REAL ESTATE

	Debt	**Equity**

Debt | **Equity**

Private

Debt side:
- Mortgage Debt
- Const. Loan
- Mezz. Debt.

Equity side:
Ownership
- Direct
  - Sole
  - Joint
  - Partnership LLP
- Indirect
  - Real Estate Fund
  - Put REIT.

Public

Debt side:
- MBS → R / C
- Covered Bonds
- Mortgage → REIT / ETF

Equity side:
Publicly Trade Shares
- Construction
- Op.
- Development
- Public REIT
- UCITS/MF/ETF.

REIT
↓
Invest Trust
90% Income Distributed

REOC
operating company
↓
- company income taxable
- less restrictions.

Classifications.

① Risk/Return

low risk low return

- Senior — CMBS
  Debt
- CORE — Stable Income
  - Diversified
  → Sale & lease back
- Core Plus — Income + · tenant   ∴ rent ↑
  generate · refurbish
            · cash-flow stabilisation.
- Value — upgrade/reposition/subinvest grade CMBS
  ADD
- opportunistic — new/redevelopment/distressed debt.

high risk high return.

② Sensitivity & Business Cycle

- defensive (low) ↓ healthcare
- cyclical (high sensitivity) ↓ Industrial/office

③ Statistical Factor.

new top notch	class	
	A	- high current inc. - less Capital App^n - < 10 yrs old - high quality const.
old amenitn	B	< 20 yrs old - good quality const.
	C	< 30 yrs old - aging constn.
very old	D	low current income ↑cap. App^n - poor cond.

FINANCIALS

NOI : Net Operating Income =

rent based on current market rate.

rental income if fully occupied
+ other income // → exc: int earned on rental deposit

gross potential rental income
− vacancy / collection loss [on this] → current rent based on existing tenants
effective gross rental income
− operating expense → gross rental income

NOI

similar to EBIT

∴ Interest
−Financing Cost
& Income Tax
not subtracted.

- insurance
- property tax
- maintainance
- utilities

→ high better

$$DSCR = \frac{NOI}{Debt\ Service}$$

→ principal + Interest.

$$LTV = \frac{Loan}{Value} → Appraised\ Value.$$

↑ lower better

∴ Max Debt = Min $\left[\frac{DSCR}{DEBT}, \frac{LTV}{DEBT}\right]$

Property purchase value = 780,000.
Current market value = 895,000
Interest only loan @ 9.5%
vacancy rate = 4.16%
Size = 3000 sq.ft.
Rent per sq.ft. = 20
Other income = 25000
Maintenance & utility = 15000
Income tax = 25%
property tax = 5000

if maximum LTV = 80%
& minimum DSCR = 1.3
What is the maximum loan you can avail?

LTV < 80%
∴ Loan Value < 0.8
App. Value

⟹ loan value < 895000 × .8
⟹ " " < 716000

Purchase Price = 5,90,000 (includes 250,000 land)
(t = 30%)
Depⁿ = 25 yrs (SLM)

DEPRECIABLE BASE
590,000
−250,000 / 50
= 680

NOI₁ = 61464 — Depⁿ, Interest & Income tax not yet subtracted.
Debt Service = 497684 × 9.5% = 47279
(Kind of pre tax & pre interest cashflows from PROP)

old data

DSCR > 1.3

or $\frac{NOI}{Debt\ Service}$ > 1.3

NOI = 20 × 3000
+ 25000 = 85000
− 4.167% × 5 = 81464
− (5000 + 5000) = 90000
61464

⟹ $\frac{61464}{loan × 0.095}$ > 1.3

⟹ loan value < **4,97,684**

ANS

Cash on Cash Return → pre-tax measure

Equity Dividend rate = $\frac{First\ Year\ CF}{Equity}$

= $\frac{NOI - Debt\ Service}{Equity}$

= $\frac{61464 - 47279}{590000 - 497684}$ = $\frac{14185}{92316}$

= 15.3%

∴ After tax returns → accel. principal

tax = [NOI − Int − Depⁿ] × tax rate
= (61464 − 47279 − 6800) 0.3
= 2215

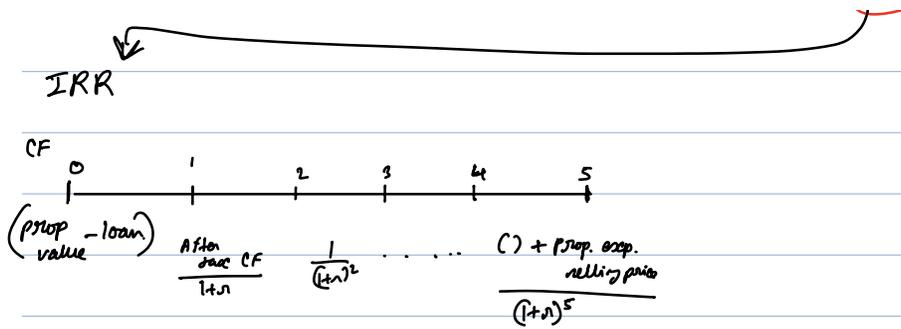⟹ $\frac{14185 - taxes}{92316}$ = 12.9%

Doesn't consider Capital App.

In tax calculation consider depr. but in AFTER TAX RET DON'T CONSIDER DEPR.

Equity Dividend Rate in pretax measure

Depr only on building.

IRR

CF
```
    0        1        2        3        4        5
    |--------|--------|--------|--------|--------|
```

$\left(\begin{array}{c}prop \\ value\end{array} - loan\right)$ $\dfrac{After\ tax\ CF}{1+r}$ $\dfrac{1}{(1+r)^2}$ . . . . $\dfrac{(\ ) + prop.\ exp.\ selling\ price}{(1+r)^5}$

Principal Risks

Market Risk

↓

Economic, Competitive factors

↓

$\left[\begin{array}{l}\Delta\ in\ economic\ Activity \\ GDP,\ growth\end{array}\right.$

$\left[\begin{array}{l}Interest\ rate \\ \quad\downarrow \\ Cost\ \&\ availability \\ of\ Capital.\end{array}\right.$

Idiosyncratic Risks.

Property level Risks
— obsolescence (remodeling expense needed)
— re zoning
— environment (earthquake) factors
— property management issues.

ECONOMIC VALUE DRIVERS.

- GDP growth
- wage growth
- unemployment / job creation

Recovery
- High Credit
- uncertain Business
- new construction
- wages ↓ ∴ rent ↓

Int NOI DSC

Bottom Out

Start Rising

trough

LTV↑

Improving Economy

Expansion
wages↑ ∴ rent↑
credit condition↑, vacancy↑
new construction↑
Int rates ↗ } new
Prop Price↑ } const.
Int, NOI, DSC ↗
LTV ↘

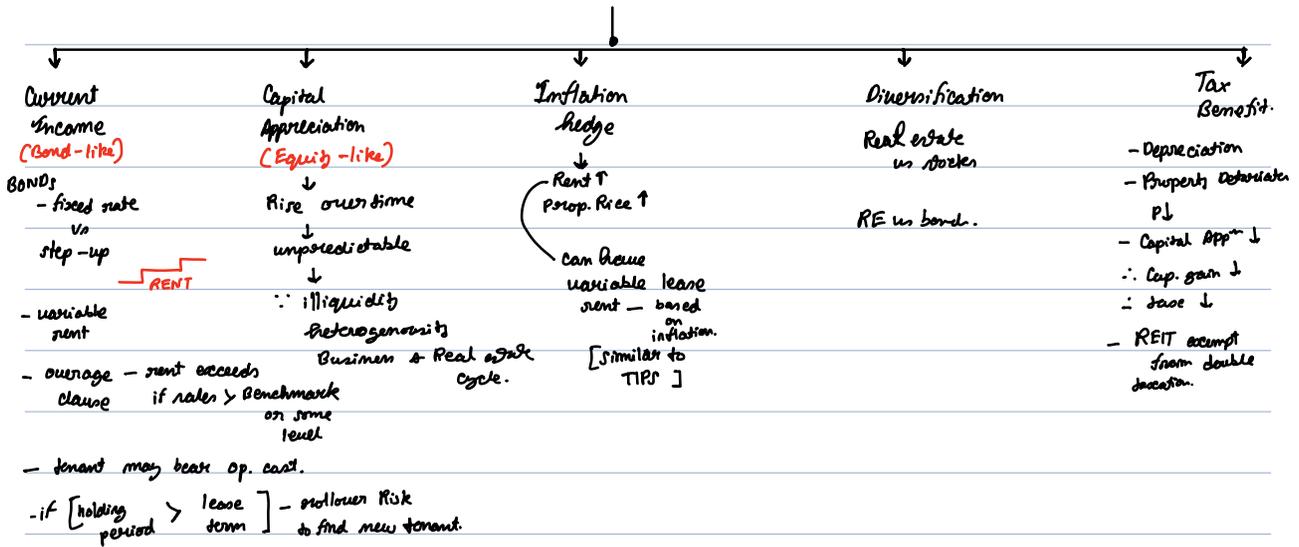**oversupply**
— economy
— new proj delivered
— excess supply
P↓ occupancy ↓
Int, NOI, DSC
LTV↓

RECESSION

Credit tightening.
P↓ occupancy ↓
Int, NOI, DSC↓, LTV↑

Portfolio Characteristics

Current Income (Bond-like)	Capital Appreciation (Equity-like)	Inflation hedge	Diversification	Tax Benefit
BONDS — fixed rate vs step-up RENT — variable rent — overage — rent exceeds clause if rates > Benchmark on some level — tenant may bear op. cost. — if [holding period > lease term] — rollover Risk to find new tenant.	Rise over time ↓ unpredictable ↓ ∴ illiquidity Heterogeneity Business & Real estate cycle.	Rent ↑ Prop. Price ↑ can have variable lease rent — based on inflation. [similar to TIPS]	Real estate vs stocks RE vs bond.	— Depreciation — Property Deteriorate P↓ — Capital Appⁿ ↓ ∴ Cap. gain ↓ ∴ Save ↓ — REIT exempt from double taxation.

COMMERCIAL PROPERTY.

DUE DILIGENCE

— Market Reviews & Outlook

— Current & Future lease outlook.

— Financial Review

- Documentation Review.

- Property inspection & service aggreement.

VALUATION APPROACHES.

Cost Approach

Cost – Depr.ⁿ

Cost of land

$\begin{array}{l} \text{Cost} \\ \text{of} \\ \text{Const.} \end{array} \left\{ \begin{array}{l} - \text{Dep} \\ - \text{ads} \\ - \text{obsolence} \end{array} \right\}$ deduction
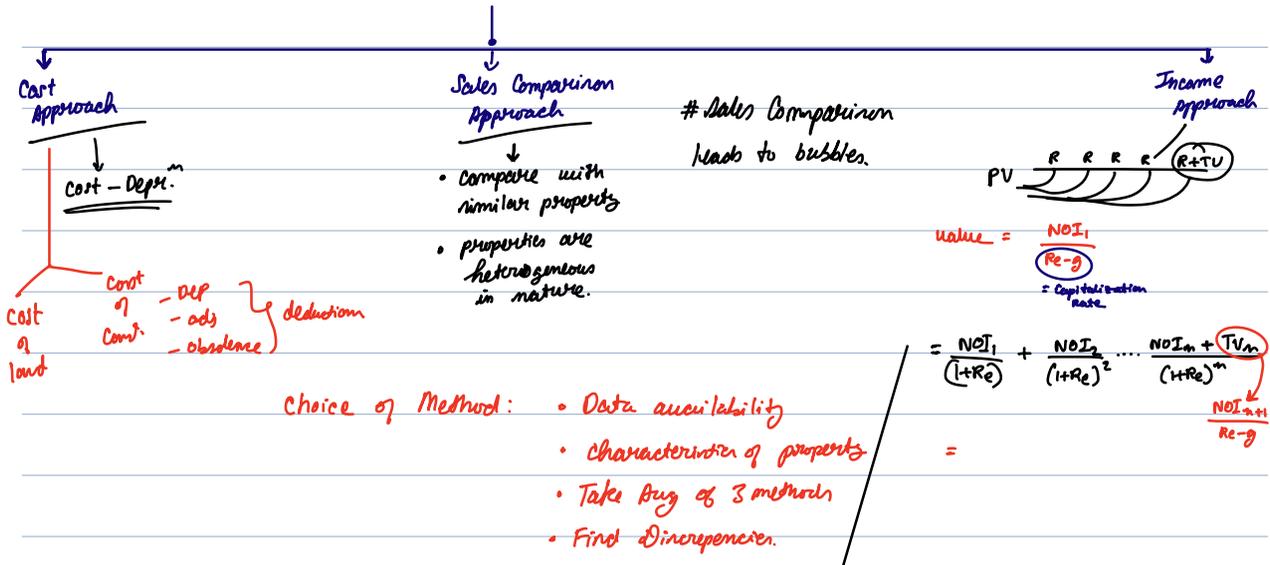
Sales Comparison Approach

- compare with similar property
- properties are heterogeneous in nature.

Sales Comparison leads to bubbles.

Choice of Method:
- Data availability
- characteristics of property
- Take Avg of 3 methods
- Find Discrepencies.

Income approach

$PV \quad R \quad R \quad R \quad (R+TU)$

$value = \dfrac{NOI_1}{R_e - g}$

$= \text{Capitalisation Rate}$

$= \dfrac{NOI_1}{(1+R_e)} + \dfrac{NOI_2}{(1+R_e)^2} \cdots \dfrac{NOI_m + TV_m}{(1+R_e)^m}$

$= \dfrac{NOI_{n+1}}{R_e - g}$

SALES COMPARISON METHOD

value

$= 45000 \, sqft$

$\times \, 134.7789$

$= 60c$

	E-Mkt	A	B	C
	7602185147		9.5	6.5
Sale Price		4.8		
Depⁿ	—	+ 7×2.5% = 17.5%	+ 4×2.5% +10	+5.5×2.5%
Location	Near	Far +12%	Avg +6%	Near —
Condition	Above	Above	Below +8%	Average +4%
Sale Date (ago)		① + .25×12 = +8%	1.5 .25×18 = +4.5%	.5 .25×6 = +1.5%
Adjusted Sale Price		6,360/45000	12,207.5 /10000	7,75125 /5000
		141.33	122.075	140.93

+Average
134.7789

REAL ESTATE INDEX : Use :

→ Track Performance

→ Benchmark

→ Index Based Investment products.

LIMITATIONS : — constructions ————→ • how?
                                          • frequency of update.

— Investable ??
        ↳ No, if private properties

— low correlation

METHODS

Appraisal Based Index.

LAG

$\sigma \downarrow$
$\rho \downarrow$ → understating risk.

↳ low correlation
∴ overstating diversification
∴   "   Sharpe Ratio
∴ over allocation

Return = $\dfrac{NOI_1 - Capital\ Exp + (End_{mkt} - Bgn_{mkt})}{Bgn_{mkt}}$

Income Return

multiple Properties
        return
        ↓
        Wt. Avg
        ↓
        Appraisal Based Index.

Transaction Based.

Repeat sale

Two time – Sell

Two Prices
    ↓
    Return

NCREIF — members
            ↓
        quarterly data
            ↓
        property Appraised
            value.

Capital Return

        +ve   –ve
    Cap < App^n Cap > App^n
    Exp   Exp

Hedonic

Onetime — Sell.
        ↓
other properties
    value
        ↓
Based on regression → One model is fitted.
                    ↳ factor, location, age etc.
        Basket of property. Calc.
        — return
        — Index.

Ret. time
intervals will
be different.

BLOOMBERG

Public security
    Indexes.

Problem   • not based on Actual sales Data.
        • ⌐ Appraisal ⌐
                ⌣
            Based
            on
            transactions.
            ↑↓   (lag)   Because of this data gets smoothened ————→ Unsmooth
                        ∴ Inefficient Portfolio.   Modified $R_t^* = \alpha R_t + (1-\alpha) R_{t-1}$ $(0 \le \alpha \le 1)$
                                                    Autoregressive
                                                    Model

• α determines the speed at which
  appraisal based return tracks actual
  return

• Higher alpha = more unsmoothing

R^*_{t-1} ———————— R^*_t

$\underbrace{\qquad\qquad}_{R_t}$

smoothed Return   Actual Return

$$R_t = \frac{R^*_t}{\alpha} - \frac{(1-\alpha)R^*_{t-1}}{\alpha}$$

Actual or unsmoothened return

→ Better Represent.

REAL ESTATE

- Private
- Public
  - Equity
    - Equity REIT
    - REOC
  - Debt
    - MBS
      - CMBS — commercial mortgage
      - RMBS — residential mortgage
    - Mortgage REIT

REIT VALUATION

NAV per share

Market Value ↖

$\dfrac{A - L}{\text{no. of shares}}$

→ Value of OP. Assets
→ NOI / CAPRATE.

MULTIPLES

- FFO
  - A/c Income
  - FFO ·····
  (Funds from Operations)
- AFFO
  → [Adjusted FFO]

Dividend Discount

DCF or
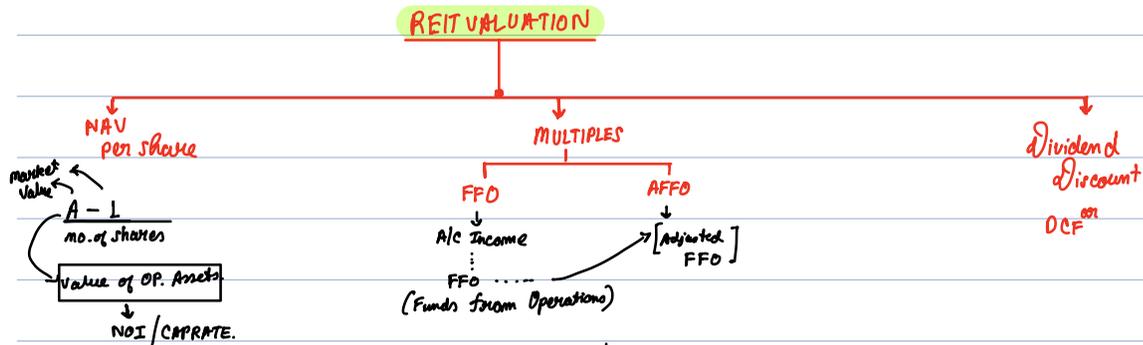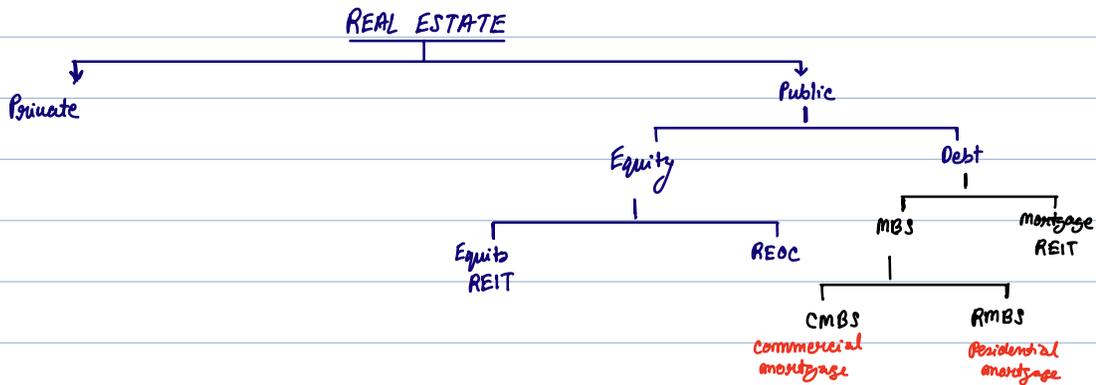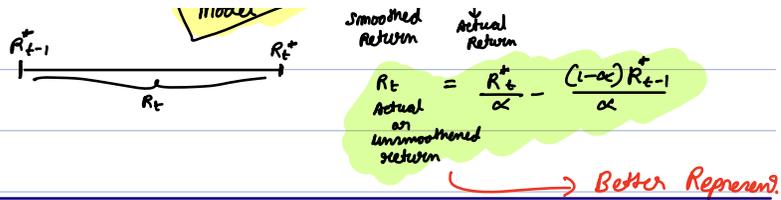
	MP	IV	
trading at premium	Market Price	> NAV Per Share	
Discount	"	< "	
Depends on leverage, mgmt, governance	"	= "	

A/c Net Earnings
+ Depr^n, Amort, impairements writerdown
– Gain from sale of property
(±) loss

___FFO___

– Non Cash Rent Adj.
– Recurring maintenance type CAPEX
   & leasing Commission

___AFFO___

🙂 AFFO < FFO
∴ AFFO multiple > FFO multiple.