A Straightforward Approach to Estimate the Abnormal Return in Taiwan

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ABSTRACT

The fluctuation of real estate prices has been a subject of public attention, and related studies are often unable to effectively measure changes due to limitations in information acquisition and modeling. In fact, the existence of abnormal return of the real estate market can be regarded as an important indicator of fluctuations in prices or a bubble. Therefore, based on the Capital Asset Pricing Model, combined with time series analysis, this paper establishes a more convenient method of analysis to explore price changes of Taiwan's real estate market from 1998 to 2012. The empirical results show that there is no abnormal return in Taiwan's overall real estate price changes. However, in major metropolitan areas, abnormal return does exist, and such a trend became more evident after the financial tsunami. By region, the abnormal return rate of New Taipei City has become gradually higher than Taipei City. The findings are consistent with the recent development of the real estate market of the Taipei region, and thus, are worth the attention of the government and relevant sectors.

Keywords: Abnormal Return, Capital Asset Pricing Model (CAPM), Real Estate, Taiwan

1. INTRODUCTION

The fluctuation of real estate prices have been a subject of public attention. Not only do investors develop investment decisions based on this trend, those in power can regard it as an important indicator of housing policy development. Therefore, literature offers numerous examples dedicated to fluctuations in real estate prices, real estate bubbles, and other related issues. Some researchers conducted analysis from the perspective of overall housing market price changes in order to explore the existence of heteroscedasticity in the error term (Abraham & Hendershott, 1996; Bourassa, Hendershott & Murphy, 2001). Some studies have tested the existence of housing price bubbles by the stability of indicators including “Price and Income Ratio” (PIR) or “Price Rent Ratio” (PRR) (Black, Fraster & Hoesli, 2006). On one hand, there is a possibility of model misspecification when establishing a value model from the overall perspective (Chang, et al., 2009); on the other hand, due to limitations

DOI: 10.4018/IJAEC.2014100103
in data acquisition and data quality, analysis results are prone to bias. For example, rentals in Taiwan’s real estate market have the issue of rigidity, namely, rental growth rate is low, making it impossible to analyze price changes by “PRR”. Moreover, due to great per capita income disparities, “PIR”-based value credibility is being questioned. Therefore, how to overcome the problem of data processing in order to clarify the changes in real estate prices, as well as the bubble phenomenon, remain important issues.

Regarding the nature of bubbles, an asset bubble refers to when asset prices are deviated from the corresponding prices of the actual economy. Therefore, in theory, changes in real estate prices should be consistent with the overall trends of economic development. The existence of abnormal return can be regarded as an important indicator to measure real estate bubbles and price fluctuations. An abnormal return is used to describe the returns generated by a given security or portfolio over a period of time, is different from the expected rate of return, and can be estimated based on the capital asset pricing model (CAPM) (Fama, Fisher, Jensen & Roll, 1969). This concept is widely used in analyzing the stock market and corporate finance (Agrawal, Jaffe & Mandelker, 1992; Banz, 1981; Basu, 1983; Fama & French, 1992; Reinganum, 1981; Rosenberg, Reid & Lanstein, 1985), as well as exploring the phenomenon of high prices of January in the stock market (the so-called January Effect) (Berges, McConnell & Schlarbaum, 1984; Brown, et al., 1983; Herrera & Lockwood, 1994; Huang, 1997; Keim, 1983). With the prevalence of real estate investment, CAPM has been applied to more and more studies on the calculation of real estate ROA (Draper & Findlay, 1982; Gau & Kohlhepp, 1978; Miles & Rice, 1978). Combined with the special characteristics of real estate, models alternative to the CAPM, such as the Arbitrage Pricing Theory (APT), the Fundamental Valuation Model (FVM), and Hedonic Price Model (HPM) have been proposed (Draper & Findlay, 1982). Some scholars have even focused on real estate market risk (βvalue) estimation (Schlumpf, Tessera & Martínez, 2013). However, most research places greater emphasis on asset prices, the rate of return calculation, or market risk value estimation, while the issue of real estate abnormal return has rarely been discussed. In addition, the majority of the literature ignores the special factors of real estate valuation, such as regional differences. Therefore, how to improve existing methods and provide a more efficient evaluation model for abnormal return is pending further study.

Based on the above, in order to clarify whether real estate abnormal return exists, and consider the differences in overall economic factors and regional factors affecting prices of real estate, as based on CAPM and combined with time series analysis, this paper established a more convenient method of analysis in order to explore the price changes of Taiwan’s real estate market from 1998 to 2012. Additionally, analysis models are constructed by region, as follows: Taiwan (country), Taipei City (major metropolitan centers), and New Taipei City (secondary metropolitan centers) for empirical analysis.

This paper is organized as follows: Section 1 is an introduction of the research motivation and literature related to real estate abnormal return. Section 2 describes the research methods, study variables, data sources, and CAPM model applications. Section 3 is empirical analysis. Section 4 offers the conclusions and suggestions.

2. METHODOLOGY

2.1. CAPM and Excess Return Version of the CAPM

This paper uses the fundamental financial theory, CAPM, to explore Taiwan’s real estate abnormal return. CAPM was developed by American financial experts Lintner(1965), Mossin(1966), Sharpe(1964) and Treynor(1961) in 1960s to help investors determine capital asset pricing; that is, when it is at the state of market equilibrium, it requires a linear relationship between the rate of return of security and the securities market risk (systemic risk).
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