes and can fall when customers optimise their spending. Look at consumption growth, committed spend against actual use, and gross margin after hosting cost. IT services is a people business. Services revenue = billable staff × utilisation × hours × rate. Margins are thin and steady, often in the low to middle teens at operating level, and the numbers to watch are utilisation, attrition, pricing on renewals and bookings against revenue. It is valued on earnings multiples because a sales multiple ignores labour cost. Internet and marketplaces earn from advertising, commissions or both. Look at gross merchandise value, active users, repeat cohorts and the contribution margin per order after fulfilment and marketing. Take rate = revenue ÷ gross merchandise value. Network effects make winners profitable at scale, but growth bought with subsidies can vanish when the subsidy stops. Semiconductors and hardware are cyclical and capital heavy. Look at orders against shipments, inventory in the company and in the channel, lead times, capacity utilisation and the design wins that lock in future volume. Value them on mid-cycle earnings, because an earnings multiple looks lowest at the top of the cycle. The same label hides different economics, so a fabless chip designer, a foundry and a device maker should not share a multiple. Many large groups mix several of these, so value each segment on its own yardstick and ask which segment the market is really paying for. The common mistake is to apply a software multiple to a hardware or services earnings stream.

WORKED EXAMPLE: ONE GROUP, THREE KINDS OF TECHNOLOGY BUSINESS

Kestrel Technologies plc is a listed group with three segments. Software subscriptions have revenue of 240m. IT services has revenue of 520m and an operating margin of 11%. Hardware has revenue of 340m, an operating margin of 20% this year and a mid-cycle margin of about 14%. The market capitalisation is 2,900m and net debt is 300m. Assume comparable software companies trade at 6 times sales, services companies at 12 times operating profit and hardware companies at 11 times mid-cycle operating profit. What does the market imply about the software segment, and how would you say it aloud? Conventions: ignore central costs and tax, and treat the peer multiples as assumptions.

Answer: Kestrel is three businesses that need three yardsticks. On the sum of the parts the market pays about 21% more than peer multiples justify, which means it is paying about 8.3 times sales for the software segment against 6 for peers, or 7.4 times even if hardware is valued on peak margins.

Interview tip: Say which kind of business each segment is before you quote any multiple, then show the value you derive and the multiple the market implies for the segment it is really paying for.

INT.HS.5.d · Technology and Software

Read the cycle in semiconductors, hardware and IT services from orders, inventory, utilisation and margins, and value cyclical earnings on a mid-cycle basis.

Cyclical technology earnings must be read through the cycle and not at the point where they are reported. Start with the demand signals. Book-to-bill compares the orders won with the shipments made in the same period. Ratio = orders received ÷ shipments in the period. A ratio above one means the order book is growing, and a ratio below one means revenue will soon follow orders down. Then check inventory, because stock builds up inside the company before the income statement shows any weakness. Inventory days = inventory ÷ cost of sales × 365. Rising days at the company point to slowing demand, and rising stock at distributors, which is the channel, means shipments are running ahead of real end demand and will be cut later. Shortages bring double ordering, where customers order more than they need to secure supply, and it reverses sharply. Lead times that lengthen and then shorten confirm the turn. Operating leverage works both ways, because fixed factory and research costs make margins rise quickly on the way up and fall faster than revenue on the way down. Compare incremental margins on the way up with decremental margins on the way down. Capital spending and depreciation follow the cycle with a lag, and under-used capacity pulls gross margin down. The valuation trap is the earnings multiple. A low price to earnings at peak earnings is a warning and not a bargain, so value the company on mid-cycle earnings, such as an average over a full cycle, and check how far the current margin sits above it. IT services run on a different clock. Look at revenue per head, utilisation, attrition, the share of work done offshore, and bookings against revenue. Bookings that lag revenue show the next year slowing. Clients press for lower prices on renewals, and automation can reduce billable hours, so test pricing and volume in the numbers and not in a story about technology replacing staff. The common mistake is to buy a cyclical because it looks cheap on the earnings of its best year.

WORKED EXAMPLE: CALDER DEVICES AT THE TOP OF THE CYCLE

Calder Devices plc is a listed chip maker with an enterprise value of 5,000m. Revenue and operating margin over the last five years were 1,200m at 16%, 1,000m at 10%, 1,300m at 20%, 1,600m at 28% and 1,800m at 32% this year. Cost of sales this year is 42% of revenue and inventory is 188m. Last year cost of sales was 44% of revenue and inventory was 110m. Orders have run at 0.86 of shipments for two quarters. In the previous downturn operating profit fell by 46 for each 100 of lost revenue. Is the stock cheap, and how would you say it aloud? Conventions: mid-cycle profit is the five-year average, use 365 days, ignore tax, and assume the order shortfall feeds straight into next year's revenue.

Answer: Calder is not cheap. The 8.7 times on peak profit is 15.9 times on mid-cycle profit, inventory days have risen from 57 to 91 and orders are 14% below shipments, which points to about a 20% fall in operating profit next year even before any move towards the mid-cycle level of 315m.

Interview tip: Show the peak multiple, then the mid-cycle multiple, then two leading indicators. Admit that the market usually looks through a cycle, and say what price would tell you the downturn is already in it.

INT.HS.5.e · Technology and Software

Build and present a long or short view on a technology company from its unit economics, the expectations in its price, a dated catalyst and what would make you wrong.

A technology idea becomes a position only when the unit economics, the expectations in the price and a dated catalyst line up. Begin with the unit economics. For a subscription business, customer acquisition cost payback is the number of months of gross profit needed to earn back the sales and marketing spend. Payback = sales and marketing spend ÷ (new recurring

revenue × gross margin) × 12. A payback under about two years is often considered acceptable, though churn changes that. A rising payback with falling retention means each new customer is worth less. For a marketplace, ask what each order earns after fulfilment, payment and marketing costs, which is its contribution margin, and whether repeat cohorts spend more over time. Growth with a flat contribution per order is worth much less than growth with a rising one. Then reverse the multiple. Ask what growth and margin the current price already assumes, by solving for the growth that justifies today's valuation. If the price assumes more than the unit economics can deliver, you have a short. If it assumes less than the retention and billings already show, you have a long. That gap is your variant perception. Next, name the catalyst, such as results, a guidance update, a contract renewal, a product launch, a lock-up expiry or an index change. A view with no date can be right and still lose money while you wait. Check how crowded the idea is through short interest, borrow cost and positioning. For every idea write down what would make you wrong, such as retention stabilising or margins turning, and the price at which you exit. Present the idea in a fixed order: the business, the numbers, the price, the gap, the catalyst, the risk and the size. The common mistake is to present a good company as a good stock.

WORKED EXAMPLE: THE CASE AGAINST HOLLIS MARKET

Hollis Market plc is a listed online marketplace. This year gross merchandise value is 2,000m from 25m orders at an average of 80, and revenue is 240m. Last year the average order was 78, the take rate was 11.5%, fulfilment and payment cost 3.30 per order and marketing cost 2.00 per order. This year the take rate is 12.0%, fulfilment and payment cost 3.40 and marketing costs 2.60. Central costs are 65m and the enterprise value is 2,800m. Assume gross merchandise value grows 18% a year for three years with the take rate rising to 13%. Results are due in seven weeks, 20% of the free float is short and borrowing costs 2% a year. Is there a variant perception? Conventions: a required return of 10% a year, an exit at 6 times revenue after three years, and ignore dilution and tax.

Answer: There is a variant perception. At 11.7 times revenue the price needs revenue to grow about 37% a year for three years, while the unit economics, with marketing per order up 30% and contribution per order flat, support about 21%. That points to a modest short with a catalyst at the results, sized small because 20% of the float is already short.

> **Interview tip:** Use the fixed order: business, numbers, price, gap, catalyst, risk and size. State the growth the price needs next to the growth the economics support, and say what you would need to see to change your mind.

INT.HS.6.a · Business Services

Analyse a business services company's organic growth, the margin against wage inflation, and contract wins and losses.

Many business services groups grow by buying others, so reported growth tells you little about the underlying business. Rebuild organic growth first. Organic growth = reported growth − acquisition effect − currency effect. Remove disposals too, and check the definition in the footnotes, because groups differ on when an acquired business starts to count as organic, often after twelve months of ownership. Then split organic growth into price, volume and mix, since price-led growth in a labour business is frequently just wage inflation passed on to customers. Most of the cost base is people, often well over half of revenue in cleaning, catering and security. So the margin test is the contract price escalator against pay. Breakeven price rise = labour share of revenue × pay rise. If labour is two thirds of revenue and pay rises 5%, contracts must reprice by about 3.3% just to hold profit. Legislated minimum wage steps matter more than average pay, because frontline staff are repriced by law on a known date. Check how quickly contracts reprice. Fixed-price terms lag inflation and squeeze margin, while indexed or open-book terms protect it but make the customer more willing to rebid. Productivity, absence, overtime and agency cover are the offsets and the leaks. Contract wins and losses need a net view. A headline contract value is a total over several years, so divide it by the term to find the annual run rate, then allow for a ramp-up and for thin margin while the contract mobilises. Compare that with gross retention, which is the share of last year's revenue that stayed, and ask for the rebid calendar and the reasons for each loss, whether price or service. A nuance a generalist misses is that protected margin can be borrowed from customers: if price rises held profit while volume fell, the next rebid is where the bill arrives. The usual mistake is to accept the headline growth rate or the headline contract value.

WORKED EXAMPLE: READING THE GROWTH AND MARGIN OF BRANTWICK CATERING

Brantwick Catering is a listed contract caterer. Last year revenue was 2,000m and this year it is 2,160m. Acquisitions added 110m and currency movements reduced reported revenue by 10m. Last year labour cost was 1,240m, other costs 650m and operating profit 110m. Price rises on retained contracts were 4%, so volume explains the rest of organic growth. Next year contract prices rise 4%, pay rises 7% after a minimum wage step, volumes are flat and other costs are unchanged. The group has also announced a five-year contract worth 450m in total, expected to deliver 40% of its full run rate in the first year, and it lost contracts worth 70m a year. What is organic growth, what happens to margin, and are the contract headlines good news? Conventions: price and volume effects are additive on last year's revenue, labour moves only with pay, and all contract figures are annual revenue.

Answer: Brantwick's organic growth is 3.0% of the 8.0% reported, made of price up 4% and volume down 1%. A 7% pay rise against a 4% price rise cuts operating margin from 5.5% to about 5.0% and profit by 6.8m. The contract news is a net loss of 34m in year one and only turns positive at full run rate.

> **Interview tip:** Say the organic number first, then the breakeven price rise in one sentence, then net the contract news. Show you treat headline contract value as a multi-year total and not as this year's revenue.

INT.HS.6.b · Business Services

Judge acquisition accounting, quality of earnings, staffing cyclicality and cash conversion in a business services roll-up, and decide whether it is a long or a short.

Roll-ups are valued on adjusted earnings, so quality of earnings is most of the case. Start with how adjusted EBITDA is built. Look for exceptional costs that are added back every year, run-rate synergies not yet achieved, and profit from acquired businesses counted before the group has owned them for a full year. A cost that recurs for four years is an operating cost. Next, test the cash. Cash conversion = operating cash flow after capex and before interest and tax ÷ adjusted EBITDA. In healthy asset-light services this is often around 80% or more, and a ratio that slides over several years means adjusted profit is drifting away from cash. Read it with receivable days and with accrued income, which is revenue recognised but not yet billed, because both can grow faster than sales when revenue recognition is aggressive. Then check acquisition accounting. Earn-outs and deferred consideration are debt-like and belong in leverage and in covenant tests, and rising goodwill shows growth bought at ever higher prices. The multiple arbitrage of buying small firms cheaply and being valued at a higher multiple lasts only while purchase prices stay low and organic growth holds. Staffing is the most cyclical corner. Operating leverage = % change in operating profit ÷ % change in revenue. Because branch and overhead costs are semi-fixed and clients cut temporary hours first, this ratio is often two to three times, and permanent placement fees fall furthest. Working capital behaves in a way that surprises people: staff are paid weekly while customers pay in 30 to 60 days, so growth consumes cash and a downturn releases it, which flatters conversion at the bottom. Shorts are strongest where conversion falls, add-backs grow, goodwill outpaces earnings and covenant headroom is thin. The common mistake is to treat adjusted EBITDA as cash.

WORKED EXAMPLE: CLEANING THE CASH OF WEXCOMBE AND A STAFFING DOWNTURN AT KETTERBY

Wexcombe Group is a listed roll-up of facilities businesses. Adjusted EBITDA is 160m. It includes an add-back of 12m of restructuring costs paid in cash that has appeared every year for five years, and 10m of run-rate synergies not yet achieved. Capex was 20m and working capital absorbed 14m. Net debt is 420m, and earn-outs owed to sellers are 22m. A covenant requires net debt including earn-outs to be no more than 3.0 times adjusted EBITDA. Separately, Ketterby Recruitment has temporary gross profit of 210m, permanent placement gross profit of 90m and operating costs of 240m. In a downturn temporary gross profit falls 8%, permanent falls 35% and costs fall 6%. How good is Wexcombe's cash and covenant, and how does Ketterby's profit behave? Conventions: ignore tax and interest, cash conversion is operating cash flow after capex over adjusted EBITDA, and the synergies produce no cash yet.

Answer: Wexcombe turns only 65% of adjusted EBITDA into operating cash and 51% after earn-outs, and its leverage is 2.76 times on the reported figure but 3.20 times once recurring and unearned add-backs go, so the covenant depends on accepting them. Ketterby shows operating leverage of about 3.5 times, with profit down 56% on a 16% fall in gross profit.

> **Interview tip:** Show the two jobs separately: strip the add-backs and rerun the covenant for the roll-up, then compute the profit drop and the ratio for the staffing group. Name the ratio out loud.

INT.HS.6.c · Business Services

Classify a business services company into its sub-sector and name the economics and metrics that matter for it.

Business services is a label for several different businesses, so the first answer to a question about one is which kind it is. Outsourcing and support services, such as cleaning, catering, security and facilities management, sell multi-year contracts that are labour heavy and capital light. Operating margins are typically in the low to mid single digits, so a small pay or price gap moves profit a long way, and the metrics that matter are organic growth, retention, margin by contract and pay against price. Testing, inspection and certification sells engineers and laboratories to customers who must prove compliance with safety, quality or environmental rules. Demand is often driven by regulation and repeats on a cycle of re-testing, margins are typically higher, and accreditation is the barrier to entry, so look at utilisation, the regulated share of revenue and capital spending on laboratories. Staffing places temporary and permanent workers and reports revenue that is mostly payroll passed through, so gross profit is the figure to follow. Conversion ratio = operating profit ÷ gross profit. A low ratio means little of each pound of gross profit survives the branch costs, which is when a downturn hurts most. Professional services sell people by the hour or project, so the economics are utilisation, rate and attrition. Utilisation = billable hours ÷ available hours. Data and information services sell subscriptions, so net revenue retention, price increases on renewal and the uniqueness of the data decide the value. Acquisitive compounders sit across all of these and buy small firms in fragmented markets. Judge them by organic growth, the return on what they pay for bolt-ons and the share of growth that is bought. Across every sub-sector read the same short list first: organic growth, retention, margin trend against labour cost, cash conversion, customer concentration and net debt including leases and earn-outs. The common mistake is to apply one multiple and one growth story to all of them.

WORKED EXAMPLE: TELLING THREE BUSINESS SERVICES COMPANIES APART BY THEIR NUMBERS

A portfolio manager gives you three invented companies with no description. Alder has revenue of 1,500m, operating profit of 60m, capex of 15m, labour at 70% of revenue and most revenue under contracts of three to seven years. Brook has revenue of 600m, operating profit of 108m, capex of 54m, labour at 45% of revenue, and 70% of revenue arises from mandatory safety and compliance checks. Cinder has revenue of 2,400m, gross profit of 240m, operating profit of 60m and revenue that is almost all payroll passed through. What is each, what does each cost of a one-point pay gap, and what do you read first? Conventions: a pay gap means pay rises one percentage point faster than the price customers pay, with volumes and other costs unchanged, and Cinder's costs below gross profit are fixed.

Answer: Alder is an outsourcer with a 4.0% margin, so a one-point pay gap costs 17.5% of its profit. Brook is a testing and inspection business with an 18.0% margin and regulatory demand, where the same gap costs 2.5%. Cinder is a staffing group with a conversion ratio of 25%, so a 10% gross profit fall cuts profit 40%.

> **Interview tip:** When asked about a business services company, first say which sub-sector it is and why, using margin, capex and revenue visibility. Then name the two or three metrics that matter for that kind.

INT.HS.6.d · Business Services

Value a business services company on cash flow and what the price already assumes, and judge the reward and risk of a long or short.

Valuation in business services starts by choosing a cash measure that fits the sub-sector, because a single multiple of EBITDA flatters some and punishes others. Under lease accounting, EBITDA excludes the cost of rented depots and branches, so use EBITDA after lease payments or include lease liabilities in net debt. For groups that buy many businesses, use EBITA, which charges depreciation but not the amortisation of acquired intangibles, and check that the cost of acquisitions is not hidden. Two companies on the same multiple of EBITDA can offer very different cash. Free cash flow yield = free cash flow after leases, interest and tax ÷ market value of equity. A group converting 95% of EBITDA into cash is far cheaper than one converting 55% at the same multiple. To see what is priced in, turn the yield into an expectation. Implied growth = required return − free cash flow yield. If a stock offers a 4% yield and you require 8%, the market is paying for about 4% growth in perpetuity, and the question is whether organic growth, price and margin can support that. This is a simple approximation and works best for steady cash flows. Staffing breaks the rule: a low multiple on peak earnings is not cheap, so normalise earnings through the cycle and expect the multiple to look highest at the trough. Compounders earn a premium multiple for steady organic growth, high returns on the capital they reinvest and a long runway of bolt-ons. The premium is fragile. When organic growth slows or acquisition prices rise toward the group multiple, both the earnings growth and the multiple can fall together. Weigh the position by skew. Reward to risk = upside to target ÷ downside to stop. For a short, add the cost of borrow, the crowding of holders in quality names, and the catalyst, since a short without a date can cost more in carry than it earns.

WORKED EXAMPLE: SAME MULTIPLE, DIFFERENT CASH AT ESTOVER AND FENMOOR

Estover Outsourcing and Fenmoor Compliance are invented listed companies. Each has a market value of 1,400m, net debt including leases and earn-outs of 400m and EBITDA after lease costs of 200m. Estover's free cash flow after leases, interest and tax is 98m a year and consensus expects organic growth of 2%. Fenmoor's free cash flow is 56m a year after heavy acquisition spending and consensus expects organic growth of 3%. Your required return on both is 8%. What is each priced for, and what is the reward to risk of shorting Fenmoor with a stop 10% above the current price? Conventions: the implied growth formula is an approximation for steady cash flows, and ignore borrow costs and tax on gains.

Answer: Both companies are on 9.0 times EBITDA, but Estover yields 7.0% and is priced for 1.0% growth while Fenmoor yields 4.0% and is priced for 4.0% growth against 3% expected. Fenmoor is the candidate short, with a 20% downside to a 10% stop, a reward to risk of 2.0, subject to a dated catalyst and the cost of borrow.

> **Interview tip:** Say the multiple is the same, then move to cash: yield, implied growth, and the gap to what you believe. Finish with reward to risk and a catalyst.

INT.HS.6.e · Business Services

Build a long or short view on a business services company from red flags, variant perception, catalysts and what would make you wrong.

A business services view is built by finding what the market expects, showing why it is wrong, and naming what will prove it. Start with the variant perception. Say what consensus expects for organic growth, margin and cash conversion, and where your evidence points elsewhere, such as rebid outcomes, wage settlements, customer reviews or hiring surveys. Then run the red flags. On the short side the strongest are organic growth slowing while acquisition spending rises, cash conversion falling, receivables and accrued income growing faster than revenue, add-backs that recur, goodwill rising faster than earnings and thin covenant headroom. In outsourcing, look for onerous contract provisions being released, large contracts mobilised at a loss, pension deficits inherited with staff and dependence on one government customer. In testing, a failed inspection or a fraud finding damages the one asset that matters, which is trust. In professional and data services, falling utilisation, rising attrition, lost licences and software that substitutes for analysts are the warnings. On the long side, the best ideas pair rising organic growth with stable margin, high conversion and bolt-ons bought at multiples well below the group's own. Every idea needs a catalyst with a date, such as results, a rebid decision, a covenant test or a wage settlement. Reward to risk = (target price − current price) ÷ (current price − stop price). Size by that ratio and by how liquid and crowded the stock is. Finally write down what would make you wrong, for example organic growth recovering, a major renewal or a lender accepting the add-backs, and the price or the evidence at which you exit. Present it in order: the call, the three numbers that carry it, the catalyst, and the way you could be wrong. The common mistake is to describe the company well and never say what the market has wrong.

WORKED EXAMPLE: A SHORT IDEA ON NORREST GROUP FROM FIRST PRINCIPLES

Norrest Group is an invented listed facilities and inspection compounder. It has 250m shares at 4.00 a share, so a market value of 1,000m, and net debt including leases and earn-outs of 450m. Adjusted EBITDA is 190m, which includes 22m of add-backs, 12m of recurring restructuring and 10m of synergies not yet achieved. A covenant requires net debt to be no more than 2.75 times adjusted EBITDA. Organic growth is 1.5% against consensus of 3.5%, and cash conversion has fallen from 78% to 58% over three years. Your base case is EBITDA of 175m next year valued at 7.5 times with net debt of 450m. Your bear case is EBITDA of 165m at 7.0 times with net debt of 460m. You set a stop at 4.40. Build the short and say what would make you wrong. Conventions: ignore tax, borrow cost and dilution, and use the same EBITDA figure for the multiple and for leverage.

Answer: Norrest looks cheap at 7.6 times adjusted EBITDA but trades on 8.6 times underlying EBITDA with only 2.6% covenant headroom, while organic growth of 1.5% and falling conversion contradict a consensus of 3.5%. The base case is down 13.8% and the bear case 30.5% against a stop 10% above the price, a reward to risk of 1.4 and 3.1, so it is a short with a dated catalyst.

> **Interview tip:** Present it in order: the call, three numbers (organic growth, conversion, underlying leverage), the catalyst, then what would make you wrong. Keep the stop in the sentence.

INT.HS.7.a · Energy and Infrastructure

Assess a commodity-exposed company by testing price and curve sensitivity, breakevens, balance sheet, reserve life and decline rates, and capital discipline.

A commodity producer is a leveraged bet on a price it does not control, so the analysis starts with what the shares already discount. Equities usually price off the futures curve rather than spot, so look at the whole curve. A steeply backwardated curve, where later prices are lower, means today's earnings flatter the long-run picture. Then build the sensitivity: how much EBITDA moves for each unit of price change after hedges, remembering that hedges expire and the full exposure returns. Next find the cash breakeven, the price at which operating cash flow covers maintenance capital and interest. Cash breakeven price = cash cost per barrel + (maintenance capex + interest) ÷ barrels sold. Keep it separate from the full-cycle breakeven, which also pays for growth and the dividend, because the two answer different questions. Dividends, buybacks and balance sheet decisions start to break near the cash breakeven. Check the balance sheet against the trough price, not the current one, using net debt to EBITDA, maturities, covenants and the bank borrowing base that is reset against reserves. Reserve life says little without the decline rate. Reserve life = reserves ÷ annual output. A field that declines 15% a year needs spending every year just to stand still, and a shale well can lose a large share of its output in the first year, so the base decline is steep. Maintenance capex therefore follows from the decline rate and the cost of replacing a flowing barrel, and a free cash flow yield is only meaningful after that charge. The common mistake is to call a high free cash flow yield cheap when it is flattered by under-investment or a peak price. A nuance generalists miss is that service and labour costs rise with prices, so a breakeven drawn at the top of the cycle is too low. Good answers end with a view on cycle position and management behaviour. Do they chase growth and buy back stock at the top, or invest only where a new barrel earns more than the cost of capital at the price you expect?

WORKED EXAMPLE: PRICE SENSITIVITY AND BREAKEVEN FOR AN OIL PRODUCER

Tarn Ridge Energy is an invented oil producer. Output is 30,000 barrels a day (10.95m barrels a year at 365 days), the realised price is USD 70 a barrel, cash costs including transport and royalties are USD 28 a barrel, interest is 50m a year, net debt is 690m, proven and probable reserves are 120m barrels and the base decline rate is 15% a year. Replacing a flowing barrel costs about USD 40,000. Ignore tax and hedges. Is the equity safe if oil falls to USD 55, and where is the breakeven?

Answer: Tarn Ridge earns 460m of EBITDA at USD 70 and about 296m at USD 55, with leverage rising from 1.5 to 2.3 times. Cash breakeven after 180m of maintenance capex and 50m of interest is about USD 49, so the balance sheet holds at USD 55 but there is no room for growth spending or a bigger payout. A 40% hedge at USD 62 would lift first-year EBITDA to about 326m, but only for 12 months.

> **Interview tip:** Say the breakeven price out loud and tie it to maintenance capex from the decline rate. Interviewers want to hear that you adjust free cash flow for the spending needed to stand still.

INT.HS.7.b · Energy and Infrastructure

Assess utilities, renewables and infrastructure by testing yield against rates, regulatory resets and policy catalysts, contracted versus merchant revenue, and financing costs.

Regulated utilities, renewables and infrastructure are valued like long-dated bonds with growth, so the first test is the dividend yield against the government bond yield and against its own spread history. When rates rise that spread narrows and the price falls, unless the cash flows are indexed to inflation. For a regulated utility the engine is the regulatory asset base and the allowed return on it. Equity value = equity asset base × allowed return ÷ cost of equity. This is a simple steady-state rule, but it shows that a reset of the allowed return moves value in proportion, so the date of the price control review is the catalyst. Check outperformance against allowances, such as lower costs or cheaper debt than the regulator assumed, because the market often pays for it and it tends to fade at the next review. Also check whether actual debt cost and gearing match the regulator's assumptions, since any shortfall falls on equity. For renewables and infrastructure, split revenue into contracted and merchant. Contracted revenue comes from fixed-price agreements, availability payments and inflation-linked concessions, so look at contract length and counterparty quality. Merchant revenue is exposed to power prices, and wind and solar typically sell at a capture price below the average price because everyone generates at the same time. Then check financing: refinancing maturities against current rates, dividend cover after interest, and gearing. Dividend cover = cash available for dividends ÷ dividends paid. The common mistake is to chase a high yield that is high because the dividend is about to be cut. A nuance generalists miss is that a long-dated, fixed-rate debt book delays the rate shock, so a stock can look safe on cover today and still be exposed at the next maturity wall. A good answer links yield, cover and refinancing into one view and names the next dated event.

WORKED EXAMPLE: REGULATORY RESET ON A WATER NETWORK

Calder Water Networks is an invented regulated utility. Equity asset base (regulated asset base less net debt) is 1,400m, the market capitalisation is 1,820m, the allowed return on equity is 7.5%, and the market cost of equity is 6.0%. The regulator has signalled that the next price control will cut the allowed return on equity to 6.5%. Use the simple steady-state rule that value equals equity asset base times allowed return ÷ cost of equity, and ignore growth and tax. How exposed is the share price?

Answer: At 1.30 times equity asset base Calder is priced above the 1.25 times that its current allowance justifies. A cut in allowed return to 6.5% points to about 1,517m, roughly 17% below the price, or about 13% if outperformance persists. A higher cost of equity could take the loss to 23%.

Interview tip: Show that you can turn a regulatory headline into a value change, and name the date of the decision. State the range, not a single number, because outperformance is the uncertain part.

INT.HS.7.c · Energy and Infrastructure

Classify an energy or infrastructure company as a producer, oil services, midstream, regulated utility, renewable or independent power, or tower business, and explain how its price-setting and cost structure differ from the others.

Energy and infrastructure is really five or six different businesses, so a good answer starts by saying which one the company is. Producers sell a commodity whose price they do not set, so earnings swing with the curve and value depends on reserves and decline rates. Oilfield services sell to producers, so revenue follows producers' capital budgets with a lag, and utilisation and day rates decide margins. Midstream companies own pipelines, storage and processing plants, and earn mostly fees for capacity reserved or volume moved, so contract structure and volumes matter more than the commodity price. Regulated utilities earn an allowed return on a regulated asset base, so growth comes from investment and the main risk is the regulator. Renewable and independent power producers sell electricity under contract or at market prices, with high upfront capital and almost no fuel cost, so the cost of capital matters more than the cost of fuel. Tower companies lease space to mobile operators on long contracts with annual escalators, and each extra tenant on an existing tower adds revenue at a very high incremental margin. Two questions sort the groups quickly. First, who sets the price: the market, a regulator or a contract? Second, how much of the cost base is capital already spent, and how much moves with output? Typically, producers have high but volatile margins, services have thinner and more cyclical margins, and midstream, utilities and towers have steadier cash flows that support more debt. Beware of mixed companies, because an integrated utility may hold regulated networks beside merchant generation, and a pipeline owner may keep some commodity exposure, so value each part with its own measure. The usual mistake is to apply one multiple to the whole sector, which makes a cyclical producer look cheap beside a contracted business that deserves a higher multiple. A nuance generalists miss is that the same macro event helps one group and hurts another. Falling gas prices, for example, hurt producers and merchant generators, but lower the fuel bill that a regulated utility passes through to customers. Classify first, and the right metrics, multiple and risk follow.

WORKED EXAMPLE: SIX ENERGY COMPANIES, ONE PRICE SHOCK

Six invented companies all carry an energy label. Harrow Fell Oil is a producer with revenue of 800m and EBITDA of 480m. Brack Drilling Services has revenue of 1,000m and EBITDA of 220m. Corran Pipelines has EBITDA of 360m, of which 85% is fee-based under take-or-pay contracts and 15% moves with commodity margins. Whinmoor Networks is a regulated electricity network with EBITDA of 300m and fuel passed through to customers. Saltmarsh Wind has revenue of 250m, costs of 70m, 70% of revenue contracted and 30% merchant. Pennine Towers leases sites to mobile operators on indexed contracts and has EBITDA of 200m. Oil and gas prices fall 20%. Use these rules: costs of the producer do not change; producers cut spending so service revenue falls 12% a year later at a 40% decremental margin; the commodity-linked margin of the pipeline falls 20%; wholesale power falls 15%, affecting only merchant revenue; ignore volumes and tax. Rank the damage and say how you would treat each.

Answer: Producer EBITDA falls 33.3%, services 21.8% a year later, the wind owner 6.25%, the pipeline 3.0%, and the network and towers do not move. Each needs a different measure, so classify before valuing.

Interview tip: When asked about an energy company, say which of the six groups it belongs to and who sets its price before you quote any multiple. Then name the one shock that matters for that group.

INT.HS.7.d · Energy and Infrastructure

Assess midstream, tower and oilfield services companies using contract share, utilisation, tenancy, distribution cover and contract expiry, and value them on contracted cash flow.

Midstream, towers and oilfield services look different, but each is judged on two things: how much of the cash flow is fixed by contract, and how fully the asset is used. For midstream, split EBITDA into fee-based contracts and commodity-linked margin. Take-or-pay and minimum volume commitments pay for capacity whether or not product flows, so check the share of EBITDA they cover, the remaining contract life and the credit quality of the shippers. A pipeline has largely fixed costs, so throughput against capacity drives operating leverage, and volumes depend on whether producers in the basin can drill profitably at the curve. Distribution cover = distributable cash flow ÷ distributions paid. Distributable cash flow should be after maintenance capex and interest, and a cover comfortably above 1.0 times with leverage often between 3 and 5 times EBITDA is typical for a fee-based business. A cover that depends on funding growth projects with new equity or debt is weaker than it looks. For towers, the key number is the tenancy ratio, the number of tenants per tower. Tenancy ratio = tenants ÷ towers. Each added tenant brings rent with little extra cost, so look at lease-up, the annual escalator, the average remaining lease term and the ground lease cost. The main risk is churn, because when two mobile operators merge, duplicate sites are decommissioned and tenants leave, often at renewal dates that were visible in advance. Oilfield services follow producers' spending with a lag, so earnings peak after oil prices do and recover after them. Utilisation, day rates and backlog are the metrics, because once utilisation passes a threshold pricing power returns and margins widen quickly, while idle equipment is costly to keep and to reactivate. For valuation use EV to EBITDA on contracted EBITDA, and let the multiple shrink as remaining contract life shortens. The common mistake is to capitalise peak or one-off EBITDA, or to accept a high distribution yield without checking cover after growth capex. A nuance generalists miss is that a contract cliff can matter more than leverage. A stable business with a large share of contracts expiring in two years faces a hidden refinancing of its revenue.

WORKED EXAMPLE: DISTRIBUTION COVER AND A CONTRACT CLIFF AT A PIPELINE OWNER

Cragside Midstream is an invented pipeline and storage owner. EBITDA is 500m, of which 70% comes from take-or-pay contracts with an average of four years left and 30% depends on volumes and spot capacity. Maintenance capex is 60m, interest is 140m, distributions are 255m, net debt is 2,400m and market capitalisation is 2,550m. In two years 25% of the take-or-pay revenue renews at rates 15% lower, and the volume-linked EBITDA falls 10% because producers in the basin slow drilling. Ignore tax, growth capex and any change in interest. Is the distribution safe?

Answer: Cover falls from 1.18 to 1.07 times and leverage rises from 4.8 to 5.1 times once the contract cliff and the volume decline arrive. The distribution survives, but with a cushion of only 7%, so the yield pays for real risk.

> **Interview tip:** Quote cover after maintenance capex and interest, then rerun it with the contract cliff. Saying 'it is covered now, and covered by about 7% after the cliff' shows you looked forward.

INT.HS.7.e · Energy and Infrastructure

Build and present a long or short view in energy and infrastructure: reverse the price, choose the valuation measure, find the accounting and financing warning signs, date the catalysts, count the carry, and set size and exit rules.

A long or short in this sector is built from five things: what is priced in, the catalyst, the accounting, the financing and what would prove you wrong. Start by reversing the price. For a producer, ask what oil price the enterprise value implies once reserves are valued on the curve. For a regulated utility, price to asset base shows how much outperformance and allowed return the market already pays for. Choose the measure that fits: EV to debt-adjusted cash flow for producers, EV to EBITDA for contracted assets, price to asset base for regulated networks, and yield with cover for distributors. Price to earnings alone misleads for producers, because depletion and impairments distort earnings. Catalysts need dates, such as price control decisions, hedge roll-offs, contract expiries, refinancing windows, reserve updates and auctions. Accounting is where shorts are found. Be suspicious of reserve upgrades that arrive with price rises, a falling depletion rate, capitalised costs that grow faster than output, and impairments that only follow price falls. Also look for hedge gains masking weak realised prices, growing regulatory assets, renewable output well below the central forecast, and distributable cash flow that leaves out maintenance capex. Financing is the other short signal, as in payouts funded by asset sales or debt, and maturities that reset at much higher rates. On a short you pay the dividend and a borrow fee, so a high yield stock has a real carry cost and needs a near catalyst. Annual cost of a short = dividend yield + borrow fee. Size a position by the distance to the point where the thesis breaks, not by conviction, and pair it where you can, such as a strong balance sheet against a weak one, to isolate the view from the oil price or the rate move. Write down what would make you wrong, for example a final regulatory decision above the draft, a contract renewed on better terms, or a price level that restores cover. A strong pitch gives the thesis, target, scenarios, carry, size and exit rules in about one minute.

WORKED EXAMPLE: A SHORT IDEA ON A YIELD-LED RENEWABLES OWNER

Merrow Renewables is an invented wind and solar owner. Market capitalisation is 1,200m, net debt is 2,000m, the dividend is 96m and management reports adjusted EBITDA of 330m, calculated at the central output forecast on revenue of 480m and fixed costs of 150m. Actual output last year was 11% below that forecast. Interest is 120m and other cash costs and maintenance are 100m. Debt of 500m reprices from 3% to 6% in nine months. Borrow costs 1.5% a year. Test a short using a price of 100 and a six-month horizon.

Answer: Merrow trades on an 8.0% yield, but actual output leaves cover at 0.60 times and the refinancing takes it to 0.44 times. The expected price is 88.4 against 100, so a short earns about 6.9% on the position after carry in six months, sized at 5% of the fund with a stop where output recovers.

> **Interview tip:** Say what is priced in, what the accounts hide, the dated catalyst, the carry and the exit in that order. A short on a high yield stock must include the dividend you pay.

INT.HS.1.f · Financial Services

Place a financial company in its sub-sector and name the driver, the first metrics and the usual misread for banks, insurers, brokers, asset managers, payments, specialty lenders and market infrastructure.

Financial services is seven different businesses under one label, so name the sub-sector first, because it decides the driver and the numbers. Banks earn the spread between lending and funding rates, and move with the rate path, credit conditions and capital returns. Look first at net interest margin, cost of risk and the common equity tier one ratio. The usual misread is calling a bank cheap on price to tangible book when peak margins prop up the return, and a short rests on a margin peak or rising credit losses. Insurers collect premium, invest the float and pay claims, so demand follows the need to transfer risk and results swing with the pricing cycle and catastrophes. Look first at the underlying combined ratio, prior-year reserve development and solvency capital. Reserve releases flatter the ratio, and a short rests on thin reserves behind premium growth that outruns the market in long-tail lines. Brokers and distributors earn commission on premium or assets placed, with almost no capital, so revenue follows premium rates, activity and client retention. Look first at organic growth, retention and margin. Bought growth presented as growth is the usual misread, and a short rests on organic growth far below the headline and heavy earn-out cash. Asset and wealth managers earn a fee margin on assets under management, so revenue follows markets, net flows and fee compression. Look first at net flows, fee margin in basis points and operating margin. Rising assets caused by markets while flows are negative is the usual misread, and a short rests on outflows from the highest-fee funds. Payments processors take a small percentage of each transaction, so revenue follows spending volumes and merchant pricing. Look first at volume growth, net take rate and merchant churn. Gross revenue that includes interchange passed to card issuers is the usual misread, and a short rests on a falling take rate as large merchants renegotiate. Specialty lenders earn a high yield on consumer or equipment loans funded by debt, so growth follows credit demand and the funding market. Look first at risk-adjusted margin, vintage losses and funding maturities. Profit flattered by a slowing reserve build is the usual misread, and a short rests on loosened underwriting, rising modifications and funding that costs more than yields. Exchanges, clearing houses and data providers charge for trading, clearing and information, so revenue follows volumes and volatility plus subscriptions that recur. Look first at the share of recurring revenue, volume per product and operating margin. Treating a volatility spike as permanent is the usual misread, and a short rests on competition or regulation that forces fee cuts. In an answer, name the sub-sector first, then the driver that moves it, then the two or three numbers that show where it stands. Practice differs on the groupings, because some split life from general insurers and investment banks from retail banks, and every range here is typical, not a statistic.

WORKED EXAMPLE: THREE FINANCIAL STOCKS, THREE HEADLINES: HOLMBURY, RAVENSGATE AND TOLLAND

A fund is screening three invented financial stocks. Holmbury Insurance earns 2,000m of premium and reports a loss ratio of 61% and an expense ratio of 31%. The loss ratio includes catastrophe losses of 4 points against a budgeted load of 7 points, and 3 points of favourable prior-year reserve release. Ravensgate Brokers grew revenue from 800m to 900m, of which acquisitions added 56m and a weaker pound added 8m. Tolland Payments handled 50,000m of volume with gross revenue of 800m, of which 560m is interchange passed to card issuers, and EBITDA of 84m. Conventions: ignore tax; combined ratio equals loss ratio plus expense ratio; take rate is net revenue ÷ volume; Tolland next year has volume up 10% and a take rate 3 basis points lower. For each stock, name the sub-sector, the driver and the first numbers, and say how much of the headline survives.

Answer: Holmbury underlying combined ratio 98% against 92% reported, Ravensgate organic growth 4.5% against 12.5% reported, and Tolland net take rate 0.48% with revenue growth of 3.1% on 10% volume growth. Only 25%, 36% and 31% of the three headlines survive.

> **Interview tip:** Say: before I value any of these I name the sub-sector, so the insurer gets the underlying combined ratio, the broker organic growth and retention, and the processor the net take rate, and each headline shrinks to between a quarter and a third once I use the right number.

INT.HS.2.f · Healthcare

Name the sub-sectors of healthcare, say what moves the stock and what a short rests on in each, and use the first numbers of each to place and read a company.

Healthcare is nine businesses, so name the sub-sector first, then what moves its stock and what a short would rest on. Large pharma sells patented drugs, so the stock moves on pricing policy and patents, the first numbers are sales losing patents, net price and pipeline replacement, and a short rests on a cliff the multiple ignores. Biotech lives on trials and has little revenue, so the stock moves on readouts and financing, the first numbers are phase, cash runway and enterprise value, and a short rests on weak evidence behind a crowded long. Devices earn equipment sales and recurring consumables, so the stock moves on procedure volumes and reimbursement, the first numbers are placements, utilisation per system and consumables share, and a short rests on shipments ahead of procedures. Care services earn rate times volume from insurers and governments, so the stock moves on rate notices and same-site volume, the first numbers are payer mix, clinician hours and organic growth, and a short rests on bought growth. Managed care collects premiums and pays claims, so the stock moves on cost trends and premium approvals, the first numbers are the medical cost ratio, membership and reserve development, and a short rests on costs outrunning pricing. Medical cost ratio = medical claims ÷ premiums, and a rise of one or two points often matters. Diagnostics earn volume times price per test, so the stock moves on payer fee schedules, the first numbers are volume, collected revenue per test and days sales outstanding, and a short rests on a fee cut that volume cannot offset. Life science tools sell instruments and consumables to laboratories, so the stock moves on research budgets and orders, the first numbers are book-to-bill and consumables share, and a short rests on falling orders the multiple has not priced. Contract research and manufacturing are paid by project and batch, so the stock moves on biotech funding, the first numbers are net book-to-bill, utilisation and customer concentration, and a short rests on cancellations outrunning orders. Healthcare software sells subscriptions, so the stock moves on renewals, the first numbers are net revenue retention, implementation time and capitalised cost, and a short rests on slowing growth under a growth multiple. Practitioners group these differently and some companies straddle two, so say which grouping you use. Cycles differ, since care is steady while research and tools follow funding, so one multiple or defensive label misleads. In an answer, name the sub-sector first, then the driver, then the numbers that show it.

WORKED EXAMPLE: ONE MAP, THREE COMPANIES: TARNMOOR, WEXCOMBE AND PELLAM

You are shown three invented companies. Tarnmoor Surgical places surgical systems that use a consumable kit on every procedure: it had 700 systems last year and 800 this year, procedures per system fell from 125 to 115, a kit costs 1,500, and it sold 100 new systems at 250,000 each. Wexcombe Health Plan has premiums of 4,000m, medical claims of 3,360m and administration costs of 440m, and next year expects claims per member to rise 6% and premiums to rise 4% with membership and administration unchanged. Pellam Labs sells instruments and consumables to research laboratories, with revenue of 600m, new orders of 480m, an opening backlog of 300m and EBITDA of 150m. Conventions: values in millions unless stated, ignore tax, annual figures, and for Pellam assume revenue falls 15% next year with 45% of each lost pound of revenue lost from EBITDA.

Answer: Tarnmoor is a device maker whose consumables grew only 5.1% against 14.3% more systems. Wexcombe is a managed care plan whose profit falls 20.8% if costs rise 6% and premiums 4%. Pellam is a tools company whose book-to-bill of 0.80 shrinks the backlog to 3.6 months and cuts EBITDA 27% on a 15% revenue fall.

> **Interview tip:** Say: I name the sub-sector first, then the driver, then the numbers. For the device maker it is utilisation, for the insurer it is the medical cost ratio against the premium rise, and for the tools company it is book-to-bill and backlog.

INT.HS.3.f · Industrials

Place an industrial company in its sub-sector and state, for each main sub-sector, what drives demand, which metrics a specialist reads first, what moves the stock and what a short thesis usually rests on.

Industrials is six different businesses, so name the sub-sector first, because it decides what moves the stock. Machinery and capital equipment makers sell large machines to customer capital budgets and then earn recurring parts and service on the installed base. The stock moves on orders and book-to-bill, and a short thesis usually rests on orders slowing behind record margins. Read backlog cover, aftermarket share of profit and decremental margin first, and do not treat a full backlog as safe when it hides cancellations. Components such as bearings and valves are transactional, ship within weeks and earn margin from design content and switching cost. The stock moves on customer destocking, and a short thesis often rests on channel inventory building. Read sell-out against sell-in and channel inventory days first, and do not mistake restocking for demand. Building products makers sell into housing, repair and remodel and non-residential construction, so volumes follow rates, credit and permits. The stock moves on starts and price against input cost, and a short thesis often rests on volumes falling while price flatters sales. Read permits, volume against price and the price-cost spread first, and do not mistake a pre-buy for demand. Commercial aerospace suppliers earn on build rates and flying hours, with cyclical new builds and a recurring aftermarket. The stock moves on build-rate changes, and a short thesis rests on a supplier holding inventory for rates the aircraft maker has cut. Read build rate, delivery slots and aftermarket share first, and do not treat backlog as demand when it holds slots customers cannot take. Defence suppliers, which some investors group with aerospace, follow multi-year budgets, so revenue is visible and project-based. The stock moves on awards, and a short thesis rests on programme charges. Read book-to-bill, the mix of cost-plus and fixed-price work and programme margin first, and do not assume a new fixed-price award carries mature margin. Distributors buy and resell from branches, so gross margin is thin and branch costs are largely fixed. The stock moves on sales per working day and price, and a short thesis rests on volumes falling while inflation props up sales. Read gross margin, branch operating leverage and inventory and receivable days first. Transport equipment makers such as truck and rail car builders sell financed units whose demand follows fleet age, freight rates and emissions rules. The stock moves on order intake, and a short thesis often rests on cancellations after a pre-buy. Read cancellations, used-equipment prices and fleet age first, and do not extrapolate orders pulled forward. In an answer, name the sub-sector first, then the driver, then the two or three numbers that show where it stands.

WORKED EXAMPLE: THREE INDUSTRIALS, THREE DIFFERENT FIRST READS

An analyst is shown three invented industrials with one table of numbers and must say which sub-sector each is in and what to read first. Brackenfell Machine Tools has revenue of 600m, orders of 480m in the year, an opening backlog of 900m, EBIT of 96m (16%), and 150m of aftermarket revenue at a 30% EBIT margin. Marlowe Glazing, a window and cladding maker, has revenue of 400m after growth of price +8% and volume -2%, and a gross margin last year of 30%. Its cost per unit rose 10%. Penwarden Supply, a distributor, has revenue of 1,500m, a gross margin of 24%, operating costs of 300m of which 80% are fixed, inventory days of 60 on cost of sales and receivable days of 45 on revenue. Conventions: ignore tax, use a 365-day year, assume Brackenfell loses 35% of any lost revenue as EBIT, and assume Penwarden's volume falls 5% at an unchanged gross margin percentage.

Answer: Brackenfell is machinery with a book-to-bill of 0.80, cover down to 1.3 years and 47% of profit from the aftermarket, so I would watch the next order print and expect revenue to fall toward 480m. Marlowe is building products whose 5.8% growth is price with volume down 2%, and its gross margin slipped from 30% to 28.7%. Penwarden is a distributor where a 5% volume fall removes 25% of EBIT. Each company needs a different first metric and a different short thesis.

> **Interview tip:** Say the sub-sector first, then the driver, then two numbers, for example: this is a distributor, so volume per working day is the driver, and a 5% volume fall removes a quarter of EBIT because branch costs are fixed.

INT.HS.3.g · Industrials

Describe the industrial cycle by stage and place each sub-sector in it from leading, coincident and lagging indicators, then say what the stage means for positioning and what is already priced in.

The industrial cycle runs through four stages, and each sub-sector sits at a different point in it. In early recovery, orders and book-to-bill turn up first while revenue is still falling, inventory is run down, price is flat, margins are at their lowest and cash is released. In expansion, volumes, price and backlog rise together, incremental margins are high, and inventory and receivables begin to absorb cash. At late cycle or peak, revenue and margins reach records, lead times stretch, customers double-order, inventory builds and book-to-bill drifts toward one while cancellations edge up. In downturn and trough, orders fall below revenue, backlog is consumed, destocking pushes volume below end demand, price is discounted and decremental margins bite. Leading indicators turn first, coincident ones confirm, and lagging ones such as margin turn last. For machinery and capital equipment, watch quote activity, orders and cancellations as leading, shipments and utilisation as coincident, and margin as lagging. Revenue typically trails orders by a year or more. For components, leading signals are purchasing surveys, customer production schedules and customer inventory, coincident ones are shipments and distributor sell-out, and lagging ones are price and margin. Revenue follows end demand within weeks, and destocking makes it overshoot. For building products, permits, starts and mortgage rates lead, merchant stock and sell-through are coincident, and price-cost and margin lag. Volumes typically trail starts by months, and by more for finishing products. For aerospace, aircraft orders, build-rate plans and delivery slots lead, deliveries and flying hours are coincident, and aftermarket growth and margin lag. Defence is less tied to the economic cycle, with budget requests and appropriations leading, awards and book-to-bill coincident, and spend rates and programme margin lagging. For distribution, purchasing surveys lead, sales per working day and price are coincident, and inventory days and branch costs lag, with a lead of only weeks. For transport equipment, freight rates, used-equipment prices and fleet age lead, orders and build rates are coincident, and cancellations and margin lag. Practitioners place freight rates and used prices differently. For a long and short investor, the best longs are often found in early recovery, when estimates are lowest, the multiple on trough earnings looks highest and the price has usually started to rise. In expansion consensus tends to extrapolate strength, and in a downturn the price often discounts a trough before orders confirm it. Late cycle is where shorts begin, but shares often peak months before earnings do, so ask what is already priced in before acting. Cycles differ in length by sub-sector and the ranges here are typical, not statistics. Read indicators together and never alone, and size the position to the stage you can evidence.

WORKED EXAMPLE: WHERE ARE RAVENSCAR AND STANBURY IN THEIR CYCLES?

Two invented industrials are in one portfolio. Ravenscar Packaging Machinery has an opening backlog of 600m. Over four quarters its orders were 160m, 150m, 138m and 128m, its revenue was 150m, 152m, 154m and 153m, and cancellations were 2%, 3%, 5% and 8% of orders. Its EBIT margin is 18% and enterprise value is 1,540m. Stanbury Plasterboard, a building products maker, has annual revenue of 800m and an EBIT margin of 8%, which is below its usual level. Over the same four quarters, housing permits were -14%, -8%, +3% and +10% year on year, merchant stock was 14, 12, 10 and 8 weeks of supply (about 9 is normal), its volume was -9%, -7%, -5% and -3% year on year, and its price was 0%, 0%, +1% and +2%. Conventions: ignore tax, assume Ravenscar's revenue falls toward its latest annualised order rate and loses 35% of lost revenue as EBIT, and assume Stanbury earns 30% of any extra revenue as EBIT.

Answer: Ravenscar is late cycle turning down. Book-to-bill has fallen from 1.07 to 0.84, cancellations have risen from 2% to 8% of orders and cover is 0.93 years, while revenue and margin still look strong. If revenue falls to the order rate, EBIT drops about 32% to roughly 75m and the stock goes from 14.0 to 20.5 times EBIT. Stanbury is early recovery: permits are up, merchant stock is below normal and margin is at a trough, so a volume gain of 5% adds 12m of EBIT. I would be cautious on the first and look to build the second.

> **Interview tip:** Say the stage, then the two indicators that prove it, then what the price already assumes. Add that no indicator is read alone and that these lead times are typical, not fixed.

INT.HS.4.f · Consumer and Retail

Map the consumer sector into its sub-sectors, and for each say what moves the stock, which numbers a specialist checks first, what is usually misread and what a short thesis rests on.

Consumer is a family of businesses, so a specialist maps the sub-sectors before forming a view. Luxury and travel are sometimes separate buckets, but seven groupings cover most names. Household and personal care brands sell named products through retailers on steady repeat demand, so organic growth split into price, volume and mix, gross margin and advertising intensity come first. The stock moves on volume and margin recovery, a short usually rests on volume lost to private label behind price rises, and the common misread is treating pricing as demand. Packaged food and drink makers sell staples bought again and again, so pricing against grain, dairy, packaging and energy costs, volume, and gross margin come first. Shares move on margin squeeze or recovery, a short rests on volume falling after repeated price rises, and the misread is treating a fall in input costs as permanent when promotions will return. Restaurants sell a perishable meal with heavy labour and rent, so same-store sales, four-wall margin and the franchised share of the estate come first. Shares move on traffic against wage inflation, a short rests on slowing traffic over a fixed cost base, and the misread is judging a franchisor and an owner of sites by the same margin. Grocery and staples retailers resell everyday goods on thin gross margins and fast stock turns, so like-for-like sales against food inflation, gross margin and the price gap to rivals come first. Shares move on price competition and wage costs, a short rests on a price war or share lost to discounters, and the misread is inflation flattering sales while volume falls. Discretionary store retail, such as apparel and homewares, resells goods for fashion or home spending against fixed rent and wages, so traffic and ticket in the comp, inventory against sales and four-wall profit come first. Shares move on comps and markdowns, a short rests on stock building ahead of a margin cut, and the misread is a good comp bought with promotions that damage gross margin. E-commerce and marketplaces earn from each order or a take rate on other sellers, so contribution per order, repeat rate by cohort and acquisition cost come first. Shares move on growth and the path to profit, a short rests on weaker cohorts and rising marketing cost, and the misread is a blended repeat rate that hides poor new customers. Consumer services and leisure, such as gyms, childcare and travel, sell time or access, often by subscription, so members, churn, utilisation and price per member come first. Shares move on occupancy and pricing, a short rests on rising churn or falling utilisation against fixed costs, and the misread is a member count that includes inactive or heavily discounted members. Staples typically hold up in a downturn, whereas discretionary categories and fixed cost models typically fall faster. In an answer, name the sub-sector first, then the driver that moves the stock, then the numbers that confirm it, and only then what is priced in.

WORKED EXAMPLE: THREE NAMES, THREE FIRST NUMBERS

A portfolio manager lists three invented consumer companies and asks what each one is and what you would check first. Wrenfold Household, a cleaning products brand, had sales of 1,000m last year and 1,034.25m this year, with list prices up 5.0% and no change in mix. Tilbrook Fitness runs gyms with 120,000 members paying 25 a month, and about 2.5% of members cancel each month. Garsdale Grocers reports like-for-like sales up 5.0% in a year when the prices of the goods it sells rose 6.0%. Conventions: growth rates compound, churn is a steady monthly rate, ignore tax, figures are in £ and all companies and numbers are invented.

Answer: Wrenfold sells 1.5% fewer units behind a 5.0% price rise, Garsdale's volume is down about 0.9% and Tilbrook must sign 3,000 members a month to stand still. Each name needs a different first number, and the brand is the first short to research.

Interview tip: Name the sub-sector first, then the driver, then two numbers, in that order. Say which number would change your mind, for example churn turning down at the gym or volume turning positive at the brand.

INT.HS.5.f · Technology and Software

Map the sub-sectors of technology, and for each say what drives demand, the economic model, the first metrics a specialist reads, what moves the stock and where a short usually starts.

A map of technology starts with six sub-sectors, because each one is driven by something different and judged on different numbers. Application software sells subscriptions to business users, so revenue is recurring, gross margins are typically high, and demand follows seat counts, upsell and customer budgets. The first metrics are net revenue retention, billings against revenue and the rule of 40, and a short usually rests on retention slipping behind a rich multiple while share-based pay hides the true cost. Infrastructure and tools software, such as databases, cloud platforms and security, is often priced by usage, so revenue follows customer volumes and is more cyclical than a fixed subscription. Watch consumption growth, committed spend against actual use and gross margin after hosting cost, and note that the common misread is a burst of growth that is customers filling commitments they will later optimise. IT services sells the time of skilled people on projects and managed contracts, so revenue follows client technology budgets, headcount and utilisation, and margins are thin and steady. Utilisation, attrition and bookings against revenue come first, and a short usually rests on weak renewal pricing or automation of billable work, while the misread is a flat margin that hides slipping prices. Internet and marketplace companies earn commissions, advertising or both, and demand follows active users, order frequency and advertiser budgets, with network effects rewarding the leader. Gross merchandise value, take rate and contribution margin per order come first, and the misread is growth bought with subsidies, so a short looks for repeat cohorts that weaken once incentives stop. Semiconductors, including the equipment makers that supply chip factories, sell units into cyclical end markets, so revenue follows customer production and inventory, and fixed costs create large operating leverage. Orders against shipments, channel inventory, lead times and utilisation come first, the stock typically turns before earnings do, and the misread is a low earnings multiple at peak margins. Hardware and devices, from handsets to networking equipment, earn revenue from product cycles and replacement demand, with thinner gross margins and the working capital of a manufacturer. Unit shipments, average selling price, gross margin and inventory days come first, and a short rests on a weak refresh cycle or component costs the company cannot pass on, while the misread is a launch spike taken as a trend. Practice differs on payments, data and communications infrastructure, which some investors place in financials or infrastructure, so say which grouping you are using. To use the map in an answer, name the sub-sector first, then the driver, then the numbers. For example, call a company a usage-priced infrastructure vendor, say that revenue follows customer volumes, and then quote consumption growth and gross margin after hosting. The common mistake is to quote a favourite metric from the wrong sub-sector, such as retention for a chip maker or utilisation for a marketplace.

WORKED EXAMPLE: THREE TECHNOLOGY STOCKS, THREE DIFFERENT FIRST READS

Three invented listed companies sit in different technology sub-sectors. Mirefield Software has enterprise value of 2,400m, revenue of 300m growing 25%, a gross margin of 80%, a free cash flow margin of 15% and net revenue retention of 112%, down from 118%. Tolbury Silicon has enterprise value of 3,000m, revenue of 1,000m, an operating margin of 30% against about 18% through the cycle, a book-to-bill of 0.85 and inventory days of 95 against 70 a year ago. Hallowell Systems has enterprise value of 1,210m, revenue of 1,000m, an operating margin of 11%, bookings of 900m and utilisation of 82% against 85% a year ago. Classify each, read it with its own metrics and say what a long or short investor would do. Conventions: ignore tax and treat the 18% mid-cycle margin as an assumption to test.

Answer: The same-looking multiples mean different things. Tolbury is about 10 times peak profit but 16.7 times mid-cycle profit with a book-to-bill of 0.85 and rising inventory, so it is the best short candidate. Mirefield is at 8.0 times sales with retention falling by 6 points and needs the next result. Hallowell is a mild, low-conviction slowdown.

> **Interview tip:** Say the sub-sector first, then the driver, then two numbers, for example: this is a cyclical chip company, revenue follows customer orders, and orders are running at 85% of shipments with inventory days up 25.

INT.HS.6.f · Business Services

Name the main business services sub-sectors and, for each, state the economics, the numbers read first, what moves the stock and what a short rests on.

Business services splits into seven sub-sectors, each with its own economics, first numbers and short thesis. Outsourcing and facilities groups sell multi-year labour-led contracts, so revenue recurs but margins are typically thin, and the first numbers are organic growth, retention and margin by contract. The stock moves on rebids and wage settlements, a short usually rests on pay rising faster than price, and the misread is a headline win that is mobilising at a loss. Testing, inspection and certification groups sell regulated compliance work that repeats on a testing cycle, and the first numbers are the regulated share of revenue, utilisation and laboratory capital spending. The stock moves on rule changes, a short rests on a failed inspection that damages trust, and the misread is treating all testing demand as mandatory when part of it is discretionary. Staffing firms place temporary and permanent workers, so revenue is mostly passed-through payroll and demand follows hiring, and the first numbers are gross profit, the conversion ratio and the permanent share. The stock moves on hiring data, a short rests on a downturn meeting high operating leverage, and the misread is a low multiple on peak earnings. Professional and consulting firms sell expertise by the hour or project, so revenue is project-led, and the first numbers are utilisation, billing rate and attrition. The stock moves on bookings, a short rests on hiring ahead of demand, and the misread is growth that comes from headcount rather than rate. Data and information services sell subscriptions to hard-to-replace data, and the first numbers are net revenue retention, renewal price increases and the uniqueness of the data. The stock moves on retention, a short rests on substitution by software or free sources, and the misread is price rises that hide customers leaving. Business process and customer contact outsourcers run back-office and call-centre work on volume contracts, and the first numbers are volume growth, revenue per employee and attrition. The stock moves on client wins and automation fears, a short rests on software doing the work and contracts repricing down, and the misread is headcount growth while price per task falls. Acquisitive compounders buy small firms across all of these, and the first numbers are organic growth, the return on bolt-on spend and the share of growth that is bought. The stock moves on organic growth and purchase prices, a short rests on slowing organic growth and rising add-backs, and the misread is assuming the multiple arbitrage lasts. Practice differs on whether consulting and data belong here, so say which grouping you use. In an answer, name the sub-sector first, then the driver of its demand, then the two or three numbers that prove the point.

WORKED EXAMPLE: THREE BUSINESS SERVICES COMPANIES READ AS A MAP

A portfolio manager shows you three invented listed companies and asks you to place each in its sub-sector and say what you would check first. Hexmoor Support has revenue of 1,800m, operating profit of 72m, capex of 18m, labour at 68% of revenue and contracts of three to seven years. Wharram Assay has revenue of 700m, operating profit of 119m, capex of 63m and 75% of revenue from mandatory safety tests, the rest being discretionary. Lyndale Talent has revenue of 3,000m, gross profit of 240m and operating profit of 60m, with almost all revenue being payroll passed through. Next year Hexmoor's pay rises 6% while its contract prices rise 3.5%, Wharram's discretionary revenue falls 10% with 60% of the lost revenue coming off operating profit, and Lyndale's revenue grows 10% with gross profit unchanged. Name each sub-sector, test each against its own metric, and say which you would examine first for a short. Conventions: other costs are unchanged, labour moves only with pay, drop-through is the share of lost revenue that comes off operating profit, and ignore tax, debt and valuation.

Answer: Hexmoor is outsourcing and facilities: pay of 6% against a breakeven price rise of about 4.1% and a contract repricing of 3.5% cuts profit by 14.5% to 61.6m. Wharram is testing, inspection and certification: a 10% fall in discretionary revenue cuts profit by 8.8%. Lyndale is staffing: revenue is up 10% but gross profit and operating profit are flat. Hexmoor is the first to examine for a short, subject to what is priced in.

> **Interview tip:** Say it in this order: the sub-sector, the driver, then the numbers. For example: this is an outsourcer, its driver is pay against contract price, and the numbers are a 4.1% breakeven against a 3.5% price rise and a 14.5% profit fall.

INT.HS.7.f · Energy and Infrastructure

Name each energy and infrastructure sub-sector and say, for each, how it makes money, what drives it, which numbers to read first, what moves the shares, what a short rests on and the usual misread.

Energy and infrastructure has about eight sub-sectors, and naming the right one first chooses the right metrics. Funds group the edges differently, for example refining with producers. Producers sell oil or gas at a market price, demand follows growth and supply discipline, the model is commodity-linked with a depleting asset, and specialists read cash breakeven, decline rate and net debt first. The shares follow the forward curve, a short rests on hedges hiding a lower curve, and the usual misread is a high free cash flow yield at a peak price. Oilfield services rent rigs and crews to producers, demand follows producers' budgets with a lag, the model is day-rate based, and specialists read utilisation, day rates and backlog first. The shares follow pricing power, a short rests on spending cuts not yet in orders, and the usual misread is capitalising peak earnings. Midstream companies own pipelines and storage, demand follows volumes producers can drill profitably, the model is fee-based and often take-or-pay, and specialists read contract share, throughput and distribution cover first. The shares follow yield and renewals, a short rests on an uncovered distribution or an expiry cliff, and the usual misread is cover measured before growth spending. Refiners turn crude into fuels, demand follows driving, flying and industry, the model is a transactional margin, and specialists read the crack spread, utilisation and inventories first. The shares follow the margin, a short rests on new capacity or weak demand, and the usual misread is treating a peak margin as normal. Regulated utilities earn an allowed return on a regulated asset base, demand is steady, and specialists read asset base growth, allowed return and actual against allowed financing costs first. The shares follow bond yields and price control decisions, a short rests on a cut to the allowed return, and the usual misread is paying for outperformance that fades. Renewable and independent power producers sell electricity under contract or at market, the model is heavy upfront capital with no fuel cost, and specialists read contracted share, capture price and output first. The shares follow power prices and rates, a short rests on a refinancing or weak output, and the usual misread is the average price in place of the capture price. Tower companies lease masts to mobile operators, demand follows data traffic, the model is recurring with annual escalators, and specialists read tenancy ratio, remaining lease term and churn first. The shares follow rates and carrier mergers, a short rests on duplicate sites being removed, and the usual misread is counting bought growth. Toll roads, airports, ports and availability concessions charge users or public bodies, demand follows traffic, and specialists read traffic, remaining concession life and cash cover first. The shares follow traffic and rates, a short rests on traffic below forecast, and the usual misread is valuing a finite concession as perpetual. Typically commodity-linked groups have cyclical earnings, while contracted and regulated groups have steadier cash flows that carry more debt. Mixed companies need each part valued with its own measure. In an answer, name the sub-sector first, then the driver, then the numbers.

WORKED EXAMPLE: THREE COMPANIES, THREE SUB-SECTORS, THREE FIRST READS

Three invented companies sit under an energy and infrastructure label. Ridgeway Roads holds a toll concession: 40m vehicles a year at an average toll of 3.00, operating costs of 30m, maintenance capex of 10m and debt service of 55m. Marram Solar sells 250 GWh a year, 60% under contract at 70 per MWh and 40% at market, where the average power price is 80 per MWh and solar captures 80% of it. Wyvern Water is a regulated network with an equity asset base of 800m, an allowed return on equity of 7.0%, a market value of 1,000m, a dividend of 48m and a government bond yield of 3.8% beside it. Classify each, name its first numbers and read it. Conventions: ignore tax and inflation, use one year, keep costs fixed unless stated, and treat 1 GWh as 1,000 MWh.

Answer: Ridgeway has cover of 1.45 times that falls to 1.35 times on a 5% traffic miss, Marram earns 16.9m of which 37.9% is merchant and exposed to a capture price of 64, and Wyvern has allowed profit of 56m that falls 7.1% if the allowed return is cut to 6.5%. Each company is read through its own sub-sector, so the numbers differ and so do the risks.

> **Interview tip:** Say it in this order: the sub-sector, then what drives it, then the numbers. For example: Ridgeway is a toll road, so traffic drives it, and cover is 1.45 times, which falls to 1.35 times if traffic misses by 5%. Then name the usual misread, here the remaining concession life, and ask for it.

Summary of the Charta interview-preparation topic. Companies and figures in the examples are invented. Draft content, not yet expert reviewed.