CHARTA LEARNING · LESSON NOTES

Private company valuation

Equity Investments

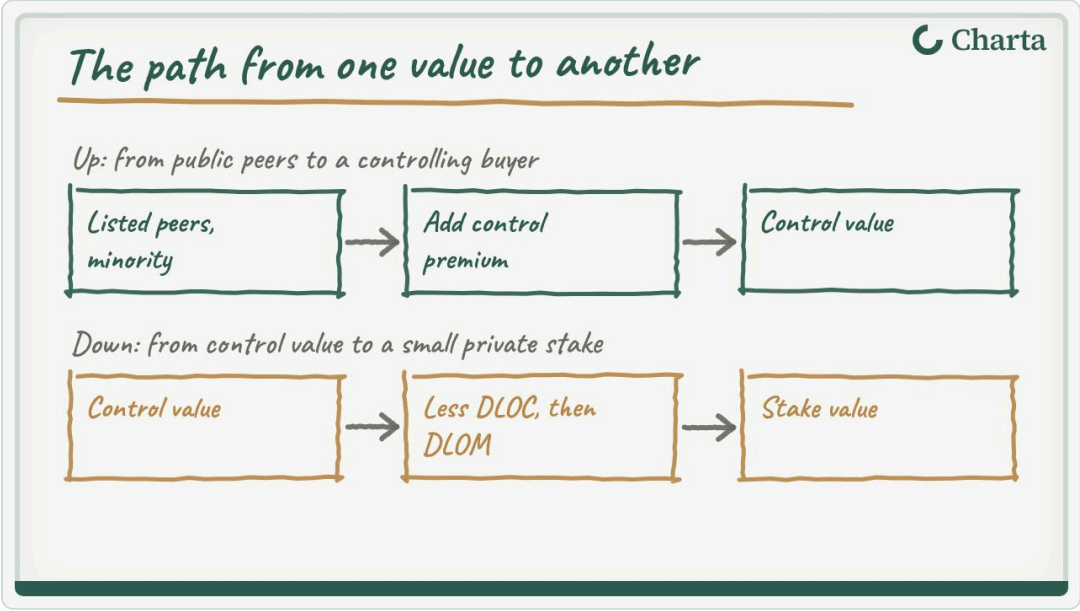
1 A story: a bakery and a ten per cent stake

- Whole firm: 50m to a buyer who takes control
- 10% stake: no say over managers or dividends
- No ready market: selling takes time and cost
- Adjust a base value to the interest being valued

IN THE LESSON

- Picture a family bakery worth fifty million in total to someone who buys all of it.
- Your aunt owns ten per cent.
- Is her stake worth five million, one tenth of the whole?
- Probably not.
- Whoever buys the whole bakery can change the recipes, replace the manager and set the dividend.
- Your aunt can do none of that.
- She also cannot sell on a screen tomorrow, because nobody quotes a price for family bakery shares.
- So her stake lacks control, and it lacks marketability.
- Both gaps cost her value.
- Our job is to find a base value, then adjust it to the interest we are actually valuing, using a discount for each gap.

2 The path from one value to another



IN THE LESSON

- Here is the path, drawn as boxes.
- Along the top, we start with listed peers.
- Their share prices are prices of small stakes that anyone can sell today, so they give a minority, marketable value.
- If a buyer is taking the whole company, we add a control premium, and we reach a control value.
- Along the bottom, we start from that control value and go the other way for a small holder.
- First take off a discount for lack of control, called D L O C.
- Then take off a discount for lack of marketability, called D L O M.
- What is left is the value of the stake.
- Always ask which box your starting number lives in.

3 The discount for lack of control

DLOC = 1 − 1 ÷ (1 + control premium)

Control premium	Extra paid for control
Minority value	The minority value, as 1
DLOC	Fall from control to minority

IN THE LESSON

- Control premium and the discount for lack of control are the same gap seen from two ends.
- Suppose a controlling buyer pays one dollar twenty five for what a minority holder would value at one dollar.
- The premium is twenty five per cent, measured on the minority value.
- But the minority value is lower than the control value by only one fifth, because we now measure the gap against the larger number.
- So the discount equals one minus one divided by one plus the control premium.
- The control premium is the extra a buyer pays for control.
- The one is the minority value.
- D L O C is the answer, the fall from control value to minority value.

4 Example 1: premium to discount

Control premium in, discount for lack of control out

Premium 10%	1 − 1 ÷ 1.10	**9.1%**
Premium 25%	1 − 1 ÷ 1.25	**20.0%**
Premium 40%	1 − 1 ÷ 1.40	**28.6%**
Slip: use 25% as the discount	25% is too large	**wrong**

The discount is always smaller than the premium

IN THE LESSON

- Example one.
- Acquisitions in a sector have carried a control premium of twenty five per cent.
- One plus zero point two five is one point two five.
- One divided by one point two five is zero point eight.
- One minus zero point eight is zero point two, so the discount is twenty per cent.
- Try a bigger premium.
- Forty per cent gives one divided by one point four, which is zero point seven one four, so the discount is twenty eight point six per cent.
- A small premium of ten per cent gives only nine point one per cent.
- Notice that the discount is always smaller than the premium.
- The common slip is to use the premium itself as the discount.
- That takes too much off.

5 The discount for lack of marketability

- DLOM: no ready market for the shares
- Bigger when sale needs consent or is restricted
- Bigger when the expected holding period is long
- Bigger when the company pays little in dividends

IN THE LESSON

- Now the second gap.
- A discount for lack of marketability, D L O M, reflects the absence of a ready market.
- If you hold listed shares, you can sell in seconds at a quoted price.
- If you hold shares in a private firm, you must find a buyer, agree a price, and often wait for approval from the other owners.
- That delay and uncertainty are worth something, so buyers pay less.
- The discount is larger when the restrictions are heavier, for example when the shares cannot be sold without board consent.
- It is also larger when you expect to hold the shares for a long time, and when the company pays little or no dividend to compensate you for waiting.

6 Compounding the two discounts

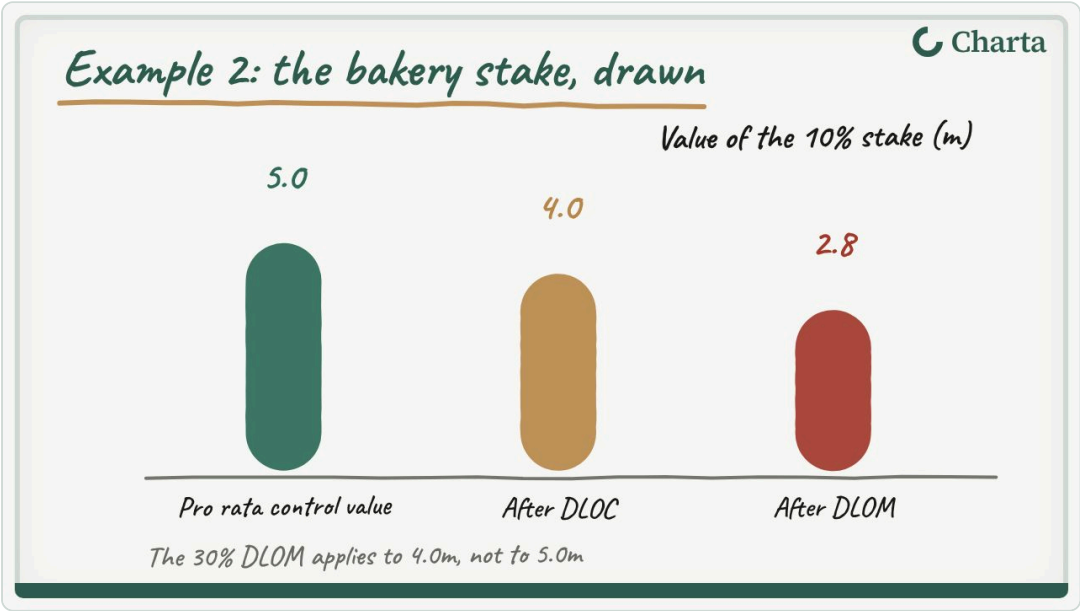
D = 1 − (1 − DLOC) × (1 − DLOM)

DLOC	Discount for lack of control
DLOM	Discount for lack of marketability
Total discount (D)	Combined, from control value

IN THE LESSON

- When both gaps apply, the discounts compound.
- They do not add.
- Think of two sales in a shop.
- A twenty per cent reduction, and then a further thirty per cent off the new price.
- The second thirty per cent applies to what is left after the first, not to the original price.
- So the total discount D equals one minus, in brackets, one minus D L O C, times, in brackets, one minus D L O M.
- Each bracket is the share of value that survives that discount.
- Multiply the survivors, and subtract from one.
- Here D L O C is the control discount, D L O M is the marketability discount, and D is the total discount from the control value.

7 Example 2: the bakery stake, drawn



IN THE LESSON

- Let's draw the bakery stake as three bars.
- The first bar is five million, a tenth of the control value of fifty million.
- That is what the stake would be worth if it carried a tenth of the power and could be sold at once.
- The second bar is four million, after taking a fifth off for lack of control.
- The discount comes from the twenty five per cent premium we found a moment ago.
- The third bar is two point eight million, after taking thirty per cent off the four million for lack of marketability.
- The thirty per cent is the analyst's judgement, and it is applied to four million, not to five.
- Each bar is smaller than the last.

8 Example 2: the arithmetic and the trap

Control value 50m, 10% stake, DLOC 20%, DLOM 30%

Total discount D	1 − 0.80 × 0.70	**44%**
Stake value	50m × 10% × 0.56	**2.80m**
Trap: add the discounts	20% + 30% = 50%	**2.50m**
Understated by	2.80m − 2.50m	**0.30m**

IN THE LESSON

- Now the arithmetic.
- The discount for lack of control is twenty per cent.
- The discount for lack of marketability is thirty per cent.
- The total is one minus zero point eight times zero point seven.
- That is one minus zero point five six, so forty four per cent.
- The stake is fifty million times ten per cent, times zero point five six, which is two point eight million.
- Now the trap.
- If you add twenty and thirty you get fifty per cent, and a value of two point five million.
- That understates the stake by three hundred thousand.
- The compounded answer is the one to give.
- Adding the discounts always takes off too much.

9 Example 3: which base are you starting from?

Pro rata 5.0m for the 10% stake, two possible bases

Base from acquisitions	control included	**2.80m**
Base from listed peers	5.0m × 0.70, DLOM only	**3.50m**
Wrong: both on listed peers	5.0m × 0.56	**2.80m**
Understated by	3.50m − 2.80m	**0.70m**

IN THE LESSON

- The last question comes before any arithmetic.
- What basis is your starting value on?
- Keep the same ten per cent stake.
- If the fifty million came from prices paid in acquisitions of whole companies, it includes control, so the stake needs both discounts and is worth two point eight million.
- But suppose the five million, the tenth, came from multiples of listed peers.
- Those are prices of small, freely traded stakes, so they are already minority and marketable.
- No control discount is needed.
- Only the marketability discount applies, which gives three point five million.
- Taking the control discount as well would give two point eight, and understate the value by seven hundred thousand dollars on the five million.

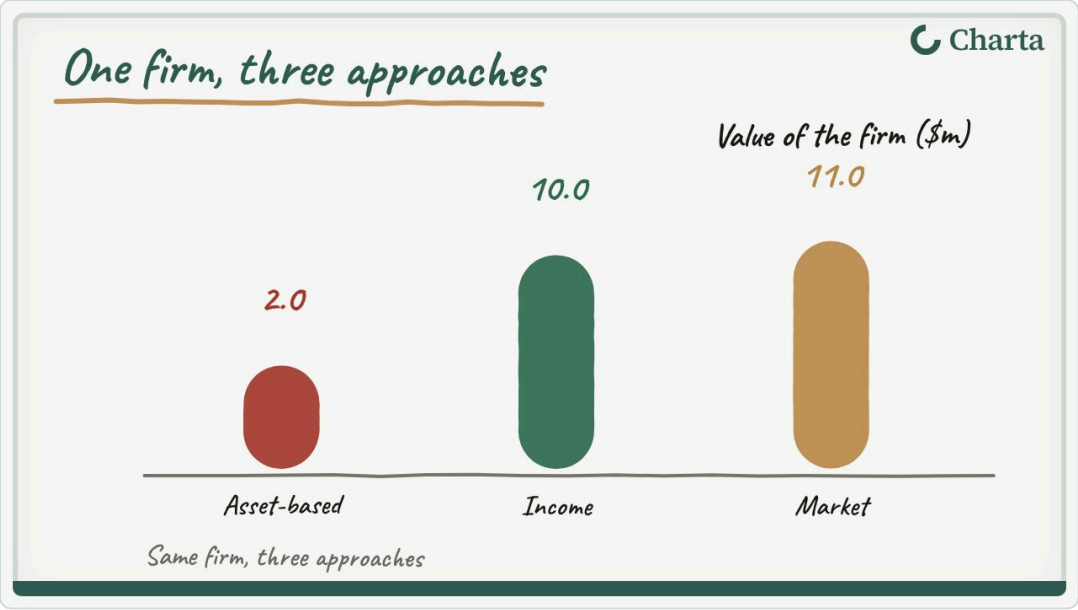
10 A story: three ways to value a house

- Income: what the business will produce
- Market: what similar businesses sold for
- Asset-based: assets at fair value less liabilities
- Which one leads depends on the company

IN THE LESSON

- Suppose you are asked what a house is worth.
- You could ask what rent it would earn, and turn the rent into a value.
- You could look at what similar houses nearby sold for.
- Or you could add up the cost of the bricks, the land and the fittings.
- These are the three approaches to valuing a company as well.
- The income approach values the economic benefits the business is expected to produce.
- The market approach uses prices of comparable companies.
- The asset based approach adds up the fair value of assets and subtracts the liabilities.
- None is always right.
- Which one leads depends on the business and on the data you can find.

11 One firm, three approaches



IN THE LESSON

- Here is one firm valued three ways.
- It is a consulting firm with few tangible assets and steady fees.
- The first bar, on the left, is the asset based value, two million dollars.
- It is short, because the firm owns little beyond furniture and receivables.
- The middle bar is the income approach, ten million, found by capitalising one normalised cash flow.
- The third bar is the market approach, eleven million, from prices paid for similar firms.
- Two approaches that were worked out independently land close together.
- The asset based answer is far off.
- When one approach is the odd one out, ask what it is leaving out.

12 Example 4: the consulting firm, step by step

Assets 2.4, liabilities 0.4, cash flow next year 1.5 ($m)

Asset-based	2.4 − 0.4	**$2.0m**
Income, capitalised	1.5 ÷ (0.18 − 0.03)	**$10.0m**
Market, transactions	5 × 2.2 EBITDA	**$11.0m**
Missing from the balance sheet	10.0 − 2.0 and more	**about $8m**

IN THE LESSON

- Now the numbers.
- The firm has assets at fair value of two point four million dollars and liabilities of point four million.
- So the asset based value is two million.
- For the income approach, its normalised cash flow next year is one point five million, growth is three per cent, and the required return is eighteen per cent.
- The capitalisation rate is fifteen per cent, and one point five divided by point one five is ten million.
- For the market check, similar firms recently sold for five times operating cash earnings, written E B I T D A, and this firm earns two point two million, so five times two point two is eleven million.
- About eight million is missing from the asset side: clients, trained staff and reputation.

13 When each approach leads

- Income: predictable cash flows or clear growth
- Market: good comparables, listed or acquired
- Asset: holding, resource, very early, or being wound up
- Trap: profitable, intangible-rich firm valued on assets

IN THE LESSON

- So when does each approach lead?
- The income approach suits a company with predictable cash flows or clear growth prospects, because there is something steady to capitalise or to forecast.
- The market approach suits a business with good comparables, where there are similar listed companies or recent deals.
- The asset based approach suits holding companies, whose value is the stakes they hold, resource companies, whose value lies in reserves, very early stage businesses with no earnings yet, and firms likely to be wound up, where the break up value is what matters.
- The trap sits in the consulting firm: a profitable business whose worth lies in intangibles should not be valued on its assets.

14 What bears on the choice

- Stage of the company: young, growing, or mature
- Nature of its assets: tangible or intangible
- Data available: comparables, trustworthy cash flows
- Purpose: sale, tax, break-up. Cross-check two approaches

IN THE LESSON

- Four things bear on the choice.
- First, the stage of the company.
- A mature firm with stable growth suits capitalisation, a young one with no earnings may only suit assets or a forecast.
- Second, the nature of its assets.
- If value lives in buildings, land or reserves, the asset approach works.
- If it lives in people and brands, it does not.
- Third, the data available.
- A market approach needs good comparables, and an income approach needs cash flows you can trust.
- Fourth, the purpose of the valuation: a sale, a tax return, a break up.
- Good analysts often use two approaches and reconcile them.
- If they disagree, find out why.

15 Income approaches: three methods

- Free cash flow: forecast years, then a terminal value
- Capitalised cash flow: one flow, stable growth
- Excess earnings: value the intangibles from what is left
- All three start from normalised earnings

IN THE LESSON

- Now the income approach in detail.
- There are three methods.
- The first is the free cash flow method.
- You forecast the cash flows for some years, add a terminal value at the end, and discount everything back.
- It suits a company whose cash flows are still changing.
- The second is the capitalised cash flow method.
- You take one normalised cash flow, grow it one year, and divide by a capitalisation rate.
- It suits a mature firm with stable growth.
- The third is the excess earnings method, which values the intangibles by looking at what earnings remain after paying the tangible assets their required return.
- Before any of them, you must normalise the earnings.

16 Example 5: normalising earnings

Reported pre-tax income 900, in thousands

Owner pay above market	310 − 190	**+120**
Rent below market	60 − 95	**−35**
One-off legal gain	not repeatable	**−45**
Personal costs in the firm	added back	**+28**
Normalised pre-tax income	900+120−35−45+28	**968**

After 25% tax: 726

IN THE LESSON

- Normalising means removing what would not carry on under an ordinary owner.
- Take a workshop with reported pre tax income of nine hundred thousand.
- The owner pays himself three hundred and ten thousand, but a replacement manager would cost one hundred and ninety.
- That pay is too high, so add one hundred and twenty back.
- The workshop pays sixty thousand in rent to a family trust, against a market rent of ninety five.
- Take thirty five off, because the real rent is higher.
- A one off legal gain of forty five is not repeatable, so take it away.
- Personal travel costs of twenty eight, run through the firm, are added back.
- The total is nine hundred and sixty eight thousand, or seven hundred and twenty six after tax at twenty five per cent.

17 Capitalised cash flow

Value = $FCF_1 \div (r - g)$

Next year's cash flow	Cash flow one year ahead
Required return (r)	Return investors need
Growth (g)	Steady growth for ever
Equity value	Value of the equity

IN THE LESSON

- The capitalised cash flow method is a growing perpetuity, the same idea as the constant growth model you already know.
- Value equals next year's cash flow, divided by the required return minus the growth rate.
- The required return r is what investors need for the risk.
- The growth rate g is how fast the cash flow is expected to grow for ever.
- The difference, r minus g, is called the capitalisation rate.
- Notice that the top is next year's cash flow, not this year's.
- If you start with this year's normalised cash flow, multiply it by one plus g first.
- Both mistakes are common: dividing by r instead of r minus g, and forgetting to grow the flow.

18 Example 6: capitalised cash flow

This year's normalised FCFE 1.8m, g = 3%, r = 13%

Next year's flow	1.8 × 1.03	**$1.854m**
Capitalisation rate	13% − 3%	**10%**
Equity value	1.854 ÷ 0.10	**$18.54m**
Trap: divide by r	1.854 ÷ 0.13	**$14.26m**
Trap: use this year's flow	1.8 ÷ 0.10	**$18.00m**

IN THE LESSON

- Example six.
- A mature printing firm has normalised free cash flow to equity of one point eight million dollars this year.
- Growth is expected to be three per cent for ever, and the required return on equity is thirteen per cent.
- Step one, grow the flow one year.
- One point eight times one point zero three is one point eight five four.
- Step two, the capitalisation rate is thirteen minus three, so ten per cent.
- Step three, divide.
- One point eight five four over point one zero is eighteen point five four million.
- Now the two traps.
- Dividing by the full thirteen per cent gives only fourteen point two six.
- Using this year's flow, one point eight over point one, gives eighteen, which is short by point five four.

19 Example 7: the free cash flow method

FCFE 1.2, 1.4, 1.6 in years 1 to 3; g = 3% after; r = 12%

PV of the three forecasts	1.07 + 1.12 + 1.14	**$3.33m**
Terminal value, year 3	1.6 × 1.03 ÷ 0.09	**$18.31m**
PV of terminal value	18.31 ÷ 1.12^3	**$13.03m**
Equity value	3.33 + 13.03	**$16.36m**

Most of the value sits in the terminal value

IN THE LESSON

- Now the free cash flow method, for a firm that is still growing.
- An analyst forecasts free cash flow to equity of one point two, one point four, and one point six million over three years.
- After that, growth settles at three per cent, and the required return is twelve per cent.
- First discount each forecast: one point two over one point twelve is one point zero seven, the second is one point one two, the third is one point one four.
- Together, three point three three.
- Next the terminal value at the end of year three.
- One point six times one point zero three, divided by nought point zero nine, is eighteen point three one.
- Discounted three years, it is thirteen point zero three.
- Add the two parts, and the value is sixteen point three six million.

20 Excess earnings

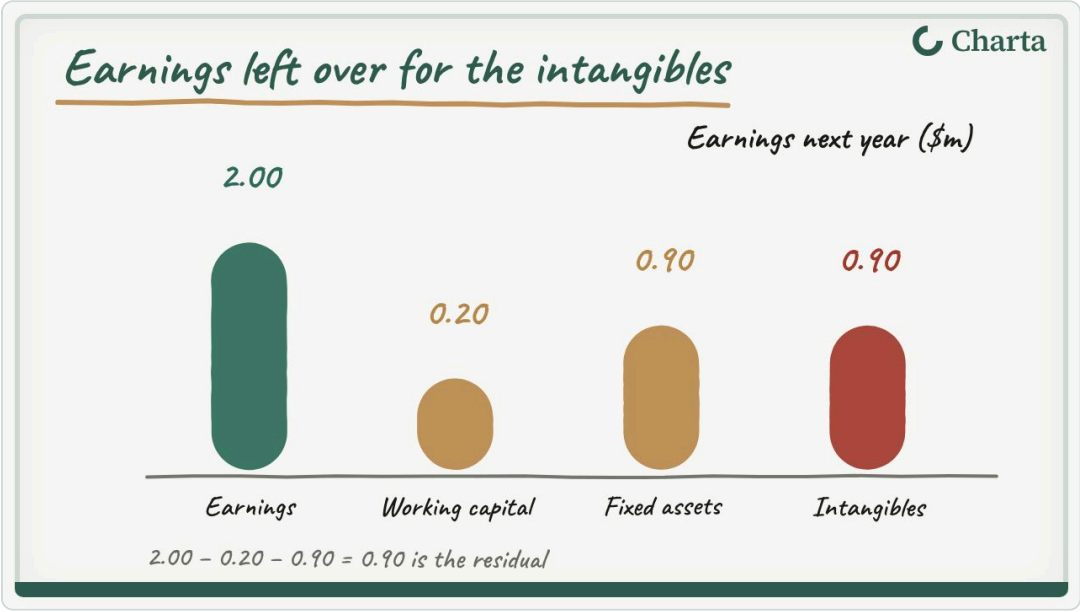
Value = tangibles + residual ÷ (r_int − g)

Tangible assets	Working capital plus fixed assets
Residual earnings	Earnings less asset charges
Intangibles rate	Required return on intangibles
Firm value	Tangible plus intangible

IN THE LESSON

- The excess earnings method has one formula built from three steps.
- First, charge the tangible assets: working capital and fixed assets are each given the return that kind of asset needs.
- Second, subtract those charges from the normalised earnings.
- What remains, the residual earnings, is attributed to the intangible assets.
- Third, capitalise the residual at the intangibles rate minus growth, and add the value of the tangible assets.
- So firm value equals the tangible assets, plus the residual earnings divided by the intangibles rate minus growth.
- The intangibles rate is higher than the rates on tangibles, because earnings that rely on a brand or customer ties are riskier than a return on stock or machines.

21 Earnings left over for the intangibles



IN THE LESSON

- Here are the earnings as bars.
- The firm is a private engineering company.
- The first bar is normalised earnings for next year, two million dollars.
- The second bar is the charge for the working capital.
- Four million of working capital is close to cash, so it earns the low rate of five per cent, which is point two million.
- The third bar is the charge for fixed assets: ten million of plant and buildings at nine per cent, which is point nine million.
- The last bar is what is left, point nine million.
- The tangible assets cannot explain that amount of profit, so the method puts it down to intangibles such as customer relationships and know how.

22 Example 8: valuing the engineering firm

Earnings 2.00m; WC 4.0m at 5%; fixed 10.0m at 9%; r_int 15%; g 3%

Residual earnings	2.00 − 0.20 − 0.90	**$0.90m**
Capitalisation rate	15% − 3%	**12%**
Intangibles	0.90 ÷ 0.12	**$7.50m**
Firm value	4.0 + 10.0 + 7.5	**$21.5m**
Trap: divide by 15%	0.90 ÷ 0.15 = 6.0	**$20.0m**

IN THE LESSON

- Now finish the valuation.
- The working capital charge is four million times five per cent, point two million.
- The fixed asset charge is ten million times nine per cent, point nine million.
- The residual is two minus point two minus point nine, which is point nine million.
- Intangibles need a return of fifteen per cent, and residual earnings are expected to grow at three per cent, so the capitalisation rate is twelve per cent.
- Point nine over point twelve is seven point five million for the intangibles.
- Add the tangible assets, four plus ten, and the firm is worth twenty one point five million.
- The trap: dividing by the fifteen per cent alone gives six million and a firm value of twenty million.

23 Mistakes that cost marks

- 1. Discounts compound: multiply, do not add
- 2. Listed-peer base is already minority: DLOM only
- 3. Intangible-rich firm: do not lead with assets
- 4. Capitalise next year's flow at r − g, not r
- 5. Excess earnings: capitalise at r_int − g, not r_int

IN THE LESSON

- Here are the mistakes that cost marks, so far.
- One.
- Adding the control and marketability discounts.
- They compound, so multiply the survivors.
- Two.
- Applying a control discount to a value that came from listed peers.
- That value is already a minority, marketable one, so only the marketability discount is needed.
- Three.
- Valuing a profitable, intangible rich firm on its assets.
- The balance sheet leaves out the people and the customers.
- Four.
- Dividing by the required return instead of the capitalisation rate, or capitalising this year's cash flow without growing it.
- Five.
- In excess earnings, capitalising the residual at the intangibles rate without taking off growth.
- Check which box your number lives in, every time.

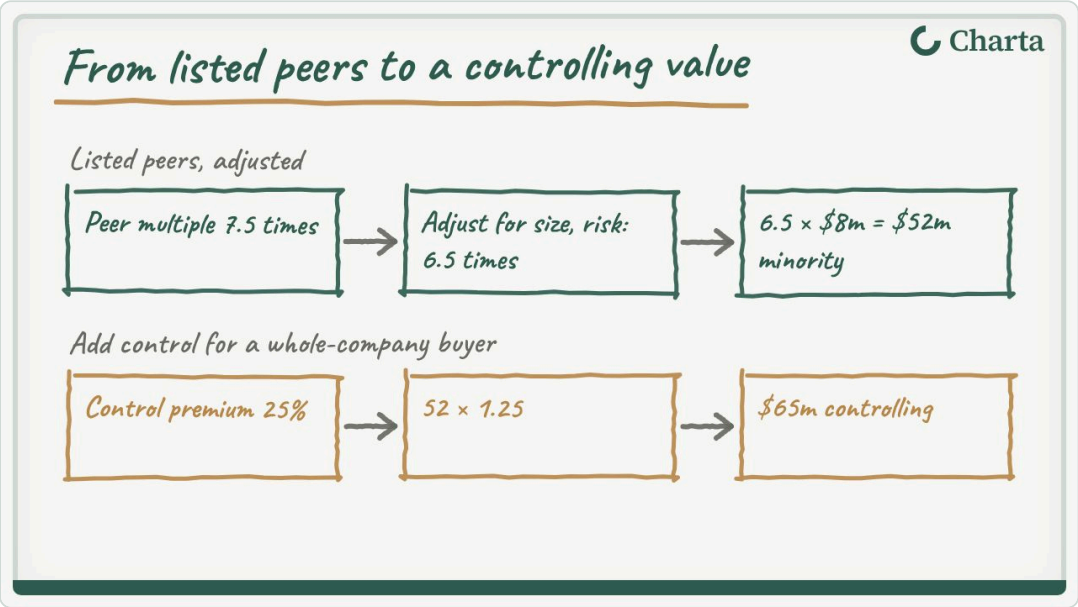
24 The market approach: three versions

- Guideline public company: multiples of listed peers
- Guideline transactions: multiples from whole-company deals
- Prior transaction: earlier trades in the firm's own shares
- Ask: how comparable? Is control already in the price?

IN THE LESSON

- Now the market approach, which borrows prices from other companies.
- There are three versions.
- The guideline public company method uses multiples of similar listed companies, such as enterprise value to operating cash earnings, or price to earnings.
- Because they come from traded shares, they are minority, marketable prices, and you adjust them for differences in size, growth and risk.
- The guideline transactions method uses multiples from acquisitions of whole companies.
- Control is already built into those prices.
- The prior transaction method uses earlier trades in the subject company's own shares, which is the most direct evidence when the trade was recent and at arm's length.
- Every version raises two questions: how comparable is the evidence, and does it already include control?

25 From listed peers to a controlling value



IN THE LESSON

- Let's follow one valuation along the boxes.
- A private firm has operating cash earnings, E B I T D A, of eight million dollars.
- Listed peers trade at a median of seven point five times.
- But the firm is smaller and riskier than those peers, so the analyst cuts the multiple to six point five.
- Six point five times eight is fifty two million.
- That is a minority, marketable value.
- Now suppose the client is a buyer of the whole company.
- A buyer who takes over can change strategy and payouts, so we add a control premium of twenty five per cent.
- Fifty two times one point two five is sixty five million.
- The premium belongs here, because a listed share price is a minority price.

26 Example 9: guideline transactions and the trap

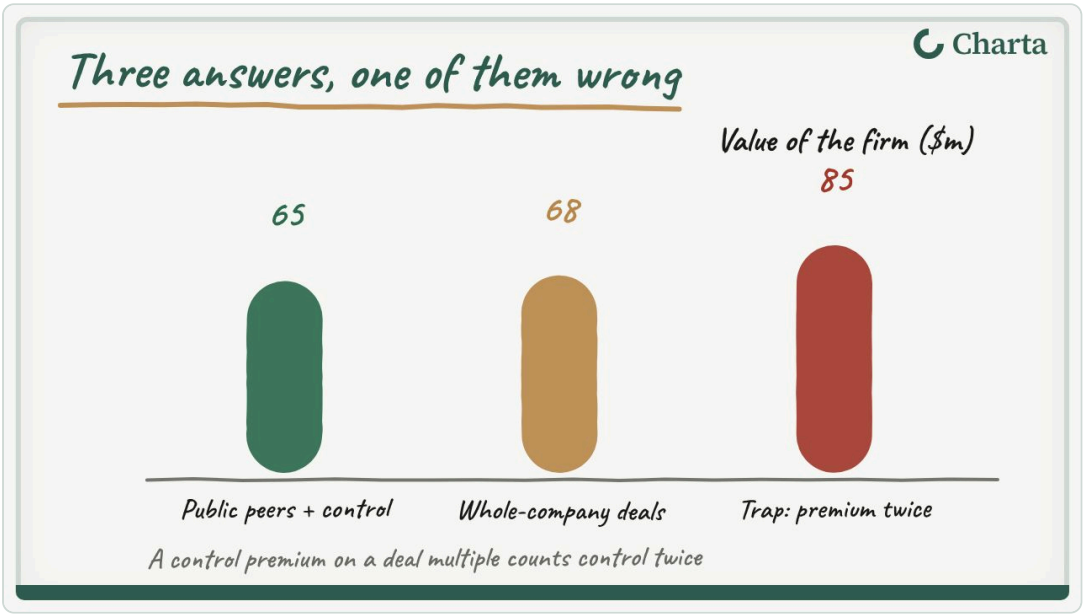
EBITDA $8m; whole-company deals at 8.5 times

Guideline transactions	8.5 × $8m, control included	**$68m**
Public company, with control	6.5 × 8 × 1.25	**$65m**
Trap: add premium again	68 × 1.25	**$85m**
Overstated by	85 − 68	**$17m**

IN THE LESSON

- Now the second method.
- Recent acquisitions of whole companies in the sector were done at eight and a half times operating cash earnings.
- Eight and a half times eight million is sixty eight million.
- That price already includes control, because the buyers in those deals took the whole company.
- So the value stands as it is.
- The trap is to add the control premium again.
- Sixty eight times one point two five is eighty five million.
- That is seventeen million too high, because control has been paid for twice.
- The sixty five million from peers and the sixty eight from deals are close, within three million.
- That gap is worth questioning rather than averaging away.

27 Three answers, one of them wrong



IN THE LESSON

- Here are the three answers as bars.
- The first is the guideline public company value with a control premium added, sixty five million.
- The second is the guideline transactions value, sixty eight million, with control already inside.
- The third is the trap, eighty five million, the transaction value with control counted twice.
- The first two stand within three million dollars of each other, and that is reassuring.
- The gap can come from synergies, which are savings that only a particular strategic buyer could get, and which can inflate deal multiples.
- The third bar is not a third opinion.
- It is simply the second one with a mistake in it.

28 Pros and cons of each market method

- Public peers: liquid, current data; comparability is weak
- Deals: control built in; scarce, dated, synergy-inflated
- Prior trades: own price; need recent, arm's-length sales
- Never add a control premium to a deal multiple

IN THE LESSON

- Let's weigh them up.
- The guideline public company method has data that is liquid and current, so the prices are fresh.
- Its weakness is comparability: listed companies are usually bigger, and rarely have the same mix of business, so you must adjust, and you may need to add control.
- The guideline transactions method has control built in.
- But data may be scarce, dated, and inflated by synergies particular to certain buyers.
- The prior transaction method uses the firm's own share trades, which is the most relevant evidence if the trade was recent and at arm's length.
- Otherwise, it can be out of date or between related people.
- No method is free of problems, so compare at least two.

29 Recap: five toolkits for private firms

Value a private firm in five steps

Discounts	Compound DLOC and DLOM
Capitalised cash flow	$FCF_1 \div (r - g)$
Excess earnings	Tangibles plus residual ÷ (r − g)
Market multiples	Peers, deals, past trades
Choosing an approach	Stage, assets, data, purpose

IN THE LESSON

- Let's pull it together.
- Discounts adjust a base value to the interest you hold: compute the control discount from the premium, then compound it with the marketability discount, and check the basis of your starting number.
- Capitalised cash flow divides next year's flow by r minus g.
- Excess earnings charges the tangibles, capitalises the residual, and adds the tangibles back.
- Market multiples come from listed peers, deals or earlier trades, and each needs a check for comparability and for control.
- And choosing the approach depends on the stage, the assets, the data and the purpose: assets for holdings and resources, income for steady cash flow, market for good comparables.

30 Try three quick questions

1. Control premium 30%. What is the DLOC?
   Answer: 1 − 1 ÷ 1.30 = 23.1%, smaller than the premium.
2. DLOC 20%, DLOM 25%. Total discount?
   Answer: 1 − 0.80 × 0.75 = 40%, not 45%.
3. FCF 3.0m now, g 4%, r 14%. Value?
   Answer: 3.0 × 1.04 ÷ 0.10 = 31.2m.

IN THE LESSON

- Now try three quick questions yourself.
- Pause after each one.
- Question one.
- A control premium is thirty per cent.
- What is the discount for lack of control?
- One minus one over one point three is twenty three point one per cent.
- Question two.
- A discount for lack of control of twenty per cent and a discount for lack of marketability of twenty five per cent apply.
- What is the total?
- One minus point eight times point seven five is forty per cent, not forty five.
- Question three.
- Normalised cash flow this year is three million, growth is four per cent, and the required return is fourteen per cent.
- What is the value?
- Next year's flow is three point one two, divided by point one, is thirty one point two million.
- Well done.