International Review of Economics and Finance 22 (2012) 230–253

Contents lists available at SciVerse ScienceDirect

International Review of Economics and Finance

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

Firm Market Performance and Volatility in a National Real Estate Sector

Marcelo Bianconi [a,*], Joe A. Yoshino [b,1]

[a] *Tufts University, Department of Economics, 111 Braker Hall, Medford, MA 02155, USA*
[b] *FEA, University of Sao Paulo, Sao Paulo, 05508-900, Brazil*

ARTICLE INFO

Article history:
Received 15 October 2010
Received in revised form 2 November 2011
Accepted 3 November 2011
Available online 11 November 2011

JEL Classification Codes:
G10
G14
O54
R30

Keywords:
Risk-return tradeoff
National real estate market
Momentum
Reversal

ABSTRACT

We present empirical evidence using daily data for stock prices for 17 real estate companies traded in the Sao Paulo, Brazil stock exchange, from August 26, 2006 to March 31, 2010. We use the U.S. house price bubble, financial crisis and risk measures to instrument for momentums and reversals in the domestic real estate sector. We find evidence of conditional premium persistence and conditional volatility persistence in the market. We find that the conditional risk-return relationship in the sector is consistent with the prospect theory of risk attitudes in this period. Certain companies seem to be operating on a perceived potential industry return above the target, while most others are below the target, and the whole sector is below target on average.

1. Introduction

The real estate market in the U.S. has passed through a transformation in the last 30 years that made it one of the culprits of the recent financial crisis. In contrast, the real estate market of the country of Brazil has been booming in the last few years, most prominently recently, but at the same time has been very volatile. Thus, the financial crisis in the U.S. provides a fertile natural experiment to understand the economic influence of the U.S. in Brazil, in particular in the Brazilian real estate sector. Fig. 1 shows the daily evolution of several sector indices of the main Brazilian stock market in the period 2008–2010.[2] The U.S. financial crisis has impacted all reported sector indices negatively with most bottoming around November 2008, at the height of the crisis. In particular, the real estate sector index was the hardest hit loosing almost 80% of its value between May and December 2008.

A key question we are interested in is what shapes the market performance of firms in the real estate sector in Brazil.[3] In order to answer this question we start with the standard Fama-French multi-factor model to explain the daily variation of firm market

* Corresponding author. Tel.: +1 617 627 2677; fax: +1 617 627 3917.
E-mail addresses: marcelo.bianconi@tufts.edu (M. Bianconi), pyoshino@usp.br (J.A. Yoshino).
URL's: http://www.tufts.edu/~mbiancon (M. Bianconi), http://www.econ.fea.usp.br/joe/ (J.A. Yoshino).
[1] Tel.: +55 11 30 91 58 26; fax: +55 11 30 91 60 13.
[2] The performance of the indices is comparable through normalization where all are equal to 100 in January 2, 2008.
[3] The market capitalization of the real estate sector in Brazil is relatively new. Until 2005, most companies were local, but from 2005 and on through active merger and acquisition activity they become national. Also, starting roughly in 2007, they seek more funds in the capital market through IPOs. The standards of operation change as well with more short term goals and more speculative behavior in fixed assets. In contrast, market capitalization of the real estate sector in the US is well developed; see for example Wu and Huang (2011) for an analysis of REITs.

1059-0560/$ – see front matter
doi:10.1016/j.iref.2011.11.002

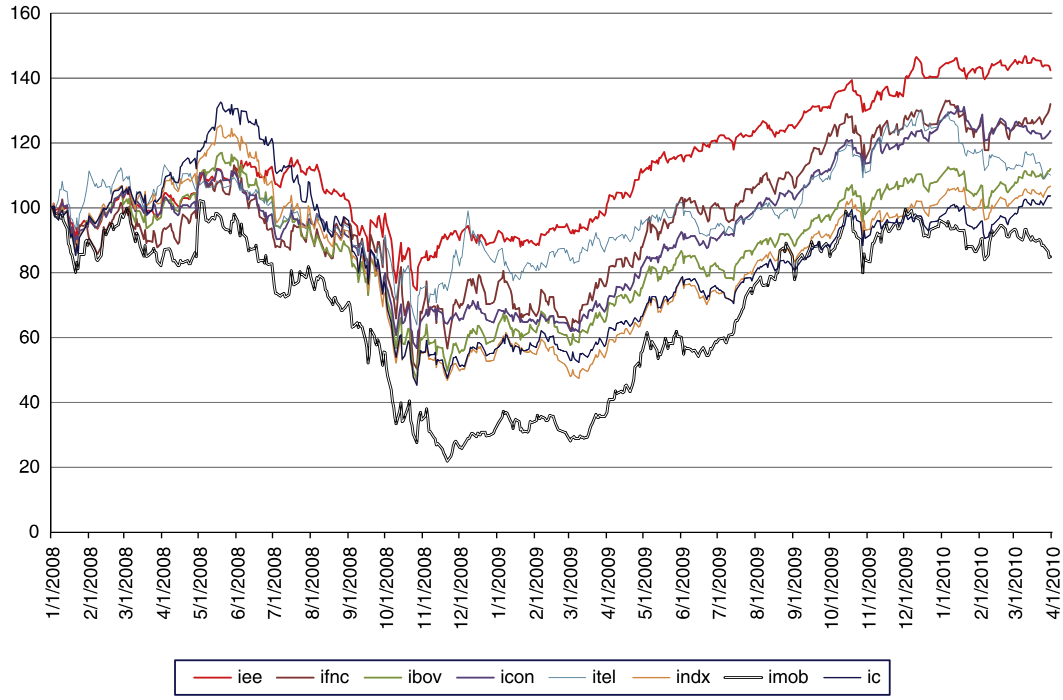

Fig. 1. Sectoral Market Indices in Brazil – 2008–2010, Daily Obs. Legend: Iee – Electric Power Index. Ifnc – Financial Index. Ibov – Bovespa Index. Icon – Consumption Index. Itel – Telecommunications Sector Index. Indx – Industrial Sector Index. Imob – Real Estate Index. Ic – Commodities Index.

premiums in the Brazilian real estate sector. We expand the factor space to include momentum and reversals in the daily market variation. Firm financial multiples and other domestic factors have a potential influence in the firm market premium, and we include them as well.

The novelty here is to condition the likelihood of momentums and reversals on U.S. risk factors and on the recent U.S. subprime lending and financial crisis. Our estimation of momentum, or boom probabilities; and reversals, or crash probabilities with U.S. risk, political and economic factors shows that many of those factors can significantly identify momentums and reversals in the Brazilian real estate sector. We find that conditional momentums and conditional reversals probabilities are significantly negatively correlated. The momentums are declining and flat during and after the U.S. crisis, while the reversals tend to increase after the U.S. crisis. We take those results as evidence that the U.S. factors provide a plausible exogenous identification of momentums and reversals in the daily variation of the real estate sector in the Brazilian capital market. In addition, we find that instrumented momentums are not correlated with the market premium, but reversals are. Hence, while downside risk from the U.S. in the real estate sector is part of the systematic risk of the market, upside risk is not in this period.[4]

We estimate several versions of the CAPM model with instrumented momentums and reversals. All specifications report the problem of potential strong persistence of premiums, and other unobservables captured by trend effects, which indicates that in the real estate sector in Brazil, the daily variation in premium is persistent and the potential for mispricing and opportunities for short term arbitrage are present. Momentums and reversals have a robust effect on the premium and the magnitudes of the β's are large, of an order of close to nine indicating the aggressiveness and risky behavior of the real estate sector in Brazil in this period.

We also estimate conditional volatility of daily returns and find that distributed lagged volatility is positive and significant in predicting current volatility, and there are significant trend effects in volatility capturing unobservables. Overall, we find a significant amount of conditional heteroskedasticity in this market.

When we relate the predicted premium and volatility from our estimates, both linearly and nonlinearly, we find a negative relationship between them in this market in this period. Thus, it reinforces the case that on a daily basis the market, on average, has opportunities for short term arbitrage. The introduction of domestic additional real estate multiples and domestic risk factors mildly mitigate the negative slopes, but does not revert it. A potential theory that explains this phenomenon is based on Kahneman and Tversky's (1979) prospect theory. In our sample of all real estate sector firms, the below target firms dominate the sector and the overall evidence is that the sector is below the perceived potential industry returns. On a company by company

[4] Our evidence shows that the US financial crisis had an important effect in the sector in Brazil, but this sector and all others have shown solid gains since February 2009. In particular, the Real Estate sector has been very volatile (and bullish) ever since.