## 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*

Rp = wA × RA + wB × RB

E Rp = wA × E RA + wB × E RB ; wA + wB = 1

*Portfolio Variance*

σp 2 = (wAσA) 2+(wBσB) 2+2ρAB wBσB wAσA

*Optimal Portfolio*

- Sharpe ratio, Rp − rf / σp = 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

## 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
- $b_t$ = Actual price$_t$ - Affordable price$_t$
- mortgage rate = r

*Stochastic Rational Bubble Implications*

- Commodities with close substitutes puts limits
- r =< 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, 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 - delta x S

- S = C/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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