CHARTA LEARNING · LESSON NOTES

Real estate and infrastructure

CFA Level I · Alternative Investments

You will learn: Sort the ways into real estate, value a building by the income, comparable sales and cost approaches, compare a REIT with direct ownership, and explain what makes infrastructure different and where its risks sit.

Running example: Examples follow Maya, a made-up investor with $10m to put into property. Her building, Elm Court, is an office bought for $10m with $4m of her own money and a $6m mortgage. Figures are round numbers made up for teaching.

1. Four ways into real estate, and who is paid first

- Two questions sort the choices: owner or lender, and traded or not. Buying a building is private equity. Shares in a real estate investment trust (REIT, a listed company owning income-producing property) are public equity. A mortgage loan is private debt. Mortgage-backed securities (listed bundles of mortgages) are public debt.
- Debt is paid first, is secured on the property and is never owed more than the contract says: safer, but the gain is capped. Equity gets what is left and takes the first losses, but its gain is open ended.
- Borrowing magnifies both losses and gains. The loan to value ratio (LTV) is the loan divided by the property's value; the owner's equity is the lender's cushion.
- On the ease-of-sale line, REIT shares are easiest, then mortgage-backed securities, then one mortgage loan, then owning a building (big, one of a kind, months to sell, concentrated, hands-on). Easy to sell does not mean calm: a REIT's price can swing with the stock market.

ELM COURT: PRICE $10M, LOAN $6M, EQUITY $4M, VALUE FALLS 20%

Building value after the fall	10 × 0.80	**$8m**
Maya's equity left	8 − 6	**$2m**
Loss on her own money	(2 − 4) ÷ 4	**−50%**
LTV at purchase / after the fall	6 ÷ 10 / 6 ÷ 8	**60% / 75%**
Fall before the lender loses	1 − 6 ÷ 10	**40%**

2. Income approach: NOI and the cap rate

- Net operating income (NOI) is rent collected minus running costs (property taxes, insurance, repairs, management). It is before interest, before depreciation and before income tax, so it values the building whoever owns it and however they paid for it.
- The capitalisation rate (cap rate) is NOI divided by price, the yearly income yield buyers demand. A higher cap rate means a lower value: value and cap rate move in opposite directions.
- The cap rate is the discount rate minus the growth rate of income: part of the required return comes as yield, part as growth. Cap rates fall when interest rates fall or rent growth is expected to rise, and then prices rise. Prices move on expectations, not just today's rent.
- Because the cap rate cannot be pinned down closely, a one point move changes value by more than 10%. Quote a range, and ask what rate and income sit behind it.

> **Value = NOI ÷ cap rate; cap rate = r − g (r = return the buyer needs, g = steady growth in income)**

ELM COURT BY INCOME (RENT $1,000,000, COSTS $300,000)

NOI	1,000,000 − 300,000	**$700,000**
Value at 7%	700,000 ÷ 0.07	**$10.00m**
Value at 6% / at 8%	700,000 ÷ 0.06 / ÷ 0.08	**$11.67m / $8.75m**
Move for one point lower / higher	vs $10.00m	**+16.7% / −12.5%**
r = 9%, growth 2% / 3%	cap 7% → 10.00m; cap 6% → 11.67m	**growth +1 point adds almost $1.7m**

Watch out: Thinking a higher cap rate means a higher value; using income after interest or depreciation.

3. Comparable sales, cost approach and reconciling

- Comparable sales: collect similar properties sold recently, convert prices to a common unit (such as price per square metre), then adjust for location, size, condition and timing. It is weak when sales are few or the building is unique, and yesterday's sales can lag a market that has just turned.
- Cost approach: replacement cost of a new building, less depreciation (physical wear and obsolescence), plus the value of the land. It suits buildings with no comparables and no rent, such as schools, special-purpose factories or brand new buildings. Cost is not value.
- The approaches rarely agree and the gap is informative. A valuer reconciles them by weighting the method that fits the property: income for let buildings, cost for unusual ones, comparables for standard buildings in a busy market.

ELM COURT BY COMPARABLES AND BY COST

Average comparable	(4,600 + 4,800 + 5,000) ÷ 3	**$4,800 per m²**
Raw value (2,000 m²)	4,800 × 2,000	**$9.60m**
Better location, +5%	9.60 × 1.05	**$10.08m**
Cost: land 3.0, new building 8.0, depreciation 25%	3.0 + 8.0 − 2.0	**$9.0m**
Three answers	income / comparables / cost	**$10.00m / $10.08m / $9.00m**

Watch out: Averaging comparables without adjusting them.

4. REIT or direct ownership

- A REIT wins on liquidity (sell in a day), a small minimum cheque, diversification across many buildings and tenants, and professional management. Direct ownership wins on control (what to buy, when to sell, how much to borrow) and on tailoring the loan and tax to you.
- Net asset value (NAV) per share is the properties' market value minus debt, divided by shares. The share price may sit at a premium or a discount to NAV, for instance when investors are gloomy or doubt the appraised values.
- In the short run a REIT behaves like the stock market and diversifies equities less than property does. Appraised values lag and look smooth, which makes direct property seem safer than it is. Over long horizons the two converge, because both follow the same rents.
- A REIT is equity, not debt, even though it pays regular income. A mortgage-backed security is the debt one.

> **NAV per share = (property value − debt) ÷ shares**

PARKSIDE TRUST AND A MARKET SHOCK

NAV (properties $500m, debt $200m)	500 − 200	**$300m**
NAV per share (20m shares)	300 ÷ 20	**$15.00**
Premium or discount (price $13.50)	13.50 ÷ 15 − 1	**−10%**
Market falls 22%: REIT price (index 100)	100 × (1 − 19%)	**81**
Appraised value, two quarters later	100 × (1 − 6%)	**94, a gap of 13 points**

5. Infrastructure and its risks

- Infrastructure is the basic physical systems a society needs. A concession is the right to build and run an asset for many years, with a protected position and a tariff formula, often rising with inflation. The grantor of the rules can also change them.
- Families: transportation (toll roads, airports), utilities (water, power grids), communication (towers, fibre) and social (hospitals, schools). When users pay, the investor takes demand risk. When the government pays for availability, income is steadier but depends on the government.
- Features: long-lived, capital-intensive and illiquid; an essential service with steady demand; a concession or regulation that limits rivals and sets prices; often inflation-linked cash flows. The result is steady income, inflation protection and low correlation with the business cycle.
- Brownfield assets already operate, with a track record and lower risk. Greenfield projects are still to be built and carry construction risk and demand risk, so investors demand a higher return.
- Main risks: regulatory and political (tariff or term can change), construction, demand, financial (large, long debt makes the asset rate-sensitive) and illiquidity.

TOLL ROAD, 20 YEARS LEFT, INCOME $42M A YEAR, REAL DISCOUNT RATE 5%

As granted: real growth 1%	42.42, growing 1%	**$573m**
As proposed: flat in real terms	42 each year	**$523m**
Change in value	523 ÷ 573 − 1	**−8.6%**

Watch out: When a question names the grantor, the answer is regulatory risk; a stable service with inflation-linked income points to low correlation with the cycle.

Key takeaways

- Real estate comes in four boxes: owner or lender, private or public. Equity takes the first loss and borrowing magnifies it.
- Value = NOI ÷ cap rate, and cap rate = r − g; a higher cap rate means a lower value.
- NOI is before interest, depreciation and tax. Adjust comparables before averaging them.
- NAV per share = (property − debt) ÷ shares; a REIT's price can sit at a discount and moves with the stock market in the short run.
- Appraised values lag the market and look smoother than they are.
- Infrastructure gives steady, inflation-linked income; the rule maker changing the rules is the main danger, and greenfield is riskier than brownfield.

Quick check

1. Net operating income $450,000, cap rate 6%. Value?
   Answer: 450,000 ÷ 0.06 = $7.5m.
2. Property $80m, debt $30m, 10m shares at $4.50. Discount to NAV?
   Answer: NAV = 50 ÷ 10 = $5.00. 4.50 ÷ 5 − 1 = −10%.
3. Infrastructure: under construction or operating, which is riskier, and why?
   Answer: Under construction: construction and demand risk.

Summary notes for the Charta whiteboard lesson. Examples use made-up figures. Watch the full lesson at charta-learning.com.