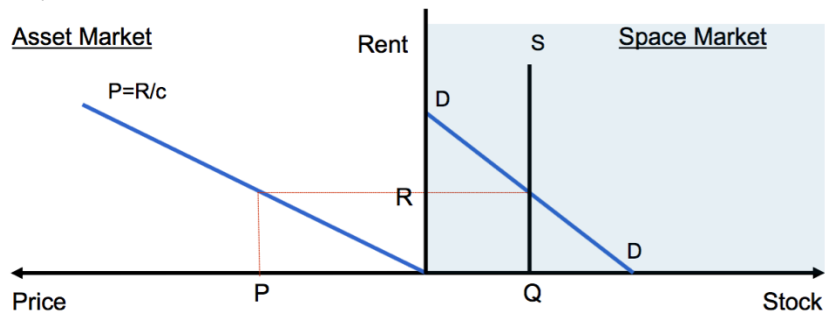


Property Investment and Development Finance

Week One: Intro and Understanding the Macro Market

- What does any model have to explain?
 - o Observe market changes, variables that affect the price cross sectional
- Modelling Real Estate Asset Pricing
 - o The property market is a set of interrelated markets, these include:
 - The rental market for space
 - The financial market for property assets
 - The market for new development
 - The land market
 - o Pricing involves the first two of these: rent and property assets
- Rental market for space
 - o The rental market for space is the market for space as a factor of production
 - o It is a market for the flow of services from a stock of space
 - o The space may be either rented space or owner-occupied space
 - Demand and supply
 - Relation to property growth and construction, eg flow of services
- Demand for and Supply of Space



Asset (property) market: Pricing real estate assets

- o Price = rent/constant
- o The demand of space depends on:
 - The rent
 - Firms output levels
 - The technology of space use, this is often summarised by the space per worker. How office space is used
- o The stock of space (supply) is fixed in the short run
 - Because of the longevity of the building stock, in most markets, changes in supply are a small proportion of the total stock of space
- Pricing cash flows in the asset market (cap rate)
 - o The most common way to express the relationship between assets and rental prices is the capitalisation rate
 - o Also known as the overall rate – OAR

$$\text{Cap Rate} = \frac{\text{Net Rental Income}}{\text{Asset Price}} \sigma$$

- o Components of cap rate

$$\text{Cap Rate} = R + RP(\sigma) - E(g)$$

- Where
 - R = opp cost of capital
 - E(g) = growth expectations
 - σ = risk

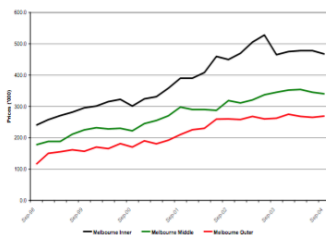


Fig 1: House prices tend to co-move within an urban area

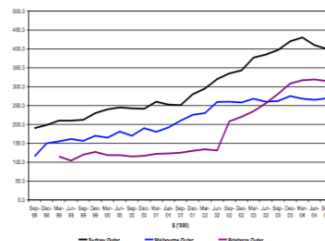


Fig 2: House prices move cyclically but may have secular differences across markets

- How do asset prices promote supply?
 - o The real economy side of the story
 - o Getting to 'go'

- Development responds to economic growth
- No development takes place unless the value of the new building is greater than the full cost of the construction
 - Value – Construction Cost = NPV ≥ 0
 - Therefore, construction increases as property prices rise
 - Go in and build in the market when prices increase as the best opp to maximise NPV
- As property values increase, more projects cross feasibility threshold for development are built
 - This means that the rate of construction increases with property prices
 - Heterogeneity of development opportunities smooths the curves
 - Heterogeneity – the quality or state of being diverse in character or content

- Real Estate Development: Highly Volatile

- Because investment is stop and go, development is highly volatile

- Overview of the Four Quadrant Model

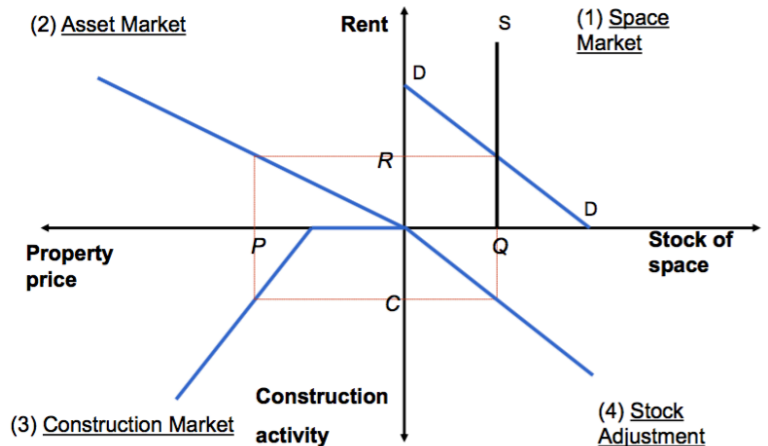
- Four Quadrant Model links

- The market for space (rent) [short run]
- The market for property (assets) [?]
- The construction market [long run]

- Red line is the state of equilibrium
- Ideal situation, does not normally exist, more of a pursuit to equilibrium
- Level of supply that the market requires in equilibrium, but not always the case

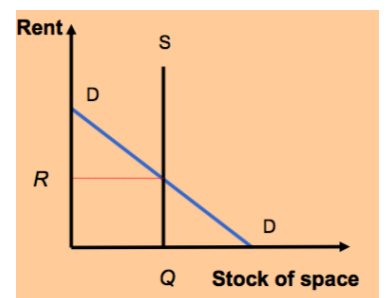
- How is equilibrium established?

- Logical structure of the model
- Stock of space (m²) today
 - Rent (m²) today
 - Price of property (m²) today
 - Construction activity (m²) today
 - Stock of space (m²) tomorrow
 - Tomorrow, as this is the determinant of equilibrium as determined by the supply and demand in the market



- Quadrant 1

- The demand for space depends on:
 - The rent
 - The user's output level ("needs")
 - The technology of space use, often summarised by the space needed per worker
- The supply (stock) of space is fixed in the short run
 - Buildings take a long time to construct
 - Buildings last a long time
 - Nobody demolishes large sky scrapers
 - Changes in the supply of space are usually only a small proportion of the total stock of space
- Mechanisms
 - Economic growth
 - Curve DD shifts outward
 - More space demanded for same rent
 - Economic contraction
 - Curve DD shifts inwards
 - In equilibrium
 - Rent is determined such that demand is equal to the stock of space



- Quadrant 2

- The most common way to express the relationship between property prices and rents in the capitalisation rate

$$\text{Capitalisation rate } (r) = \frac{\text{Rent for coming year } (R_1)}{\text{Today's property price } (P_0)}$$

- Of course, given a cap rate, we can say:

$$\text{Property price} = \frac{\text{Rent for coming year}}{\text{Capitalisation rate}}$$

$$\text{ie } P_0 = \frac{R_1}{r}$$

- The equation shows that the: