CHARTA LEARNING · LESSON NOTES

Building an equity portfolio

Portfolio Construction

1 A story: the toolbox

- One tool, four main jobs
- Growth, dividends, diversification, inflation cover
- Some clients add values: environmental and social aims
- First ask which job this client needs most

IN THE LESSON

- Think of a toolbox with one tool that does several jobs, though not equally well.
- Shares are that tool.
- First, they grow, because company profits grow over the years.
- Second, they pay dividends, which is cash in hand.
- Third, they behave differently from bonds, so holding both makes the whole fund steadier.
- Fourth, company prices tend to rise with the cost of living, which gives some protection against inflation.
- Some clients add a fifth reason: they want their money to back companies that meet their own environmental, social or governance standards.
- Dana Osei's first question is always which of these jobs this client needs most.

2 Four jobs, and who needs them

What equities contribute to the total portfolio

Job	Who needs it most
Capital growth	Young saver
Dividend income	Retiree
Diversification	Every client
Inflation cover	Long horizons

IN THE LESSON

- Here are the four jobs, and who values each one.
- Capital growth is the main reason to hold shares, and it matters most to a young saver, who has decades to let profits compound.
- Dividend income matters most to a retiree, who can spend the cash without selling anything.
- Diversification matters to every client, because shares and bonds do not move in step, so their correlation is below one.
- Inflation cover matters over long horizons, because company revenues can rise with prices.
- Notice that the table does not say shares do all four jobs for everyone.
- The recommendation depends on the client's goal.

3 Example 1: two pools, two jobs

Shares 7% a year (3% yield), bonds 4.5% a year, 30 years

Young pool 100m, all shares	100m × 1.07^30	**761.2m**
Young pool 100m, all bonds	100m × 1.045^30	**374.5m**
Pensioner 800m: 40% shares	320m × 3%	**9.6m**
Pensioner: 60% in bonds	480m × 4.5%	**21.6m**
Pensioner income, total	9.6 + 21.6	**31.2m**

The pensioner pool needs 32m a year

IN THE LESSON

- Let us give the fund two groups of members.
- The young pool holds one hundred million, and will not be touched for thirty years.
- The pensioner pool holds eight hundred million, and must pay out thirty-two million a year.
- Assume shares return seven per cent a year, with a three per cent dividend yield, and bonds return four and a half per cent.
- In shares, the young pool grows to seven hundred and sixty-one point two million.
- In bonds, only three hundred and seventy-four point five million.
- That is why growth drives the young pool.
- The pensioner pool holds forty per cent in shares, which is three hundred and twenty million, so dividends are nine point six million.
- Its bonds, four hundred and eighty million, pay twenty-one point six million.
- Together that is thirty-one point two million, close to what the pool needs.

4 Compounding: shares against bonds

Chart: Value of the pool, millions vs Years held, 0 to 30

- Shares end at 761.2
- Bonds end at 374.5
- Start at 100

IN THE LESSON

- Here is the young pool as a picture.
- The horizontal axis is the years held, nought to thirty.
- The vertical axis is the value of the pool in millions, starting at one hundred.
- Follow the green line first.
- It is the pool in shares, and it curves upward more and more steeply, ending at seven hundred and sixty-one point two.
- The gold line is the pool in bonds.
- It also curves, but gently, and ends at three hundred and seventy-four point five.
- The gap between the lines opens slowly at first and then quickly.
- That is compounding at work.
- One caution: the smooth green line is an average.
- A real share path would bounce up and down along the way.

5 Example 2: the free benefit of mixing

40% shares (risk 16%), 60% bonds (risk 5%), correlation 0.2

Weighted average of risks	0.4 × 16 + 0.6 × 5	**9.40%**
Variance of the mix	$6.4^2 + 3.0^2 + 2\times6.4\times3.0\times0.2$	**57.64**
Volatility of the mix	√57.64	**7.59%**
Risk removed by mixing	9.40 − 7.59	**1.81 points**

IN THE LESSON

- Now diversification, with a reminder from earlier levels.
- The risk of a mix is not the average of the risks, unless the assets move in perfect step.
- The pensioner pool has forty per cent in shares with risk of sixteen per cent, and sixty per cent in bonds with risk of five per cent.
- The correlation is point two.
- The weighted average of the two risks would be nine point four per cent.
- But weight each risk, giving six point four and three point oh.
- Square each, and add twice their product times the correlation.
- The variance is fifty-seven point six four, and its square root is seven point five nine per cent.
- So mixing removed one point eight one points of risk, and that is the free benefit of mixing.

6 Example 3: inflation, short run and long run

Real return = (1 + share return) ÷ (1 + inflation) − 1

Bad year: shares fall	−10%	**−10%**
Bad year: prices rise	inflation	**6%**
Bad year, real return	0.90 ÷ 1.06 − 1	**−15.1%**
Long run: 7% shares, 3% inflation	1.07 ÷ 1.03 − 1	**+3.9%**

IN THE LESSON

- Now inflation, where the exam trap sits.
- Suppose inflation is six per cent in a bad year, and shares fall ten per cent.
- Prices rise, so the real return is nought point nine over one point oh six, minus one, which is minus fifteen point one per cent.
- Inflation did not help.
- It came with a falling market.
- Over a long stretch the story is kinder.
- If shares return seven per cent a year while inflation runs at three per cent, the real return is one point oh seven over one point oh three, minus one, which is three point nine per cent a year.
- So shares protect buying power over many years, not over a single bad year.
- Do not sell them to a client as a cover for next year's prices.

7 The proposal for Wren Valley, and the trap

- Young pool: growth is the job, so a high share weight
- Pensioner pool: income and long-run cover, bonds as core
- Say shares protect over decades, not one bad year
- Ask whether values rules change which shares qualify

IN THE LESSON

- Here is Dana Osei's proposal, with reasons.
- For the young pool, growth is the job.
- It does not need cash for thirty years, so dividends can be reinvested and the pool can hold a high share of equities.
- For the pensioner pool, shares still earn their place, because a pension can last decades and prices will rise.
- But bonds carry most of the income, because this pool cannot wait out a long fall.
- What could go wrong is leaning on the inflation story.
- Say that shares protect over decades, not over one bad year.
- And ask the trustees whether any members hold environmental or social views, because that changes which shares qualify.

8 A story: the supermarket aisles

- Thousands of shares, too many to study
- Split the universe into groups first
- Size, style, place, activity and values
- The split sets benchmark, peers and risks

IN THE LESSON

- Imagine a supermarket with tens of thousands of products.
- Nobody shops by wandering every aisle.
- You split the shop up: by size of pack, by brand, by where the food was grown, by type of food.
- The market for shares is the same.
- There are thousands of listed companies, and no manager can study them all.
- So the manager first splits the universe into groups, and chooses where to look.
- The way the universe is split decides three things: the benchmark the manager is measured against, the peers the manager is compared with, and the risks the client has to watch.

9 Ways to divide the universe

Cut by the company

Size → Style → Geography

Cut by business and values

Sector and industry → ESG screens → The mandate

IN THE LESSON

- Here are the main ways, in two rows.
- The first row cuts by the company itself.
- Size sorts companies into large, mid and small.
- Style sorts them into value, growth or core, by how the market prices them.
- Geography sorts markets by where the shares are listed.
- The second row cuts by business and by values.
- Sector and industry sort companies by what they do.
- Environmental, social and governance screens can then be laid over any of the other cuts.
- The last box is the result: a mandate, such as small-company shares in emerging markets, which combines several cuts at once and sets the benchmark.

10 Size and style, in plain measures

How managers sort size and style

Group	Typical measure
Large, mid, small	Market value
Value	Low price-to-book
Growth	High earnings growth
Core	A mix of both

IN THE LESSON

- Size is measured by market value, which we meet in a moment.
- Style needs measures that describe how the market prices a company.
- A value company has a low price-to-book ratio, which compares its share price with the accounting value of its assets, and usually a high dividend yield.
- A growth company has high expected earnings growth, and the market pays a high price for it.
- A core company sits in between, or mixes both.
- Each index provider draws its own lines, so the same company can be growth in one index and core in another.
- The exact cut-offs do not matter.
- What matters is that the label comes from a measure.

11 Example 4: sorting three companies by size

Large above 10bn, mid 2bn to 10bn, small below 2bn

Alder: 40 × 500m shares		**20.0bn: large**
Birch: 12 × 400m shares		**4.8bn: mid**
Cedar: 8 × 150m shares		**1.2bn: small**
Alder share of the three	20.0 ÷ 26.0	**76.9%**

IN THE LESSON

- Let us sort three companies, using our own cut-offs: large above ten billion, mid between two and ten billion, small below two billion.
- Market value is the share price times the number of shares.
- Alder trades at forty, with five hundred million shares, so it is worth twenty billion, which is large.
- Birch trades at twelve, with four hundred million shares, worth four point eight billion, which is mid.
- Cedar trades at eight, with one hundred and fifty million shares, worth one point two billion, which is small.
- Now notice concentration.
- Together the three are worth twenty-six billion, so Alder alone is seventy-six point nine per cent of them.
- Weight by size, and one name can dominate.

12 Example 5: when the label drifts

Value if price-to-book is below 2.5. Book value 25 a share

Price 100: price-to-book	100 ÷ 25	**4.0**
Price falls to 55	55 ÷ 25	**2.2**
Label changes	growth to value	**below 2.5**
Several holdings drift	no trade made	**tilt to value**

IN THE LESSON

- Now the trap.
- Dana Osei's growth manager holds a share with book value of twenty-five per share.
- The index provider calls any share with a price-to-book ratio below two point five a value share.
- At a price of one hundred, the ratio is one hundred over twenty-five, which is four point oh, so the share is growth.
- Over the year the price falls to fifty-five.
- The ratio is now fifty-five over twenty-five, two point two, below the cut-off.
- The company did nothing, yet the label moved from growth to value.
- If several holdings drift this way, the portfolio tilts to value without a trade.
- So style exposure must be monitored, not assumed.

13 Geography: developed, emerging, frontier

Three groups of markets

Group	What it signals
Developed	Deep, liquid markets
Emerging	Faster growth, more risk
Frontier	Thin trading, high risk

IN THE LESSON

- Geography is the third cut.
- Developed markets are large and deep, with strong rules and easy trading.
- Emerging markets offer faster growth but bring more risk, in political events, in company governance and in currency swings.
- Frontier markets are smaller still.
- Trading can be thin, so buying or selling a large holding moves the price, and the rules protecting a minority shareholder can be weak.
- For Wren Valley this matters in two ways.
- A currency fall can wipe out a gain in local prices.
- And a portfolio that is spread over many countries may still be concentrated in one type of risk.

14 Sector, industry and values screens

- Sector and industry: what the company does
- Production-based: grouped by what the firm makes
- Market-based: grouped by how its shares behave
- Values screens sit over any cut and change the benchmark

IN THE LESSON

- The fourth cut is economic activity.
- Sector and industry group companies by what they do, such as banks, drug makers or builders.
- There are two ways to classify.
- A production-based system groups firms by what they make or sell.
- A market-based system groups them by how their shares behave and respond to the same economic forces.
- A bank that also runs a software arm could sit in different groups under the two systems.
- Finally a manager can add values screens, which exclude or favour companies on environmental, social and governance grounds.
- Each choice changes the benchmark and the peer group, so it must be made on purpose and written down.

15 A story: the leaky bucket

- Gross return is the water poured in
- Income tops the bucket up; costs are the leaks
- Small leaks repeat every year and add up
- The client keeps only the net return

IN THE LESSON

- Picture a bucket under a tap.
- The water poured in is the gross return of the portfolio.
- A little extra water drips in from the side: that is income from lending shares or selling options.
- But the bucket also has leaks.
- Fees leak out.
- Trading leaks out.
- Tax taken at the border leaks out.
- Each leak looks tiny, but the bucket is refilled and leaks again every year, and the leaks compound.
- The client keeps only what is left, the net return.
- Dana Osei's job is to count both the extra drips and the leaks, because a clever manager can still lose to them.

16 Where extra income comes from

Four sources of income on a share portfolio

Source	What the fund gets
Dividends	Cash from companies
Share lending	Fee from short sellers
Covered call	Premium, upside capped
Cash-secured put	Premium, may buy shares

IN THE LESSON

- The main income is the dividend, cash paid by the company.
- Beyond that, the fund can lend shares to short sellers, who borrow them to sell and pay a fee for the loan.
- The fund can also write options.
- In a covered call, the fund owns the share and sells someone the right to buy it at a fixed price.
- It collects a premium, but gives up gains above that price.
- In a cash-secured put, the fund sells someone the right to sell it the share at a fixed price, and keeps cash ready to buy.
- It collects a premium, but may have to buy the share when the price has fallen.

17 Example 6: a covered call

Own a share at 100. Sell a call, strike 110, premium 3

Share ends at 80	−20 + 3	**−17**
Share ends at 100	0 + 3	**+3**
Share ends at 120	+10 + 3 (was +20)	**+13**
Best case, any higher price	10 + 3	**+13**

IN THE LESSON

- Let us see the covered call with numbers, per share.
- The fund owns a share at one hundred, and sells a call with a strike price of one hundred and ten, for a premium of three.
- If the share ends at eighty, it loses twenty, but the premium softens that to a loss of seventeen.
- If the share ends at one hundred, the gain is nought, and the fund keeps the premium of three.
- If the share ends at one hundred and twenty, it would have gained twenty, but the sold call caps the gain at ten, so the total is thirteen.
- The best case at any higher price is also thirteen.
- The premium is income, but the fund pays for it with the upside.

18 Example 7: lending shares, and the hidden risk

Lend 40m of shares for a fee of 0.30%. Collateral held 42m

Lending fee earned	40m × 0.30%	**0.12m**
Cash collateral reinvested		**42m**
Reinvestment loses 0.5%	42m × 0.5%	**−0.21m**
Net result	0.12m − 0.21m	**−0.09m**

IN THE LESSON

- Securities lending looks like free money, so test it.
- Wren Valley lends forty million of shares for a fee of nought point three per cent.
- The fee is forty million times nought point three per cent, which is point one two million.
- The borrower hands over collateral, forty-two million in cash, and the fund reinvests it.
- Suppose that reinvestment loses nought point five per cent.
- The loss is forty-two million times nought point five per cent, which is point two one million.
- The net result is minus point oh nine million.
- The lesson is that lending income comes with counterparty risk, if the borrower fails, and with collateral reinvestment risk.
- Both are easy to overlook.

19 The costs of running the fund

Costs of holding and running an equity portfolio

Cost	What it covers
Fees	Management and performance
Custody and admin	Safekeeping and records
Marketing	Distribution and sales
Trading	Commission, tax, spread, impact

IN THE LESSON

- Now the leaks.
- Fees come first: a management fee, charged on assets whatever the result, and sometimes a performance fee when the manager beats a target.
- Custody and administration cover safekeeping and records.
- Marketing and distribution fees pay for selling the fund.
- Trading costs are the hardest to see.
- Commissions and stamp duties or transaction taxes are visible.
- The bid-ask spread, the gap between the buying and selling price, and market impact, the move in price caused by your own order, are never billed, yet they are often larger.
- Withholding tax on foreign dividends is a further leak, and we count it next.

20 Net return, and the price of trading

Net return = Price return + Income − Costs and tax
Trading cost = Turnover × Round-trip cost

Net return	Return the client keeps
Costs and tax	Fees, tax, custody, trading
Turnover	Share of fund traded in a year
Round-trip cost	Cost to buy then sell one unit

IN THE LESSON

- Two relationships tie this section together.
- The net return is the price return plus income, less all the costs and tax.
- That is what the client keeps.
- Within the costs, the trading cost is the turnover times the round-trip cost.
- Turnover is the share of the fund bought and sold in a year, so a high turnover means much of the fund changes hands in the year.
- The round-trip cost is the cost of buying and then selling one unit.
- That is why a manager who trades often has to find much more skill to pay for the trading.
- Turnover belongs in the conversation, next to the headline fee.

21 Example 8: from price return to net return

A year, in per cent: price 6.0, dividends 2.0, lending 0.1

Price return + dividends	6.0 + 2.0	**8.0**
Add the lending fee	8.0 + 0.1	**8.1**
Withholding tax on dividends	15% × 2.0	**−0.3**
Fees 0.8 and trading 0.6	−0.8 − 0.6	**−1.4**
Net return	8.1 − 0.3 − 1.4	**6.4%**

Tax and costs take 1.7 points in all

IN THE LESSON

- Here is one year for the fund, in per cent.
- The price return is six point oh and dividends are two point oh, so together eight point oh.
- Add the lending fee of point one, and we have eight point one.
- Now the leaks.
- The dividends came from abroad, and a fifteen per cent withholding tax takes fifteen per cent of two point oh, which is point three.
- Fees and custody take point eight, and trading takes point six, so fees and trading together take one point four.
- The net return is eight point one, less point three, less one point four, which is six point four per cent.
- Tax and costs together took one point seven points of return.

22 Where the return went

Per cent a year

Before costs	**8.1**
Tax	**0.3**
Fees	**0.8**
Trading	**0.6**
Net	**6.4**

Tax and costs: 0.3 + 0.8 + 0.6 = 1.7

IN THE LESSON

- Here is the same year as bars.
- The vertical axis is per cent a year.
- The first bar is the return before tax and costs, eight point one.
- The next three bars are the leaks, each small: tax of point three, fees of point eight and trading of point six.
- Look how short they are next to the first bar, and how easy they are to ignore one at a time.
- The last bar is what the client keeps, six point four.
- The three small bars add up to one point seven, and that is the amount any stock picking has to earn back before the client is any better off.

23 Example 9: does the skill pay for the cost?

Index 8.0%. Round trip costs 0.50% of each unit traded

A: +1.0% skill, fee 0.90%	8.0 + 1.0 − 0.90	**8.10%**
A: turnover 120%, trading	1.2 × 0.50%	**0.60%**
A, net of fee and trading	8.10 − 0.60	**7.50%**
Index: fee 0.10%, turnover 5%	8.0 − 0.10 − 0.025	**7.875%**
Index fund wins by	7.875 − 7.50	**0.375**

Manager A needs 1.375 points of skill to break even

IN THE LESSON

- Now a decision.
- The index earns eight per cent, and every unit of trading costs point five per cent for the round trip.
- Manager A expects to beat the index by one point oh, charges point nine oh in fees, and turns the fund over one hundred and twenty per cent.
- After the fee, manager A earns eight point one oh.
- Trading costs one point two times point five, which is point six oh, leaving seven point five oh.
- The index fund charges point one oh and turns over five per cent, so trading costs only point oh two five, and it nets seven point eight seven five.
- The index fund wins by point three seven five.
- Manager A would need one point three seven five points of skill to break even.

24 Mistakes so far

- Treating shares as a sure cover against inflation
- Leaving a growth label on after the price has fallen
- Counting dividends but forgetting the tax taken from them
- Judging skill before fees and trading costs
- Lending shares for the fee and ignoring collateral risk

IN THE LESSON

- Let us stop and collect the traps from the first three outcomes.
- First, calling shares a reliable cover against inflation, when the cover works over decades and not over one bad year.
- Second, leaving a growth label on a holding after its price has fallen, so the style quietly changes.
- Third, counting dividends and forgetting the tax taken from them before they arrive.
- Fourth, judging a manager on skill before fees and trading costs, when turnover can erase the skill.
- Fifth, lending shares for the fee and forgetting the collateral risk.
- Each of these is a small slip, and each of them has changed the answer in a case you have just seen.

25 A story: the shareholder's voice

- Unhappy owners can exit or use their voice
- Engagement is a continuing talk with the board
- Strategy, capital use, governance, ESG issues
- Done well it adds value; it also costs money

IN THE LESSON

- Imagine you own a small share of a local restaurant.
- If you dislike how it is run, you can sell your share and leave.
- Or you can speak to the owner and try to improve it.
- Owning shares gives an investor the same two choices: exit, or voice.
- Voice is called engagement.
- It is an ongoing conversation between investors and a company's board and management about strategy, how money is spent, governance and environmental or social issues.
- Done well, it can make a company better run and a holding more valuable.
- But it takes time and money, and every other shareholder gets the benefit without paying.

26 From a vote to a campaign

Cheapest to dearer

Vote thoughtfully → Meet directors → Join other holders

At the far end

Activist campaign → Inside information → Trading frozen

IN THE LESSON

- Here are the ways a manager can engage, from the cheapest to the most costly.
- The top row begins with voting.
- Every shareholder has a vote, but following a recommendation without reading it is not engagement.
- Voting thoughtfully on pay, directors and capital decisions is.
- Next is meeting directors and managers, where most real engagement happens.
- Then joining other shareholders, to share the cost and add weight.
- The bottom row is the far end.
- An activist campaign is public, expensive and rare.
- It can bring contact with inside information, and that can freeze the manager's trading in the shares.
- Most engagement stops well before this row.

27 What engagement can achieve

Four gains from engagement

Gain	How it helps
Better governance	Stronger board oversight
Fewer agency conflicts	Managers serve owners
Long-term value	Better capital use
Information	Helps value the firm

IN THE LESSON

- So what can engagement actually achieve?
- Better governance is the first gain: a board that watches management more closely.
- Second, fewer agency conflicts, which means managers acting for the owners instead of for themselves.
- Third, better long-term value, through wiser strategy and use of capital.
- Fourth, information.
- Even a polite meeting teaches the manager things that help it value the company, so the engagement helps the portfolio even if nothing at the company changes.
- None of these is guaranteed.
- Engagement is a bet that talking costs less than the value it unlocks, and the next slide puts a rule on that bet.

28 Is it worth engaging alone?

Engage alone if Chance × Stake × Value created > Cost

Chance of success	Probability engagement works
Holder's stake	Share of company you own
Value created	Rise in total company value
Cost of engaging	Staff time, travel, advice

IN THE LESSON

- Free riding is the key problem.
- If the engagement works, every shareholder shares in the gain according to their stake, but only the engaging manager pays.
- So each manager asks a narrow question: does my own expected share of the gain cover my own cost?
- The expected share is the chance of success, times my stake, times the value created.
- If that beats the cost of engaging, engage alone.
- If not, the choices are to do nothing, or to share the cost with other holders.
- This is a simple decision rule built from the free-rider idea, so use it as a way to think, not as a named formula from a book.

29 Example 10: who should engage?

Company 5bn; value rises 1%; 40% chance; cost 300,000

Value created if it works	5bn × 1%	**50m**
2% holder expects	0.4 × 2% × 50m	**400,000**
0.5% holder expects	0.4 × 0.5% × 50m	**100,000**
Four 0.5% holders pay each	300,000 ÷ 4	**75,000**
Pooled: net gain each	100,000 − 75,000	**25,000**

IN THE LESSON

- Let us test the rule.
- An illustrative company is worth five billion.
- Dana Osei believes a change in how it uses its capital would raise its value by one per cent, and gives engagement a forty per cent chance of working.
- The cost to a manager is three hundred thousand.
- If it works, the value created is fifty million.
- A two per cent holder's expected share is point four times two per cent times fifty million, which is four hundred thousand, above the cost.
- A half per cent holder expects only one hundred thousand.
- But four half per cent holders who share the cost pay seventy-five thousand each, and each still expects one hundred thousand, a net gain of twenty-five thousand, so sharing the cost makes the engagement worth doing.

30 Costs, risks and the passive manager

- Costs: staff time and advice
- Inside information can freeze trading
- Conflict if the company is also a client
- Free riding: all share the gain, one pays
- Passive funds cannot sell, so they engage

IN THE LESSON

- Engagement has costs, and a good recommendation names them.
- There is staff time and perhaps legal advice.
- There is the risk of being told material information that is not public, which can restrict the manager from trading the shares until it is public.
- There is possible conflict, if the company is also a client of the manager's firm.
- And there is free riding, which we just priced.
- Passive managers deserve special mention.
- They hold what the index holds and cannot sell a company they dislike, so engagement is often their main lever.
- For Dana Osei, the proposal is to vote thoughtfully everywhere, meet the boards of large holdings, and join others on small ones.

31 Recap: the lesson in five lines

- Shares: growth, income, mixing, some inflation cover
- Universe: size, style, place, activity, values; labels drift
- Net return = price + income − fees, trading and tax
- Engage alone if chance × stake × value gain > cost
- Say the trap along with the recommendation

IN THE LESSON

- Let us pull the lesson together.
- First, shares do four jobs: growth, income, diversification and some inflation cover, and the client's goal decides which matters, with the inflation cover working only over long periods.
- Second, the universe is divided by size, style, geography, sector and values, and labels can drift.
- Third, income comes from dividends, share lending and option premiums, while fees, trading costs and tax take it away, so only the net return counts.
- Fourth, engagement can improve governance and value, but free riding means a manager should weigh its own gain against its own cost.
- Fifth, always state the trap with the answer.

32 Try three quick questions

1. Book value 40. Price 120 falls to 80. Value if below 2.5. Label?
   Answer: 3.0 falls to 2.0: growth becomes value.
2. Price 7.0, dividends 2.0 taxed 15%, costs 1.2. Net return?
   Answer: 9.0 − 0.3 − 1.2 = 7.5%.
3. Firm 2bn, +2%, 50% chance, cost 200,000. 5% holder: engage?
   Answer: 0.5 × 5% × 40m = 1.0m, above cost: yes.

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- A share has book value of forty.
- Its price falls from one hundred and twenty to eighty.
- The value cut-off is a price-to-book below two point five.
- What happens to its label?
- The ratio goes from three point oh to two point oh, which is below the cut-off, so a growth share becomes a value share.
- Question two.
- Price return is seven, dividends are two, taxed at fifteen per cent, and costs are one point two.
- What is the net return?
- Nine, less point three, less one point two, is seven point five per cent.
- Question three.
- A company is worth two billion, engagement lifts it two per cent with a fifty per cent chance, and costs two hundred thousand.
- Is it worth it for a five per cent holder?
- Point five times five per cent times forty million is one million, above the cost, so yes.