THE UNIVERSITY OF QUEENSLAND
AUSTRALIA

FINM3406
Real Estate Finance

Lecture 5
Real Estate Development

Outline

- Real Estate Appraisal (Valuation)
  - Valuation methodologies – capitalisation rate (continued from Week 4)
- Real Estate Development
  - Real estate market cycles
  - Development process
  - Legislative and environmental considerations
  - Financing requirements
  - Financial model for simple development analysis – static residual valuation

Objectives

- Real Estate Appraisal (Valuation)
  - Be able to calculate the value of income producing real estate that is not currently let at market rates using the capitalisation method of valuation
- Real Estate Development
  - Describe the various stage of the real estate market cycle and how that works across sectors
  - Understand the role of finance in the real estate development process
  - Be able to produce a financial model/valuation for a simple real estate development that uses the hypothetical development method of valuation

VALUATION METHODOLOGIES

The Valuation of Varying Incomes

- **The Lessor:**
- The lessor has a right to receive rental and other income from the property under the terms of the lease. Once the lease has expired, the property reverts to the full control of the lessor who can then relet the property at the prevailing full market rental rates.

- The income derived from the lease can be capitalised to establish the value of the based on the lease term.

- The potential income at lease expiry is known as the Reversionary Income which can then be capitalised in perpetuity to establish the reversionary value of the property *at that time*.

The Valuation of Varying Incomes

- **The Lessee:**
- If the property is being rented by the lessee at a rate below the market rate, there is the potential for a profit to be made on the rent:
- For example:

Full Market Rent	*$1,000 per annum*
Passing Rent	*$800 per annum*
Profit Rent =	*$200 per annum*

- Subject to certain provisions of the lease, the lessee has the right to sub-lease the premises for the remaining term of the lease . In such cases, the lessee will become the Head-Lessee and this terminating "leasehold interest" (capitalisation of the profit rent) is the lessee's interest.

The Valuation of Varying Incomes

- There are several methods available for the valuation of varying incomes:

1 – Term and Reversion;

- This method capitalises and then aggregates the term and reversionary Incomes. The reversionary value will need to be converted to a present value.

2 – Hard Core Method;

- Under this method, income flows are dealt with as horizontal slices, with passing rent being the "core" income, and future increases due to reviews or reversions being additional slices.

3 – Shortfall Method.

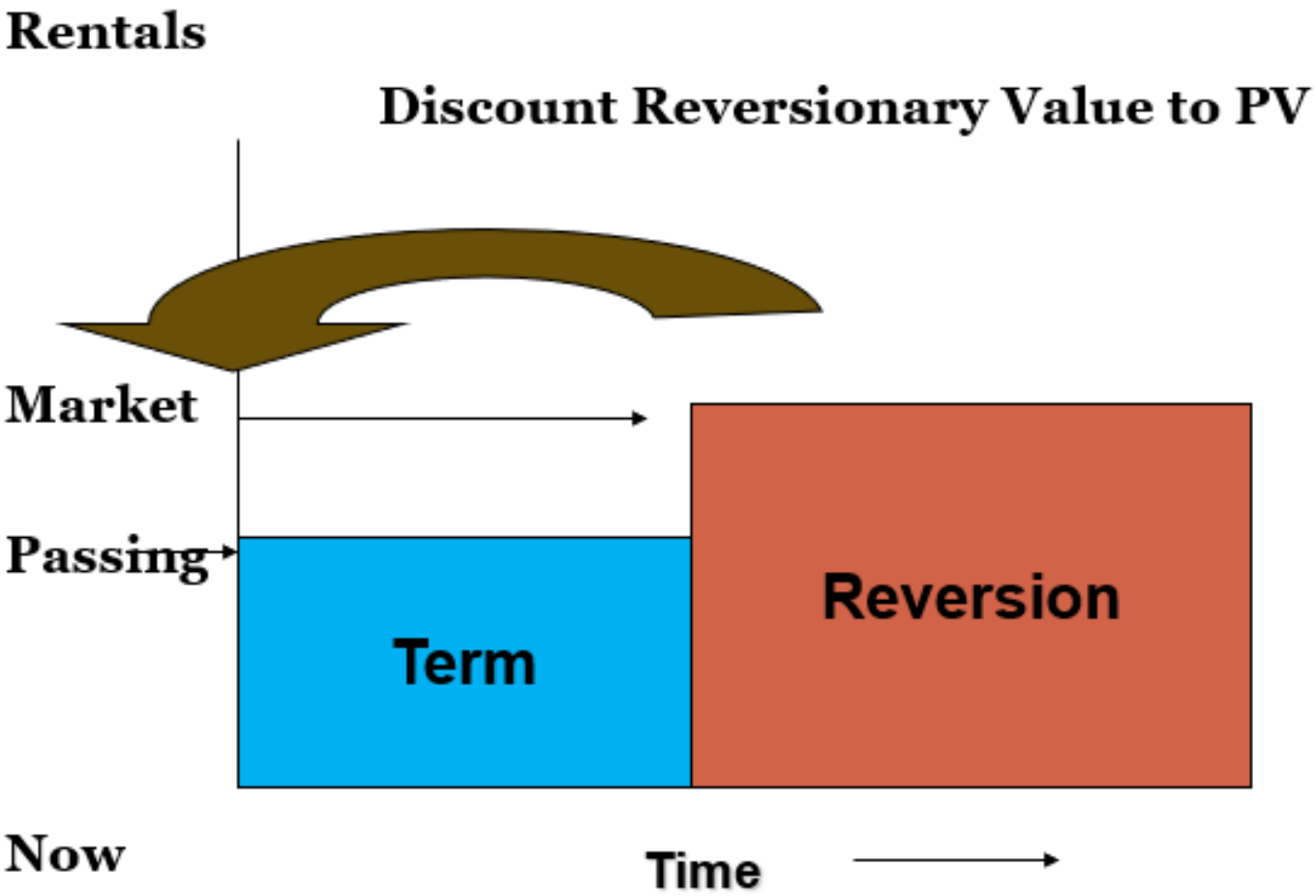
- This method calculates the "loss" of income before market rates are achieved and deducts the value so derived from full market value.

Term & Reversion

- Consider a relatively long lease term in a commercial class income producing property. The rental rates may well have been market based at the start of the lease, but over time have drifted to levels above or below market rates. This could easily happen where under the lease the rents are to be reviewed to a non -market based formula, ie to a set percentage rate or to CPI.

- This creates a problem when we need to value the freehold interest in the property. Remember, the freehold value of the property is based on the right to receive income from that property.

Term & Reversion



Term & Reversion

- As an example, consider an industrial building which is now leased for 3 years at $40,000 net pa (no outgoings). The market rent is still $50,000 pa and the Cap Rate for this property is still 8%.
- In order to establish the property value subject to the lease, we need to assess the value of the lease term and then the reversionary value, and then aggregate the two.

1st step (Term Value)

Passing Rental		$40,000pa
YP (period) for 3 years at 8%	=	2.5771
Capital Value	=	$103,084

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YP (period) for 3 years at 8%	=	2.5771
Capital Value	=	$103,084

Term & Reversion

To calculate the YP (period) for 3 years at 8%, we simply applied the PV of $1 pp formula for an amount of $1, to establish the factor to be applied to the annual net rent; ie.,

$$\text{PV of \$1 pp} = \frac{1 - (1 + i)^{-n}}{i}$$

Or, by calculator

Pmt	=	$1		
n	=	3		
i	=	8		
PV	=	?	=	2.5771

Term & Reversion

2ND Step (Reversionary Value)

Market Rental $50,000

Cap Rate 8%

$$CV = NI \times YP = \$50,000 \times \frac{100}{8}$$

$$= 50,000 \times 12.5 = \$625,000$$

However, this is the value as at lease expiry, 3 years in the future. We now must discount that amount back to a Present Value.

$$PV \text{ of } \$1 = (1 + i)^{-n}$$

$$= (1 + 0.08)^{-3}$$

Term & Reversion

By Calculator

FV = 1

n = 3

i = 8

PV = ? = 0.7938

Therefore CV = $625,000 x 0.7938 = $496,125

3rd Step

Add Term and Reversionary Values to arrive at the property value.

Capital Value = $103,084 (term) + $496,125 (reversion)

= $599,209 (Adopt $600,000)

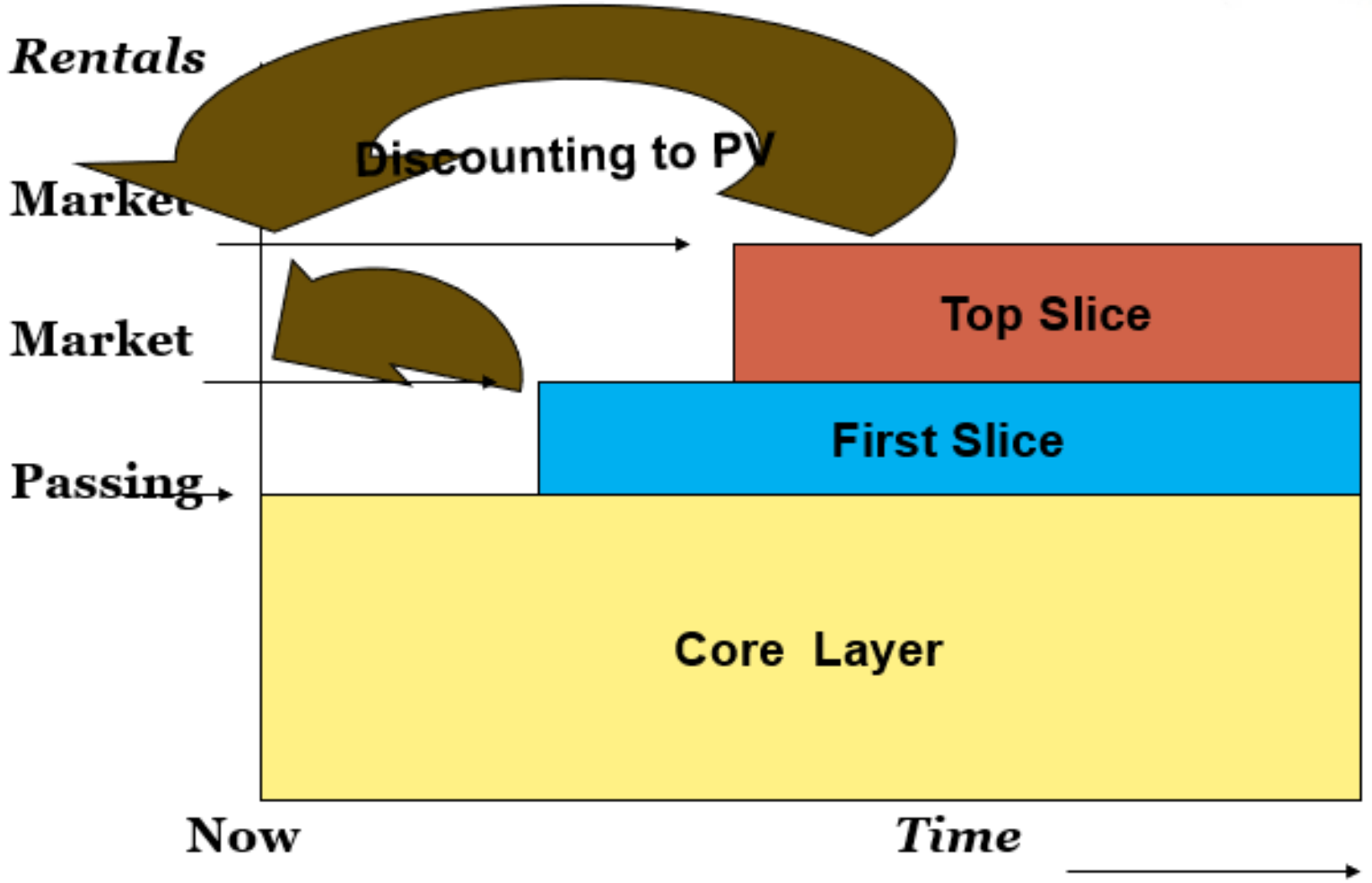
Hard Core, or Layer Method

- Income under this method is treated in horizontal slices. The passing income is the "core" income which is the most secure. Rental increases achieved after future rent reviews are then additional slices (ie 2nd slice, 3rd slice, top slice) added later and are considered to be less secure income sources.

- Each slice is valued in perpetuity, with later slices being discounted to a present value.

- This method is useful when the property being valued has multiple tenancies.

Hard Core, or Layer Method



Hard Core, or Layer Method

- 15 year structured lease at the following rental rates:
  - 1st 5 years: $100,000 pa
  - 2nd 5 years: $150,000 pa
  - 3rd 5 years: $200,000 pa
  - then reversion (at year 15) to Full Market Rental at $250,000 pa
- We should be able to value this income flow using the Hard Core method at a Cap Rate of 10%.
- We need to capitalise each layer in perpetuity, then bring each to a Present Value and aggregate to obtain the total value.

Hard Core, or Layer Method

1st Step - Find the capital value of each layer

Layer 1

CV = NI x YP = $100,000 x 10

= $1,000,000

Layer 2

CV = NI x YP = $50,000 x 10

= $500,000

Layer 3

CV = Ni x YP = $50,000 x 10

= $500,000

Layer 4

CV = NI x YP = $50,000 X 10

= $500,000

Hard Core, or Layer Method

2ND Step - Bring each of the future values back to a present value using the PV of $1 formula, or by calculator:

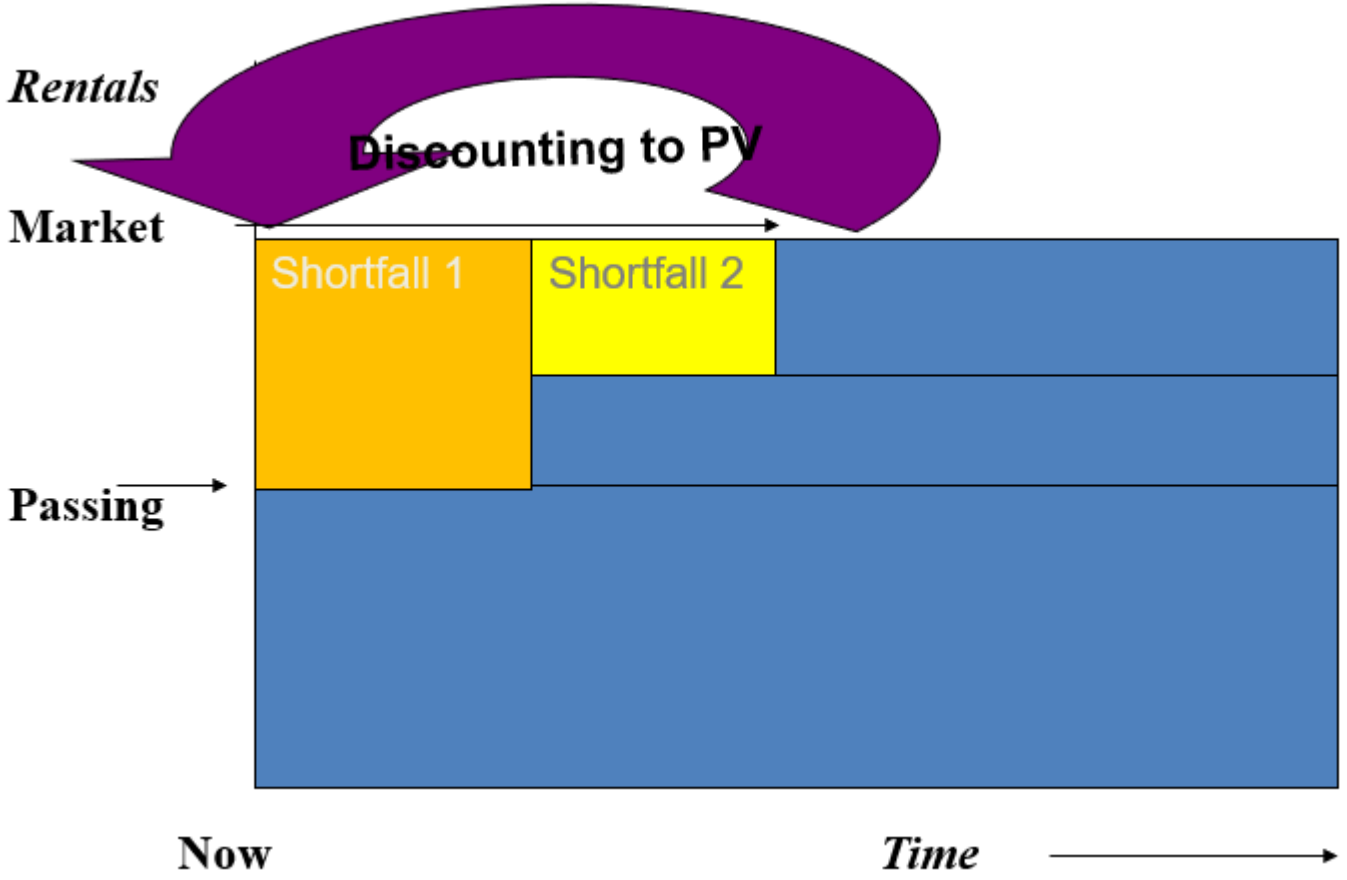
FV = amount shown
n = period shown
i = 10
PV = ?

	FV	Period	PV
Layer 1	0		$1,000,000
Layer 2	$500,000	5 yrs	$310,460
Layer 3	$500,000	10yrs	$192,772
Layer 4	$500,000	15 yrs	$119,696
TOTAL VALUE			$1,622,928

Shortfall Method

- This Method essentially values the loss or profit above or below market to add or subtract from the market capitalisation
- Value a property subject to a 10 year structured lease at the following rental rates:
  - 1st 5 years: $100,000 pa
  - 2nd 5 years: $150,000 pa
  - then reversion to Full Market Rental at $200,000 pa
- Cap Rate of 10%.

Shortfall Method



Shortfall Method

1st Step - Find the capital value of Shortfall 1

PV of $100,000 pa being received for 5 years

PMT	=	$100,000	
n	=	5	
i	=	10	
PV	=	?	= $379,079

Shortfall Method

2nd Step - Find the capital value of Shortfall 2

PV of $50,000 pa being received for 5 years from Year 10

PMT	=	$50 000	
n	=	5	
i	=	10	
PV	=	?	= $ 189 539 (FV 5 Years)
FV	=	$ 189 539	
n	=	5	
i	=	10	
PV	=	?	= $ 117 688

Shortfall Method

3rd Step - Find the capital value of property assuming no lease

$200000 / .1 = $ 2,000,000

Subtract Rental Shortfall

Shortfall 1 - $379,079
Shortfall 2 - $117,688

CV = $ 1,503,233

REAL ESTATE DEVELOPMENT

The Development Process

"Property development is a process that involves changing or intensifying the use of land to produce buildings for occupation"

"It is not the buying and selling of land for a profit: land is only one of the raw materials used."

Cadman and Topping

Nature of Development Process

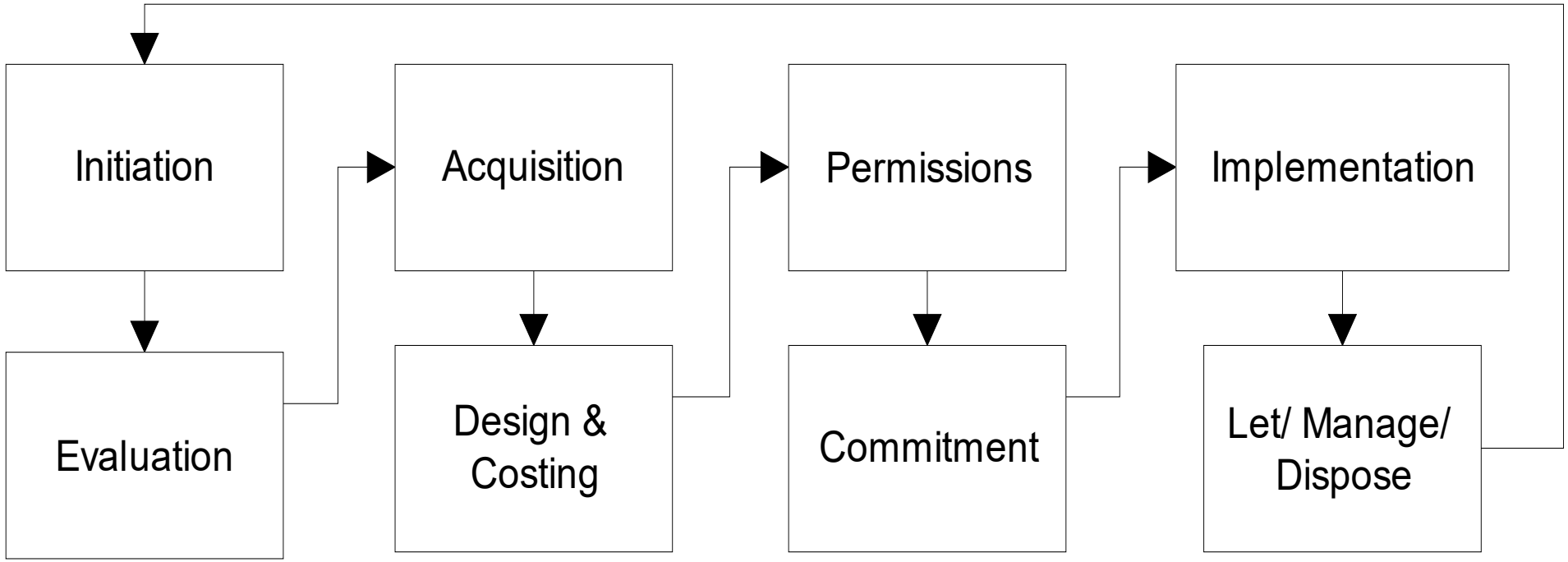
Creative

- Often intuitive
- Especially up-front
- Assimilate multiple inputs
- Importance of networks

Rational

- Often pain-staking
- Multiple constraints to be satisfied
- Optimisation by options and feasibility studies

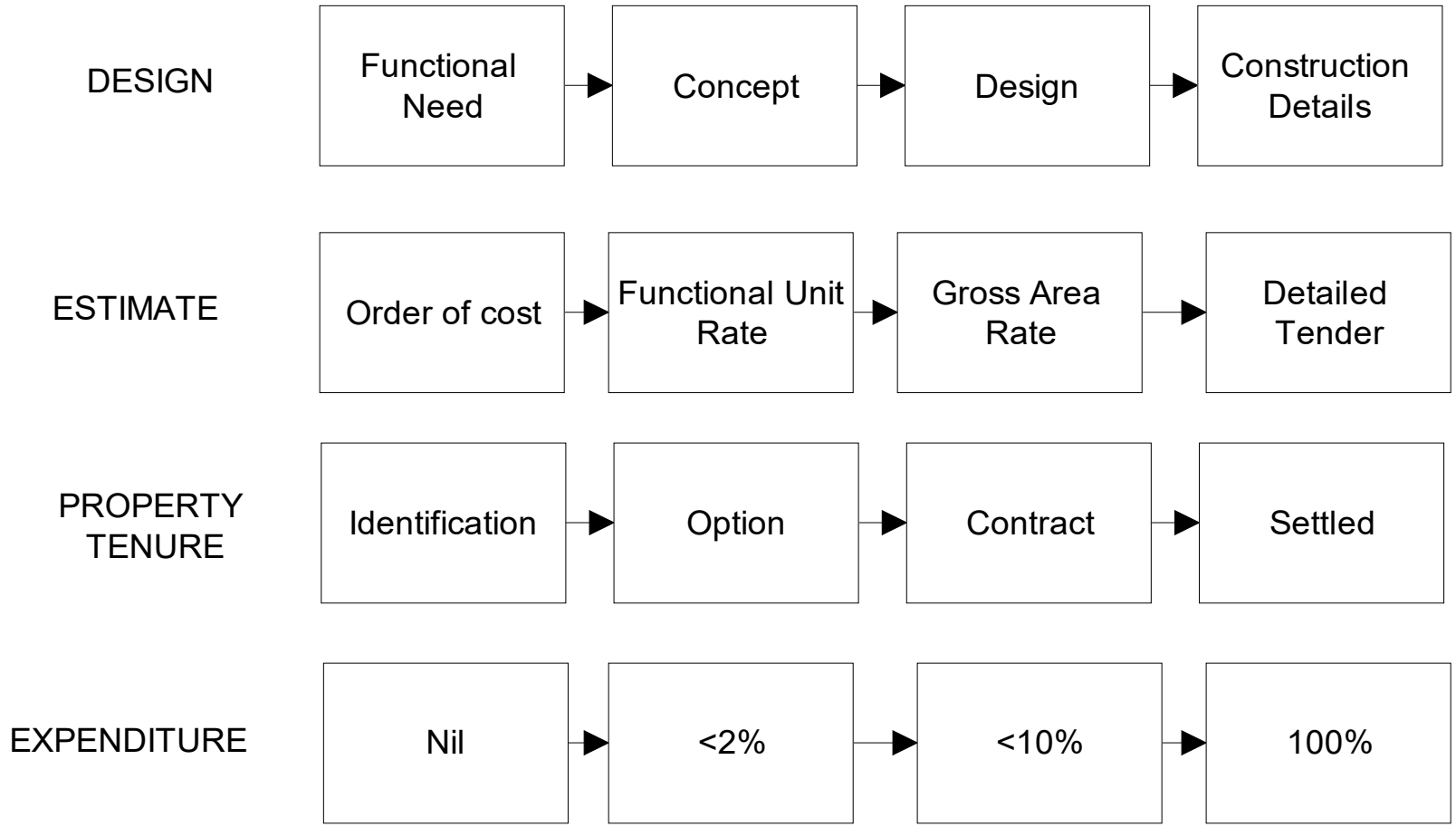
Development as a Process



Context of Development

- Driven by “organic” growth
- Regulated by government (use, size, appearance, facilities, neighbourliness)
- Commercial/ political implications
- Market cycles
- High end of risk/ reward spectrum

Development as a Progression



Development Options

- Site selection
- Scale of improvements
- Single or mixed use
- Design options
- Market positioning
- Timing
- Staging

Development Options (contd)

- Finance options
- Structuring options
- Resourcing options

Project Initiation

Can be...

- Demand driven
- Supply driven
- Driven by regulatory change
- Success when all these intersect

Sources of Initiation

- Freelance initiation
- Organic Site Availability
- Site Amalgamation
- Formal invitations
  - Land disposal motive
  - End user driven
  - Government Surplus

Market Fundamentals

- Timing
- Pricing/rents
- External economic settings
- Capital availability
- Regional and local issues

Timing Issues

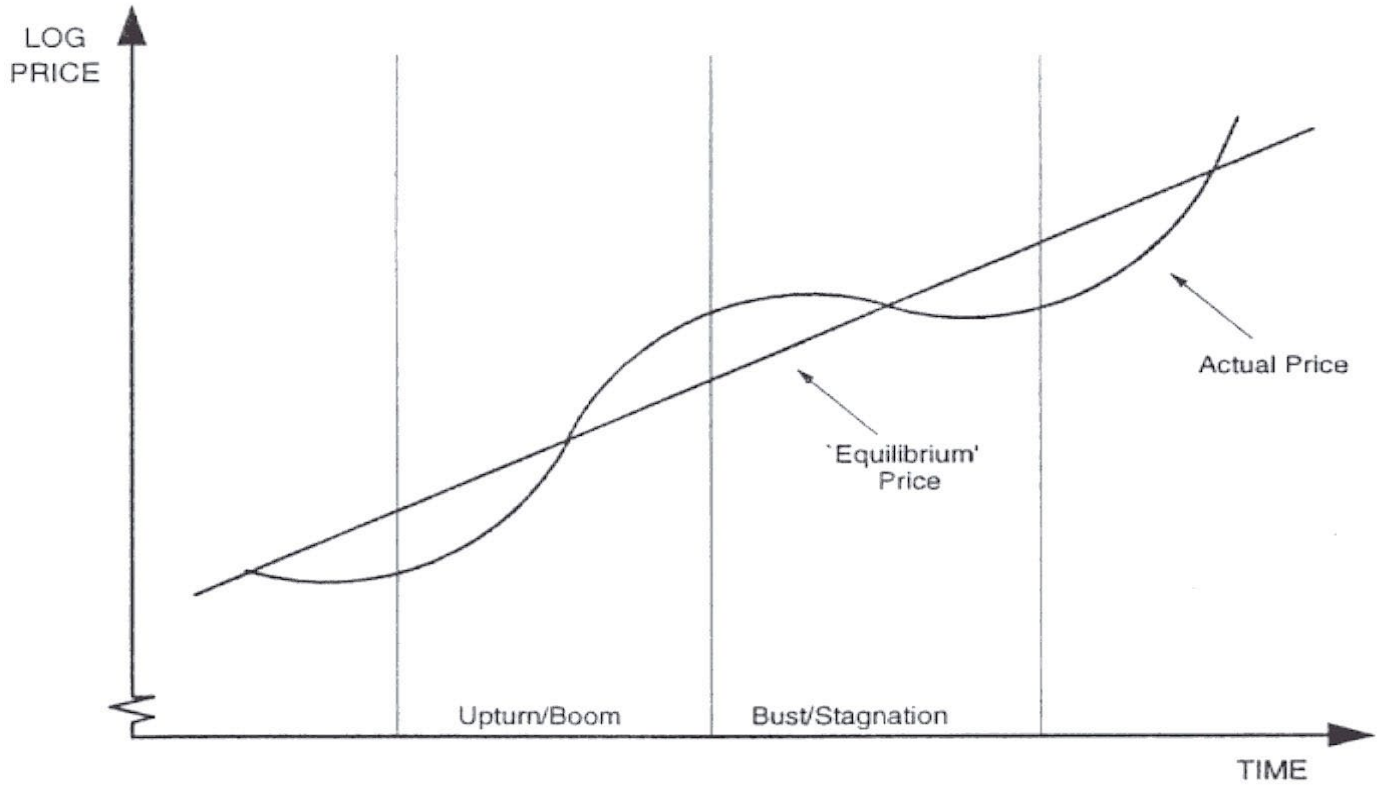
- Property market is cyclical
- Similar to all financial markets
- Each market/sector has its own cycle characteristics
- Multiple economic drivers

Market Cycles

(Source: BIS Shrapnel - *Building in Australia*, 20th Edition)

Chart 1.1

PRICE AND ACTIVITY IN THE BUILDING INVESTMENT CYCLE



The Building Cycle

Natural stock cycle

- Fuelled by uncertainty and long lead times

Uncertainty in:

- Underlying demand
- Building activity
- Prospective yields

Cycle - Upturn

- New demand emerges
- Rental prices increase
- Increasing yields attract investors
- Sale prices and activities to rise
- Attracts yield-seeking investment

Cycle - Boom

- Entry of growth capital
- Volatile investment flows
- Rising prices attract new investors, further raising prices
- Developers enter as margins improve
- Over-heated - activity overshoots
- Overvalued prices lower yields

Cycle - Bust

- Oversupply & low rental yields
- Yield-seeking investors withdraw
- Sales, prices & activity fall
- Average prices distorted by forced sales
- Prices flatten (fall in real terms)
- Activity very low as prices below vendor's expectations

Cycle - Stagnation

- Activities stabilise at lower levels
- Excess stocks absorbed over time
- Lasts until demand gets ahead of stock levels

Cycle Characteristics

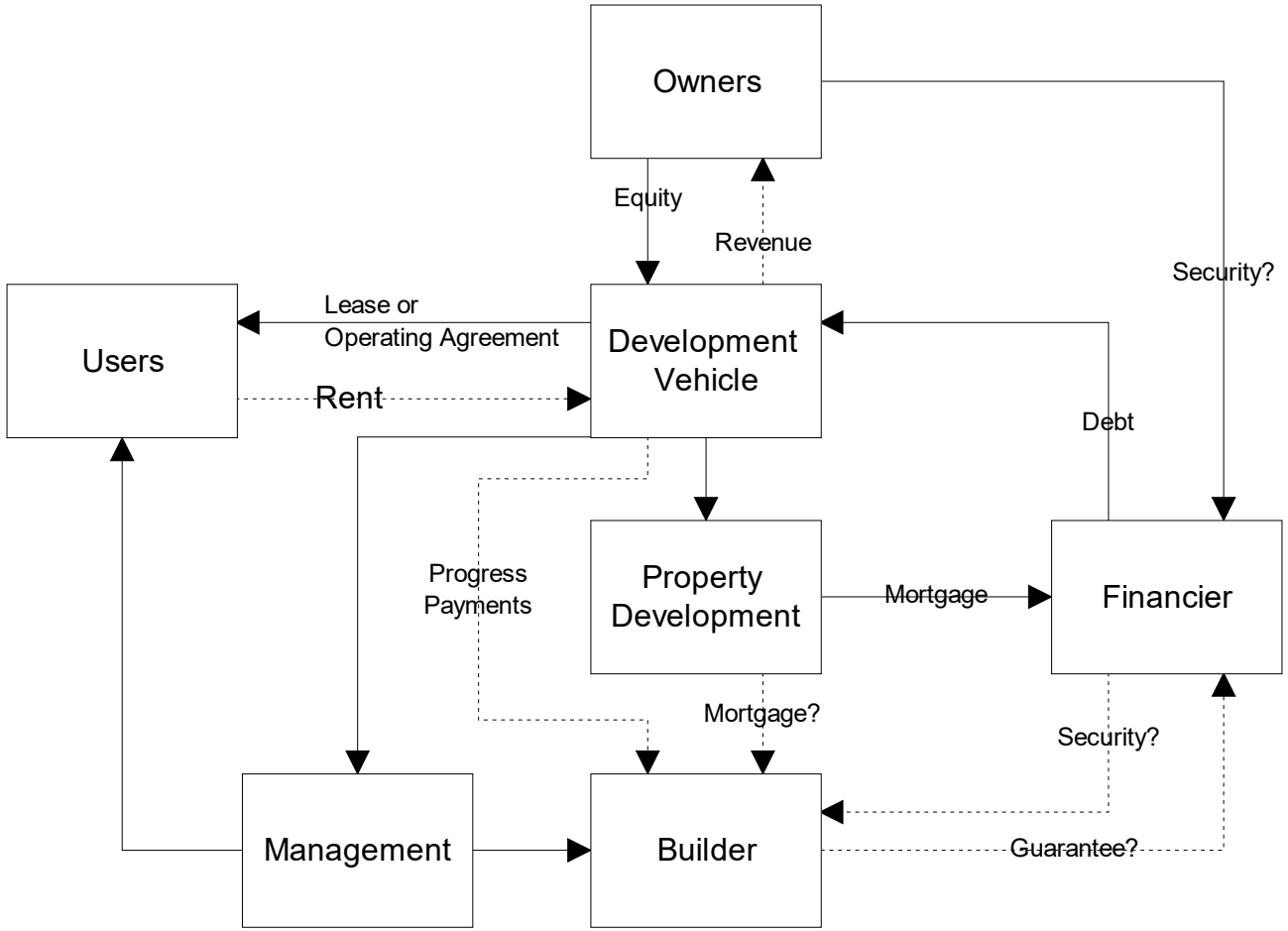
Dwellings

- 5-8 years
- Activity upturns of 50-80%

Offices

- up to 15 years
- Activity by 400% during upturn
- Boom can last 6 years
- Price rises of 30-80%

Organisational Structure



Stages of the Building Design Process

- Concept design
- Schematic design
- Developed design
- Construction documentation

Concept Design

- Site master planning
- “Block” planning (locate and size functional units/ departments)
- Building form (area and number of floors)
- Main circulation paths

Schematic Design

- Entry/exit traffic routes defined
- Arrangement of rooms within buildings/apartments
- Main circulation routes and sizes
- Main vertical circulation concept & location
- Plant areas located and approx areas
- Floor to floor height
- Mechanical plant concept

Design Development

- Dimensioned site planning
- Dimensioned floor plans
- Plant areas allocated and main equipment located
- Define and size vertical a/c risers, plumbing ducts, electrical routes

Construction Documentation

- Detailed design
- Specifications
- Schedules
- Sufficient for measure, tender and construction at trade level
- Stage that requires greatest input (time and fees)

Costing at Each Stage of Design

Concept:	$/m2 based on functional use
Schematic:	$/m2 based on type of construction
Developed Design:	Elemental cost estimate
Construction Documents:	Detailed BOQ and trade estimate

Source of Cost Data

Functional area rates and elemental unit rates:

- QS data derived from historical costs (eg Rider's Digest, Rawlinsons')
- Contractor data

Trade estimates:

- QS data from recent priced BOQs
- Contractor data

Consultant Disciplines - Design

- Architect
- Specialist planner
- Process designer
- Contamination expert
- Traffic
- Structural engineer
- Civil engineer
- Façade engineer
- Geotechnical engineer

Consultant Disciplines - Services

- Mechanical
- Electrical
- Communications
- Hydraulics
- Fire- electrical
- Fire - water
- Vertical transportation
- Specialist lighting
- Audio-visual
- Special equipment (kitchens, laundries etc

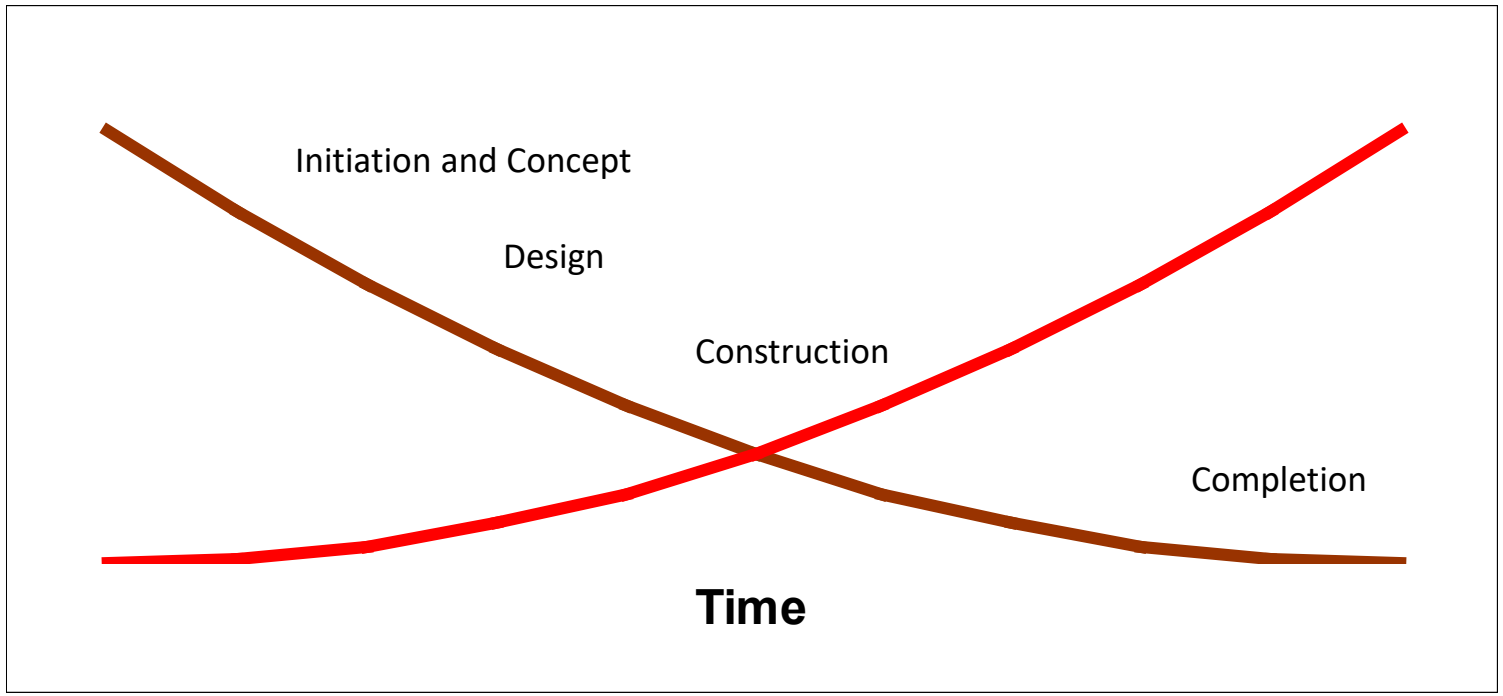
Consultants - Non Design

- Planning & approvals
- Code compliance
- Survey
- Cost planner/ QS
- Programmer
- Valuer
- Marketing
- Taxation
- Legal
- Public/ government/ media relations
- Body corporate

Ability to Reduce Costs

Ability to Influence Performance/ Results

Cost to Change



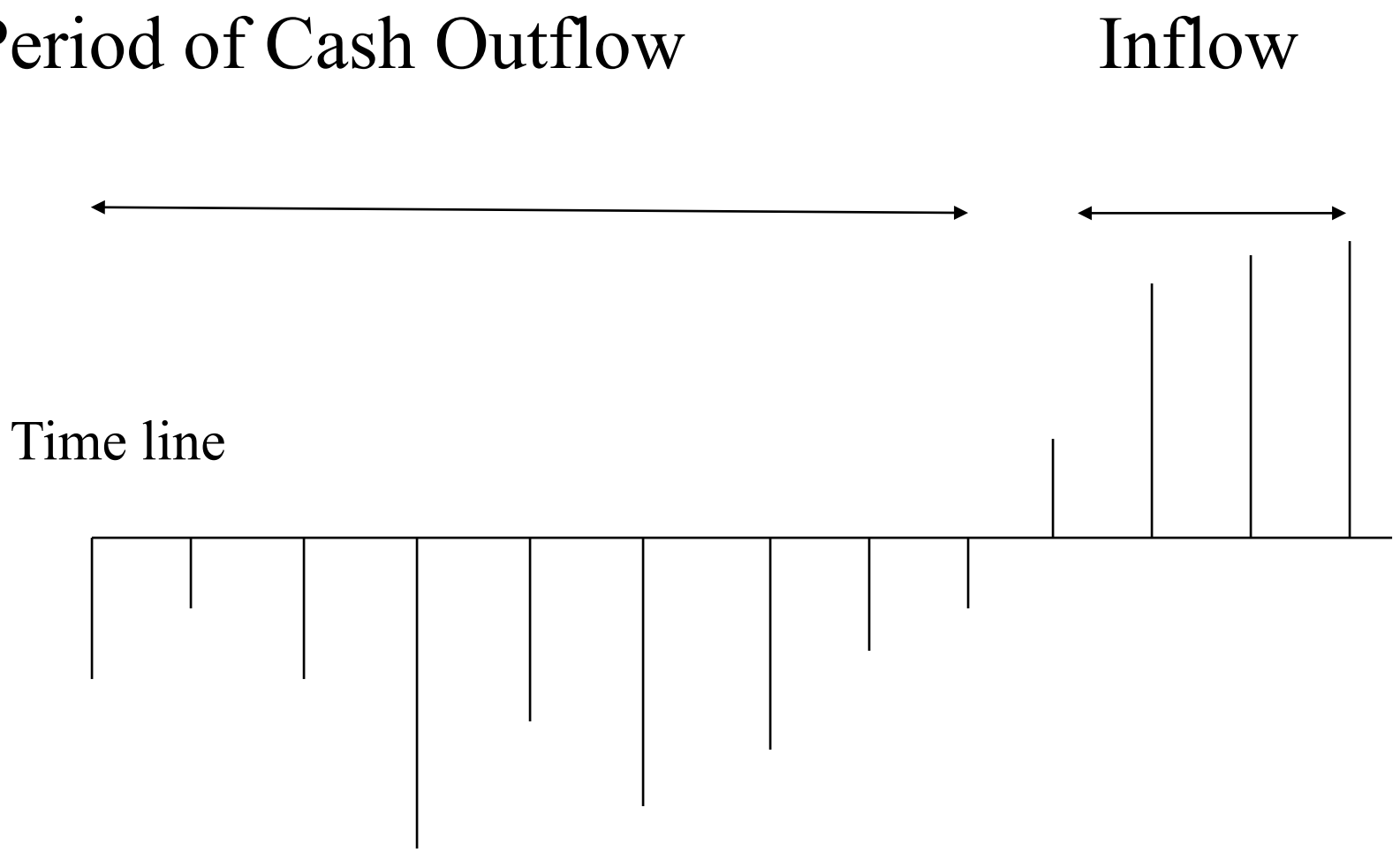
HYPOTHETICAL DEVELOPMENT MODEL

Hypothetical Development Equation

- "Value of Finished Product" = land value + dev costs + finance costs + profit

- Value of Land = Value of Finished Product that is Gross Realisation – (dev costs + finance costs + profit)

Typical Cash Flow Profile



Hypothetical Development Method Example

- **Gross Realisation**

  Less Selling and Legal Costs

- **Net Realisation**

  Less Profit and Risk/Development Margin
  Less Development Costs
  Less Interest on Development
  Less Interest on Land
  Less Acquisition Costs

- **LAND VALUE**

Hypothetical Development Method Example

Gross realisations:			
70 lots @ $70,000 per lot			4,900,000
Less:			
Selling costs @ $3,100 per lot			217,000
Net realisations:			4,683,000
Less profit and risk allowance (20% of outlay)			
$4,683,000 x (20 ÷ 120)			780,500
Development costs, land value and interest			3,902,500
Less development costs:			
Water and sewerage headworks,	175,000		
Earthworks, drainage, road construction	497,000		
Undergrounding power	55,650		
Surveying fees	31,500		
Planning fees	10,500		
Council fees	4,900		
Engineering design and supervision	68,250	842,800	
Other Costs:			
Overhead–say 4% of sales		196,000	
Open space contribution		58,800	
Sub–total:		1,097,600	
Contingencies –say 5% of $1,097,600		54,880	
		1,152,480	
Interest and Property Taxes:			
Interest on development costs @ 9% for 12 months: $1,152,480 x 0.09		103,723	
Rates and taxes for 2 years allow $1,050 per lot			
$1,050 x 70 x 2 years		147,000	1,403,203
Land value, acquisition costs and interest on land purchase			2,499,297
Less interest on land 9% for 2 years:			
$2,499,297 x (18 ÷ 118)			381,249
Land value plus acquisition costs			2,118,048
Less acquisition costs @ 3%: $2,188,048 x (3 ÷ 103)			61,691
Estimated land value:			2,056,357

Hypothetical Development Method

a) Step 1 - Assess Gross Realisations

- Direct comparison approach
- Local market value
- Allowances
  - Internal Area
  - Location
  - Views
  - Quality of Fit out
  - Onsite Amenities
  - Car Accommodation
  - Number of units in development
  - Aspect

Hypothetical Development Method

b) Step 2 - Assess Cost Estimates

- Ideally provided by Quantity Surveyor/Engineer including:

- Construction costs
- Council contributions
- Professional fees
- Contingency
- Rates and land tax
- Finance cost (application & interest)
- Stamp duty purchase and sale
- Agent's commission
- GST (Margin Scheme?)

Hypothetical Development Method

c) Step 3 – Estimate Sale Rate

- Presales
- Derived from other developments
- Establish demand for product in that area - will be partly determined by price

d) Step 4 – Estimate Holding Costs - Interest

Hypothetical Development Method

e) Step 5 - Select Development Margin

- Factors
  - Location
  - Risk
  - Development Approvals
  - Presales
  - Derived from Analysis of Sales

Information from external sources

- Planning
- Environmental
- Architectural
- Engineering (traffic, civil etc)
- Quantity Surveyor
- Market analysis
- Marketing
- Financial

Risk profiling your project

The major risks in relation to any project generally relate to the following areas:

a) Planning
b) Construction
c) Sales/leasing
d) Financial

Risk profiling

Planning

a) Delays
b) Not achieving expected outcome
c) Increased costs of imposed by planning outcomes

Construction

a) Higher than expected costs, including escalation prior to commencement and during construction
b) Failure of your chosen contractor during construction
c) Demolition uncovering unforseen environmental issues

Risk profiling

Sales / leasing / marketing

a) Rate of sale/leasing during and post construction
b) Settlement failure of presales / pre-letting ("fallover" risk)
c) Payment of commissions (prior to completion financial planners)
d) Market incentives e.g. rental guarantees
e) Marketing budgets

Financial

a) Increased cost of funds

How much detail do I need?

- Most common method of used to appraise development schemes.
- Can be as simplistic or as complex as the valuer chooses.
- Important that a valuers skill and experience is used to estimate or assume the differing variables.
- Hypothetical Development methods can be utilised to assess any type of development property.

Profit and Risk

- Profit and Risk factor determination - That is the profit required in relation to the risk of capital.
- Various factors are considered by purchasers and include:

- Complexity of the development, strength of the market, profit margins, interest rates, competition, size of development…
- Higher the risk / Higher the profit.

Profit and Risk

- Rates for profit and risk are best derived from market evidence in the form of actual profits made by subdividers in the market place.

- Analysis of englobo sales of comparable properties is the most reliable source of evidence.

Hypothetical Valuation

What You Need To Know!!!!

- What? Type of Product / Size / Quality
- How Many? No of units/blocks of land etc
- How Much? Sales Price
- How Fast? Approval, Development, Sales Rates
- How Much? Profit/risk rate
- What? Interest Rate Applicable

Hypothetical Valuation

- What? Medium Density Residential Units
- How Many? 8 Units
- How Much? $450,000/unit
  $200,000/lot production
- How Fast? Sales rate = 2 units/month
  approval period = 6 months
  development period = 8 months
  selling period = 4 months
- How much profit/risk? 15%
- Interest Rate Applicable? 6%

Hypothetical Valuation - Workings

- **Gross Realisation**

8 units x $450 000	**$3,600,000**
Less Selling Costs @ 5%	$180,000
• **Net Realisation**	**$3,420,000**
Less Profit and Risk	$446,087
@ 15% of outlays (%/100+% x Net Realisation)	
Less Development Costs	$1,600,000
@ $200000 / unit	
Less Interest on Dev Costs	$80,000
(Dev period + 1/2 Sell period)	
10 Months @ 6% pa	
• **Land Value, acq'n costs and interest on land**	**$ 1,293,913**

CONT.

Hypothetical Valuation - Workings

Less Interest - Land Component	
(Appr + Dev Period + 1/2 Sell Period)	
16 months at 6%pa	$97,653
(%/100+%)x(LV+AC+Int on land) x Period	
• **Land Value and acq'n costs**	**$1,196,260**
Less Acquisition Costs - 4%	
(%/100+%)x Land Value and acq'n costs	$ 46,010
• **Raw Land Value**	**$1,150,250**
• **Adopt**	**$1.15 Million**

Hypothetical Development Methodology

Advantages

- Reflects intricacies of the site
- Reflects services and costs
- Reflection of a purchaser's decision process

Disadvantages

- Sensitive to changes in gross realisations/cost estimates, sale rates
- Difficult to establish market driven development margins
- Making future predictions which are subject to external influences

Questions?