Journal of International Money and Finance 31 (2012) 1823–1850

Contents lists available at SciVerse ScienceDirect

Journal of International Money and Finance

journal homepage: www.elsevier.com/locate/jimf

Are REITs real estate? Evidence from international sector level data☆

Martin Hoesli [a,b,c,*], Elias Oikarinen [d]

[a] University of Geneva (HEC and SFI), 40 boulevard du Pont-d'Arve, CH-1211 Geneva 4, Switzerland
[b] University of Aberdeen (Business School), Edward Wright Building, Aberdeen AB24 3QY, Scotland, UK
[c] Bordeaux Ecole de Management, F-33405 Talence Cedex, France
[d] Turku School of Economics, Rehtorinpellonkatu 3, 20500 Turku, Finland

Keywords:
Public and private real estate
REITs
Property type
Dynamics
Leverage
Fundamentals
VECM

ABSTRACT

The aim of this study is to examine whether securitized real estate returns reflect direct real estate returns or general stock market returns using international data for the U.S., U.K., and Australia. In contrast to previous research, which has generally relied on overall real estate market indices and neglected the potential long-term dynamics, our econometric evaluation is based on sector level data and caters for both the short-term and long-term dynamics of the assets as well as for the lack of leverage in the direct real estate indices. In addition to the real estate and stock market indices, the analysis includes a number of fundamental variables that are expected to influence real estate and stock returns significantly. We estimate vector error-correction models and investigate the forecast error variance decompositions and impulse responses of the assets. Both the variance decompositions and impulse responses suggest that the long-run REIT market performance is much more closely related to the direct real estate market than to the general stock market. Consequently, REITs and direct real estate should be relatively good substitutes in a long-horizon investment portfolio. The results are of relevance regarding the relationship between

☆ The authors are grateful for comments by Piet Eichholtz, David Geltner and Jim Clayton as well as by participants at the Annual Conference of the American Real Estate Society in Seattle (WA), the Annual Conference of the European Real Estate Society in Eindhoven (the Netherlands), the Leibniz Network on Real Estate Markets and Capital Markets (ReCapNet) in Mannheim (Germany), and the International Conference on Real Estate Securities at the University of Tilburg (the Netherlands). A reviewer also provided many useful comments. The authors also thank the *European Public Real Estate Association* (EPRA) and the *National Association of Real Estate Investment Trusts* (NAREIT) for providing them with the real estate securities data. Financial support from EPRA is gratefully acknowledged. The usual disclaimer applies.

* Corresponding author. University of Geneva (HEC and SFI), 40 boulevard du Pont-d'Arve, CH-1211 Geneva 4, Switzerland.
E-mail addresses: martin.hoesli@unige.ch (M. Hoesli), elias.oikarinen@utu.fi (E. Oikarinen).

doi:10.1016/j.jimonfin.2012.05.017

public and private markets in general, as the 'duality' of the real estate markets offers an opportunity to test whether and how closely securitized asset returns reflect the performance of underlying private assets. The study also includes implications concerning the recent financial crisis.

1. Introduction

Direct real estate investments have been shown to provide significant diversification benefits in a portfolio containing stocks (Hoesli et al., 2004; MacKinnon and Al Zaman, 2009; Brounen et al., 2010). However, direct real estate assets have several disadvantages such as relatively low liquidity, high transaction costs, and lumpiness. The securitized real estate market has developed to circumvent these complications, so that many investors prefer to invest in real estate securities rather than in direct real estate.

If securitized and direct real estate returns are driven by a common 'real estate factor' over the long horizon, then real estate securities are expected to provide the same diversification benefits as direct commercial real estate in a mixed-asset portfolio of a long-horizon buy-and-hold investor, such as a pension fund. On the other hand, if securitized real estate behaves like the general stock market, real estate equities do not provide the diversification opportunities exhibited by the direct real estate market. Although the question of whether real estate securities behave as real estate or as equities is an old one and an important one for a large number of investors, the answer to the question is still not conclusive in the extant literature.

Securitized real estate prices may embed stock market noise that is not related to the fundamentals driving real estate returns. Therefore, the attractive diversification features of direct real estate may be lost by investing in REITs instead of in direct real estate assets. Indeed, it is well known that the contemporaneous correlation between securitized and direct real estate returns is relatively low (Mueller and Mueller, 2003; Brounen and Eichholtz, 2003). Instead of co-moving with direct real estate returns, early empirical evidence, mainly concerning the U.S. market, identified a similar return behaviour between securitized real estate and the general stock market (Goetzmann and Ibbotson, 1990; Ross and Zisler, 1991; Myer and Webb, 1994). More recently, the results regarding the comovement between securitized real estate returns and general stock market returns have been mixed.

The short-run comovement between the securitized and direct real estate markets may also be significantly diminished by the typically sluggish adjustment of direct real estate market prices to changes in the fundamentals. However, as in the long run both markets should adjust to shocks in the fundamentals and the impact of noise in securitized real estate prices should vanish, securitized real estate should strongly co-vary with the returns on a portfolio composed of equivalent direct real estate investments, since the fundamental asset is essentially the same in both markets. In line with this assumption, it has been established that over long horizons the linkages between indirect and direct real estate are substantially stronger than suggested by the simple contemporaneous correlation figures (Giliberto, 1990; Geltner and Kluger, 1998; MacKinnon and Al Zaman, 2009; Oikarinen et al., 2011).

Conventionally, the question has been studied by only including the three asset classes in the analysis while neglecting the role of economic fundamentals. Furthermore, the analyses have generally been based on aggregate real estate indices. The overall direct and securitized real estate indices typically differ notably with respect to the property-type mixes. Since the return dynamics between various real estate sectors may vary substantially (Wheaton, 1999; Oikarinen et al., 2010), the use of overall indices may diminish the estimated comovement between securitized and direct real estate markets. That is, using sector level data should yield more accurate results regarding the linkages between direct and securitized real estate.

The aim of this study is to examine whether securitized real estate returns reflect direct real estate returns or general stock market returns. Similarly to a recent study by Sebastian and Schätz (2009), we