



FIG Working Week 2012

Rome, Italy 6–10 May

Knowing to:

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*Real estate indices as a barometer of stable real estate returns
and predictor of real estate risks during real estate boom or burst cycles.*

- Mr. Manohar Velpuri, India
- Mr. Fabio Pinna, Italy

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Framework : different methods
Equations
Pricing indices at a glance
Graphs of different indices
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Framework : different methods

Appraisal methods and/or Transaction based methods.

A sub classification of the Transaction based methods is




1) repeated sales method

$$R_{itt'} = \frac{B_{t'}}{B_t} e^{-c(t-t')} U_{itt'} \quad r_{itt'} \equiv \sum_{j=1}^{T+1} b_j x_j + u_{itt'}$$

2) hedonic methods

$$\ln p_{it} = \alpha + \beta \ln m_i + \sum_{j=2}^T \delta_j D_{ij} + \sum_{j=1}^I \gamma_j X_{ij} + \epsilon_i$$

p_{it} = Achieved prices in real estate;
 X_{ij} = Locational and qualitative characteristics known for all real estate sold;

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Methodology : Equations (1)

- A typical repeated sales model in simplistic terms can be see below – (Martin et al, 1963 and Bailey et al 1963)
- Repeated sales model has been in use in the built up of the Hong Kong Residential pricing index, the details of the equation are as follows – (Chau, 2006)

$$R_{itt'} = \frac{B_{t'}}{B_t} e^{-c(t-t')} U_{itt'} \quad r_{itt'} \equiv \sum_{j=1}^{T+1} b_j x_j + u_{itt'}$$

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Methodology : Equation (2)

- A typical hedonic method is represented as follows –

$$\ln p_{it} = \alpha + \beta \ln m_i + \sum_{j=2}^T \delta_j D_{ij} + \sum_{j=1}^L \gamma_j X_{ij} + \epsilon_i$$

p_{it} = Achieved prices in real estate;

X_{ij} = Locational and qualitative characteristics known for all real estate sold;

Achieved prices in real estate;

Locational and qualitative characteristics known for all real estate sold;

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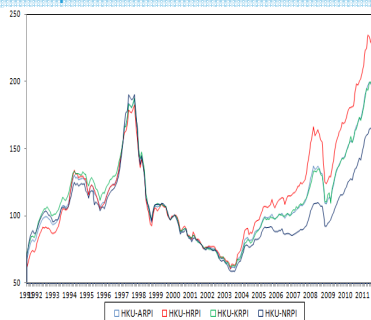
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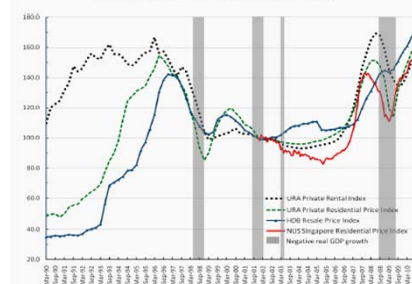
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Graphs of different indices (1)



The HDB Resale Price Index (Q4-2001=100), the NUS SRPI (Dec 2001=100) and the URA Private Residential Price and Rental Indexes (Q4-2001=100)



- Hong Kong Special Administrative Region and is a weighted average of sub-indices for three sub-regions in Hong Kong" (Chau, 2006):

$$HKU-ARPI_t = (w_H * (HKU-ARPI_t) / (HKU-HRPI_{t0}) + w_K * (HKU-KRPI_t) / (HKU-KRPI_{t0}) + w_N * (HKU-NRPI_t) / (HKU-NRPI_{t0})) * HKU-ARPI_{t0}$$

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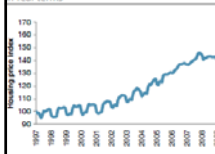
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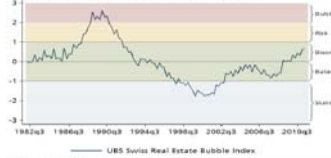


Graphs of different indices (2)

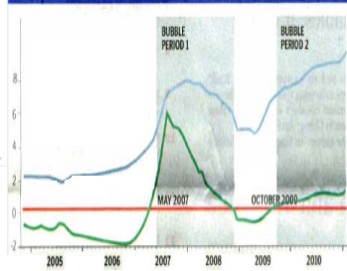
Impressive Chinese housing price growth in real terms



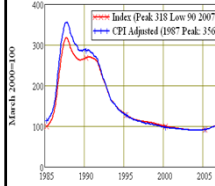
UBS Swiss Real Estate Bubble Index



SINGAPORE REAL ESTATE INDEX AND BUBBLES



Tokyo House Price Indices



Economic growth and income return UK, all properties, in % yoy (change in income return)



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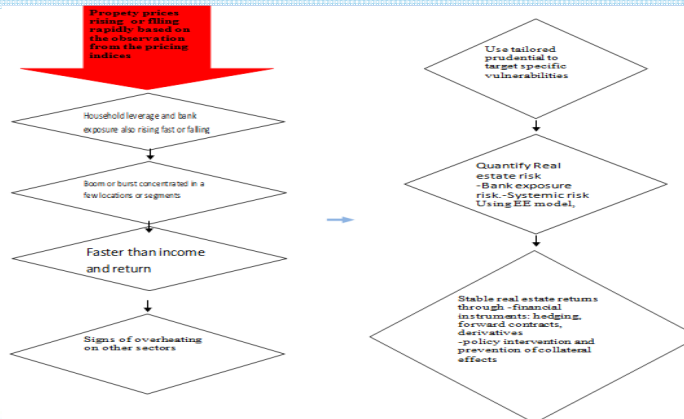
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Framework for stable real estate returns



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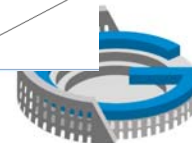




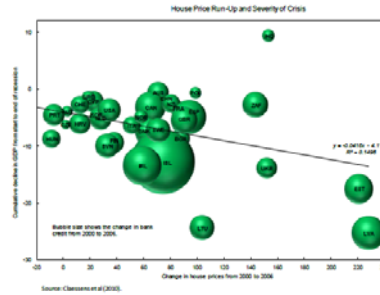
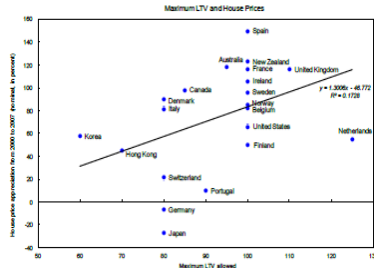
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Changing scenarios due to crisis



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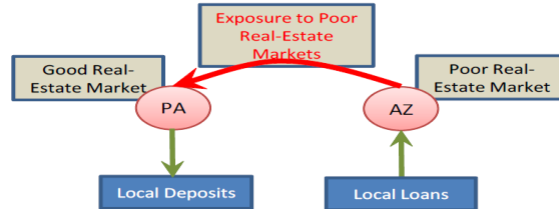
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Situation of banks in crisis and relationship to HPI

Branching Experiment



- Finding a link would mean that banks' local deposit rates are driven by overall bank demand for the deposits
- In the setting of the experiment: the demand for deposits is driven by loan growth

- On average, banks in trouble : deleverage
 Make fewer loans, Seek deposits less aggressively, Evidence for both 1987 – 1993, 2007 – 2010

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Conclusions

- For pricing purposes in real estate market, one needs to specify exogenously the market price of risk.
- Combining hedonic and repeat-sales methods used in the construction of housing price indexes makes them applicable equally well to other durables.
- Virtual real estate markets on the internet may well facilitate the development of high quality property price indexes there by leading to a better prediction measure of volatility and bubbles.

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