CHARTA LEARNING · LESSON NOTES

Alternative investments: types, features, access and partnerships

Alternative Investments

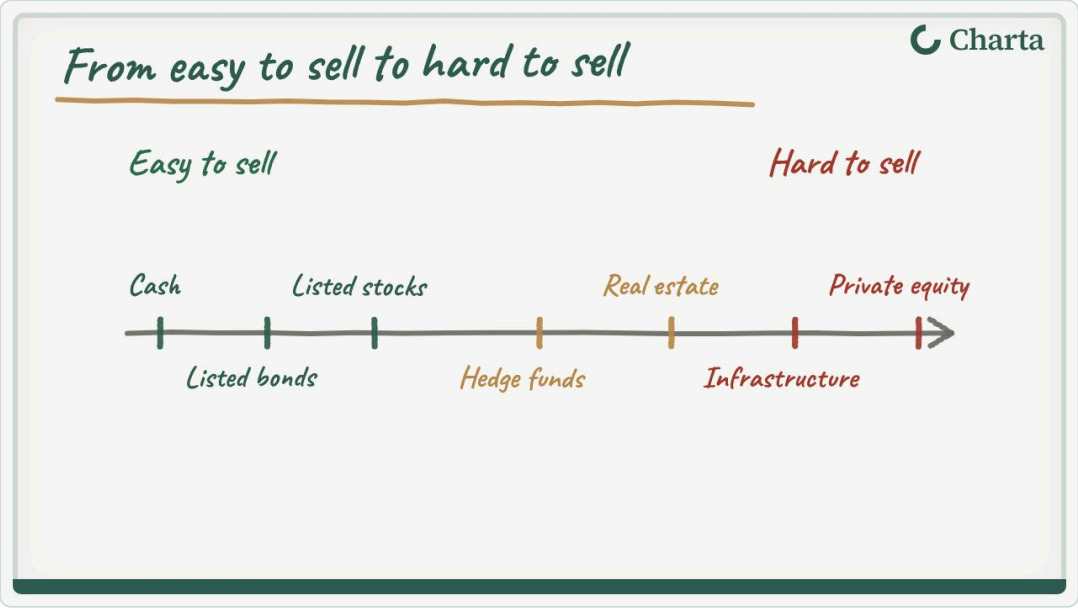
1 A story: the foundation looks beyond the exchange

- Oakfield: $500m, all in listed stocks and bonds
- A trustee asks: what else could we own?
- Answer: alternative investments
- All figures here are made-up examples

IN THE LESSON

- Meet Oakfield Foundation, our made-up example for the whole lesson.
- It looks after five hundred million dollars for a university, and every dollar sits in stocks and bonds that trade on an exchange.
- At the next board meeting a trustee asks a fair question.
- Is there anything else we could own?
- There is, a whole family of it.
- Investors call it alternative investments.
- Some of these assets are rarely traded, some are held in funds with unusual strategies, and some are real things you can stand on.
- All the figures in this lesson are round numbers made up for teaching.

2 From easy to sell to hard to sell



IN THE LESSON

- Here is one way to see the family.
- This line runs from assets that are easy to sell on the left to assets that are hard to sell on the right.
- This is an illustration, not a measurement.
- On the left sits cash, then listed bonds, then listed stocks.
- You can sell any of those in seconds.
- Further along are hedge funds, which let you out only at set dates.
- Then real estate, which takes months to sell.
- Then infrastructure, such as toll roads and power networks.
- At the far right, private equity, which locks your money in for about ten years.
- An alternative investment is, broadly, anything toward the right of this line.

3 Private capital and hedge funds

Where the money goes in each one

Category	Owns
Private equity: shares in unlisted firms	Shares
Private debt: loans arranged in private	Loans
Hedge funds: flexible trading strategies	Strategies

IN THE LESSON

- Now the main types, starting with three.
- First, private equity: owning shares in companies that are not listed on an exchange.
- A buyout fund might purchase a whole business, improve it for a few years and sell it.
- Second, private debt: loans made directly to companies, negotiated in private rather than through a bank or a bond market.
- The lender earns interest, and often a fee.
- Third, hedge funds.
- These are pooled funds that use flexible strategies, such as buying some shares and selling others short, or using borrowed money.
- Private equity and private debt together are called private capital, because the money goes into private, unlisted deals.

4 Real assets

Assets you can touch, or that sit on something you can touch

Category	Return from
Real estate: land and buildings	Rent, value
Infrastructure: roads, power, pipelines	Long contracts
Natural resources: oil, metals, timber, farms	Price, output

IN THE LESSON

- The second group is real assets, things with physical form.
- Real estate means land and buildings, such as offices, shops, warehouses and flats.
- The return comes from rent and from changes in the value of the property.
- Infrastructure means the systems society runs on: toll roads, airports, pipelines, power lines.
- These often earn long, steady cash flows under contracts that last for decades.
- Then natural resources: commodities such as oil and metals, and land that grows things, such as timber and farmland.
- Commodities pay no interest or dividend at all, so their return comes only from price changes.
- Some investors also treat digital assets as a further alternative category.

5 Example 1: Oakfield's alternatives sleeve

Oakfield: $500m portfolio, 20% to alternatives (made-up split)

Whole portfolio	the endowment	**$500m**
Alternatives sleeve	20% of 500	**$100m**
Private equity + real estate	40 + 30	**$70m**
Infrastructure + hedge funds	20 + 10	**$30m**
Stocks and bonds left	500 − 100	**$400m**

IN THE LESSON

- Let's put numbers on it.
- Oakfield decides to hold twenty per cent of its five hundred million dollars in alternatives.
- Twenty per cent of five hundred is one hundred million dollars.
- The board splits that sleeve four ways.
- Forty million goes to private equity and thirty million to real estate, which together is seventy million.
- Twenty million goes to infrastructure and ten million to hedge funds, which together is thirty million.
- The seventy and the thirty add up to the one hundred million sleeve.
- That leaves four hundred million, the rest of the portfolio, in ordinary stocks and bonds.
- One example of how a spread across alternative types might look.

6 What sets alternatives apart: the main features

- Less liquid: lock-ups of years
- Valued rarely, often by an appraiser
- Leverage and derivatives used more freely
- Lighter regulation, less disclosure
- Higher fees, including a share of profit

IN THE LESSON

- Why not just buy more stocks?
- Think about a share and an apartment building.
- You can sell a share in seconds at a price shown on every screen.
- Selling a building takes months, nobody posts its price each day, and the buyer will want a long look at the books.
- That gap in everyday life is the heart of the second outcome.
- Compared with listed stocks and bonds, alternatives tend to be less liquid, which means harder to sell, and are held for longer, often many years.
- They are valued less often.
- They use borrowed money and derivatives more freely, and they are less regulated, so they tell you less.
- And they charge higher fees, including a share of the profit.

7 Listed assets versus alternatives

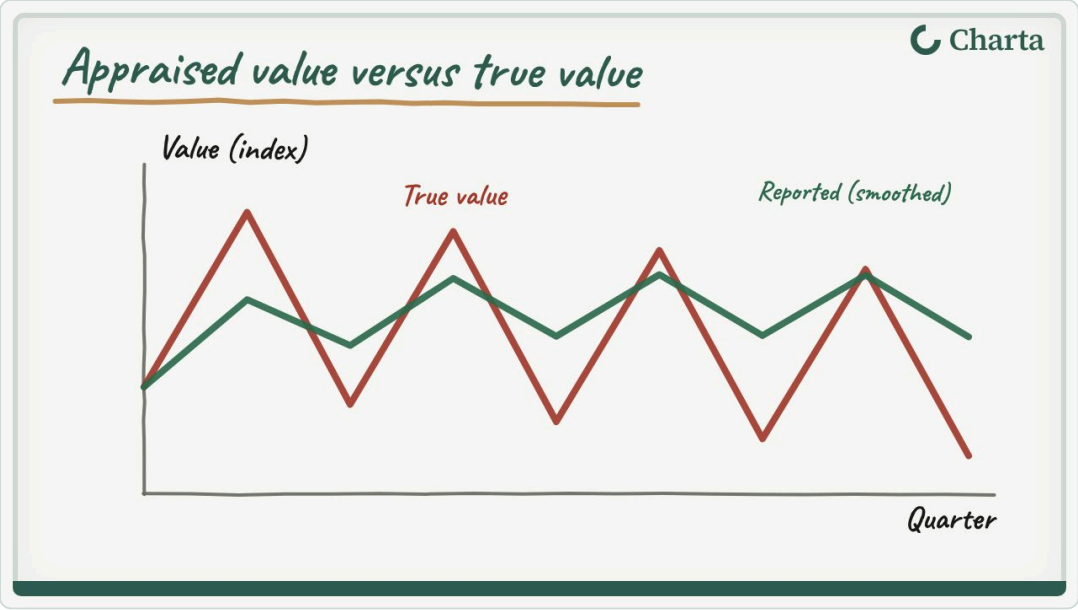
Compared with listed stocks and bonds, alternatives are...

Feature	Alternatives
Selling quickly	Hard
Valuation	Appraised
Disclosure and rules	Lighter
Fees	Base + bonus

IN THE LESSON

- Here is the same list as a quick reference, with the alternative side shown.
- Selling quickly is hard, because there is often no market at all, and a fund may stop you withdrawing for years.
- Valuation is by appraisal, which means a professional estimates the worth rather than a market setting it.
- Disclosure and rules are lighter, which is why these funds are usually offered only to larger, qualified investors, and why you must do more of your own checking, called due diligence.
- Fees are a base charge plus a bonus tied to profit.
- Borrowing, called leverage, is also used freely, which can lift gains and losses alike.
- There is a price for all of this, and also a reward.
- Investors expect extra return for accepting the difficulty, called the illiquidity premium.

8 Appraised value versus true value



IN THE LESSON

- Now a picture of the feature that matters most for analysis.
- Time runs along the bottom, in quarters, and value is up the side.
- The jagged line is what the asset is really worth, which swings up and down.
- Now the second line, drawn smoother.
- That is the value an appraiser reports.
- Why is it smoother?
- An appraiser values a building by looking at the last valuation and at old sales of similar buildings.
- So each new number leans on the previous one, and the sharp moves are rubbed out.
- The result is a reported series that looks calm.
- The calm is partly an illusion.
- The real risk is the jagged line, but the reported one is what shows up in the statistics.

9 Example 2: smoothing shrinks the swings

True returns swing ±10% each quarter; the appraiser blends old and new 50/50

True quarterly returns	+10, −10, +10, −10	**σ 11.5%**
Reported returns	+5, −2.5, +3.75, −3.125	**σ 4.2%**
Reported ÷ true	4.2 ÷ 11.5	**about 36%**
Risk hidden by smoothing	1 − 0.36	**about 64%**

IN THE LESSON

- Let's see it in numbers.
- Suppose the true returns of a property fund swing between plus ten and minus ten per cent each quarter.
- Its true standard deviation is about eleven and a half per cent a quarter.
- Now suppose the appraiser reports half of the new return plus half of the previous reported figure.
- The reported returns come out at plus five, minus two and a half, plus three point seven five, minus three point one two five.
- Calm by comparison.
- Their standard deviation is only about four point two per cent.
- The same fund, the same buildings, and measured risk falls to roughly a third of the truth.
- Nothing about the fund became safer.

10 The Sharpe ratio

Sharpe ratio = (Rp − Rf) ÷ σ

Sharpe ratio	Reward per unit of risk
Fund return, Rp	What the fund earned
Risk-free rate, Rf	What a safe asset earns
Volatility, σ	How much returns swing

IN THE LESSON

- Smoothing matters because it flatters the measures investors rely on.
- The most famous is the Sharpe ratio.
- It equals the fund's return minus the risk-free rate, all divided by its volatility.
- Taking the terms in turn.
- The fund return is what the fund earned over the year.
- The risk-free rate is what you could earn with no risk at all, for example on a government bill.
- Their difference is the reward for taking risk.
- Volatility, written with the Greek letter sigma, is the standard deviation of returns, a measure of how much they swing.
- So the ratio tells you reward per unit of risk.
- A higher number looks better.
- If volatility is understated, the ratio is overstated.

11 Example 3: a Sharpe ratio built on smoothing

Return 8%, risk-free rate 2%; reported σ 7%, unsmoothed σ 13%

Excess return	8% − 2%	**6%**
Sharpe, as reported	6 ÷ 7	**0.86**
Sharpe, unsmoothed	6 ÷ 13	**0.46**
Fall in Sharpe ratio	1 − 7 ÷ 13	**46%**

IN THE LESSON

- Here is a property fund that earned eight per cent a year, while the risk-free rate was two per cent.
- The excess return is six per cent.
- Its reported volatility, from smoothed appraisals, is seven per cent.
- Six divided by seven gives a Sharpe ratio of about point eight six, which looks excellent.
- Now suppose analysts adjust for the smoothing and estimate true volatility at thirteen per cent.
- Six divided by thirteen gives about point four six.
- Same fund, same return, and the Sharpe ratio is cut nearly in half, by one minus seven over thirteen, about forty six per cent.
- The unsmoothed correlation with stocks would also rise, so the diversifying benefit is smaller than it appeared.

12 How alternatives charge: the fee pieces

- Management fee: % of assets, paid regardless
- Performance fee: share of profit, often 20%
- Hurdle rate: bonus only above a minimum return
- High-water mark: bonus only above the old peak
- Order: management fee, hurdle, catch-up, then bonus

IN THE LESSON

- Now the fees, which are another feature that sets alternatives apart.
- Most charge two pieces.
- The first is a management fee: a fixed percentage a year, for example two per cent, paid whether or not the fund makes money.
- The second is a performance fee, called an incentive fee in a hedge fund and carried interest in private equity: a share of profit, often twenty per cent.
- People call this two and twenty.
- Two protections limit the bonus.
- A hurdle rate is a minimum return the fund must beat before any bonus is paid.
- A high-water mark says the manager earns a bonus only on gains above the fund's previous peak value, so losses must be recovered first.

13 The incentive fee with a hurdle

Incentive fee = rate × (gross profit − management fee − hurdle)

Incentive fee	Bonus paid to the manager
Incentive rate	Manager's share, e.g. 20%
Gross profit	Earned before any fees
Management fee	Flat charge, paid first
Hurdle amount	Minimum return to investors

IN THE LESSON

- Here is the performance fee in a simple fund with a hard hurdle.
- The incentive fee equals the incentive rate times the gross profit, minus the management fee, minus the hurdle amount.
- Taking the terms one by one.
- The incentive rate is the manager's share, say twenty per cent.
- Gross profit is what the assets earned before any fees.
- The management fee comes off first, because it is a plain cost.
- The hurdle amount is the return the investors must receive first, such as five per cent of the starting money.
- The manager is paid only on the profit that is left above the hurdle.
- If nothing is left, the incentive fee is zero.

14 Example 4: two and twenty with a hurdle

Start $100m, end $120m before fees; 2% fee, 20% bonus, 5% hurdle

Gross profit	120 − 100	**$20.0m**
Management fee first	2% of 100	**$2.0m**
Profit above the hurdle	20 − 2 − 5	**$13.0m**
Incentive fee	20% of 13.0	**$2.6m**
Investor net return	(20 − 2 − 2.6) ÷ 100	**15.4%**

IN THE LESSON

- Let's run it in order.
- A hedge fund starts the year with one hundred million dollars and ends with one hundred twenty before fees, so gross profit is twenty million.
- First, the management fee: two per cent of one hundred is two million, which leaves eighteen million.
- Second, the hurdle: five per cent of one hundred is five million, so only thirteen million sits above it.
- Third, the incentive fee: twenty per cent of thirteen million is two point six million.
- The investors keep eighteen minus two point six, which is fifteen point four million.
- That is a net return of fifteen point four per cent, against twenty gross.
- Fees took four point six percentage points.

15 Example 5: the high-water mark

Peak value is the high-water mark; fees shown on the fund's value

End of year 1	high-water mark	**$115.4m**
Year 2: −10%, then 2% fee	115.4 × 0.9 − 2.3	**$101.6m**
Year 3: +15%, then 2% fee	101.6 × 1.15 − 2.0	**$114.8m**
Still below the mark by	115.4 − 114.8	**$0.6m**
Incentive fee in year 3	no gain above the peak	**$0**

IN THE LESSON

- Now the high-water mark.
- Carry on from that fund.
- After the first year the investors' value is one hundred fifteen point four million, and that is the high-water mark, the peak on which a bonus was last paid.
- In year two the fund loses ten per cent before fees, and pays its two per cent charge, leaving about one hundred one point six million.
- In year three it gains fifteen per cent before fees, which sounds great.
- After the fee the value is about one hundred fourteen point eight million.
- That is still below the high-water mark of one hundred fifteen point four.
- So the manager earns no incentive fee in year three, even though the fund rose.
- The old loss must be earned back first.

16 Mistakes so far

- Reported volatility is understated, so Sharpe is flattered
- Illiquidity premium is payment for a risk, not free money
- Hurdle: minimum return. High-water mark: recover losses
- Management fee is paid first and always

IN THE LESSON

- Let's pause on the mistakes that cost marks.
- First, taking low reported volatility at face value.
- For appraised assets, reported volatility and correlation are understated, so the Sharpe ratio looks better than the truth and the diversification looks greater.
- Second, thinking the extra return of an alternative is free.
- It is partly a payment for illiquidity, and it is only a reward if you can actually sit through the lock-up.
- Third, mixing up the fee protections.
- A hurdle sets a minimum return before the bonus, while the high-water mark says to recover past losses before the bonus.
- And fourth, forgetting that the management fee comes first and is paid whatever the result.

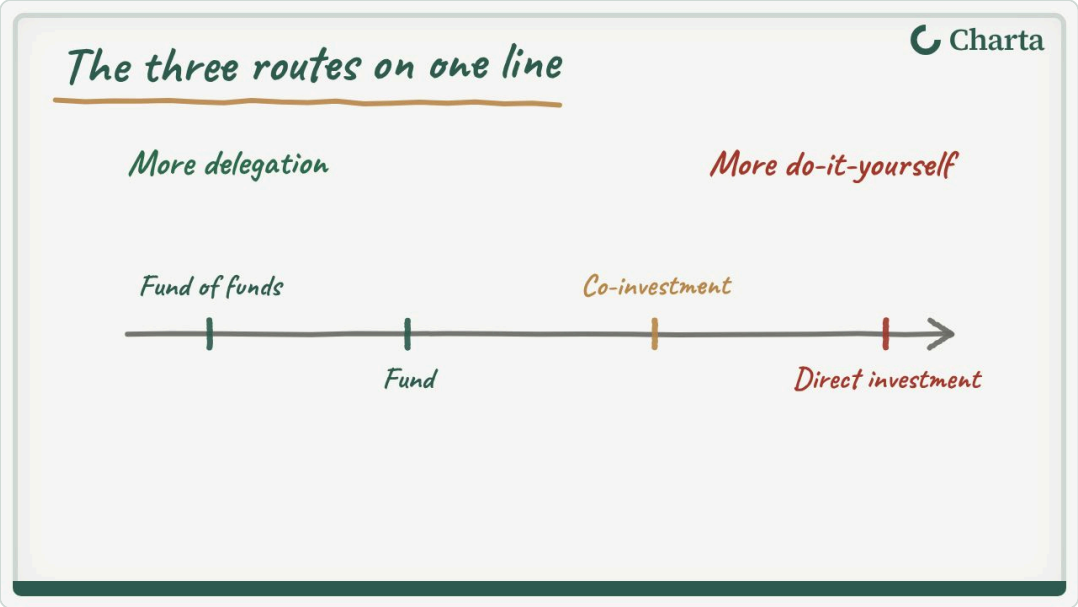
17 A story: three doors to the same room

- Fund: a manager selects and runs the assets
- Co-investment: extra money into one deal, beside a fund
- Direct: you buy the asset yourself
- Moving along: fees fall, the skill you need rises

IN THE LESSON

- Back to Oakfield.
- The board agrees on infrastructure.
- Now it faces a practical question: how do we actually own it?
- Picture three doors into the same room.
- The first door is a fund.
- Hand your money to a specialist manager, who selects and runs the assets.
- You get the full service and pay full fees.
- The second door is co-investment.
- The manager, who is already running the fund, offers you extra money alongside it, into one particular deal, usually for little or no fee.
- The third door is direct investment.
- You buy the asset yourself, with no manager between you and the asset, so no fund fees, but also no one to do the work.
- The same assets, three ways in.

18 The three routes on one line



IN THE LESSON

- Here are the routes on one line.
- On the left is the most delegated way, where the manager does nearly everything.
- On the right is the most do-it-yourself way.
- A fund of funds sits furthest left, because it is a fund that invests in other funds, so it adds a second layer of fees on top of the underlying funds' fees.
- Next is an ordinary fund, with full fees and full delegation.
- Further along, a co-investment has reduced or zero fees, but you must decide quickly, on one single deal.
- At the far right, direct investment has no fund fees, but you need your own staff, systems and deal access.
- The pattern: moving right, fees fall and the skill you must have rises.

19 Example 6: what the fund route costs

$50m committed for 10 years; 2% fee on commitment, 20% carry, no hurdle

Management fee	2% × 50 × 10 years	**$10.0m**
Money actually invested	50 − 10	**$40.0m**
Carry on a doubling	20% × (80 − 40)	**$8.0m**
Total fund fees	10.0 + 8.0	**$18.0m**
Co-investment fees	same deal, no fund fee	**$0**

IN THE LESSON

- Let's price the fund door.
- Oakfield commits fifty million dollars to an infrastructure fund over ten years.
- The fund charges a management fee of two per cent a year on the commitment.
- Two per cent of fifty million is one million a year, which is ten million over ten years.
- That leaves forty million actually invested.
- Suppose it doubles to eighty million.
- The gain is forty million, and at twenty per cent the performance fee, the carry, is eight million.
- We ignore a hurdle to keep it simple.
- Total fund fees are ten plus eight, eighteen million.
- Now compare co-investing the same money in the same deal: no fund fee at all.
- The price of that saving is speed and skill.

20 Example 7: when does direct pay?

Direct needs a team costing $2.5m a year (made-up)

Small investor: fees avoided	18.0 over 10 years	**$1.8m a yr**
Cost of the team	staff and systems	**$2.5m a yr**
Small investor: net	1.8 − 2.5	**−$0.7m**
Large investor: fees avoided	10 times the size	**$18.0m a yr**
Large investor: net	18.0 − 2.5	**+$15.5m**

IN THE LESSON

- So should Oakfield skip the fund and go direct?
- Direct investing means hiring a team: analysts, lawyers, systems.
- Suppose that costs two point five million dollars a year.
- Oakfield's fund fees of eighteen million over ten years are one point eight million a year.
- That is less than the team costs, so for a fifty million programme the fund is cheaper.
- Now picture a pension giant ten times as big.
- Its fees would be one hundred eighty million over ten years, or eighteen million a year.
- The same team now saves fifteen point five million a year.
- So direct investing pays only for large investors, which is why smaller ones stay with funds.

21 The three routes side by side

Cost falls and required expertise rises, left to right

Route and its fees	Skill needed
Fund: full fees, manager does the work	Low
Co-investment: low fees, quick decision	Medium
Direct: no fees, you do everything	High

IN THE LESSON

- Let's tidy this into one picture.
- A fund investment: full fees, but the manager does the work, so you need little skill of your own.
- A co-investment: reduced or zero fees, and you also get to look at the actual asset, but you must judge a deal in a few weeks.
- That is the part many people miss.
- A co-investment is not free money.
- Managers often offer them when a deal is too big for the fund alone, so you need staff who can evaluate it fast.
- Direct investment: no fees, you hold the asset outright, and you need the most capability.
- Across the three, cost falls and the expertise required rises.
- Do not mix that up.

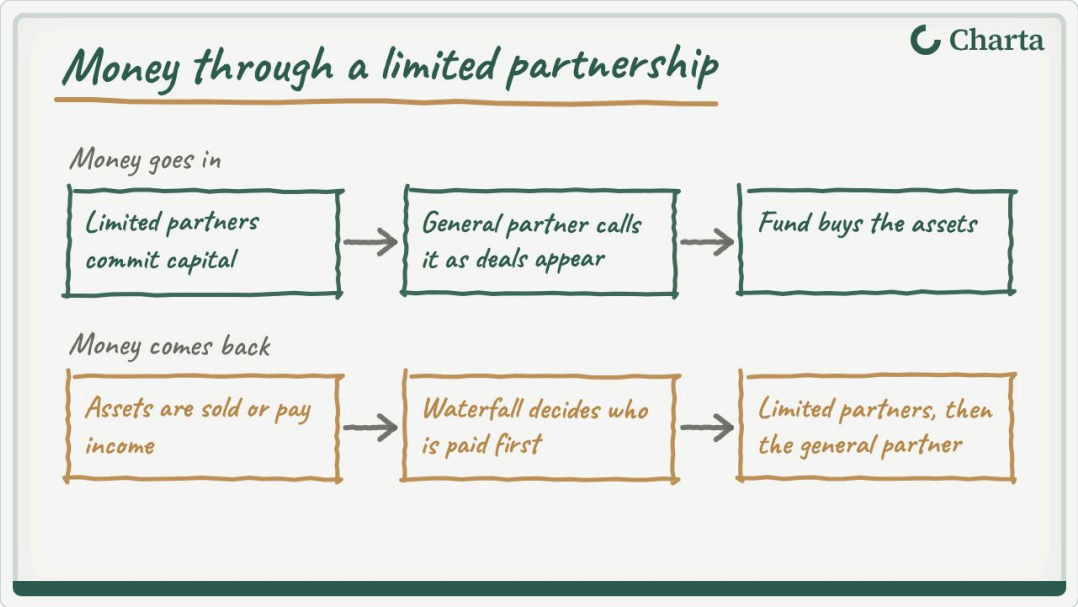
22 A story: the restaurant and its backers

- General partner (GP): the manager, like the chef
- Limited partners (LPs): the investors, like the backers
- GP runs everything; LPs supply most of the money
- Most private funds are limited partnerships

IN THE LESSON

- Now the shape most private funds take.
- Imagine a chef who wants to open a restaurant.
- She has the skill but not the money.
- A group of backers has money but no wish to cook.
- They agree on a partnership.
- The chef runs everything and is personally responsible if the place goes bust.
- The backers put in money and keep out of the kitchen, and in return they can lose only what they put in.
- That is a limited partnership.
- The chef is the general partner, or G P.
- The backers are limited partners, or L Ps.
- Most private equity, real estate and infrastructure funds, and many hedge funds, use this structure.

23 Money through a limited partnership



IN THE LESSON

- Here is how money moves.
- On the top row, the way in.
- The limited partners commit capital, which is a promise to supply a certain amount.
- Note the word commit.
- The money does not arrive at once.
- The general partner calls it, meaning asks for a part of it, a drawdown, when it finds a deal.
- Then the fund buys the asset.
- On the bottom row, the way back.
- The assets are eventually sold or pay income.
- The proceeds then pass through a set of rules, called the distribution waterfall, which decides who is paid first.
- And the cash reaches the limited partners and, once they are satisfied, the general partner's share.
- Every step is set by one document, the agreement.

24 Who does what, and who is exposed

- GP: finds, runs and exits deals; unlimited liability
- LPs: provide most of the capital; no part in management
- LP loss is capped at the commitment
- Interfering in management can risk the cap

IN THE LESSON

- Now the roles.
- The general partner finds deals, manages them, sells them and calls the capital.
- It has unlimited liability: if the fund owes more than it holds, creditors can come after the general partner's own wealth.
- That is why the general partner is usually itself a company set up for the purpose.
- The limited partners provide most of the money, but have no say in running the fund.
- Their liability is capped at their commitment, meaning they can lose that and no more.
- The cap is linked to staying out of management.
- In many places, an investor who interferes may lose the protection.
- So the rules for everything else must be written down in advance.

25 Example 8: limited versus unlimited

LP commits $20m, $12m paid in; fund collapses owing $50m beyond its assets

Paid in and lost	already called	**$12m**
Still callable	20 − 12	**$8m**
LP maximum loss	12 + 8, capped	**$20m**
Left owing after the LP	50 − 8	**$42m**
Who is exposed to that	no cap, so the GP	**General partner**

IN THE LESSON

- Let's test the cap.
- A limited partner commits twenty million dollars, and twelve million has been called and paid in.
- Then the fund goes badly wrong.
- It loses all its assets and is left owing creditors fifty million dollars more than it can pay.
- The limited partner has already lost the twelve million paid in.
- It can also be called for the remaining eight million of its commitment, to help pay.
- So its maximum loss is twenty million, its commitment, and no more, however large the debt.
- The creditors then look to the general partner for what is left.
- Fifty million, less the eight million the limited partner can still be called for, leaves forty two million.
- Unlimited, for the general partner.

26 The limited partnership agreement

- Investment period and the fund's term
- Fees: management fee, carry, hurdle, catch-up
- Distribution waterfall: who is paid first
- Key-person clause: if named leaders leave
- Clawback: overpaid carry must be returned

IN THE LESSON

- Since limited partners cannot step in later, the deal must be written down at the start.
- That document is the limited partnership agreement, the governing document of the fund.
- It sets the investment period, the years in which the general partner can call capital and make new investments, and the term of the fund.
- It sets the fees: the management fee and the carry, the hurdle and any catch-up.
- It sets the distribution waterfall, the order of payment.
- It includes key-person provisions: if the named leaders leave, new investing may stop.
- And a clawback: if the general partner was overpaid early in the fund's life, it must hand money back at the end.

27 Example 9: committed is not invested

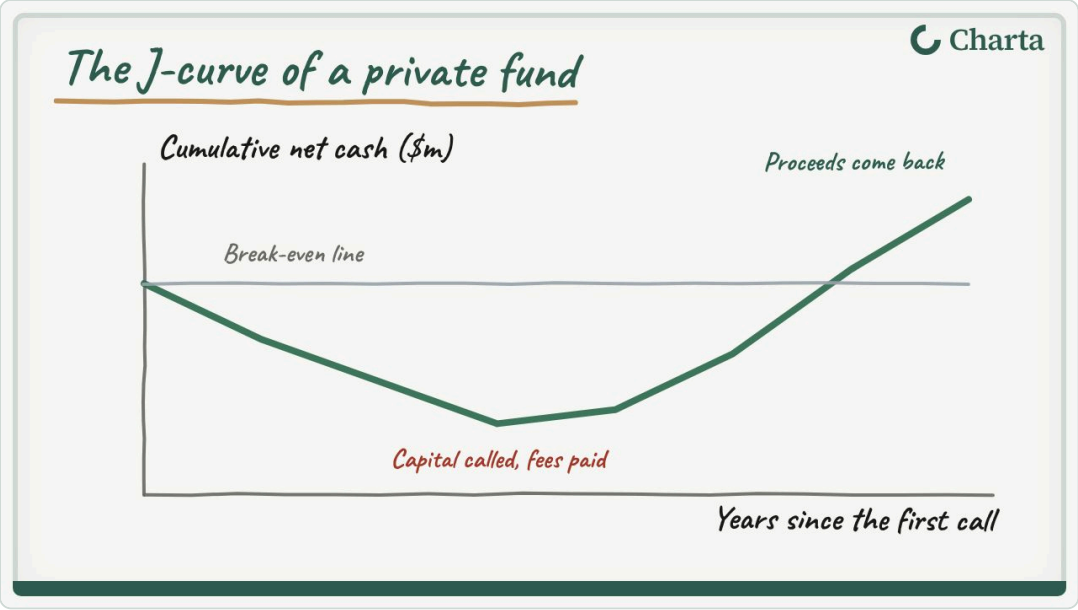
$20m commitment; 2% management fee charged on the commitment

Called so far	3 + 7	**$10m**
Still uncalled	20 − 10	**$10m**
Annual fee on the commitment	2% × 20	**$0.4m**
Fee as % of the money drawn	0.4 ÷ 10	**4.0%**

IN THE LESSON

- Here is the practical burden.
- An investor commits twenty million dollars to a fund with a five year investment period.
- In year one the general partner calls three million.
- In year two, seven million more, on ten days' notice.
- After two years ten million has been called and ten million remains uncalled.
- But the investor must keep that uncalled ten million in cash or liquid assets, earning very little, ready for a call that can come at short notice.
- Meanwhile the management fee is charged on the whole commitment: two per cent of twenty million is four hundred thousand dollars a year, which is four per cent of the ten million actually invested.
- Commitment is not the same as invested capital.

28 The J-curve of a private fund



IN THE LESSON

- This is the cash-flow picture of a typical private fund, the J-curve.
- Time runs along the bottom, in years since the first call, and the line shows the investor's cumulative net cash.
- It starts at zero.
- In the early years, money goes out as the general partner calls capital, and fees are charged, so the line falls.
- It hits its low point at the third call, when all one hundred million dollars of the commitment has been paid in.
- Then the investments mature and are sold, and cash comes back.
- The line climbs back through zero, at break-even, and finishes above it.
- The shape of the line looks like the letter J.
- Early reported results of a young private fund are therefore poor, and that is normal.

29 The internal rate of return

$$0 = CF_0 + CF_1/(1+IRR) + CF_2/(1+IRR)^2 + \dots + CF_n/(1+IRR)^n$$

Cash flow, CF	Money in (−) or out (+) at t
IRR	Rate that makes the sum zero
Year, t	Years since the first call

IN THE LESSON

- How do investors measure return on such a fund, when money goes in and comes out at irregular dates?
- They use the internal rate of return, or I R R.
- It is the single yearly rate that makes the present value of all the cash flows equal zero.
- That means the money paid in, shrunk back to today, exactly matches the money received, shrunk back too.
- Taking the terms one at a time.
- Cash flow, C F, is the money at each date, negative when the investor pays in and positive when it receives.
- The year, t, tells us when.
- I R R is the rate that balances them.
- Private funds use it because the general partner decides when money moves, so timing is part of the result.

30 Example 10: the IRR of the J-curve fund

Per $100m committed: calls −40, −30, −30; proceeds +10, +40, +60, +50

Total paid in	40 + 30 + 30	**$100m**
Total received	10 + 40 + 60 + 50	**$160m**
NPV at 10%	still positive	**+$8.2m**
NPV at 15%	now negative	**−$7.9m**
IRR	between 10% and 15%	**about 12.4%**

IN THE LESSON

- Let's find the I R R for that fund.
- Per one hundred million committed, the investor pays in forty, thirty and thirty over the first three years, then receives ten, forty, sixty and fifty million in the next four.
- Total paid in: one hundred.
- Total received: one hundred sixty, a multiple of one point six times.
- But the multiple ignores timing, so we need the rate.
- Trial and error.
- At ten per cent the net present value is still positive, about eight million.
- At fifteen per cent it is negative, about minus eight.
- The I R R sits between: about twelve point four per cent.
- A time-weighted return, used where the investor controls the flows, would not suit this fund.

31 Example 11: the waterfall, first half

$100m in, $170m out after 4 years; 8% hurdle, full catch-up, 20% carry

Total to distribute	after management fees	**$170.00m**
1. Return of capital	to the LPs	**$100.00m**
2. Hurdle: 8% for 4 years	$100 \times 1.08^4 - 100$	**$36.05m**
3. Catch-up to the GP	until 20% of profit	**$9.01m**
Left to split 80/20	170 − 100 − 36.05 − 9.01	**$24.94m**

IN THE LESSON

- Last, the distribution waterfall, in order.
- Take a fund that invested one hundred million dollars, with management fees already taken out of the cash flows as a running cost.
- After four years it sells everything and distributes one hundred seventy million.
- The agreement has an eight per cent hurdle, a full catch-up, and twenty per cent carry.
- Step one, return of capital: the first one hundred goes to the limited partners.
- Step two, the hurdle, or preferred return: eight per cent compounded for four years on one hundred gives about one hundred thirty six, so thirty six point oh five more to the limited partners.
- Step three, the catch-up: the general partner takes all the next dollars until it holds twenty per cent of the profit so far.
- That is nine point oh one million.
- Left to split: twenty four point nine four.

32 Example 11: the waterfall, second half

Last step: split the rest 80/20, then total up

LPs' 80% of the rest	0.8 × 24.94	**$19.95m**
GP's 20% of the rest	0.2 × 24.94	**$4.99m**
GP's total carry	9.01 + 4.99	**$14.0m**
LPs' total	170 − 14	**$156.0m**
LP IRR over 4 years	1.56 ^ ¼ − 1	**11.8%**

IN THE LESSON

- Now the last step, the carried interest split.
- The remaining twenty four point nine four million is shared eighty twenty.
- The limited partners receive nineteen point nine five million, and the general partner receives four point nine nine million.
- Add it up.
- The general partner has received nine point oh one in catch-up plus four point nine nine, fourteen million dollars in all.
- That is exactly twenty per cent of the seventy million profit, which is what a full catch-up is designed to do: once the hurdle is cleared, the general partner is brought up to its full share of all profit.
- The limited partners receive one hundred fifty six million in total, a multiple of one point five six.
- Their I R R is about eleven point eight per cent a year.

33 Recap: the main ideas

- Types: private capital, hedge funds, real assets
- Features: illiquid, appraised, lighter rules, higher fees
- Access: fund, then co-investment, then direct
- Partnership: GP unlimited, LPs capped

IN THE LESSON

- Let's pull it together.
- Alternative investments include private equity, private debt, hedge funds, real estate, infrastructure and natural resources.
- They differ from listed assets: harder to sell, valued by appraisal, lighter rules, more borrowing and higher fees.
- Appraisal smooths returns, so reported volatility and correlation are understated and the Sharpe ratio flattered.
- Fees come in this order: management fee, hurdle, catch-up, then carried interest, with the high-water mark guarding against paying twice.
- An investor can reach them through a fund, a co-investment or directly, and as fees fall, the skill needed rises.
- Most private funds are limited partnerships: the general partner has unlimited liability and runs the fund, while limited partners risk only their commitment.

34 Try three quick questions

1. Return 8%, Rf 2%, reported σ 6%, unsmoothed σ 12%. Both Sharpe ratios?
   Answer: Reported 6 ÷ 6 = 1.0. Unsmoothed 6 ÷ 12 = 0.5.
2. Which route has no fund fees but needs the most capability?
   Answer: Direct investment.
3. LP commits $30m, has paid in $18m. Maximum loss if the fund fails?
   Answer: $30m: the commitment (18 paid + 12 callable).

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- A property fund earns eight per cent, the risk-free rate is two per cent, reported volatility is six per cent and unsmoothed volatility is twelve per cent.
- What are the two Sharpe ratios?
- Reported, one point zero, because six over six.
- Unsmoothed, point five, because six over twelve.
- Question two.
- Which route to an alternative asset has no fund fees but needs the most capability from the investor?
- Direct investment.
- Question three.
- A limited partner commits thirty million dollars and has paid in eighteen million.
- The fund fails with large debts.
- What is its maximum loss?
- Thirty million, its full commitment, paid in and still callable together.