房市與股市之間是否存在不對稱財富效果?

分量單根檢定之應用

學生：沈蕙蘭　　　　　　　　　　　　指導教授：李政峰 博士

國立高雄應用科技大學金融資訊研究所碩士班

摘　要

　　過往文獻通常在線性架構下探討股市與房市間之長期關係，忽略兩者間可能存在非線性行為。非線性的成因可能來自於兩市場的不同風險波動特性。當房市和股市受到壞消息衝擊時，股價波動大而房價波動小，此時兩市場可能存在較低的相關性。反之，好消息使兩市場價格齊漲，因此房市與股市間可能存在財富效果(或共整合關係)。鑑此，本文認為兩市場的不同風險特性可能潛在的影響兩者間的長期關係。本研究應用 Koenker and Xiao (2004)的分量單根檢定方法去檢驗美國和大陸之房市與股市間的長期關係。實證結果發現美國及大陸兩市場，在高分量下，面對正衝擊，呈現均數復歸行為，表示兩市場存在財富效果(或共整合關係)。相反地，在低分量下，面對負衝擊，顯示存在單根行為，表示兩市場無長期關係。此結果亦可從分量迴歸結果之圖形檢驗中發現，當股市多頭時，兩市場易有長期關係，亦即存在財富效果。反之，當股市空頭時，兩市場則無長期關係。因此，本文的實證結果支持房市與股市間存在不對稱財富效果，與 Tsai et al. (2011)研究結果相符。

關鍵字：房價指數、股價指數、財富效果、分量單根檢定

Does the asymmetric wealth effect exist between the stock and housing markets? Evidence from the quantile unit root test

Student：Huei-Lan Shen　　　　　　　　　Advisors：Dr. Cheng-Feng Lee

Institute of Finance and Information
National Kaohsiung University of Applied Sciences

Abstract

Previous studies often investigate the long-run relationship between the stock and housing markets under a linear framework, ignoring the possible presence of nonlinearities since these two markets may behave different risk characteristics. When bad news hits the stock and housing markets, the stock price shows large volatility while the housing price exhibits less volatility. In such cases, these two markets are likely to exhibit less correlation. Conversely, good news causes the prices to increase in both markets, and thus suggest the existence of the wealth effect (or cointegration). As a result, difference in the risk characteristics may have a potential impact on the long-run relationship between the two markets. This thesis applies a new quantile unit root test developed by Koenker and Xiao (2004) to investigate the long-run relationship between the housing and stock markets in the US and China. Our empirical results suggest that positive shocks with large magnitudes found at the upper quantiles tend to induce strong mean reversion, indicating the presence of the wealth effect; on the contrary, negative shocks found at the lower quantiles do not. A graphical examination of the quantile results shows that positive shocks that induce mean reversion seem to frequently occur during the period when the stock market return is positive, while negative shocks largely occur during the period when the stock market return is negative. Our findings support the presence of the asymmetric wealth effect between the housing and stock markets, conforming to those in Tsai et al. (2011).

Keywords: Housing price index; Stock price index; Wealth effect; Quantile unit root test

Table of Contents

References

1. Ando, A. and F. Modigliani (1963), "The 'life cycle' hypothesis of saving: Aggregate implications and tests," *American Economic Review*, 53(1), 55-84.

2. Black, F. (1976), "Studies of stock price volatility changes," *Proceedings of the Meetings of the American Statistical Association, Business and Economics Statistics Division*, 177-181.

3. Bond, M.T., and Seiler, M.J. (1998), "Real estate returns and inflation: An added variable approach," *Journal of Real Estate Research*, 15(3), 327-38.

4. Chan, N. K. (2001), "Asset price fluctuations in Taiwan: Evidence from stock and real estate price 1973 to 1992," *Journal of Asian Economic*, 12, 215-232.

5. Christie, A. (1982), "The stochastic behavior of common stock variances: Value, leverage, and interest rate effects," *Journal of Financial Economics*, 10, 407-432.

6. Fogler, H.R., Granito, M.R., Smith, L.R. (1985), "A theoretical analysis of real estate returns," *The Journal of Finance*, 40(3), 711-21.

7. Glascock, J.L. (1991), "Market conditions, risk, and real estate portfolio returns: Some empirical evidence," *Journal of Real Estate Finance and Economics*, 4, 367-374.

8. Green, R. K. (2002), "Stock prices and house prices in California: New evidence of a wealth effect? " *Regional Science and Urban Economics*, 32, 775-783.

9. Grissom, T., Kuhle, J., Walther, C. (1987), "Diversification works in real estate too," *Journal of Portfolio Management*, 13, 66-71.

10. Kakes, J. and J. W. V. End (2004), "Do stock prices affect house prices? Evidence for the Netherlands," *Applied Economics Letters*, 11, 741-744.

11. Kapopoulos P, Siokis F (2005), "Stock and real estate prices in Greece: Wealth versus 'credit-price' effect," *Applied Economics Letters*, 12, 125-128.

12. Koenker, R., and Bassett, G. (1978), "Regression quantiles," *Econometrica*, 46, 33-49.

13. Koenker, R. and Z. Xiao (2004), "Unit root quantile autoregression inference," *Journal of the American Statistical Society*, 99(467), 775-787.

14. Koutmos, G. (1998), "Asymmetries in the conditional mean and the conditional variance: Evidence from nine stock markets," *Journal of Economics and Business*, 50, 277-290.

15. Koutmos, G. and R. Saidi (1995), "The leverage effect in individual stocks and the debt to equity ratio," *Journal of Business Finance & Accounting*, 22, 1063-1075.

16. Kuhle, J. (1987), "Portfolio diversification and returns benefits—Common stock vs. real estate investment trusts," *Journal of Real Estate Research*, 2, 1-9.

17. Lee, C.-F. and C.-C. Tsong (2011), "Asymmetric behaviour of unemployment rates: Evidence from the quantile covariate unit root test," *Working Paper*.

18. Markowitz, H. (1952), "Portfolio selection," *The Journal of Finance*, 7(1), 77-91.

19. Nelson, D.B. (1991), "Conditional heteroskedasticity in asset returns: A New Approach," *Econometrica*, 59, 347-370.

20. Ng, S., Perron, P. (2001), "Lag length selection and the construction of unit root tests with good size and power," *Econometrica*, 69, 1519-1554.

21. Okunev, J. and P. Wilson (1997), "Using nonlinear tests to examine integration between real estate and stock markets," *Real Estate Economics*, 25, 487-503.

22. Okunev, J., P. Wilson, and R. Zurbruegg (2002), "Relationships between Australian real estate and stock market prices: A case of market inefficiency," *Journal of Forecasting*, 21, 181-192.

23. Okunev, J., Wilson, P. and Zurbruegg R. (2000), "The causal relationship between real estate and stock markets," *Journal of Real Estate Finance and Economics*, 21(3), 251-261.

24. Ong, S. E. (1995), "Singapore real estate and property stocks-A cointegraton test,"

Journal of Property Research, 12, 29-39.

25. Payne, J.E., and Sahu, A.P. (2004), "Random walks, cointegration, and the transmission of shocks across global real estate and equity markets," *Journal of Economics and Finance*, 28(2), 198-210.

26. Phillips, P.C.B and P. Perron (1988), "Testing for a unit root in time series regression," *Biometrika*, 75, 335-346.

27. Poon, S-H. and S.J. Taylor (1992), "Stock returns and volatility: An empirical study of the UK stock market," *Journal of Banking and Finance*, 16, 37-59

28. Quan, D. C. and S. Titman (1997), "Commercial real estate prices and stock market returns: An international analysis," *Financial Anaiysts Journal*, May/June, 21-34.

29. Quan, D. C. and S. Titman (1999), "Do real estate prices and stock prices move together? An international analysis," *Real Estate Economics*, 27, 183-207.

30. Rubens, J., M. Bond, and J. Webb (1989), "The inflation-hedging effectiveness of real estate," *The Journal of Real Estate Research*, 4, 45-56.

31. Said, S. and D. Dickey (1984), "Testing for unit roots in autoregressive-moving average model of unknown order," *Biometrica*, 71, 599-607.

32. Schwert, W. G. (1990), "Stock volatility and the crash of '87," *Review of Financial Studies*, 3(1), 77-102.

33. Sutton, G.D. (2002), "Explaining changes in house prices," *BIS Quarterly Review*, September, 46-55.

34. Tsai, I.-C., C.-F. Lee and M.-C. Chiang (2011), "The asymmetric wealth effect in the US housing and stock markets: Evidence from the threshold cointegration model," *Journal of Real Estate Finance and Economics*, forthcoming.

35. Tsai, I.-C. and M. Chen (2009), "The asymmetric volatility of house price in the UK," *Property Management*, 27, 80-90.

36. Tsong, C.-C. and C.-F. Lee (2011), "Asymmetric inflation dynamics: Evidence from quantile regression analysis," *Working Paper*.

37. Wu, M.-C., Y.-S. Liau, and Y.-C. Wang (2010), "Are REITs defensive? Evidence from the U.S.," *African Journal of Business Management*, 4(7), 1386- 1389.