

Real Estate Market Analysis

Stock Market, Property Market, Inflation

Major Sectors in Hang Seng Index Market Composition

- Financials (22.66%)
- Info Tech (25.09%)
- Properties & Construction (14.21%)
- Consumer Goods (10.83%)

Correlation Coefficients

- HS Index & Properties (0.895)
- HS Index & Finance (0.957)
- HS Index & Utilities (0.556)
- HS Index & ComInd (0.932)

Expected Portfolio Return

$$R_p = w_A \times R_A + w_B \times R_B$$

$$E R_p = w_A \times E R_A + w_B \times E R_B ; w_A + w_B = 1$$

Portfolio Variance

$$\sigma_p^2 = (w_A \sigma_A)^2 + (w_B \sigma_B)^2 + 2\rho_{AB} w_B \sigma_B w_A \sigma_A$$

Optimal Portfolio

$$\text{- Sharpe ratio, } R_p - r_f / \sigma_p = 5.21\% - 0.6\% / 16.17\% = 0.285$$

Consumer Price Index

Real Estate investment as a hedge against inflation

- Based on return, property is a good hedge against inflation
- Based on volatility, real estate more volatile than CPI, long-term hedge against inflation, not short-term hedge

Residential Real Estate

- Not public, under I not C

Macroeconomy and Property Market

Stock Market, Property Price and Rental

Financial Events

- Anti-speculative measures (1995)
- Handover (1997)
- Asia Financial Crisis (1997-1999)
- Recession (1997-2002)
- SARS (2003)
- Recovery (2004)
- Global Financial Crisis (2008)

Lead-lag Relationship

- Stock
- Property Price
- Rent

Correlation Coefficients

- HSI & Price (0.47)
- HSI & Rent (0.38)

GDP and Property Price Indices

Coefficient Correlation

- GDP & ABC (0.66)
- GDP & DE (0.63)
- GDP & All (0.66)

Real GDP = Production

Capital Inflows During the Financial Crisis

Causes of Fund Inflows

- Quantitative easing led to abundant liquidity and increased risk appetite
- Weak US dollar and near-zero interest rates fuel carry trade in emerging market
- 100% Deposit Guarantee by HKBS until end of 2010; safe haven
- Active property market since the beginning of 2009

Potential Risks

- Inflationary pressures
- Asset-price bubbles

Real Estate Market Activities and Bubbles

Rental Yield

Rental yield = Annual rent / Current Price

- the lower the rental yield, the higher the property price

Mainland Visitors and Private Retail

- Increase in Mainland visitors boost retail business

Vacancy Rate and GDP Growth

Correlation Coefficient

- GDP & A (-0.48)
- GDP & C (-0.61)
- GDP & E (-0.47)

Price Index Trend

- Private Domestic Price Index
- Rental Index
- Prices and rents have returned to pre-crisis levels
- Price above rental index because of decreased land supply and increased liquidity

Property Market Trend HKMA Framework

- Real property prices; deflating the nominal property price index by the CPI
- Real new mortgages; total amount of new mortgages, deflating the nominal values by the CPI
- Transaction volume; Sales and purchase agreements
- Income leverage; Ratio of debt payment to HH income
- Buy Rent Gap; Mortgage payment to rent ratio, high when speculative or strong property ownership
- Confirmor transactions; buyer resells to sub-purchaser before the legal completion of the original sale



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Real Estate Market Analysis (cont)

Wealth Effect of Real Estate on Consumption

- Increase in wealth effect boost consumption
- declines in asset prices might have only limited impact on local consumers
- Multiplier effect; wealth effect could lead to decrease in investment, fall in GDP, falling income, shrink in consumption

Supply and Demand Conditions

Household Formation

- Dynamics of population pool
- Lifestyle and economic situation
- No of new HH
- Ave HH size

Household Income

- Importance of ownership
- Homeowners tend to be more economically productive, boost economy and property price, vice versa

Supply for Shelter

- Decrease in supply when the price index and rental index is decreasing

Vacancy

- $Vacancy^t = Vacancy^{t-1} + Completion^t - Take\ up^t - Depreciation$

Affordability Issues

Affordability Index

- Median HH income / Average monthly mortgage payment
- Bank mortgage lending policy; HH income > 2x or 3x Mortgage payment
- AI < 2, low affordability
- AI < 1, unaffordable

Problems of Affordability Index

- HH income may not be the only source of income, like personal savings and investments
- Mortgage payment consists of principle and interest, compare interest with rent
- HH income only reflects local affordability not overseas

Rise and Fall of Property Price

- Too high; affordability issue
- Too low; banks unwilling to lend (deteriorating L/V ratio), high interest rate, increase in default rate to cut loss

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Bubbles and Crashes

Bubble

- asset prices move because they are expected to move
- the price moves away from fundamentals based solely on expectations of further movements

Examples of Bubble

- Japanese asset price bubble (1985-1991)
- Dot-com bubble (1999-2000)
- Post-crisis property market in HK

Why Do Bubbles Arise?

- Shortage of store of value
- Agents misbehave

Rational Bubble

- Realise price is divorced from fundamentals, but believe that price rises will persist for some time, and that price growth will compensate for the risk
- Irrational bubbles involve unrealistic expectations about asset's future prospects
- If everyone knew that at period (T+j) that the bubble would burst, then no one would pay the bubble price at period (T+j-1); bubble unravels

Stochastic Rational Bubble

- $q \times b_{t+1} = (1+r)b_t$
- $b_t = v_t - v^*$

Affordable Property Price

- Calculated based on a fraction of median household and other mortgage assumptions
- $b_t = \text{Actual price}_t - \text{Affordable price}_t$
- mortgage rate = r

Stochastic Rational Bubble Implications

- Commodities with close substitutes puts limits
- $r \leq$ the growth rate of the economy

Effects of Bubbles

- distortions in resource allocation
- Financial collapses

Nature of Property and Capital Market

Prices of Houses

- How many households wish to own the units
- How many units are available for ownership
- Demand to own real estate = Supply

Supply of New Real Estates

- Property price > Construction cost + Land (increase in supply, vice versa)
- In the long run, property price = construction cost + land

Rent affect Price

- In the market for real estate use of space, demand comes from the occupiers of space

Firm's Use of Space

- Production technology
- Output levels
- Relative cost of space

Household's Use of Space

- Household income
- Relative cost

Rent

- For tenants, rent is lease agreement
- For owners, rent is the annualised cost associated with the ownership of property

Rent Determination

- Determined in the 'property market' for space use, not in the 'asset market' for ownership

Four-Quadrant Framework

Quadrant 1: Property Market for Rent Determination

- $D(R, \text{Economy}) = S$
- If the economy changes, then the entire curve shifts
- Inelastic demand; demand curve is nearly vertical
- Elastic demand; demand curve is more horizontal

Quadrant 2: Asset Market for Valuation

- $\{n\} - P = R/i$
- $i =$ capitalisation rate = $R/P =$ slope of the valuation curve = represents the current yield to hold real estate assets

Components of Capitalisation Rate

- Long term interest rate
- Expected growth in rent
- Risks with rental stream
- Tax
- Exogenous

Quadrant 3: Asset Market for Construction

- $P = f(C)$
- $f(C) =$ replacement cost
- Greater building activity increases the replacement cost
- Same cost at any level; vertical curve
- Inelastic supply; horizontal curve

Quadrant 4: Property Market for Stock Adjustment

- = change in $S = C - \text{delta} \times S$
- $S = C/\text{delta}$

Equilibrium and Disequilibrium

Equilibrium

- The property and asset markets are in equilibrium with each other when the starting and finishing levels of stock are the same

Disequilibrium

- If the starting stock is less than the finishing stock, the rents, prices, and construction must decrease to be in equilibrium, vice versa

Effects of Exogenous Shock

- An increase in demand for space; Increases in R, P, C, and S
- A decrease in capitalisation rate; increase in P, C, S and decrease in R
- An increase in construction costs; decrease in C, S and increase in R, P



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