W1 - SPACE & ASSET MARKETS

Is Real Estate important to Australia?
The property industry is the largest industry in Australia…
The industry is estimated to have contributed $182.5 billion to Australian GDP in 2013-14, accounting for 11.5% of GDP for the year (of $1,583.6 billion)

Introducing… the Real Estate Space Market & Asset Market
What's a "market"?… A mechanism for the **voluntary** exchange of goods and services among **owners**

Exhibit 1-5		Public Markets	Private Markets
Major Types of Capital Asset Markets and Investment Products	Equity Assets	Stocks REITs Mutual funds	Real property Private equity Hedge funds
	Debt Assets	Bonds MBS Money instruments	Bank loans Whole mortgages Venture debt & LBOs

Public market - those in which small homogeneous units (or "shares") of ownership in assets trade in public exchanges where buyers and sellers are simultaneously participating in the market. Public markets are characterised by a relatively high degree of **liquidity** in that it is possible to quickly sell assets near the last quoted price

Private market - are those in which the assets are traded in private transactions arranged between individual buyers and sellers who have "found" each other often through the aid of intermediaries and brokers. It common for **whole assets** (e.g an entire company or property) to be traded in a single transaction. Avg. transaction size is larger in private

Which type of market applies to property? Bit of both?

Two types of markets relevant to commercial property:
1) Space Market…
   - For the usage (or right to use) "real property"
   - "usage market", or "rental market"
   - (e.g. tenants & landlords exchange money for leases)
2) Asset Market…
   - For the ownership of "real property"
   - i.e. the "property market"
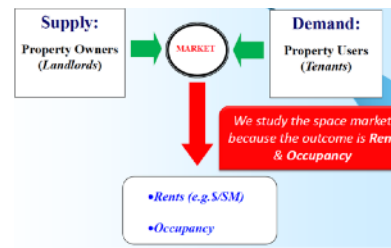   - (e.g. Pension Fund exchanges my Superannuation $ for an office bldg)

What's "real property"?
LAND & BUILT SPACE

Land	usually appreciates over time
Built Space	buildings or improvement on the land
Buildings	usually depreciates over time

** Consider inflation!!!

The Space Market

Segmentation
- A market is "**segmented**" if it breaks up into sub-markets, or market segments
- Within each sub-market or segment, the same good may have a **different** equilibrium **price**
- **The real estate market is highly segmented. Why?**

Demand side:
- Users require specific types of **space**…
  - An accountant can't use a warehouse
  - A trucking firm can't use a high-rise office building
- Users require specific **locations** (or types of locations)
  - An accountant won't get much business at the intersection of Clayton & Dandenong Roads
  - A trucking firm's trucks would spend all their time stuck in traffic if their warehouse is located in the CBD

Supply side:
- Buildings are of **specific physical types** (warehouses ≠ high-rise offices)
- Buildings are in **specific locations** (and they can't move!)
- Who supplies space?
  - Owner's of Property (Landlords)

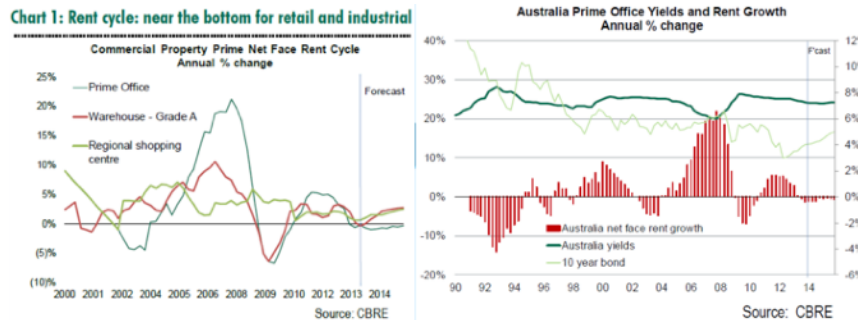## Two majors dimensions of space market segmentation:
Geographic location:
- Basic unit is the "metropolitan area"
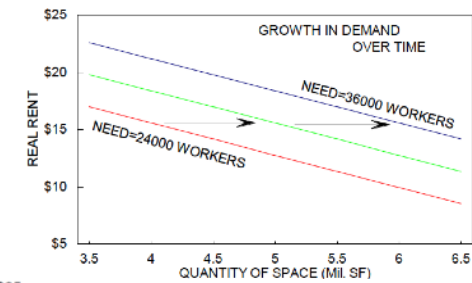- Sub-markets (e.g. CBD, Suburban, neighbourhoods) also important

Property type:
- Residential (house/apartment)
- Office (commercial)
- Industrial (factory/warehouse)
- Retail
- Other (hotels, health-care, etc….)
- Broad acre/Rural

Example: Space Market - cbre research

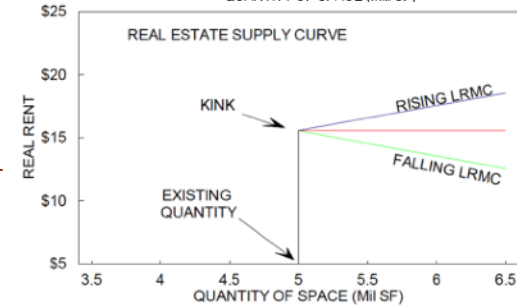## Office **Demand** as a Function of Employment
Normal Demand curve - downward sloping

Real Estate Space Market **Supply function**…
The real estate space **supply** function has a more peculiar space…
Real estate space long-run supply in **kinked**
==**KINK = Replacement Cost of Rent**==

- **LR Supply Function** = Long-run Marginal Cost Function (**LRMC**)
- **LMRC** = Development cost (beyond existing supply) Virtually zero (at and below existing supply)

This is due to the **longevity** of buildings. (You can add them a lot easier than you can subtract them!)

Introducing: The Cap Rate
Current **yield** on the investment
Yield = income/asset value

$$Cap\ Rate = \frac{NOI}{Market\ Price}$$

- Understand how Yields are used for investment
- There are multiple versions of the Cap rate, what is important is the concept that the cap rate is a yield measure

Property value can be estimated as: $Property\ Price = \frac{Current\ Annual\ Net\ Income}{Cap\ Rate}$

Income ➜ Value ➜ Prices ➜ Development
What encourages the development of new property?
When developers can sell their product (the property they construct) for a price greater than the development cost
The economic concept of break-evens apply:
Break-even property price = property development cost
What is the prime driver of commercial property prices?
Ans: Property Income or **Rent**; ↑rent = ↑price, vice versa

This driving relationship between property income and prices is captured by the **Cap Rate = NOI / Price** (e.g. 10%)

==Given that investors are willing to purchase property at a 10% yield on capital invested (cap rate), then we can establish the rental income the provides for a break-even property price==

The apportionment of the purchase price splits the asset into the following three categories:
- Land
- Plant (Division 40)
- Buildings (Division 43)

Division 43 - Deductions for Capital Works

Prime cost method: Building allowance of 2.5% for properties constructed after Sept 1987. For older properties (pre July 1985) the building allowance may not be claimed. However, the allowance may be claimed for capital improvements that have occurred after Sept 1987 to any property, regardless of age.
https://www.ato.gov.au/General/Property/In-detail/Rental-properties/Rental-properties---claiming-capital-works-deductions/

Scrap value: when an income producing property is scrapped (bulldozed to the ground and removed) the remaining depreciable value may be claimed as an expense.
Tax Depreciation Calculator: http://www.bmtqs.com.au/tax_estimator.htm

Division 40 - Depreciation of Plant

Diminishing value method: Plant & Equipment - based on economic life of asset. e.g. Lifts 25 years, Carpets 7 years, dishwasher 5 years.
Types of use affects economic life
e.g. carpet in a residential property (low use area) will have a longer economic life than a carpet in a restaurant (high use area) (Low-cost assets (those with a cost under $1000) may be grouped in a **low-value pool** and depreciated at 37.5 using the diminishing value method) - furnitures and fittings - real assets that wear and tear

Quantity Survey - hired to go into your property and create a depreciation schedule - how much you can claim on tax for the building or the furnitures and fittings inside

Tax Issues: How to calculate the annual taxation of property, pre-reversion CFs…

Firstly, we calculate Property Taxable Income
1. **Calculate NOI**
   NOI = Gross Potential Rent Income
   - Vacancy Allowance
   - Operating Expenses
   - Land Tax

2. **Sum other non-operating expenses that typically include…**
   - Interest expense only (principal repayment is not tax deductible)
   - Depreciation - building allowance
   - Depreciation - furniture & fittings
   - Amortisation of purchase costs (including conveyancing & legal costs)

3. **Property Taxable income = NOI - non-operating expenses**
   Note: This is an accounting/tax calculation, not a cash flow calculation

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Secondly, depending on whether *Other Income (e.g. investor's salary)* for the investor is provided/available…
1. **Other Income is available: Calculate**
   Total Taxable Income = Property Taxable Income + Other Income
   See ResortApartments_s in Excel Workshop folder

2. **Apply appropriate ax rate to Total Taxable Income**
   - Individual = MTR, Corporate = Corporate Tax Rate
   - Tax liability or credit is obtained

3. **Calculate tax credit/liability on Other Income, then take the difference between the Tax credit/liability on Other Income and the Tax credit/liability on Total Taxable Income**
   - The objective is to find the Change in investor's tax liability for use in the cash flow calculations

If…
1. **Other Income is unavailable, apply the appropriate tax rate to Property Taxable income**
   - Total Taxable Income = Property Taxable Income
   - A Tax/credit/liability is obtained
   - See ShoppingCentre_s in the Excel Workshop

2. **The Tax credit/liability is then used in the cash flow calculations**
   - It is important to note that these calculations are tax calculations which serve to provide one answer: the tax credit/liability or change in tax credit/liability which is a cash flow to be used along with other cash flow calculations

Note: We shall soon see this works in practice during our review of the Excel - Tax Example Spreadsheet

Tax Issues

CGT - Capital Gains Tax
Payable on sale of property
- CGT is part of the Reversion Cash Flow
  - If property owned = company/fund, use company tax rate
  - If property owned = individual, use individual MTR
- 50% of gain is taxed at individual's marginal rate if the property is held for more than 12 months.
- Stamp duty is capitalised on the purchase price when the capital gain is being determined

Tax Issues: How to calculate CGT…
1. **Establish the taxable capital gain**
   Taxable capital gain =
   Net Sale Price - Capitalised Purchase price adjusted for depreciation
   where… Net Sale Price = Sale price - Selling Costs

   (Capitalised Purchase price adjusted for depreciation =
   Purchase price + stamp duty + CI - accumulated depn (inc. CI depn). CI includes any renovation or refurbishment that allows for the property to be sold at a higher price. That includes any CI that increases rent growth.)

2. **Apply the tax rate to the taxable capital gain for CGT**
   - **Corporates**: the appropriate corporate tax rate (30%)
   - **Individuals**: the Marginal Tax Rate (MTR). If the property is held for more than 12 months, a 50% discount to the taxable capital gain applies before the MTR

Property Acquisition - Example
Refer to the Excel - Tax example spreadsheet
The structure and format of this model shows how the simple DCF timeline valuation is elevated to fully incorporate…
- Capital Structure & Financing Costs
- Taxation effects

Being able to produce property valuations of this sophistication is critical skill needed for the assignment

Purchase Price	$890,840
Deposit	20%
Holding Period	7 years

Return to Investor based on assumptions adopted
- NPV = $31,875
- IRR = 16.36% *(Required return = 14%)*

Prime objectives:
- Understand how property annual taxation and reversion taxation are handled
- How after-tax annual cash flows for property investment are determined

Model implications of how capital structure, interest costs, depreciation & taxation affect property valuation

1. Capital Structure
Equity = Paid upfront in Yr0
Debt = Re-paid when the property is sold, at the end of the holding period, Yr7

2. Interest Costs
Interest costs are applied in 2 areas…
1) Calculation of annual tax liability   2) Calculation of after tax annual NCF

Capital Structure & FC Implications on Loan Selection

- Is it better to use an interest-only or an amortising loan?
  (Ans: Whichever has the cheapest total cost, holding all else equal)
- This can be calculated by PVing the cash flows of an interest-only and amortising loan to observe which is lower
- Amortising Loan Cost > Interest-Only Loan Cost?
- If the interest cost is the same, holding all else equal, I/O loans will always be cheaper than amortising as the largest repayment by far is the loan principal; which is **discounted the heaviest**, as it is the last payment made, providing the lowest PV cost
- The time value of money shows that delaying most of the loan repayments till as far into the future as possible reduces the total loan cost
- The current financing trend is for out-of-cash rate cycle increases for interest-only loans which increases the spread between I/O and amortising loan costs. How much of a spread will result in amortising loans being cheaper than I/O?

Investment Property ~ Interest only Vs Amortising,

Interest Only

Holding period 7 years	year ending	0	1	2	3	4	5	6	7
			30-Jun-10	30-Jun-11	30-Jun-12	30-Jun-13	30-Jun-14	30-Jun-15	30-Jun-16
Other Expn. - Interest expense		7.4%	($56,451)	($56,451)	($56,451)	($56,451)	($56,451)	($56,451)	($56,451)
Loan balance										($762,856)
Cost of borrowing			($56,451)	($56,451)	($56,451)	($56,451)	($56,451)	($56,451)	($819,307)
PV of Borrowing Cost	($546,946)								

Amortising Only - 20yr loan

Holding period 7 years	year ending	0	1	2	3	4	5	6	7
			30-Jun-10	30-Jun-11	30-Jun-12	30-Jun-13	30-Jun-14	30-Jun-15	30-Jun-16
Other Expn. - Interest expense		7.4%	($74,262)	($74,262)	($74,262)	($74,262)	($74,262)	($74,262)	($74,262)
Loan balance repaid/period			($17,811)	($19,129)	($20,544)	($22,064)	($23,697)	($25,451)	($27,334)
Loan balance										-$606,825.12
Cost of borrowing			($74,262)	($74,262)	($74,262)	($74,262)	($74,262)	($74,262)	($681,087)
PV of Borrowing Cost	($560,968)								

Where the interest cost is the same: Amortising Loan Cost > I/O Loan Cost
How high does the interest cost of an I/O loan have to be before the equivalent Amortising loan becomes cheaper?

3. Depreciation

Investment Property ~ Analysis of Cash Flows

Holding period 7 years	-	year ending	0	1	2	3	4	5	6	7
				30-Jun-10	30-Jun-11	30-Jun-12	30-Jun-13	30-Jun-14	30-Jun-15	30-Jun-16
Land value			$451,510	$489,888	$531,529	$576,709	$625,729	$678,916	$736,624	$799,237
Gross potential rent income				$33,241	$39,606	$40,596	$41,611	$42,651	$43,718	$44,811
Vacancy allowance		5.0%		($1,662)	($1,980)	($2,030)	($2,081)	($2,133)	($2,186)	($2,241)
Operating Expenses		22.0%		($7,313)	($8,713)	($8,931)	($9,154)	($9,383)	($9,618)	($9,858)
Land tax				($678)	($755)	($838)	($928)	($1,104)	($1,370)	($1,658)
NOI (Net Operating Income)				$24,266	$28,912	$29,635	$30,376	$31,135	$31,914	$32,712
1.How Depreciation impacts property valuation										
Other Expn. - Interest expense		7.4%		($56,451)	($56,451)	($56,451)	($56,451)	($56,451)	($56,451)	($56,451)
- building allowance		2.5%		($9,745)	($9,745)	($9,745)	($9,745)	($9,745)	($9,745)	($9,745)
- depreciation of fixtures and fittings				($6,123)	($6,103)	($5,104)	($4,283)	($3,605)	($3,046)	($2,583)
- Amortisation of purchase costs				($333)	($333)	($333)	($333)	($333)		
Total other expenses				($72,652)	($72,632)	($71,633)	($70,812)	($70,134)	($69,242)	($68,779)
Taxable income from investment property				($48,386)	($43,719)	($41,998)	($40,435)	($38,999)	($37,328)	($36,067)
Taxable Capital gain on sale of property										$348,596
Investor's gross salary income		5.00%		$78,750	$82,688	$86,822	$91,163	$95,721	$100,507	$105,533
Taxable Income				$30,364	$38,968	$44,824	$50,727	$56,722	$63,179	$418,061
Tax credit (liability)				($2,494)	($4,834)	($6,825)	($8,832)	($10,871)	($13,066)	($167,983)
Property - After Tax cash Flows										
NOI				$24,266	$28,912	$29,635	$30,376	$31,135	$31,914	$32,712
Tax Credit due to investment property				$15,866	$14,986	$14,586	$14,250	$13,967	$13,614	($139,368)
Interest expense				($56,451)	($56,451)	($56,451)	($56,451)	($56,451)	($56,451)	($56,451)
Value of property at the end of 7 years (start of yr 8)										$1,576,914
Loan balance										($762,856)
Initial investment (deposit)		($178,168)								
Net Cash Flows after Tax from investment		($178,168)		($16,319)	($12,553)	($12,230)	($11,825)	($11,349)	($10,923)	$650,950
NPV	$31,875									
IRR	16.36%									

Depreciation is applied in 2 areas…
1) Annual tax credit/liability   2) Calculation of CGT

Capital Gains Tax (CGT) calculation:

$1,576,914	Sale Price (based on valuation end of year 7)
($39,423)	Selling Costs
$1,537,491	Net sale price
	2. How Depreciation impacts property valuation
$939,360	Capitalised value of purchase price
($99,061)	Accummulated depreciation
$840,299	Purchase price adjusted for depreciation
$697,192	Capital Gain
$348,596	Taxable portion of gain (50%)

CGT = Net Sale Price - Capitalised Purchase Price adjusted for depreciation + Capital Improvements

Net Sale Price = Sale Price - Selling Costs
Capitalised Purchase Price adjusted for depreciation = Purchase price + Stamp Duty + CI - accumulated depreciation (inc. CI depreciation)

Depreciation Implication on y and g

- What impact does depreciation have on annual after-tax cash flow, i.e. the after-tax income yield?
- What impact does depreciation have on capital gains tax, and consequently the capital appreciation return?
- Is depreciation good for y?
  Yes, good for income as more depn you have larger deduction, smaller taxable income and pay less income tax
- Is depreciation good for g?
  Depreciation is **not** good for capital gain

Percentage of Government taxes in Property Development… an example

Taxes that make up a new house in Sydney

	SW SYDNEY LAND PROJECT A		SW SYDNEY LAND PROJECT B	
	Cost per lot	Tax % of total dev cost	Cost per lot	Tax % of total dev cost
State stamp duty	$8,042	3.5%	$8,860	3.4%
Federal GST	$27,666	12.2%	$23,883	9.2%
Council rates	$282	0.1%	$367	0.1%
State land tax	$4,170	1.8%	$2,667	1.0%
Local council section 94	$28,333	12.5%	$31,389	12.0%
State infra contribution	$9,181	4.0%	$10,112	3.9%
Total taxes & charges	**$77,675**	**34.1%**	**$77,277**	**29.6%**
Total development cost	**$227,520**	**100.0%**	**$260,950**	**100.0%**
Purchaser stamp duty	$15,750	16.9%	$15,750	4.4%
Total taxes & charges	**$93,424.72**		**$353,977**	

SOURCE: UDIA

Y_ROE from Op Cash Flow

- The use of leverage can boost overall returns for the investor if the property increases in value over the holding period
- Leverage will also reduce the cash throw-off (CFAF) due to debt servicing
- CFAF = CFO - Debt Servicing
- The management of operating cash flows is fundamental to the operation of any business
- Investors are frequently interested in the return achieved from operating cash flows
- When the rent and operating costs are known the net yield on equity or ROE, may be determined

Purchase price		PP
Purchase costs as % of purchase price		pc
Gross rental income as % of purchase price		y(PP)
Operating expenses as % of gross income		h
Improvements and Reserves as % of gross income		mr
Interest rate on borrowed funds (interest only debt)		i
Investors marginal tax rate (MTR)		t
Operating Expenses as a percentage of rent		h
Loan to value ratio		LVR
Investor's outlay (D + E)		PP(1+pc)
Financing: Debt		D = LVR(PP)
Equity	E = PP(1+pc) – LVR(PP) =	PP(1+pc-LVR)
Gross rental income		y(PP)
Operating expenses		h[y(PP)]
NOI	y(PP) - h[y(PP)] =	y(pp)[1-h]
CFO	NOI(1-mr) =	y(pp)[1-h](1-mr)
CFAF	CFO – LVR(PP)i =	y(pp)[1-h](1-mr) – LVR(PP)i

$$ROE = \frac{CFAF}{Equity} = \frac{NOI(1-mr) - LVR(PP)i}{PP(1+pc-LVR)}$$

$$ROE = \frac{y(1-h)(1-mr) - LVR(i)}{(1+pc-LVR)}$$

Note: This is an Income ROE, not to be confused with project IRR_ROE which is a Total_ROE

DCF Valuation Procedure

1. **Forecast the expected future cash flows:**
   - Identify what the future cash inflows & outflows are. This can be done before and after-tax, depending on whether a before or after-tax valuation is desired
   - **Primary Cash Inflows**: Rent, which can be divided into **(a) contracted** & **(b) uncontracted lease payments**. Reversion CF, which is mainly **(c) net sale price**
   - Other inflows include tax credits, capital contributions, income from re-investment of surplus cash flows (IRR & MIRR)
   - **Primary Cash Outflows**: **(a) Operating Expenses**, **(b) Yr 0 Equity Contribution**, **(c) Debt servicing**, **(d) Loan principal repayment during reversion**, **(e) tax liabilities**

Different risk preferences and different risk aversion among valuers will result in different "discount rate" used in valuation models and math.

- Consider the uncertainty/risk of the primary cash inflows and outflows
  - Rank the cash inflows by risk:
    Most risky: selling price, **Least** risky: contracted lease
  - What are the implications of having cash flows of different risk when valuing them? The implication is that we should be different discount rates to discount cash flows of different risk

2. **Determine the required total return**
   - we've been doing this through 'WACC for ROA' & 'Ke for ROE'

3. **Discount the annual net cash flows to present value at the required rate of return**

Traditional DCF Valuation

$$V = \frac{E_0[CF_1]}{1 + E_0[r]} + \frac{E_0[CF_2]}{(1 + E_0[r])^2} + \ldots + \frac{E_0[CF_T]}{(1 + E_0[r])^T}$$

where:

CF_t = Net cash flow generated by the property in period "t";

V = Property value at the end of period "t";

$E_0[r]$ = Expected average multi-period return (per period) as of time "zero" (the present), also known as the "**going-in IRR or in-going yield**";

T = The terminal period in the expected investment holding period, such that CF_T would include the **re-sale value of the property** at that time, **in addition to normal operating cash flow**.

Examples Effective rent

Lease A Term: 5 years, Rent: $180/m²
Concessions: 1 year free rent, up front
Tenant still pays operating expenses during rent holiday

Lease B Term: 6 years, Rent: $204/m
Concessions: 2 years free rent, up front
Tenant still pays operating expenses during rent holiday

Assume: k = 7%, rate tenant could borrow on a **secured** loan,
k = 8% on **unsecured** loan

Landlord's Effective rent - **Lease A**
Assume: k = 7%, rate tenant could borrow on a **secured** loan

$$LPV = CF_0 + \frac{CF_1}{1+k} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \frac{CF_4}{(1+k)^4}$$

$$LPV = \$0 + \frac{\$180}{1.07} + \frac{\$180}{(1.07)^2} + \frac{\$180}{(1.07)^3} + \frac{\$180}{(1.07)^4}$$

LPV$_A$ = $0 + $168.22 + $157.22 + $146.93 + $137.32
= **$609.70**

Landlord's Effective rent - **Lease B**
Assume: k = 7%, rate tenant could borrow on a **secured** loan

$$LPV = CF_0 + \frac{CF_1}{1+k} + \frac{CF_2}{(1+k)^2} + \frac{CF_3}{(1+k)^3} + \frac{CF_4}{(1+k)^4} + \frac{CF_5}{(1+k)^5}$$

$$LPV_B = \$0 + \frac{\$0}{1.07} + \frac{\$204}{(1.07)^2} + \frac{\$204}{(1.07)^3} + \frac{\$204}{(1.07)^4} + \frac{\$204}{(1.07)^5}$$

LPV$_B$ = $0 + $0+ $178.18 + $166.52 + $155.63 + $145.45
= **$645.79**

Landlord's Effective rent

$$ER = \frac{k(LPV)}{(1+k)\left[1 - \frac{1}{(1+k)^n}\right]}$$

Lease A effective rent

$$ER_A = \frac{0.07(\$609.70)}{(1.07)\left[1 - \frac{1}{(1.07)^5}\right]} = \$138.97$$

Lease B effective rent

$$ER_B = \frac{0.07(\$645.79)}{(1.07)\left[1 - \frac{1}{(1.07)^6}\right]} = \$126.62$$

Effective rent from Landlord's perspective

Lease A Term: 5 years, Rent: $180/m²
Concessions: 1 year free rent, up front
Effective rent $138.97

Lease B Term: 6 years, Rent: $204/m
Concessions: 2 years free rent, up front
Effective rent $126.62

All other things equal, the landlord would prefer lease A

The rentable space is like collateral which is owned by the landlord - it is a secured loan

Effective rent from Tenant's perspective
Would the tenant or landlord have a higher effective rent for a NNN lease?
Would the tenant or landlord have an effective rent for a Gross lease?

The tenant has an obligation to pay an amount prescribed by the lease each year for the term of the lease. This is un-collateralised (unsecured) debt

Lease A Term: 5 years, Rent: $180/m²
Concessions: 1 year free rent, up front
Operating expenses are $80/m² growing at 2.5% p.a.

$$LPV_A = \$80 + \frac{\$262}{1.08} + \frac{\$264}{(1.08)^2} + \frac{\$266}{(1.08)^3} + \frac{\$268}{(1.08)^4}$$

LPV$_A$ = $80 + $242.59 + $226.38 + $211.28 + $197.21
= **$957.46**

Lease B Term: 6 years, Rent: $204/m
Concessions: 2 years free rent, up front
Operating expenses are $80/m² growing at 2.5% p.a.

$$LPV_B = \$80 + \frac{\$82}{1.08} + \frac{\$288}{(1.08)^2} + \frac{\$290}{(1.08)^3} + \frac{\$292}{(1.08)^4} + \frac{\$295}{(1.08)^5}$$

LPV$_B$ = $80 + $75.93 + $246.96 + $230.33+ $214.85 + $200.44
= **$1,048.51**

Tenant's Effective rent

$$ER = \frac{k(LPV)}{(1+k)\left[1 - \frac{1}{(1+k)^n}\right]}$$

Lease A effective rent

$$ER_A = \frac{0.08(\$957.46)}{(1.08)\left[1 - \frac{1}{(1.08)^5}\right]} = \$222.04$$

Lease B effective rent

$$ER_B = \frac{0.08(\$1,048.51)}{(1.08)\left[1 - \frac{1}{(1.08)^6}\right]} = \$210.01$$

All other things equal, the tenant would prefer lease B.
The Effective Rent is a cost to the tenant while the Effective Rent to the landlord is revenue


Valuing a Lease Renewal Option
Lease A
Suppose at the end of the 5-year term the landlord offers the tenant an option to renew for another 5 years. Current rent paid is $180/m². (exercise price)

Rent at the start of the option term (in 5 years) would be based on market rate for the property prevailing at that time

p = 50% → $190/m²
1- p = 50% → $170/m²

Assumption:
Subjective probability distribution of market rents when option matures
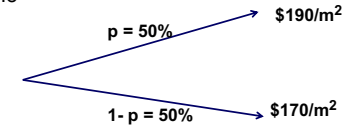
Expected(rent) = 0.5 ($170) + 0.5 ($190) = $180

Option decision rules:
The tenant will exercise if rent rises to $190/m². This is when the option has value, when it saves the tenant $10, as the tenant can continue to pay $180 instead of the market rent of $190.

The tenant will let the option expire if (market) rent falls to $170/m² and will seek another space and pay the lower rent of $170.
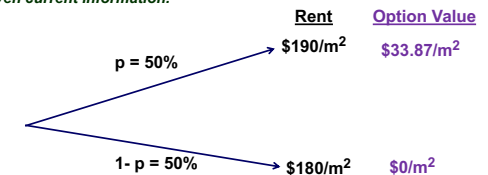
Value of option to the tenant if rent rises to $190/m2…

$$Opt.Value_{Tenant} = 1st\ yr\ rent\ free + \frac{\$190 - \$180}{1.07} + \frac{\$190 - \$180}{(1.07)^2} + \frac{\$190 - \$180}{(1.07)^2} + \frac{\$190 - \$180}{(1.07)^3} + \frac{\$190 - \$180}{(1.07)^4}$$

LPV$_A$ = $0 + $9.35 + $8.73 + $8.16 + $7.63
= **$33.87**

> **Value of Option if rent is $190 is $33.87**
> **Value of Option if rent is $170 is $0**

Subjective probabilities given current information.

	Rent	Option Value
p = 50%	$190/m²	$33.87/m²
1- p = 50%	$180/m²	$0/m²

Since the option is risky a high discount rate is employed to discount its value back to the present.

Assume a suitable discount rate is 15%

$$PV\ (\$33.87\ in\ 5\ yrs) = \frac{33.87}{(1.15)^5} = \$16.84$$

PV's weighted by subjective probabilities:
0.5($16.84) + 0.5($0) = $8.42

$$Option\ Value\ Cost\ Saving = \frac{0.07(8.42)}{(1.07)\left[1 - \frac{1}{(1.07)^5}\right]} = \$1.92$$

Valuing a Lease Renewal Option (CONT.)

From the tenants, perspective, the option has positive value, meaning a cost saving for which an option price is paid

- As the value of the option is cost saving on *Effective Rent* by $1.92. The tenant is willing to pay an option price up to the option value
- The landlord has no choice but to accept the outcome of tenant's decision to exercise or let the option lapse and thus is in effect writing the option for the tenant. So compensation up to the value of the option should be paid by the tenant to the landlord for the tenant having the sole benefit of the option

The option price paid by the tenant to the option writer, the landlord, is established through negotiation

The impact of the landlord wiring a lease renewal option to the tenant on effective rent is as follows:

Tenants Lease A Effective Rent: from slide 18
    $222.12 + Option Price, Max($1.92)
Landlord Lease A Effective Rent: from slide 13
    $138.97 + Option Price, Max($1.92)

Appendix 30A of G&M reviews this methodology in another example

Broader leasing strategy considerations
What things are left out of the effective rent calculation?

Should you always choose the lease with the best effective rent?
                                                                          NO!

(So, what's left out of the effective rent calculation?)

Issues relating to lease term and rent:
Overview: **Inter-lease risk**
                     Releasing costs
                     Flexibility
                     Expiration timing strategy

Inter-lease risk
Has risk been included at all in the effective rent calculation?

(It depends on the "**k**" value that is used)

If "**k**" based on tenant's borrowing rate, then risk factors included in loan OCC will have already been included and accounted for, that is, risk **within** the lease (relevant to "*intra-lease* discount rate"), including:

1. Interest rate risk
2. Tenant default risk

Note: Default risk to the lessor may be less than default risk to lender: The landlord can lease space to another tenant

However, tenant's borrowing rate will not well reflect some other sources of risk for landlord (and tenant), in particular, sources which influence risk between leases (relevant for inter-lease discount rate)

- **You should be using a higher discount rate for uncontracted lease cash flows than your contracted cash flows**

(the difference is usually just an educated guess)

Sources of inter-lease risk (in OCC):

- Space market risk (uncertainty of future contract rents)
- Term structure of interest rates in bond market (Are interest rates rising, flat or falling over time?)
- **Note**: The former is more important than the latter

Implication: longer-term leases reduce risk in a way that is not reflected in the effective rent calculation

- *Ceterus Paribus,* landlord prefers longer-term lease at same effective rent, or is willing to accept lower effective rent for longer-term lease, relative to a projection of what the future short-term (or "spot") rents will be
- Tenant feels same way
  - Tenants preferences tend to be symmetric to landlords:
  - At same rent, tenants prefer shorter-term leases (by same dollar amount as landlords prefer longer-term leases)
  - PV of perpetual stream of rent payments is same to tenant as to landlord (only it's a cost instead of a value: negative instead of positive)

Releasing costs (examples)
1. **Vacancy period (lost revenue)**
2. **Search cost (leasing commissions, own time)**
3. **Moving expenses (tenants including operational disruption, landlord reimburse?)**

Landlord & Tenant affected in same direction by releasing costs:
- Re-leasing is cost to both sides
- Both sides prefer longer lease terms (to minimise re-leasing cost)

Hence, Releasing costs do not affect term structure of rents
- Tenants would pay higher rent for longer-term lease, but
- Landlord's would accept lower rent for longer-term lease, therefore,
- In equilibrium (negotiation between tenant & LL), no impact

Releasing costs do have an equilibrium impact on preferred lease term:
- Longer lease terms (more so, in markets where releasing costs are greater)

Flexibility Considerations
How does the lease affect future decision flexibility?
1. **Expectations about the future rental market**

   Suppose landlord and tenant expectations differ regarding the future direction of spot rents…

   "**Complementary**" **expectations if:**
   - Tenant believes rents will **rise**
   - Landlord believes rents will **fall**
   - Then long-term lease agreement will be **easier to negotiate**

   "**Conflicting**" **expectations if:**
   - Tenant believes rents will **fall**
   - Landlords believes rents will **rise**
   - Then long-term lease agreement will be **more difficult to negotiate**

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1. **Expectations about the future rental market** (CONT.)

If space market expectations are conflicting and not reconcilable, then agreement will be facilitated **by reducing the lease term length**, thereby reducing the impact of future changes in market rents on the opportunity cost of the lease, and providing more flexibility to either side to take advantage of favourable developments in the rental market

Rent at the start of the option term (in 5 years) would be based on market rate for the property prevailing at that time

2. **Tenant expectations about future space requirements:**

   Expectations regarding tenant future space requirements influence the ideal lease term length from the tenant's perspective

   - If tenant knows they need space for exactly 3 years, then 3-year lease term is best
   - If the tenant expects to grow steadily in size, then shorter-term leases may be preferred in expectation of a future need to expand
   - Explicit lease options on adjacent space or other space in the same building can help with such expectations
   - More uncertainty about tenant's future space needs results in greater value to the tenant in retaining flexibility in space commitments which creates greater value for explicit lease options, such as expansion options & cancellation options
   - Sublease rights are also valuable for dealing with tenant flexibility needs

Note: Merely reducing lease term lease term length does not by itself create "option value" ("right without obligation"), though it may increase flexibility and ability to conform space rent and usage to current market conditions and tenant requirements (Text is misleading on this point, p.815)

3. **The landlord's redevelopment option**
   - Lease encumbers property owner's right to redevelop
   - Shorter term lease reduces length of time for which this right is relinquished, thereby preserving more flexibility for the landlord

   For a landlord's redevelopment option in a lease contract, which part is the option writer and which party is the option buyer?
   Writer (they don't have a choice in the option and in return they earn the premium, buy out the option and pay the premium for the choice): Tenant   &   **Buyer**: Landlord

Staggered lease expirations & releasing risk..
- In properties with multiple tenants & leases…
- Don't just consider leases one at a time in isolation from each other
- Do you want all the leases in a building expiring at the same time?
- Volatility in building's future cash flow can be reduced by staggering lease expiration dates more uniformly across time
- Depending on what the future lease expiration pattern looks like a given building, this may cause the landlord to prefer either a longer or shorter lease term length than would otherwise be the case in a given deal

   Staggering expirations
   - No general implication for term length or rent term structure