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Speculative bubbles in emerging stock markets and macroeconomic factors: A new empirical evidence for Asia and Latin America

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A R T I C L E   I N F O

A B S T R A C T

The purpose of this study is firstly to test for the existence of periodically collapsing stock price bubbles in Asian and Latin American emerging stock markets for the period 1990–2009. We use the new non-cointegration test developed by Taylor and Peel (1998) with the Residuals-Augmented Least Squares (RALS) method of Im (1996) and Im and Schmidt (2008) for monthly data of price indexes and dividends. The results show that the hypothesis of formation of bubbles cannot be rejected for all of the studied emerging stock markets. This evidence implies that the co-integration relation between the prices and the dividends is not always supported, indicating that the stock prices do not reflect their fundamental values in the emerging stock markets. We then link speculative bubbles with macroeconomic and financial factors, which is an interesting contribution of this study. The degree of equity market openness is found to be the key factor, positively related to the formation of speculative bubbles in these markets.

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1. Introduction

Emerging stock markets generally provide investors with relatively high returns compared to developed markets. In fact, if we take the period from 1995 to 2014, the average annual return for emerging markets is higher than that of developed markets (excluding US), 4.714% compared to 3.276%.[1] It is due to the fact that emerging economies have developed rapidly after undertaking many important reforms including financial liberalization. According to Bekaert and Harvey (2000), most of emerging countries began the financial liberalization in late 1980s and in early 1990s. The financial liberalization helped these markets to integrate into the world capital market and hence, promoted a sharply increase in capital inflows which resulted in positive consequences to the economic growth (Bekaert and Harvey, 2000). However, a surge of capital inflows may lead to asset price bubbles (Kim and Yang, 2009). Hence, the high returns in emerging stock markets may imply the presence of bubbles. In fact, during 1990s, many financial crises have been witnessed in emerging markets, such as the Mexican financial crisis in 1994 or the Asian crisis in 1997. Although they did not have global effects as strong as the subprime crisis in the United States in 2007, their consequences were very severe.

It is very important to detect the existence of speculative bubbles because it has many implications for the policy makers. As pointed by Chana et al. (2003), monitoring market fundamentals is not sufficient to conduct monetary policy in presence of

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rational bubbles. Besides, the major factor contributing to the formation of bubbles is the uncertainty about the fundamentals (see Parke and Waters, 2007), which is highly present in asset markets such as emerging stock markets. In order to implement an optimal policy to deal with speculative bubbles, a problem raised for central banks is how to detect them, which is not a simple task. Speculative bubble is defined as systematic price deviations from fundamentals. These deviations are due to the self-fulfilling beliefs of market participants. As the investors purchase an asset in expecting to resell it at a higher price, they push price toward expected price although they realize that prices exceed fundamental values (see Blanchard, 1979, Blanchard and Watson, 1982). Hence, the existence of speculative bubbles can be detected by examining the deviations of the price from the fundamentals. Based on standard financial asset pricing theory, the fundamental value of a security can be defined as the present value of all future cash flows associated with that security. For stocks, their prices or fundamental values in an efficient and well-informed market are the present values of anticipated future dividends with a discount rate as presented by dividend discount model (DDM).

Many econometric techniques are proposed in order to detect the formation of speculative bubbles.[2] In this paper, we choose the robust non-cointegration test developed by Taylor and Peel (1998) with the Residuals-Augmented Least Squares. We test for the formation of bubbles in the emerging markets of Asia and Latin America from 1990 to 2009. We choose this period because of the fact that equity market liberalizations of emerging markets studied in this paper are clustered in the late 1980s and in the early 1990s. Besides, financial liberalization creates linkages between emerging markets and the rest of the world, and in some way makes these markets more vulnerable to financial crisis contagion, especially a serious crisis like global crisis in US in 2007–2008. Furthermore, we also question about the effect of major macroeconomic and financial factors on the formation of speculative bubbles. Hence, after detecting the bubbles, we investigate their relationships by calculating the correlation coefficients between these two subjects.

The remainder of the paper is set out as follows. Section 2 reminds briefly the literature about speculative bubbles. Section 3 presents the model used to detect the formation of bubbles. Section 4 describes the robust non-integration test of Taylor and Peel (1998) and the estimated regressions. Section 5 introduces the data set used in the study. Section 6 reports and discusses the empirical results. Finally, Section 7 the conclusions.

2. Review of literature

In the literature, there exist several works which try to detect rational speculative bubbles defined as departure of prices from their fundamental values. Many econometric techniques are proposed for this purpose. We can cite here five categories of tests: 1, tests for excess volatility; 2, tests for bubble premiums; 3, specification tests; 4, tests for the cointegration of dividends and prices; 5, duration dependence test.

Tests for excess volatility are initiated by LeRoy and Porter (1981) and Shiller (1981). This method implies that in general, the variance of actual stock price should be less than the variance of the fundamental price. In fact, the stock price is the forecast of the fundamental price and the variance of the forecast should be less than that of the variable being forecast. Hence, in presence of speculative bubbles, the variance of actual stock price will be larger than the variance of the fundamental price. Kleidon (1986) and Marsh and Merton (1986) are among the authors who detect speculative bubbles by this method.

The tests for bubbles premiums were first used by Hardouvelis (1988). By definition, bubble premiums are extra returns that investors expect in presence of bubbles. They must be high enough so that the investors decide to stay in the market although they know that bubbles may crash. Once the bubble collapses, investors will suffer large losses. Hence, bubble premiums are positive and increase during the lifetime of the bubble. Rappoport and White (1991) also used this method to examine the existence of rational speculative bubbles.

Specification tests for rational speculation bubbles were introduced by West (1987). The author estimates the parameters needed to calculate the expected present discounted value (PDV) of a stock's dividend by two techniques and then compares two sets of parameters. The first one is obtained by regressing the stock prices on dividends and the second one is the parameter estimates constructed to satisfy the Hansen–Sargent prediction formulas.[3] The idea is that if the bubble is present then the two sets of estimates cannot be the same. This method is also applied by other authors like Dezhbakhsh and Demirguc-Kunt (1990).

Tests for the cointegration relationship between dividends and prices are proposed by Diba and Grossman (1988). Their tests are based on the investigation of stationarity property in data series of dividends and stock prices in the rational valuation formula. Exogenous bubbles introduce an explosive element in the prices which is not present in the fundamentals. They find out that the stock prices and dividends are not co-integrated in presence of these bubbles, i.e. there is no linear stationary relation between stock prices and dividends. Arshanapalli and Nelson (2008) used this method to examine housing prices in the US from 2000 to 2007.

Duration dependence test was proposed by McQueenn and Thorley (1994). These authors suggest that the runs of positive abnormal returns will exhibit negative duration dependence if asset prices contain bubbles. Hence, in order to detect the presence of bubbles, one can test for duration dependence in runs of positive abnormal returns. McQueen and Thorley (1994) tested for bubbles in New York Stock Market from 1927 to 1991 by using this method in their paper. Their results

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[2] This will be discussed in the following section.
[3] See Hansen and Sargent (1980).