Property Investment

BFX3355

Space and Asset Markets

Space Market	Asset Market
- Usage of real property	- Ownership of real property
- Tenants	- Landlords
- Usage market/Rental market	- Property Market

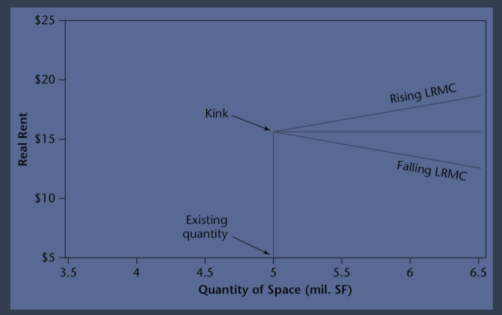
Space Market

Supply Property owners (landlords)	Demand Property users (tenants)

- Rent on y, occupancy (%) on x
- Rent on y, quantity of space on x

Segmentation in the space market:
- Dimensions of space market segmentation
    1. Property type (warehouse, office, etc.)
    2. Geographic location

Space market supply function
- SR supply is *kinked*
- LR supply function = LR marginal cost (extra cost of producing one more product/property)



Real Property = Land and Built Space

- Built space = buildings / improvements on land
- Land usually appreciates over time
- Buildings usually depreciate over time

Financial / Physical Capital

- Financial capital: money (fungible/mobile)
- Physical capital: real physical assets that produce goods or services (specific/immobile)

In real estate, financial capital is used to purchase physical capital

- Space market: deals with physical capital
- Asset market: deals with financial capital

Financial capital:
- Asset market not segmented like space market

Cap Rate

- Current yield on investment / % return on property / % return on money invested
- ↑ Cap rate = ↑ income return
- $Cap\ rate = \frac{NOI}{Market\ price}$
    - Income / Value
    - NOI = Revenue – Operational expenses
    - $Property\ price = \frac{NOI}{Cap\ rate}$

Relationship between rent and property price
- ↑ rent = ↑ property price

What encourages new development?
- When selling price > development cost

Break-even concept applies
- Break-even property price = property development cost

Replacement Cost of rent
- Break-even rent (rent that causes property to break-even)
- Profitable for new development if:
    - Rent > RC of rent
    - Price > Development cost
        - RC is *kink* in diagram

For investors: real estate assets = future CFs

Determinants of Cap Rates
1. Opportunity Cost of Capital (OCC)
    - Asset market / Lost opportunity of investing elsewhere / ↑ IR/expected returns = ↑ Cap rates
2. Growth expectations
    - Space market / CF growth / ↑ growth expectations allow for ↓ Cap rate (pay more today for future growth)
3. Risk
    - Asset/space market / ↑ risk/sensitivity = ↑ Cap rate

Real Estate Risk and Return

ROA	ROE
$\frac{CFO}{Asset\ Price}$	$\frac{CFAF}{Equity}$
$CFO = NOI - CI - R$ Income / Asset	$CFAF = CFO - FC$ Income* / Equity
Not affected by FC and capital structure	Affected by FC and capital structure
Interest Rate Sensitivity / Financing Costs ↑ IR = ↑ FC	
Not affected by FC	↓ as FC ↑ ↑ as FC ↓
Leverage Sensitivity Leverage = amount borrowed	
Not affected by leverage	Affected…
	When ROA > FC: ROE ↑ as leverage ↑
	When ROA < FC ROE ↓ as leverage ↑
Who Uses ROA and ROE?	
Vendors	Vendors and Buyers

Estimating Capital Return Over Holding Period	
$V_0 = E_0 + D$	$V_n = E_n + D$
Average Capital Return Over Holding Period	
$NSP = V_n(1 - sc) - D = V_n - D - \text{scV}_n$	
$E_n = V_n - D \rightarrow E_n = E_0(1 + r)^n$ (r/ROE is unknown, solve last)	
$r = \left(\frac{V_n(1 - sc) - D}{E_0}\right)^{\frac{1}{n}} - 1$	
When no income yield (as above): Capital return = ROE	

Period by Period Returns	Multi-Period Returns
What the investment grows to within each period	Single, blended measure of returns
Time-weighted return	Dollar-weighted return
$y_{0\to3} = \frac{y_1 + y_2 + y_3}{3}$ $g_{0\to3} = \frac{g_1 + g_2 + g_3}{3}$ $r_{0\to3} = y_{0\to3} + g_{0\to3}$	$V_0 = \frac{CF_1}{1+i} + \cdots + \frac{CF_t + (V_t - V_0)}{(1+i)^3}$ Solving for i finds the multi-period return i
Track performance over time, macro-level portfolio evaluation	Compare multiple properties, micro-level portfolio evaluation

IRR
Per annum total return of the property
The periodic blended yield of the investment
NPV = 0, solve for r
Using CFO as CF gives ROA / Using CFAF as CF gives ROE

MIRR
Assumes reinvestment of surplus CFs at safe-rate or cost of capital – more realistic than at IRR rate
Calculating MIRR with + CF: CF from each period reinvested as safe rate - calculate new IRR (MIRR) Calculating MIRR with − CF: Discount negative CF at safe rate back to time 0 (add to CF_0) – calculate new IRR (MIRR)
Conclusions: When safe rate < IRR: MIRR < IRR (property doing well) When safe rate = IRR: MIRR = IRR (property breaking even) When safe rate > IRR: MIRR > IRR (property not doing well)
Ex post (realised, historical) / Ex ante (expected)

Total Return	
Total return = Income return + Capital growth $r_t = y_t + g_t$	
$y_t = \frac{CF_t}{V_{t-1}}$	$g_t = \frac{V_t}{V_{t-1}} - 1$
$r_t = \frac{CF_t + V_t}{V_{t-1}} - 1$	

Income Returns	
Measures of CF:	
$\frac{Gross\ rent}{Price}$	Rental Yield or GIM (Gross Income Multiplier)
$\frac{NOI}{Price}$	Cap rate or Net Income Yield
$\frac{CFO}{Price} = \text{ROA}_{\text{Income}}$	$\frac{CFAF}{Equity} = \text{ROE}_{\text{Income}}$
Capital Growth	
Can be considered from two perspectives: 1. Appreciation of total value 2. Appreciation of equity (same formula, but use equity)	
To convert y into g, reinvest income in property	
Total Return Components	
Current yield + Growth	$y + g$
Risk-free rate + Risk premium	$r_f + RP$
Real return + Inflation premium	$R + iP$

Property Risk
Property risk arises from uncertainty and volatility in cash inflows and outflows Main risks include: σ_{Rent}, $\sigma_{Sale\ price}$, $\sigma_{Op.exp.}$, $\sigma_{Interest\ cost}$ Rent lowest risk (contracts), Sale price highest risk (long nature)

Leverage

Role of Leverage in Property Investment

1. Allows investors to overcome equity capital restraints (afford a property that would otherwise be unpurchaseable)
2. Allows investors to lower the cost of capital
3. Under right conditions, can increase ROE, y_{ROE} and g_{ROE}

Leverage Ratio (LR)

How many times equity capital is in total value (100/40 = 2.5 times)

$$LR = \frac{V}{E} = \frac{V}{V-D} = \frac{1}{1-\frac{D}{V}}$$

Loan to Value Ratio = LVR = $\frac{D}{V}$

Proportion of property financed by debt

Debt Servicing (DS)

Interest only loans: $Loan\ principal * Interest\ rate$

Amortising loans: $PMT = \frac{PV*r}{1-\frac{1}{(1+r)^n}}$

Leverage Conclusions

When $Y_{ROA} > FC$, as leverage ↑… - y_{ROE} ↑, g_{ROE} and $Total_{ROE}$ ↑ - σ_y and σ_g also ↑	Positive gearing Cash in > Cash out
When $Y_{ROA} < FC$, as leverage ↑… - y_{ROE} ↓, g_{ROE} and $Total_{ROE}$ ↑ - σ_y and σ_g also ↑	Negative gearing Cash in < Cash out
When $Y_{ROA} = FC$, as leverage ↑… - y_{ROE} unchanged, g_{ROE} and $Total_{ROE}$ ↑ - σ_y and σ_g also ↑	Neutral gearing Cash in = Cash out

Discount Rates to be Used

When using CFO to get ROA… Use WACC	When using CFAF to get ROE… Use cost of equity

Capital Structure and Property Investment

$WACC = \frac{D}{V}k_D + \frac{E}{V}k_E$	$r = LVRr_D + (1-LVR)r_E$

- r^D: lender's return (return to debt holder / FC of debt)
- r^E: equity investor's return
- r: required rate of return on property

Equity Return

$y_E = \frac{y_P - LVR*y_D}{1-LVR}$	y_P: Cap rate y_D: Yield on debt

Leverage Ratio (WACC)

$r_P = LVRr_E + (1-LVR)r_E$	$r_E = \frac{r_P - r_D(LVR)}{1-LVR}$
Substituting for LVR…	$r_E = r_D + (r_P - r_D)LR$
	$r_P = r_f + risk\ premium$

Positive and Negative Leverage

Positive Leverage:
When more debt will ↑ the equity investor's return (ROA>FC)
Negative Leverage:
When more debt will ↓ the equity investor's return (ROA<FC)

Whenever the return component (ROA) is > in the underlying property than the FC of the loan, there will be positive leverage

Positive gearing will always result in positive leverage
Negative gearing can result in negative or positive leverage

Negative leverage can occur when:
1. Investor overpays for property and ROA < FC
2. Value of property falls over time

Valuation (not directly tied to leverage)

Property can be seen from two perspectives:

Sum of financial capital	Sum of physical capital
$V = \mathrm{D} + \mathrm{E}$	$V = \mathrm{Land} + \mathrm{Building} + \mathrm{F/F}$

Principals of Property Valuation

Appraisal: act of estimating value (an opinion)

Real property values are affected by 4 characteristics:
1. Utility: ability of a good to satisfy a need
2. Scarcity: relative availability
3. Effective demand: desire for the property / buying power
4. Transferability: absence of legal constraints on selling property

Forces affecting value:
- Physical environment: location, size, shape, etc.
- Economic: how does property fit with economy of region?
- Social: population trends, neighbourhood character, etc.
- Governmental: local, state, federal laws on zoning, building, etc.

Understanding Residential Property

Types of Residential Property

1. Freehold (houses) (completely belongs to 'title owner')
2. Group title / Strata title (own unit/apartment in multi-unit complex – common areas shared by all owners)
3. Company title (rare – company owns property, can acquire property by gaining enough shares)
4. Leasehold (use of government property in rural areas – farms)

Property is a hedge against inflation as rent is part of CPI, which is part of inflation

Reasons Direct Property is Poorly Correlated with Equities Market

1. A different asset class risk factor (arises from space market and leverage)
2. Heterogeneous nature of property (each property is unique)
3. Absence of a central market
4. High entry, maintenance and exit costs
5. Lack of expertise or knowledge possessed by buyers
6. Information on zoning requirements/planning may be difficult to obtain for novice buyers

Residential v Commercial Property

	Residential Property	Commercial Property
Rents	Weekly/monthly	Per m. sq.
Lease	Short lease	Long lease
Finding tenant	Relatively easy	May take a long time and require fit-out
Capital outlay	Small	Large
LVRs	80%-100%	Up to 75% (usually 60%)
Maintenance	Tenants do not	Tenants do (mostly)
Appraised value	Occupancy does not affect value	Occupancy determines value
	Tenants not overly concerned about appearance	Integral to business

Residential Property Trends

- Poor rental yield growth: flat or falling
- Price falls in 3rd quarter of 2018 (Melbourne -1.4%, Sydney -0.9%)
- Trend of falling prices set to continue - ↑FC
- Most residential property investors are negatively-gearing investors
- Royal Banking Commission cracking down on bad lending practices
- Possible over-supply of apartments in Melbourne and Sydney
- Underperformance of property in 'resource states' (Perth – FIFO workers)
- Drop off in foreign investors - new Chinese laws prevent large money exiting country
- 3+ bedroom houses in inner-city suburbs doing well – because they are rare nowadays

Supply / Demand Side Participants

Demand-Side Participants of Residential Property

1. Owner-occupiers (first home buyers, upgraders)
2. Investors (domestic, foreign)

Demand-Side Drivers of Residential Property

- Government taxation
- Mortgage finance costs
- Unemployment
- Consumer confidence
- Inflation and wage growth
- Population growth, international and interstate migration
- Demographic changes
- Domestic and foreign investment patterns
- Housing and affordability
- Financial regulation
- Economic prospects of the geography
- Levels of household debt

Supply-Side Participants of Residential Property

1. Government
   - Local: zoning of land
   - State: primary release of state-owned land
   - Federal: primary release of federal-owned land
2. Developers/investors (domestic/foreign)
   - Secondary release of land
   - Construction and building services

Supply-Side Drivers of Residential Property

- Local government zoning
- Local government urban development policy
- State and commonwealth release of land
- Levels of interest rates and cost of property development finance
- Development replacement cost of rent and LRMC of construction
- Development industry taxation and red tape

Indicators of Demand and Supply

Demand-side leading indicators
1. Mortgage approvals
2. Auction-clearance rates
3. Consumer confidence

Supply-side indicators
1. Building approvals
2. Construction starts