Employee compensation

Financial Statement Analysis

1 A story: three pay packets in one job

- Short term: salary and bonus, expensed as earned
- Post employment: pensions and retirement promises
- Share based: shares, options, cash tied to price
- Same job, three very different accounting effects

IN THE LESSON

- Imagine you take a job at Kestrel Components.
- Your offer letter has three parts.
- First, a salary and a yearly bonus, paid as you work.
- Second, a promise about your retirement.
- Third, some shares or share options in the company itself.
- Those are the three ways employers pay.
- The first is short term benefits, expensed as the work is done.
- The second kind is post employment benefits, which are pensions and similar promises.
- The third kind is share based pay.
- This lesson is about the second and the third, because that is where the accounting gets interesting.

2 Defined contribution against defined benefit

Who carries the risk decides who carries the liability

Question	DC | DB
Employer promises	DC: a payment in | DB: a pension out
Investment risk	DC: the employee | DB: the employer
Longevity risk	DC: the employee | DB: the employer
Liability beyond cash	DC: none | DB: yes

IN THE LESSON

- Post employment plans come in two flavours, and this split is tested all the time.
- In a defined contribution plan, which we write D C, the company promises only to pay in an agreed amount, say eight per cent of salary, into an account for each worker.
- The worker owns the account and takes the investment risk.
- If markets fall, the company owes nothing extra.
- In a defined benefit plan, which we write D B, the company promises a pension at retirement, often based on final salary.
- Now the company carries the risk.
- If investments do badly, or people live longer, the company must top up.
- That is why only a D B plan creates a liability.

3 Example 1: the cost of a defined contribution plan

Payroll $24m, employer pays 8% of salary into accounts

Expense for the year	8% × $24m	**$1.92m**
Cash paid in the year	given	**$1.80m**
Contribution still owed	1.92 − 1.80	**$0.12m**
Cost if markets crash	no change	**$1.92m**

IN THE LESSON

- Let's price a D C plan.
- Kestrel's payroll for the year is twenty four million dollars.
- It pays eight per cent into its workers' accounts.
- Eight per cent of twenty four million is one point nine two million dollars.
- That is the expense, and that is the whole expense.
- Suppose Kestrel actually handed over one point eight million in cash before the year end.
- Then the remaining one hundred and twenty thousand dollars is a small liability for contributions still owed.
- And if the accounts lose money in a market crash, Kestrel's expense does not move at all.
- Compare that with a D B plan, where a crash would raise the company's cost.
- The employee, not Kestrel, took the hit.

4 The forms of share based pay

Settled in shares or settled in cash: that is the key split

Award	What the employee gets
Grants, restricted shares	Shares, maybe locked
Options	Right to buy at a set price
Share appreciation rights	Cash for the price rise
Phantom shares	Cash equal to share value

IN THE LESSON

- Now share based pay.
- There are five common forms.
- A share grant gives the employee actual shares.
- Restricted shares are given but locked until they vest, meaning until a set time or target is met.
- Options give the right, not the duty, to buy shares at a fixed price called the exercise price, so they pay off only if the share price ends above it.
- Share appreciation rights, or S A Rs, pay the employee in cash the amount by which the share price has risen.
- Phantom shares pay cash equal to the value of a number of shares.
- The last two are settled in cash, which matters for the accounting.

5 Why firms do it, and what to watch

- Aligns managers with shareholders; saves cash
- Options reward volatility, not just good results
- New shares dilute the existing owners
- Trap: only a DB promise leaves a liability

IN THE LESSON

- Why would a company pay in shares at all?
- The first reason is alignment.
- If the managers own shares, they gain when owners gain, so they think like owners.
- The second is cash: a young company can pay talent without spending any.
- But there are two warnings.
- Options reward a rising share price and give nothing back when it falls, so they can tempt managers to take risk, because more volatility makes an option worth more.
- And new shares dilute existing owners, since the same profit is split over more shares.
- Here is the exam trap for this outcome.
- A plan with the word pension in its name does not always create a liability.
- Only a defined benefit promise leaves an obligation beyond the cash already paid.

6 Share based pay is a real expense

- No cash leaves, yet the work was received
- Measured once: fair value at the grant date
- Options: value from a pricing model
- Spread over the vesting period

IN THE LESSON

- Now the accounting for share based pay.
- Here is the puzzle.
- Kestrel hands its engineers options, and no cash leaves the company.
- So is there a cost?
- Yes.
- The employees give work, and in return they receive something valuable.
- Giving options is a cost, just paid in a different currency.
- So the rules say: record an expense.
- The value is fixed once, at the grant date, which is the day the award is given.
- For options the grant date fair value comes from an option pricing model.
- Then the expense is spread over the vesting period, the years the employee must work before the award is theirs.

7 The yearly expense

Expense per year = fair value × awards expected to vest ÷ service years

Grant-date fair value	Value of one award at grant
Awards expected to vest	After allowing for leavers
Service years	The vesting period
Expense each year	Charged to profit each year

IN THE LESSON

- Here is the formula for a straight line expense.
- Annual expense equals the grant date fair value of one award, times the number of awards expected to vest, divided by the number of service years.
- Take each term.
- Grant date fair value is what one option was worth on the day it was given.
- Awards expected to vest is the count you expect to survive, after allowing for people who will leave and forfeit.
- Service years is the vesting period.
- If everything vests at the end, which is called cliff vesting, you divide evenly.
- Under I F R S the expected number is updated each year.
- U S G A A P also lets a company book forfeitures only when they happen.

8 Example 2: the option expense

500,000 options, $8 each, 4-year cliff, 90% expected to vest

Options expected to vest	500,000 × 90%	**450,000**
Total cost	450,000 × $8	**$3.60m**
Expense per year	$3.60m ÷ 4	**$0.90m**
Share price changes?	no effect	**locked in**

IN THE LESSON

- Example two.
- Kestrel grants five hundred thousand options at the start of Year one.
- An option pricing model values each at eight dollars.
- They vest at the end of four years, provided the holder stays.
- Kestrel expects ninety per cent to vest.
- Step one, the number expected to vest is five hundred thousand times zero point nine, which is four hundred and fifty thousand.
- Step two, the total cost is four hundred and fifty thousand times eight dollars, which is three point six million dollars.
- Step three, spread over four years, that is nine hundred thousand dollars a year.
- And note that the share price today does not matter.
- The eight dollars is locked in at the grant date.

9 Example 3: the estimate of leavers changes

Year 3: expected vesting falls from 90% to 80%

New total cost	500,000 × 80% × $8	**$3.20m**
Should be booked by Year 3	3/4 × 3.20	**$2.40m**
Booked in Years 1 and 2	2 × 0.90	**$1.80m**
Year 3 expense	2.40 − 1.80	**$0.60m**
Year 4 expense	3.20 − 2.40	**$0.80m**

IN THE LESSON

- Now let's see what happens when the forecast changes.
- At the end of Year three, staff are leaving faster than expected, and Kestrel now expects only eighty per cent of the options to vest.
- Do not touch the first two years.
- Instead, work out where the cumulative expense should be today, and book the difference.
- The new total cost is five hundred thousand times eighty per cent times eight dollars, which is three point two million.
- After three of four years, three quarters of it should be booked, so two point four million.
- Kestrel has already booked one point eight million.
- So Year three's expense is six hundred thousand dollars, a catch up.
- Year four then books the remaining eight hundred thousand.

10 The option expense, year by year

Option expense ($ thousand)

Year 1	**900**
Year 2	**900**
Year 3	**600**
Year 4	**800**

Total $3,200 thousand: set by the grant and the leavers

IN THE LESSON

- Here is the picture.
- Along the bottom are the four years.
- Up the side is the expense in thousands of dollars.
- Years one and two are the steady nine hundred each, from our forecast of ninety per cent vesting.
- In Year three the bar drops to six hundred, because the lower forecast creates a catch up that is smaller than the normal slice.
- And in Year four it rises to eight hundred, the remaining amount.
- Add the four bars together and you get three thousand two hundred, which is exactly the final total cost for the options that vest.
- The shape teaches the point: the estimate of leavers moves the expense, but the share price never does.

11 Where the entry goes: shares or cash

Equity settled

Expense lowers profit → Credit to equity reserve → Total equity unchanged

Cash settled

Expense lowers profit → Credit to a liability → Remeasured every year

IN THE LESSON

- Now the other half of the entry.
- Every expense needs an opposite entry somewhere.
- Look at the top row, an equity settled award, one paid in shares.
- Kestrel records the expense, which lowers retained earnings.
- The opposite entry goes to equity itself, in a reserve for share based pay.
- One piece of equity goes down, another goes up by the same amount, so total equity does not change.
- There is no cash and no liability.
- Now the bottom row, a cash settled award such as a share appreciation right.
- Kestrel must pay real cash in the end, so it records a liability.
- And the liability is measured again at fair value at every reporting date, which means the expense follows the share price up and down.

12 Example 4: share appreciation rights

200,000 rights, 2-year vesting, paid in cash

Liability, end of Year 1	200,000 × $4.00 × 1/2	**$0.40m**
Liability, end of Year 2	200,000 × $6.50	**$1.30m**
Year 1 expense	equals the liability	**$0.40m**
Year 2 expense	1.30 − 0.40	**$0.90m**

Same rights settled in shares would not be remeasured

IN THE LESSON

- Example four.
- Kestrel also grants two hundred thousand share appreciation rights to its sales team.
- They vest after two years and will be paid in cash.
- All are expected to vest.
- At the end of Year one each right has a fair value of four dollars.
- At the end of Year two, because the share price has risen, it is six dollars fifty.
- At the end of Year one, the liability is two hundred thousand times four dollars, times one half for one year of two served, which is four hundred thousand.
- At the end of Year two it is two hundred thousand times six fifty, one point three million, fully served.
- So the Year two expense is the rise in the liability: nine hundred thousand dollars.
- A rising price pushed the expense up.

13 What makes an option worth more

Chart: Option value vs Volatility of the share price

- Long expected life
- Short expected life

IN THE LESSON

- Why was the option worth eight dollars at all?
- An option pricing model produces its value from a few inputs.
- Look at the picture.
- Along the bottom is the volatility of the share price, how wildly it swings.
- Up the side is the option's value.
- The upper line is an option with a long expected life, the lower line one with a short life.
- Both rise as you move right.
- An option has only an upside, so more swings are worth more, and a longer life gives more time to swing.
- Expected dividends work the other way.
- The trap: do not remeasure an equity settled grant when the price later moves.

14 Putting share based pay into a model

- Forecast as a share of revenue: 5% × $1,500m = $75m
- Or build it from the vesting schedule in the notes
- Keep it as a real operating cost
- Do not add it back as non cash

IN THE LESSON

- Now we move to the analyst's desk.
- Suppose you are building Kestrel's forecast.
- How do you project the share based pay expense?
- Two common ways.
- One, as a share of revenue.
- If revenue is expected to be one thousand five hundred million dollars and the expense has run at five per cent, you forecast seventy five million.
- Two, from the vesting schedule in the notes to the accounts, which tells you the cost of awards already granted.
- And then the big rule.
- Do not treat this expense as a harmless non cash item and add it back.
- It is a real cost, because the company is handing value to employees instead of to owners.
- Treat it like wages when you work out profit and free cash flow.

15 Forecasting the number of shares

Closing shares = opening + issued on vesting − bought back

Opening shares	Last year's closing count
Issued on vesting	New shares for staff awards
Bought back	Shares the company buys back
Closing shares	Next year's starting point

IN THE LESSON

- Shares matter just as much as the expense.
- A model rolls the share count forward like a bank balance.
- Closing shares equal opening shares, plus the shares issued when awards vest or options are exercised, minus the shares the company bought back.
- Opening is where last year ended.
- The issued shares are new ones created to deliver the awards, and each one makes your slice of the company a bit thinner.
- Buybacks work the other way: the company spends cash, and the share count falls.
- Many companies run buybacks on purpose, to offset the dilution from staff awards.

16 Example 5: rolling the share count

Opening 200.0m shares; buyback of $60m at $40 a share

Opening shares	given	**200.0m**
Issued on vesting	given	**+3.0m**
Bought back	$60m ÷ $40	**−1.5m**
Closing shares	200 + 3 − 1.5	**201.5m**

IN THE LESSON

- Example five.
- Kestrel starts the year with two hundred million shares.
- During the year, three million shares are issued as awards vest.
- Management also spends sixty million dollars on buybacks, at an average price of forty dollars.
- Sixty million divided by forty is one point five million shares bought back.
- So the closing count is two hundred, plus three, minus one point five, which is two hundred and one point five million.
- Notice that the company spent sixty million dollars and still ended with more shares than it started with.

17 The treasury stock method

Extra shares = options × (1 − exercise price ÷ average price)

Options outstanding	Options that could be used
Exercise price	Price the holder pays
Average share price	Average price in the period
Extra shares	Net new shares to add

IN THE LESSON

- Now options that are already outstanding.
- How many extra shares do they add to the count?
- We use the treasury stock method.
- Imagine every in the money option is exercised today.
- The holders pay the exercise price to the company.
- The company then uses that cash to buy back shares at the average market price.
- Only the net extra shares count.
- The formula: extra shares equal the number of options times one minus the exercise price over the average share price.
- If the exercise price is above the average share price, the option is out of the money, nobody would use it, and it adds nothing.
- Diluted earnings per share and valuation per share use this larger count.

18 Example 6: the treasury stock method

3.2m options, exercise price $24, average price $32

Cash received	3.2m × $24	**$76.8m**
Shares bought back	$76.8m ÷ $32	**2.4m**
Net new shares	3.2 − 2.4	**0.8m**
Diluted count	201.5 + 0.8	**202.3m**

If the exercise price were $36, the option adds nothing

IN THE LESSON

- Example six.
- Kestrel has three point two million older, fully vested options, each with an exercise price of twenty four dollars.
- The average share price this year was thirty two dollars.
- If all are exercised, holders pay three point two million times twenty four, which is seventy six point eight million dollars.
- At thirty two dollars a share, that cash buys back two point four million shares.
- So the net new shares are three point two minus two point four, eight hundred thousand.
- The formula agrees: three point two times one minus three quarters is zero point eight.
- Add this to the closing count of two hundred and one point five, and the diluted count is two hundred and two point three million.

19 Example 7: valuation per share, done once

FCF before pay 400; pay cost 75 (56.25 after 25% tax); r − g = 5%

FCF after pay cost	400 − 56.25	**343.75**
Equity value	343.75 ÷ 0.05	**6,875**
Per diluted share	6,875 ÷ 202.3	**$33.98**
Per basic share	6,875 ÷ 201.5	**$34.12**
Value if added back	400 ÷ 0.05	**8,000**

Equity value in $ million; shares in million

IN THE LESSON

- Example seven puts it together in a valuation.
- Kestrel's free cash flow, with the share based pay added back, is four hundred million dollars.
- The pay expense is seventy five million, and after tax at twenty five per cent it is fifty six point two five.
- A careful analyst subtracts it, so the cash flow is three hundred and forty three point seven five million.
- Suppose the discount rate minus growth is five per cent.
- Value is then three hundred and forty three point seven five divided by zero point zero five, which is six thousand eight hundred and seventy five million.
- Divide by the diluted count of two hundred and two point three, and you get thirty three dollars ninety eight a share.
- Using the basic count gives thirty four twelve, too high.

20 Four mistakes so far

- 1. Calling every pension a liability
- 2. Remeasuring equity settled awards each year
- 3. Adding the expense back as non cash
- 4. Double counting: expense AND dilution for future awards

IN THE LESSON

- Before the pensions, here are the slips to avoid.
- One.
- Calling a plan a pension and assuming a liability.
- Only defined benefit leaves one.
- Two.
- Remeasuring an equity settled award every year as the share price moves.
- Its grant date value is locked in, and only a cash settled award is remeasured.
- Three.
- Adding the expense back as non cash.
- It is a real cost.
- Four.
- Double counting.
- Either put the expense of future grants in your cash flows, or dilute the share count for them, but never both, because that would charge the owners twice for one cost.
- Already granted awards, though, belong in the diluted share count.

21 A defined benefit plan: money in, promises out

Plan assets

Company pays contributions → Fund earns a return → Benefits paid out

Obligation (DBO)

Service cost adds → Interest cost adds → Actuarial loss adds → Benefits paid reduce

IN THE LESSON

- Now pensions.
- Think of a defined benefit plan as two buckets.
- The first holds plan assets: a fund of investments, set apart from the company.
- The second is an invisible bucket, the defined benefit obligation, or D B O, which is the present value of all the pensions promised for service so far.
- Look at the top row.
- The company pays contributions into the fund, the fund earns a return, and the fund pays out benefits to retirees.
- Now the bottom row.
- Each year employees earn more pension, called service cost.
- The obligation grows through interest cost, because the payments are one year closer.
- It can jump with an actuarial loss, when assumptions change.
- And it falls when benefits are paid.

22 Funded status and total pension cost

Funded status = plan assets − DBO
Total cost = service + interest − actual return + actuarial loss

Funded status	Negative means a deficit
Service cost	Pension earned this year
Interest cost	Opening DBO × discount rate
Actual return on assets	What the assets truly earned
Actuarial loss	Assumptions got worse

IN THE LESSON

- Two formulas run this topic.
- The first is the funded status.
- It equals plan assets minus the defined benefit obligation, and it is what the balance sheet shows.
- If assets fall short, there is a deficit, which is a net liability.
- The second is the total pension cost for the period.
- It equals the service cost, plus the interest cost, minus the actual return on plan assets, plus any actuarial loss.
- An actuarial gain would be subtracted.
- Past service cost, from a plan change that raises the benefits for work already done, is also added.
- There is a handy check: total cost also equals the contributions paid plus the rise in the deficit.
- We will see both ways in the example.

23 Example 8: Kestrel's plan at the year end

Open: DBO 1,000, assets 800. Discount rate 5% ($ million)

Opening funded status	800 − 1,000	**−200**
Closing DBO	1,000+60+50+25−70	**1,065**
Closing assets	800+48+120−70	**898**
Closing funded status	898 − 1,065	**−167**

IN THE LESSON

- Example eight.
- Kestrel's plan starts the year with an obligation of one thousand million dollars and assets of eight hundred million, so a deficit of two hundred.
- The discount rate is five per cent.
- During the year, the service cost is sixty, the interest cost is five per cent of one thousand, so fifty, there is an actuarial loss of twenty five, and benefits paid are seventy.
- The obligation ends at one thousand, plus sixty, plus fifty, plus twenty five, minus seventy, which is one thousand and sixty five.
- The assets earned forty eight, Kestrel contributed one hundred and twenty, and seventy was paid out.
- So assets end at eight hundred, plus forty eight, plus one twenty, minus seventy, which is eight hundred and ninety eight.
- The deficit is one sixty seven.

24 Example 9: the total pension cost

Total cost for the year ($ million)

Service cost	given	**60**
Interest cost	5% × 1,000	**50**
Less actual return	given	**−48**
Plus actuarial loss	given	**25**
Total pension cost	60+50−48+25	**87**

Check: contributions 120 + rise in deficit (−33) = 87

IN THE LESSON

- Example nine.
- What did the plan cost Kestrel this year?
- Use the formula.
- Service cost sixty.
- Interest cost fifty.
- Minus the actual return on assets, forty eight.
- Plus the actuarial loss, twenty five.
- The total is eighty seven million.
- Now check the other way.
- Contributions were one hundred and twenty.
- The deficit fell from two hundred to one sixty seven, a drop of thirty three.
- Contributions plus the rise in the deficit is one twenty plus minus thirty three, which is also eighty seven.
- So Kestrel paid in more cash than the plan cost it.
- That excess of thirty three will matter when we reach cash flows.
- Now, where in the statements does the eighty seven go?
- That depends on the accounting framework.

25 Under IFRS: two lines, plus other comprehensive income

IFRS split of the $87m ($ million)

Service cost	to profit or loss	**60**
Net interest	5% × 200	**10**
Profit or loss charge	60 + 10	**70**
Remeasurement loss to OCI	25 − (48 − 40)	**17**
Total	70 + 17	**87**

IN THE LESSON

- Start with I F R S.
- Profit or loss gets two things.
- The service cost, sixty, including any past service cost.
- And net interest, which is the discount rate times the net liability at the start.
- Five per cent of the two hundred deficit is ten.
- So the charge to profit is seventy.
- Everything else is called remeasurement, and it goes to other comprehensive income, or O C I, and is never moved into profit later.
- Remeasurement here is the actuarial loss of twenty five, less the asset return above the interest income.
- Interest income on assets would be five per cent of eight hundred, forty, so the assets beat it by eight.
- The net remeasurement loss is seventeen.
- Seventy plus seventeen is eighty seven.

26 Under US GAAP: a different split

US GAAP split of the same $87m ($ million)

Service cost	operating	**60**
Interest less expected return	50 − 56	**−6**
Amortisation from OCI	assumed	**9**
Net periodic cost in income	60 − 6 + 9	**63**
Left in OCI	87 − 63	**24**

IN THE LESSON

- Now U S G A A P, which splits the same eighty seven differently.
- Net income carries service cost, interest cost on the whole obligation, a minus for the expected return on assets, and an amortisation of old amounts parked in O C I.
- Suppose management assumes a seven per cent expected return, which is fifty six.
- Interest less expected return is minus six.
- Say the amortisation of old losses is nine.
- The net periodic cost in income is sixty, minus six, plus nine, which is sixty three.
- The actual difference goes to O C I: eighty seven minus sixty three is twenty four.
- Only the service cost, sixty, sits in operating income.
- The trap is to apply one framework's split to the other.

27 The same 87, split two ways

Pension cost ($ million)

IFRS profit	**70**
IFRS OCI	**17**
GAAP income	**63**
GAAP OCI	**24**

Each pair adds to 87: the framework only moves the line

IN THE LESSON

- Here is the comparison as a picture.
- Up the side is the amount in millions of dollars.
- The first two bars are I F R S.
- Seventy goes through profit or loss and seventeen goes to other comprehensive income.
- The next two are U S G A A P.
- Sixty three goes through net income and twenty four goes to other comprehensive income.
- Add each pair and you get the same eighty seven.
- The framework does not change what the plan costs, only which line carries it, and so how much reported profit moves.
- When you compare a company that reports under one framework with a rival under the other, you must put them on the same basis first.

28 Valuing a company with a pension plan

- Deficit is debt like: add it to net debt, after tax
- Surplus is an asset, with caution
- Only service cost is an operating cost
- Interest is financing; expected return a guess

IN THE LESSON

- Now the last outcome: what the analyst does with all this.
- The reasoning is simple.
- A deficit is money the company will have to find.
- It is debt like.
- So when you measure leverage or enterprise value, you add the deficit to the debt, usually after tax, because paying into the plan earns a tax deduction.
- A surplus is the opposite, an asset, though a cautious analyst may not count all of it, since the company may not be able to get it back.
- The second step is comparability.
- Only the service cost is truly an operating cost.
- Interest cost is a financing cost.
- And under U S G A A P the expected return is a non operating item that rests on a number management picks.

29 Example 10: the deficit in the valuation

Enterprise value 9,000; net debt 400; tax rate 25% ($ million)

Deficit	from Example 8	**167**
Deficit after tax	167 × 0.75	**125.25**
Equity value, adjusted	9,000 − 400 − 125.25	**8,474.75**
Equity value, ignored	9,000 − 400	**8,600**
Adjusted net debt	400 + 125.25	**525.25**

IN THE LESSON

- Example ten.
- Kestrel's enterprise value comes out of the model at nine thousand million dollars.
- Its reported net debt is four hundred million.
- The pension deficit at the year end is one hundred and sixty seven.
- The tax rate is twenty five per cent, so the after tax deficit is one hundred and sixty seven times zero point seven five, which is one hundred and twenty five point two five.
- Equity value is nine thousand, minus four hundred, minus one twenty five point two five, which is eight thousand four hundred and seventy four point seven five.
- Ignoring the pension would give eight thousand six hundred, overstating the equity by one hundred and twenty five.
- For credit work, the debt used for leverage rises from four hundred to five twenty five.

30 Example 11: contributions above the cost

Contributions 120; total cost 87; tax 25%; reported CFO 310

Excess contribution	120 − 87	**33**
After tax	33 × 0.75	**24.75**
Adjusted operating cash flow	310 + 24.75	**334.75**
Financing cash flow	falls by the same	**−24.75**

If contributions were below the cost, the adjustment goes the other way

IN THE LESSON

- Example eleven is a cash flow adjustment.
- Kestrel contributed one hundred and twenty million to the plan, but the total pension cost was only eighty seven.
- In effect the company paid thirty three extra.
- Economically, paying more than the cost is like repaying a loan, so the thirty three is a financing item, not an operating one.
- Because contributions are tax deductible, we use the after tax figure: thirty three times seventy five per cent is twenty four point seven five.
- Suppose reported operating cash flow is three hundred and ten.
- We add twenty four point seven five, to reach three hundred and thirty four point seven five.
- Financing cash flow falls by the same amount.
- Total cash is unchanged.

31 Example 12: the high expected return trap

Plan assets 800; expected return raised from 7% to 9%

Expected return at 7%	7% × 800	**56**
Expected return at 9%	9% × 800	**72**
Extra reported profit	72 − 56	**16**
At a 10 × multiple	16 × 10	**160 of fake value**

IN THE LESSON

- Example twelve is the trap that the exam loves.
- Under U S G A A P, the expected return on plan assets is management's own assumption.
- Suppose Kestrel raises it from seven per cent to nine per cent.
- On assets of eight hundred, the expected return rises from fifty six to seventy two, a gain of sixteen.
- Net income rises by sixteen, but nothing real has changed.
- The assets earned the same forty eight in cash terms, and the difference simply shifts into other comprehensive income.
- A ten times multiple on that extra sixteen would add one hundred and sixty of value from a paper change.
- So treat a high expected return as an assumption, not a source of operating profit.

32 Example 13: flexing the discount rate

One payment of 1,628.89 due in 10 years ($ million, stand-in for the DBO)

Present value at 5%	1,628.89 ÷ 1.05^10	**1,000**
Present value at 4%	1,628.89 ÷ 1.04^10	**1,100**
Rise in obligation	1,100 − 1,000	**≈ 10%**
After 25% tax	100 × 0.75	**75**
Interest cost, next year	5% × 1,000 vs 4% × 1,100	**50 vs 44**

IN THE LESSON

- Last example.
- Forecasts should be tested against the assumptions.
- The discount rate is the big one.
- Take a simple stand in for the obligation: one payment of sixteen hundred and twenty eight point eight nine million dollars due in ten years.
- At five per cent its present value is one thousand million.
- If the discount rate falls to four per cent, the present value is about eleven hundred million.
- The obligation rose by around ten per cent, one hundred million on our scale, though no one was promised any extra pension.
- After twenty five per cent tax, that is a seventy five million increase in debt like items.
- Service cost also rises when rates fall.
- Interest cost, though, actually falls, from fifty to forty four, because the rate falls by more in proportion than the obligation rises.

33 Recap: the key ideas and formulas

Expense = fair value × vesting ÷ years
Added shares = options × (1 − exercise ÷ price)
Cost = service + interest − return + loss

Recap: expense	Locked at grant date
Recap: shares	Opening + issued − bought back
Recap: dilution	Use diluted shares
Recap: pension cost	Under both frameworks
Recap: debt-like	Deficit after tax is debt

IN THE LESSON

- Let's pull it together.
- Short term pay is expensed as earned.
- Defined contribution costs only the contribution, and the employee bears the risk.
- Defined benefit leaves the company with the risk and a liability.
- Share based pay is an expense at grant date fair value, spread over the vesting years.
- Equity settled awards are locked in and leave equity unchanged.
- Cash settled awards are remeasured.
- In models, keep the expense as a cost, roll the share count forward, use the treasury stock method, and use diluted shares.
- Pension cost is service plus interest minus actual return plus actuarial loss.
- A deficit is debt like, after tax.
- Only service cost is operating, and the excess of contributions over cost is financing.

34 Try three quick questions

1. 400,000 options, $5 each, 4-year cliff, all expected to vest. Yearly expense?
   Answer: 400,000 × $5 ÷ 4 = $500,000.
2. Assets 210, DBO 260. Funded status and treatment?
   Answer: 210 − 260 = −50: a deficit, debt like, after tax.
3. Contributions 90, total cost 70. What adjustment?
   Answer: Excess 20 is financing, not operating (after tax).

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- A company grants four hundred thousand options, each worth five dollars at grant, vesting after four years, with all expected to vest.
- What is the yearly expense?
- Four hundred thousand times five is two million, divided by four, so five hundred thousand dollars.
- Question two.
- A plan has assets of two hundred and ten and an obligation of two hundred and sixty.
- What is the funded status, and how do you treat it?
- It is a deficit of fifty, and you treat it as debt, after tax.
- Question three.
- Contributions are ninety, and total pension cost is seventy.
- What is the adjustment?
- The excess of twenty is a repayment of borrowing, moved from operating to financing cash flow, after tax.