CHARTA LEARNING · LESSON NOTES

Building active equity strategies

Portfolio Management

1 A story: the restaurant kitchen

- Judgement alone is not a strategy
- A strategy is the process around the judgement
- Wolverby Fund is Harrowmere's fundamental fund
- The process protects judgement from its owner

IN THE LESSON

- Think of a restaurant kitchen.
- A good chef has taste, but taste alone does not feed a full dining room on a Saturday night.
- The kitchen needs a process: where the ingredients come from, how they are checked, how a dish is cooked, how big the portions are, and when a dish comes off the menu.
- A fundamental equity strategy is the same.
- The manager's judgement about individual companies is the taste.
- The strategy is the kitchen around it.
- The Heronsgate trustees ask Rhea Stonehurst to walk through the Wolverby Fund, her fundamental fund, one station at a time.
- Much of the process exists to protect the judgement from the person using it.

2 From universe to sell decision

Wolverby process, part one

Universe 1,200 → Pre-screen → Research

Part two

Value: target price → Build 25 holdings → Sell rules

IN THE LESSON

- Here is the whole process in six boxes, read left to right along the top row, then along the bottom.
- The first box is the universe, the list of stocks the manager may buy.
- It is often the benchmark plus nearby stocks, here twelve hundred names.
- Far too many to study, so the second box is a pre-screen: simple quantitative filters that cut the list to a size the analysts can cover.
- The third box is research on each business and its industry.
- The bottom row starts with valuation, which gives a target price.
- Then portfolio construction picks and sizes the holdings.
- The last box is the one most often forgotten: the rules for when to sell.

3 Example 1: the pre-screen

Wolverby: five analysts, 1,200 stocks to start

Universe	benchmark and near it	**1,200**
After liquidity filter	70% pass	**840**
After quality filter	50% pass	**420**
After valuation filter	cheapest 25%	**105**
Names per analyst	105 ÷ 5	**21**

IN THE LESSON

- Let us watch the pre-screen shrink the list.
- Wolverby starts with twelve hundred stocks.
- Filter one is liquidity: drop any stock too thinly traded to buy in size.
- Seventy per cent pass, which leaves eight hundred and forty.
- Filter two is quality: keep only companies with positive free cash flow.
- Half pass, which leaves four hundred and twenty.
- Filter three is valuation: keep the cheapest quarter on a simple multiple.
- That leaves one hundred and five.
- Now five analysts can each cover twenty one companies properly.
- The filters are crude on purpose.
- They do not pick winners, they just decide where scarce research time is spent.

4 From research to a target price

Target price = forecast EPS × target P/E
Upside = (target − price) ÷ price

Forecast earnings	Analyst's earnings per share
Target multiple	Multiple the stock deserves
Target price	Where the analyst says it goes
Upside	Gain from today's price

IN THE LESSON

- Now the research.
- An analyst studies the industry, the firm's place in it, and forecasts its sales, margins and earnings.
- Then comes valuation.
- Some use discounted cash flow, others use a relative multiple.
- Here is the multiple version, which is the quickest to show.
- The target price is forecast earnings per share times the multiple the stock deserves, say a price to earnings ratio.
- Upside is the target price minus today's price, divided by today's price.
- Upside alone is not enough.
- A sound analyst also builds a bear case, with lower earnings and a lower multiple, and compares the gain in the good case with the loss in the bad one.

5 Example 2: valuing Sablemoor Foods

Sablemoor Foods trades at 45

Base target price	4.00 × 15	**60.00**
Base upside	(60 − 45) ÷ 45	**33.3%**
Bear price	3.20 × 12	**38.40**
Bear loss	(45 − 38.40) ÷ 45	**14.7%**
Reward for each unit of risk	33.3 ÷ 14.7	**2.3**

IN THE LESSON

- Take Sablemoor Foods, a company on Wolverby's research list.
- It trades at forty five.
- The analyst forecasts earnings of four per share and decides the stock deserves a multiple of fifteen.
- The target price is sixty, so the upside is fifteen on forty five, which is thirty three point three per cent.
- Now the bear case: earnings of three twenty and a multiple of twelve give thirty eight forty.
- The loss from forty five would be fourteen point seven per cent.
- So the reward is about two point three times the risk.
- That is attractive, and it is also written down, which matters later, because a written thesis can be checked against what actually happens.

6 Example 3: sizing the position

Wolverby holds 25 stocks; Sablemoor is high conviction

Equal weight	100% ÷ 25	**4.0%**
Weight wanted by conviction	4.0% × 1.8	**7.2%**
Assumed bad-case fall		**40%**
Loss allowed per stock	of the fund	**2.0%**
Cap, and final size	2.0 ÷ 40	**5.0%**

IN THE LESSON

- Next, portfolio construction.
- Wolverby plans to hold twenty five stocks, so an equal weight would be four per cent.
- Sablemoor is a high conviction idea, and Rhea Stonehurst scales it by one point eight, which asks for seven point two per cent.
- But conviction is not the only input.
- Risk also limits size.
- The team assumes a bad case for Sablemoor of a forty per cent fall, and will not let any one stock cost the fund more than two per cent.
- Two divided by forty gives a cap of five per cent.
- The position is the smaller of seven point two and five.
- So Sablemoor gets five per cent, and no single thesis can sink the fund.

7 When to sell

Wolverby's written sell rules

Event	Action
Price reaches 60 target	Sell or revalue
Thesis fully played out	Sell
Thesis broken	Sell fast
Price falls, thesis intact	Review

IN THE LESSON

- Now the box people forget.
- A stock can leave the portfolio for three reasons, and a robust process writes them down before buying.
- First, the price reaches the target.
- Sablemoor at sixty means the upside has been earned, so the manager sells or does a new valuation.
- Second, the thesis has played out.
- The reason for owning the stock, perhaps a margin recovery, has fully happened, so nothing is left to wait for.
- Third, the thesis has broken.
- A margin recovery that does not come is a reason to sell quickly, however painful.
- One more case matters: if the price falls but the thesis is intact, that is a prompt to review, and perhaps to add, not to sell in a panic.

8 The biases that attack a process

Bias on the left, remedy on the right

Bias	Remedy
Overconfidence and control	Log forecasts
Confirmation bias	Formal challenge
Availability bias	Wide screened universe
Attachment to holdings	Written sell rules

IN THE LESSON

- Why bother with all these written rules?
- Because the person running the process is human.
- The common failures are behavioural.
- Overconfidence and the illusion of control make a manager believe forecasts are more accurate than they are.
- The cure is to log every forecast and check the hit rate.
- Confirmation bias means only reading research that agrees with the thesis.
- The cure is formal challenge, where someone must argue the other side.
- Availability bias means over-weighting whatever is easy to recall, such as last month's headlines.
- The cure is a wide, screened universe.
- Attachment to a holding means refusing to sell a stock one has lived with.
- The cure is written sell rules.
- Discipline in the process beats willpower in the moment.

9 A story: the recipe tested on old dinners

- Start with a claim about what drives returns
- Turn the claim into a rule a computer can follow
- Test the rule on history
- Most of the work is the testing

IN THE LESSON

- Now the Orrington Fund, Harrowmere's quantitative fund.
- Picture a cook who claims that adding lemon improves any dish.
- A careful cook does not just believe it.
- She writes the claim as a rule, and then tests it on many old dinners to see whether lemon really helped.
- That is a quantitative strategy.
- It starts as a claim about what drives returns, such as that cheap, high quality stocks beat expensive, poor quality ones.
- The claim becomes a rule, and the rule is tested on history.
- Most of the work is in the testing, because it is easy to fit a model to the past and much harder to learn something real from it.

10 How a quantitative strategy is developed

Orrington process, part one

Hypothesis → Gather clean data → Back-test signal

Part two

Combine into score → Optimise with costs → Monitor and retire

IN THE LESSON

- Here is the development process in six boxes, along the top and then along the bottom.
- It starts with a hypothesis, a reason why cheap quality stocks should win, ideally an economic reason and not just a pattern.
- Second, data are gathered and cleaned.
- Third, the signal is back-tested, which means ranking the stocks in each past period and seeing what happened next.
- The bottom row begins with combining the signals that survive into one multifactor score.
- Then an optimiser builds the portfolio, using a risk model and estimates of trading costs, so it does not buy a bargain that costs more to trade than it earns.
- The last box is monitoring, because every signal fades.

11 Example 4: the data trap

Ten-year test, 500 stocks at the start

Survivors	440 stocks, average +10%	**4,400**
Delisted stocks	60 stocks, average −50%	**−3,000**
Survivors only report	4,400 ÷ 440	**10.0%**
All stocks together	(4,400 − 3,000) ÷ 500	**2.8%**
Bias in the first figure	10.0 − 2.8	**7.2 points**

IN THE LESSON

- The first danger is in the data.
- Orrington tests a value signal over ten years.
- Five hundred stocks were in the market at the start.
- Four hundred and forty survive to today and averaged a gain of ten per cent.
- The other sixty were delisted, after failing or being bought out cheaply, and lost an average of fifty per cent.
- A test built from today's list sees only the survivors and reports ten per cent.
- The honest figure weights both groups: four thousand four hundred, less three thousand, over five hundred, which is two point eight per cent.
- That is survivorship bias.
- A second trap is look-ahead bias, using a number, such as annual earnings, before it was actually published.
- The cure is point in time data, recording what was known on each date.

12 What a working signal looks like

Next-month return (%)

Q1 low	**0.4**
Q2	**0.6**
Q3	**0.8**
Q4	**1.0**
Q5 high	**1.2**

Illustration: top minus bottom is 0.8 a month

IN THE LESSON

- Now the back-test itself.
- Each period, Orrington ranks every stock by its value and quality score and splits them into five equal groups called quintiles, from lowest score to highest.
- Then it records the average return of each group in the following month.
- The vertical axis shows that average monthly return, in per cent.
- Look at the bars from left to right.
- The lowest scoring fifth earned point four.
- Each step up earns a little more, and the top fifth earned one point two.
- A working signal looks like a staircase with no step out of place.
- The gap between the top and bottom bars is point eight per cent a month, roughly what a portfolio long the top and short the bottom would have earned, before any costs.

13 Example 5: the information coefficient

Five stocks, ranks of score against next-month return

Score ranks	stocks A to E	**1 2 3 4 5**
Return ranks	same stocks	**2 1 3 5 4**
Sum of squared gaps	1+1+0+1+1	**4**
Rank correlation	1 − 24 ÷ 120	**0.80**

IN THE LESSON

- A second test looks at stocks one by one.
- The information coefficient is the correlation between the scores and the returns that follow.
- A simple version uses ranks.
- Take five stocks.
- Their score ranks are one to five.
- Their return ranks next month came out two, one, three, five, four.
- Subtract the ranks stock by stock and square the gaps: one, one, nought, one, one, which sum to four.
- Then use one minus six times that sum, divided by five times twenty four.
- Six times four is twenty four, and five times twenty four is one hundred and twenty.
- Twenty four over one hundred and twenty is point two, and one minus point two is point eight.
- Real signals show much smaller figures, like point oh five, but across hundreds of stocks even a small positive number can be worth having.

14 Example 6: costs and turnover

Long-short Orrington: turnover 180% a side, cost 0.4% a trade

Gross spread, a year	0.8 × 12	**9.60%**
Cost on one side	1.8 × 0.4	**0.72%**
Cost on both sides	2 × 0.72	**1.44%**
Net return	9.60 − 1.44	**8.16%**

IN THE LESSON

- Back-tests flatter a strategy when they forget what trading costs.
- Orrington's long and short portfolio shows a gross spread of point eight a month, which is nine point six per cent a year.
- But the portfolio turns over one hundred and eighty per cent a year on each side, and each trade costs point four per cent.
- Cost on the long side is one point eight times point four, point seven two.
- The short side costs the same, so together the cost is one point four four.
- Net of costs the strategy earns eight point one six per cent, not nine point six.
- If turnover were higher, or the stocks harder to trade, more would vanish.
- This is why the optimiser must see costs, not just signals.

15 Example 7: too many signals tried

20 noise signals, each passes luck test 5% of the time

Chance a noise signal fails	1 − 0.05	**95%**
Chance all 20 fail	0.95 to the power 20	**35.8%**
Chance at least one passes	1 − 0.358	**64.2%**
Fix	hold back unseen data	**Test once**

IN THE LESSON

- The next trap is data mining.
- Suppose Orrington's team tries twenty different signals, and the ordinary test accepts a signal as real if it passes at five per cent.
- Even if every signal is pure noise, each has a five per cent chance of passing by luck.
- The chance that at least one passes is one minus point nine five, to the power of twenty.
- That works out to sixty four per cent.
- So the team will probably find a great signal, and it will mean nothing.
- Overfitting is the same problem inside one model, with too many knobs tuned to the past.
- The defences are to state the hypothesis first, keep data aside that was never used to choose the model, and ask whether an economic reason supports the result.

16 Pitfalls that outlive the back-test

Four things to ask a quant manager

Pitfall	Effect
Data mining, overfitting	Edge was never real
Costs and turnover left out	Profit overstated
Signal decay, crowding	Edge fades
Funds unwind together	Liquidity squeeze

IN THE LESSON

- A signal that survives a clean back-test can still disappoint.
- Here are the four pitfalls the Heronsgate trustees should ask Orrington about.
- Data mining and overfitting, which we just saw, give a result that was never real.
- Understated turnover and costs turn a paper profit into a small one, as we saw with the net figure.
- Signal decay happens when other funds find the same idea, so the return shrinks as the idea becomes crowded.
- And liquidity squeezes come last.
- When many quant funds hold similar positions and one has to sell, prices move against all of them at once, and the loss is bigger than any back-test showed.
- A robust process monitors the signal and watches how crowded the trades have become.

17 A story: the label on the tin

- Styles: value or growth, large or small
- Clients build portfolios out of the labels
- Ivymount markets itself as growth
- Two ways to check, which can disagree

IN THE LESSON

- When you buy a tin in a shop you trust the label.
- But a label is a summary, written by someone, and it can be out of date.
- Equity styles work the same way.
- A style label sorts stocks, and managers, mostly on two lines: value against growth, and small against large companies.
- Hence large cap growth, or small cap value.
- Clients build their portfolios from these labels, so Heronsgate's consultant asks a pointed question about a third manager, Ivymount, which markets itself as growth.
- Is the tin really growth?
- There are two ways to open the tin and look, and they can disagree for good reasons.

18 Two ways to check a style

Holdings-based and returns-based analysis

Method	Looks at
Holdings-based	Stocks held today
Returns-based	Past returns
Holdings-based: strength	Current, precise
Returns-based: weakness	Backward, unstable

IN THE LESSON

- Here are the two methods side by side.
- Holdings based analysis looks inside the portfolio.
- Each stock is scored on characteristics such as price to book, earnings yield, dividend yield and expected growth, and the results are added up by weight.
- It is current and precise, but it needs detailed, up to date holdings.
- Returns based analysis looks only at the manager's returns.
- It regresses them on the returns of style indexes, to infer what the portfolio has effectively behaved like.
- It needs just a return history.
- But it looks backward, can be unstable, and may miss a recent change in style.
- Neither is the truth.
- Each is a different photograph taken at a different moment.

19 Example 8: holdings-based style

Ivymount sleeve: weight × share of each stock that is value

Stock A: 40% at 80% value	0.40 × 80	**32.0**
Stock B: 30% at 60% value	0.30 × 60	**18.0**
Stock C: 20% at 30% value	0.20 × 30	**6.0**
Stock D: 10% at 0% value	0.10 × 0	**0.0**
Portfolio value share	32 + 18 + 6 + 0	**56%**

Wrong: simple average of shares is 42.5%

IN THE LESSON

- Let us classify Ivymount from its holdings.
- The sleeve has four stocks.
- Stock A is forty per cent of the sleeve and, on its characteristics, eighty per cent value.
- Stock B is thirty per cent of the sleeve and sixty per cent value.
- Stock C is twenty per cent and thirty per cent value.
- Stock D is ten per cent and no value at all.
- Multiply each weight by its value share: thirty two, eighteen, six and nought.
- The portfolio is fifty six per cent value.
- Notice the stocks are not all one label or the other, each is partly both.
- The trap is to average the four value shares without weights.
- That gives forty two point five and ignores that the biggest holding is the most value.

20 Returns-based style analysis

Rp = wV × R(value index) + wG × R(growth index) + residual

Manager return	What the manager earned
Value weight	Effective value exposure
Growth weight	Effective growth exposure
Unexplained part	Not explained by style

IN THE LESSON

- Now the other method.
- Returns based analysis explains the manager's return in each period as a blend of the style index returns, plus a part nothing explains.
- The manager's return equals the value weight times the value index return, plus the growth weight times the growth index return, plus a residual.
- The weights are chosen to fit the history as well as possible, and they are usually required to be positive and to add to one, so they read as a style mix.
- The residual is the part that style does not explain, which is where stock picking skill, or luck, lives.
- A regression finds the weights from months of returns, and that is why it needs a history.

21 Example 9: fitting the weights

Weights found by regression: 30% value, 70% growth

Month 1: value 1, growth 3	0.3×1 + 0.7×3	**2.4%**
Month 2: value 2, growth 5	0.3×2 + 0.7×5	**4.1%**
Month 3: value −1, growth 2	0.3×−1 + 0.7×2	**1.1%**
Style mix inferred	from 36 months	**30 / 70**

IN THE LESSON

- See how the fit works, using three of the months.
- The value index returned one, two and minus one per cent.
- The growth index returned three, five and two.
- A weight of point three on value and point seven on growth gives, for month one, point three times one plus point seven times three, which is two point four.
- Month two gives four point one.
- Month three gives one point one.
- Those fitted returns sit close to what Ivymount actually earned, and no other split fits better, so the analysis says thirty per cent value and seventy per cent growth.
- It looks like a growth manager.
- But the weights come from a fit over thirty six months in all.
- It averages the period, and cannot see what Ivymount did last week.

22 Two views of one manager

Share of portfolio (%)

Returns: value	**30%**
Returns: growth	**70%**
Holdings: value	**56%**
Holdings: growth	**44%**

Returns view: 36 months. Holdings view: today

IN THE LESSON

- Now put the two views side by side.
- The vertical axis is the share of the portfolio, in per cent.
- The first pair of bars is the returns based view over the last thirty six months: thirty per cent value and seventy per cent growth.
- It says Ivymount has behaved like a growth manager.
- The second pair is the holdings based view today: fifty six per cent value and forty four per cent growth.
- It says Ivymount now leans to value.
- Both can be right.
- The regression averages thirty six months of behaviour, so a recent shift barely shows.
- The holdings are a snapshot of now.
- When the views disagree like this, the first explanation to check is that the manager's style has drifted.

23 Where the labels fall short

Four limits of style labels

Shortfall	Why it matters
Style drift	Label stays, style moves
Stocks are blends	Hard label hides mix
Time window	Old data, one date
Label ignores risk	Same label, different bets

IN THE LESSON

- So what do we conclude about labels?
- Four things.
- First, style drift: a manager can move away from the stated style, and the label stays the same.
- Second, stocks do not fall cleanly into one box.
- One stock can be partly value and partly growth, so a hard label hides the blend.
- Third, time window: returns based analysis is slow to notice a change, and holdings based analysis only shows one date.
- Fourth, the label says nothing about risk or skill.
- Two growth managers can behave very differently.
- The practical rule for Heronsgate's consultant is to use both methods, compare them, and ask the manager to explain any gap, rather than accepting the label at face value.

24 Mistakes to avoid so far

- No written sell rule for a holding
- Back-testing survivors or unpublished data
- Ignoring costs, or trusting the best of many tests
- Averaging style shares without position weights
- Accepting a label when two views disagree

IN THE LESSON

- Let us collect the common mistakes from the first three topics.
- One: building a fundamental process with no written sell rule, so that stocks stay long after their thesis is done.
- Two: testing a signal on survivors only, or on numbers not yet published at the time.
- Three: reporting a back-test return before trading costs, and trusting the best of many signals tried.
- Four: averaging the style shares of the stocks without weights, instead of weighting by position size.
- Five: taking a style label at face value when a returns based view and a holdings based view disagree.
- Each mistake comes from trusting a number or a label that no one has checked.

25 A story: two chefs, one menu

- Portfolio equals philosophy turned into positions
- Which rewarded factors to hold
- Timing factors, or picking securities
- How big each position is, and how many ideas

IN THE LESSON

- Two chefs are given the same ingredients and the same price.
- One cooks a few large, bold dishes and bets on her palate.
- The other cooks many small dishes by a precise rule, each adding a tiny edge.
- Both want to win, and neither is wrong.
- Their menus look nothing alike because their beliefs differ.
- A portfolio is a manager's philosophy turned into positions.
- Four decisions carry the beliefs: which rewarded factors to hold, what kind of skill is claimed, how positions are sized, and how many independent ideas the skill stretches across.
- Where the positions do not match the stated beliefs, the client is paying for risks the manager never claimed to be good at.

26 Example 10: two philosophies, two shapes

Wolverby: concentrated picker. Orrington: systematic.

Holdings	Wolverby vs Orrington	**25 vs 500**
Typical active weight	Wolverby vs Orrington	**4% vs 0.2%**
Skill claimed	Wolverby vs Orrington	**Both: picking**
Tracking error accepted	Wolverby vs Orrington	**4% vs 2%**

IN THE LESSON

- Back to Harrowmere.
- Wolverby, the fundamental fund, believes in picking a few winning companies.
- It holds twenty five stocks, and its typical active weight, the position minus the benchmark weight, is four per cent.
- Orrington believes in many small edges.
- It holds five hundred stocks, with typical active weights of just point two per cent.
- Wolverby claims skill in selecting securities, and accepts higher tracking error, the volatility of its return against the benchmark, of four per cent.
- Orrington claims skill too, but spreads it across hundreds of names and keeps tracking error to two per cent.
- Neither is better.
- What matters is that each portfolio fits its philosophy.

27 Breadth and skill

Information ratio ≈ skill per bet × √(independent bets)

Information ratio	Active return per unit of risk
Skill per bet	Information coefficient
Independent bets	Count of separate ideas

IN THE LESSON

- Why does breadth matter so much?
- There is a classic rule of thumb.
- The information ratio, which is active return per unit of active risk, is roughly the skill per bet times the square root of the number of independent bets.
- Skill per bet is measured by the information coefficient we met in the quant section.
- Independent is the key word: a hundred stocks all moving with one sector are not a hundred ideas.
- So a manager with modest skill can still reach a high ratio, if the skill is applied across many separate bets.
- The rule is an approximation.
- It assumes the manager can express every view fully, which costs and constraints often prevent.

28 Example 11: skill against breadth

Illustration with made-up skill and breadth

Wolverby ratio	0.10 × √25	**0.50**
Orrington ratio	0.05 × √400	**1.00**
Wolverby expected active return	0.50 × 4%	**2.0%**
Orrington expected active return	1.00 × 2%	**2.0%**

IN THE LESSON

- Apply it.
- Wolverby's analysts are good, with a skill per bet of point one, but they make only twenty five independent bets a year.
- The square root of twenty five is five, so the information ratio is point five.
- Orrington's skill per bet is a modest point oh five, but it makes four hundred independent bets.
- The square root of four hundred is twenty, so the ratio is one.
- Now turn ratio into return.
- Wolverby runs four per cent tracking error, and point five times four gives two per cent of expected active return.
- Orrington runs two per cent, and one times two also gives two.
- The same return, but with half the risk.
- Breadth did the work that skill alone could not.

29 Where Orrington's active risk comes from

Share of active risk (%)

Sector bets	**44%**
Size bets	**17%**
Stock selection	**39%**

Claimed skill: stock selection

IN THE LESSON

- The danger is inconsistency.
- The Heronsgate trustees study Orrington's risk report.
- The vertical axis is the share of Orrington's active risk, in per cent, and it is split by source.
- Sector bets supply forty four per cent of it.
- Size bets supply seventeen.
- Stock selection, the thing Orrington claims skill in, supplies only thirty nine.
- Orrington says it picks stocks, yet most of its active risk comes from exposures it makes no claim to be good at.
- A sector call or a drift to small companies may happen by accident of how the optimiser fills the portfolio, and the trustees are paying for risk with no stated skill behind it.

30 Example 12: testing consistency

Orrington's active variance, by source

Sector bets	variance	**4.0**
Size bets	variance	**1.5**
Stock selection	variance	**3.5**
Tracking error	√(4.0 + 1.5 + 3.5)	**3.0%**
Stock selection share	3.5 ÷ 9.0	**39%**

IN THE LESSON

- Here are the numbers behind the bars.
- Orrington's active risk is described with variances, which add up if we treat the three sources as unrelated.
- Sector bets contribute four, size bets one and a half, and stock selection three and a half, a total of nine.
- The square root of nine is three, so tracking error is three per cent, higher than the two Orrington intends.
- Stock selection is three and a half out of nine, thirty nine per cent of the total.
- Taken alone, it would be a much smaller risk than the three the trustees are bearing.
- The fix is not to abandon the portfolio.
- It is to neutralise the sector and size exposures, bringing them close to benchmark, so that the risk left over is the risk the philosophy claims skill in.

31 Philosophy sets the other choices too

If the philosophy says this, the portfolio should do that

If the philosophy says	The portfolio should
No sector skill	Neutralise sectors
Cost sensitive	Limit turnover
High conviction picks	Few large positions
Many small edges	Hundreds of names

IN THE LESSON

- The philosophy also decides things that are easy to overlook.
- It decides which exposures are neutralised.
- A manager with no sector skill should keep sector weights close to the benchmark.
- It decides how costs are managed: a cost sensitive manager trades less and limits turnover.
- It decides how much tracking error is accepted: a high conviction picker runs a lot, a systematic manager with many small edges runs less.
- And it decides the number of holdings.
- Here is a quick guide.
- When the Heronsgate trustees review any manager, they should check each row.
- If what the manager says and what the portfolio does do not match, the portfolio is inefficiently built.

32 Recap: the lesson in five lines

- Fundamental: screen, research, value, size, sell rules
- Quantitative: hypothesis, data, back-test, optimise
- Styles: holdings view and returns view, compare
- Philosophy sets factors, skill, sizing and breadth
- Check that risk matches the claimed skill

IN THE LESSON

- Let us pull the lesson together.
- First, a fundamental strategy runs from universe to pre-screen, research, valuation, sizing and sell rules, and its main enemies are behavioural biases.
- Second, a quantitative strategy runs from hypothesis to clean data, back-test, multifactor model and optimiser, and its enemies are bias in the data, data mining, costs and crowding.
- Third, style labels come from holdings or from returns, and each can mislead.
- Fourth, philosophy sets factors, skill, sizing and breadth.
- Fifth, check that the risk in the portfolio is the risk the manager claims skill in.

33 Try three quick questions

1. Gross 6%, turnover 100% each side, cost 0.5% a trade. Net?
   Answer: Cost 2 × 0.5 = 1.0, so net is 6.0 − 1.0 = 5.0%.
2. Stocks: 60% at 50% value, 40% at 75% value. Portfolio value share?
   Answer: 0.6 × 50 + 0.4 × 75 = 30 + 30 = 60%.
3. Skill per bet 0.04, 100 independent bets. Information ratio?
   Answer: 0.04 × √100 = 0.04 × 10 = 0.40.

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- A long and short quant portfolio shows a gross return of six per cent a year.
- Turnover is one hundred per cent on each side, and each trade costs point five per cent.
- What is the net return?
- Cost on each side is point five, so both sides cost one, and the net is five per cent.
- Question two.
- A sleeve has two stocks.
- The first is sixty per cent of it and fifty per cent value.
- The second is forty per cent and seventy five per cent value.
- What is the value share?
- Point six times fifty is thirty, point four times seventy five is thirty, so sixty per cent.
- Question three.
- Skill per bet is point oh four across one hundred independent bets.
- What is the information ratio?
- The square root of one hundred is ten, so the ratio is point four, which is modest but useful.