

國立中山大學應用數學系

學術演講

金融工程學程演講

- 講者：Professor Chang Yun Fah 張運華 教授
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- 講題：On the Macroeconomic Determinants of the
Housing Price Index in Taiwan: An
Autoregressive Multiple Unreplicated
Linear Functional Relationship Model
臺灣房價指數的宏觀經濟決定因素：一個
自回歸多元無重複綫性函數關係模型
- 時間：2018/12/19 (星期三) 14:10 ~ 15:00
- 地點：理學院四樓理 SC 4009-1 室
- 茶會：15:00 於理 SC 4010 室 (系辦公室)

摘要

Affordability of housing has become a key challenge for the local authorities to provide a better living quality and liveability of many cities. Affordable housing provides positive externalities in terms of social stability, public welfare and economic development of a city. As in Taipei City, the median house price to median annual household income ratio is 15.7 times in 2014, which is at the severely unaffordability level. House price index in Taiwan averaged 186.27 index points from 2001 until 2017, reaching an all-time high of 297.78 index points in the second quarter of 2014. The house price movements are affected by both macro-economic determinants such as loan to housing, unemployment rate, per capital income and inflation rate; and micro-perspective like build-up area, number of bedrooms, and distance to the nearest central business district. Most studies applied time-series models or regression models to predict the housing price with a set of macroeconomic determinants or a set of micro-perspective factors. Nonetheless, none of the studies considered the explanatory variables subject to errors, i.e. autocorrelated errors. This study aims to model and predict the housing price index with a set of macroeconomic determinants in Taiwan. An autoregressive multiple unreplicated linear functional relationship (AM_pULFR) model is developed to identify changes in the Taiwan's residential market in terms of significant macro-economic determinants and their corresponding effect on house prices. The main contribution of this study is that the proposed model considers both the housing prices and the macro-economic determinants are all subject to autocorrelated

errors, and hence it leads to a combination of the time-series $ARIMA(r, d, q)$ model and the multiple unreplicated linear functional relationship model. The experimental results indicate that the proposed model has better performance for a longer time prediction and it requires larger training set to surpass the performance of the existing methods.

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