Non-linear Short-run Adjustments between REITs and Stock Markets in the USA and Australia

Hao Fang
Department of Assets and Property Management, Hwa Hsia Institute of Technology
No. 111, Gong Jhuan Rd., Chung Ho, Taipei, Taiwan 23568, R.O.C.
Yen-Hsien Lee

Department of Finance, Chung Yuan Christian University
No. 200, Chung Pei Rd., Chung Li, Taiwan 32023, R.O.C.
Telephone: (03)265-5711 E-mail: yh@cycu.edu.tw

ABSTRACT

This study, following the model proposed by Gregory and Hansen (1996), utilises the residual-based test for co-integration with structural breaks in order to examine whether non-linear co-integration exists between real estate investment trusts (REITs) and corresponding stock markets in the United States and Australia. Moreover, we employ the smooth-transition, vector-error correction model (STVECM) including the generalized autoregressive conditional heteroskedasticity (GARCH) model, in order to separately explore the adjustment efficiencies of the short-run REIT and corresponding stock return dynamics as well as respective REIT return dynamics while there is the long-run disequilibrium between the REITs and corresponding stock markets and between the respective REIT markets in the two countries. Our empirical results demonstrate that there is a non-linear co-integration with structural breaks between the equity and mortgage REITs and stock markets in the US, between the REITs and stock markets in the Australia and between the REIT markets in both the US and Australia. When large positive and negative deviations of STVECM exist, the speed of equilibrium adjustment of the S&P 500 index is greater than that of the Mortgage REIT index. However, when large positive (negative) deviations of STVECM exist, the speed of equilibrium adjustment of the Australian REIT (stock) index is greater, and that of the Australian REIT (US REIT) index for reversion is greater. Then, the results of a non-linear Granger causality test proposed by Hiemstra and Jones (1994) find that there are credit price effects between the US for each type of REIT and stock markets regardless of whether there are large positive or negative deviation (or return) regimes in STVECM (or STVAR). However, there is a feedback effect between the REITs and the stock markets in Australia. In addition, the price leadership of the US REIT market is relative to the Australian REIT market.

Keywords: US, Australia; REITs; STVECM; structural break co-integration; nonlinear Granger causality; GARCH.