

Semester 1: 2018

PROPERTY ANALYSIS

Deakin University, Burwood

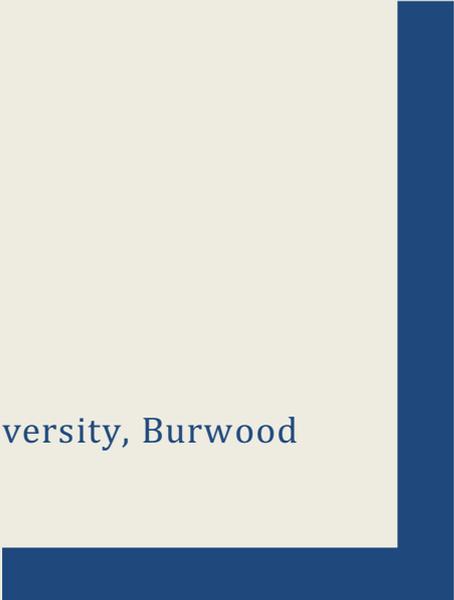


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Week 1: Forecasting Property Performance

Introduction

Investment objectives can be divided into 2 parts:

1. Growth – long term horizon with no immediate need for the investment funds (Accumulated phase).
2. Income – short term horizon and on-going need to use the cash generated from the investment (Yield phase).

Investment constraints

- Risk
- Liquidity
- Time horizon
- Expertise
- Size
- Capital Constraint

Asset Class Relationships

Equities, Property, Fixed Interest and Cash.

Why invest in Real Estate?

1. Diversification
2. Yield
3. Perceived Lower Risk
4. Capital Growth
5. Ability to tailor risk real estate exposure to investment objectives
6. Ability to add leverage (leverage returns)
7. Tax Advantages (Negative gearing, depreciation, CGT)

The Dynamics of Property Markets

An understanding of the dynamics of the property markets is required before any forecasting is performed. Three key concepts:

1. Space markets and capital markets

The Space Market (occupation of properties, either owners or tenants) – rents established by demand for tenants and supply of space.

Capital market (investors) - the yields, capitalisation rates and other rates of return are determined by the capital markets.

2. Long term trends, medium term cycles and short-term movements in rents and values

Long term = greater than 5 years (demographic, economic, social factors as well as obsolescence)

Medium term = more than 1, but less than 5 years

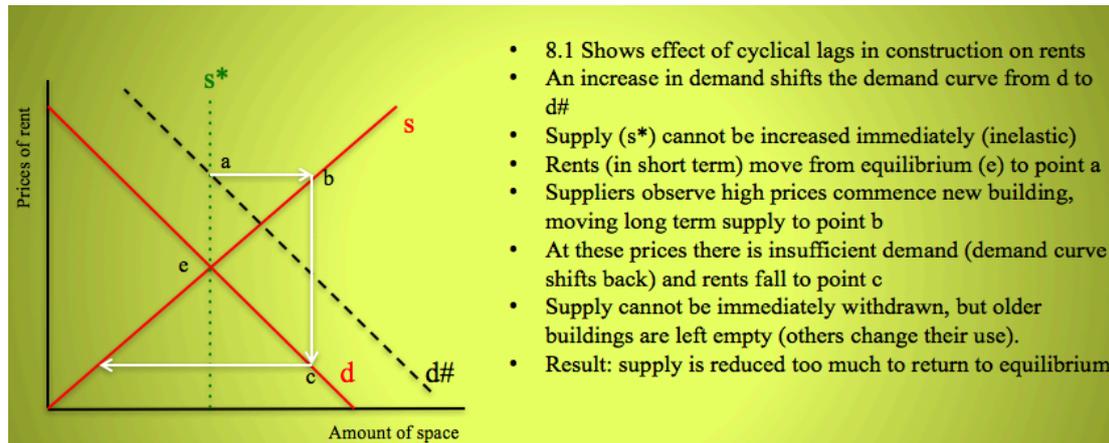
Short term = up to 1 year

Markets are sometimes pushed in different directions by long, medium and short-term factors.

3. Geographical

Construction and Business Cycles

Many aspects of property investment are characterised by cycles. The most pronounced is the building cycle – the length of time between decision to build and completion.



Capital Markets

For investors, property assets = claims to future cash flows. Cash is cash, property competes as an investment option with other investment alternatives (e.g. shares, bonds), therefore it is part of the broader capital market.

The amount of capital available for property investment is determined by:

1. The rate of capital creation across the economy
2. The willingness of financial and investment institutions to place money in properties, rather than other assets

Components of Cash Flow Forecasts

- This section focuses on the components of a property investment that are projected for cash flow analysis.
- Rental income and resale value are major components
- However, links between short term changes in rents, vacancies and time on market also need to be considered
- Long term variables (inflation, economic growth) also have impacts on cash flows.

Forecasting market and background variables

Inflation

Inflation impacts property investment analysis in 3 ways:

1. Impacts the discount rate (higher inflation = higher required return)
2. Property is not a hedge against unexpected inflation, therefore risk the real return will be eroded by unexpected inflation
3. Inflation influences many of the variables that determine the income stream

Economic Growth

- Impacts on rents, vacancies and property values
- The relationship between economic growth and property returns is ill-defined
- Thus, for forecasting there is need to identify if the forecasts are based on high, medium or low economic growth estimates
- ABS provides regular stats that can be used to access potential economic growth

Vacancy Rates

- The market vacancy rate is the best short-term predictor of changes in rents, it is important to focus on submarkets than broader markets vacancies.
- Vacancies rates have a close relation with rental values
- For example: increase in market vacancies is a warning that rental growth will slow or even reverse in the short term because more properties are on the market meaning less demand > lower prices.

Construction

- Current vacancy shows immediate supply, a shortage trigger construction
- In the medium-term supply will be increased, thus current vacancy plus buildings under construction give an approximation of changes in stock.

Projecting Rental Income

	First period	Subsequent periods	
Lease rent (Step 1)	From lease & tenancy schedule	Changes based on lease provisions	Market rent when lease permits
Market rent	From comparisons with recent lettings (Step 2)	Forecasts based on market dynamics (Step 3)	
Recoverable expenses	Add operating expenses that are recoverable from the tenants (Step 4). Project the property expenses forward (Step 5)		
Vacancy	Loss to vacancy & re-letting costs at lease expiry (Step 6)		
Property expenses	Estimate & project the statutory charges & operating expenses, including those recovered from tenants (Steps 4 & 5)		
Net rental income	Lease rent, less vacancy & property expenses (Step 7)		

Resale Value Estimation

Resale value can be estimated two ways:

1. As a percentage change in value between purchase and resale
2. Discounting the anticipated/future income from date of resale.

Change in Value

- Method based on past pattern of price changes in the submarket
- The past pattern is generally based on price indices
- Need to be caution when using indices because if they are not accurate this can impact price changes
- In particular, most indices ignore the change in the quality of the properties and obsolescence.

Capitalised Resale Value

- Method involves discounting net rental income after resale
- Call this "capitalising the net income immediately after resale" at a current capitalisation rate

Cap rate is determined by:

- Current capitalisation rates
- Capital market cycles
- Obsolescence

Cap Resale Value = Net Rental Income

Cap Rate

Summary

- An understanding of the forces that impact trends, structural changes, cycles and short-term movement in the property area is important for investment analysis.
- Examined the impact of construction and business cycles
- The relationship between the space market and capital market is important to understand in property investments
- Also looked at how to forecast market rents and re-sale valuations.

Week 2: Statistical Analysis of Property Markets

Introduction

We are discussing the analysis of property markets, which involves understanding and predicting the drivers of property market fundamentals. We can use statistical analysis of historic data to:

- Describe the information
- Identify trends, patterns and relationships
- Develop predictive models and run scenarios to help inform decision making

Basic Statistical Concepts and Terms

General terms describing data:

Population – all the items in a specific category

Sample – part of the population, from which conclusions about a population can be drawn

Variate – one item in a population

Measures of *central tendency* used to identify the typical variate in a population:

Mean – average (sum of all variates/no. of variates)

Median – divides the variates into two equal halves

Mode – variate that appears most frequently

Measures of *variation*:

Range – difference between the highest and lowest variates

Standard Deviation – measure of variability around the mean

Variance – square of standard deviation

Regression Analysis

What is Regression Analysis?

Measures the impact of one or more independent variables on a single dependent variable. There are two types of variables in a regression analysis:

- Dependent Variable: the variable that will be measured (e.g. Sale Price)
- Independent Variable: variable that may have an impact on the dependent variable (e.g. Land Size)

Models past behaviour to predict future behaviour – assumes normal distribution, linear relationship, no significant outliers, independence of observations, errors normally distributed.

Assessing the Strength of the Model

There are *three statistics* that can assess the models fit:

Standard error of estimates

- Standard error of estimates is derived from the sum of all the squared errors (SSE) in the model, that is how far away the observation is from the line of best fit. Once these are all summed, if the value is lower this indicates a good set of data as there is less dispersion away from the line of best fit.
- Low SSE: Model is a good fit
- High SSE: Model is not a good fit

Coefficient of determination

- Provides an approximate percentage of the variation in the dependant variable which is explained by the model.
- Measure of efficiency of the equation (normally between 0-1)
- $R^2 = 0$ means there is no relationship
- $R^2 = 1$ means all the points fall on the regression line, perfect prediction

F-test of the analysis of variance

- Ratio of two variances
- Variances are a measure of dispersion, or how far the data plots are away from the mean
- A large value of F indicates that most of the variation in the dependent variable (y) is explained by the regression model/equation and thus the model is useful

To examine the importance and impact the independent variables have on the dependent we look at:

- The coefficient
- The t-test and p-value related to the coefficient
- A p-value of 5% means there is only a 5% chance the result is random or we can be 95% condiment that the relationship between the independent and dependant is significant.

Regression Analysis Example

The Holiday Inns group is planning an expansion. Management wishes to predict which sites are likely to be profitable. Several areas where predictors of profitability can be identified are:

- Competition
- Market awareness
- Demand generators
- Demographics
- Physical quality

**More about this example in the lecture slides

Hedonic Regression Modelling

A method of regression analysis used to value a good or service by breaking it down into component parts. Each of the parts is valued separately using regression. Basically, saying that a property is a package of different characteristics, that all contribute in some measureable way to the ultimate value a buyer places on a property. For example, components could include land area, building area, car-parks, hardstand, proximity to transport hub etc.

There are limitations in the use of the hedonic method. These include:

- Information: the model requires that all individuals have prior knowledge of the potential positive and negative externalities they may face having purchased a house.
- Measureable Validity: the quality of the measures used in the independent variables is of key importance.

- Market Limitations: the model ideally requires that a variety of different houses are available so that individuals are able to obtain the particular house of their choosing, with a combination of characteristics they desire.
- Multicollinearity: it may be the case that large houses are only found in green areas with low pollution, and small houses are only found in urban areas with high pollution.
- Price changes: the model assumes that market prices adjust immediately to changes in attributes. in reality there will likely be a lag associated with this, especially in areas where house sales and purchases are rare.