SPECULATIVE BUBBLE ON THE MOROCCAN REAL ESTATE MARKET: IDENTIFICATION AND CYCLES

Pr. Firano Zakaria and Pr. F. A. Filali

University Mohammed 5 Rabat- Faculty of Law, Economics and Socials Sciences Rabat Agdal

Introduction and Abstract

This paper present several approaches to identify and dated the speculative bubble at real estate's market. Using the price index real estate (IPAI), statistical and structural approaches were combined in order to detect the existence of a bubble on the Moroccan real estate market. The results obtained affirm that the Moroccan real estate market knew a speculative bubble during the period 2006-2008 explained mainly by the boom of the credit during the same period. The use of the Markov switching model affirmed also that the speculative bubble in Morocco is cyclic and corroborates consequently the critic formulated by Evans (1991) concerning the approaches traditional of detection of the financial bubbles. Thus, the analysis of the series of the bubble, extracted using the Kalman filter, affirms the existence of two regimes namely: an explosive regime and a normal regime. The first regime describes the periods of explosion of the bubble and lasts about 9 quarters, while the second, of which during 14 quarters, describes the periods to return to the average cycle.

Objectifs

The real estate markets are frequently affected by speculative bubbles following the example financial markets. The real estates are the subject of purchase and sale by taking account of anticipations of the agents. For this reason, the price determination on the market of the real estate is a fundamental question which as well worries the actors of the market as the public authorities because of the impact of this market on economic development and financial stability. The fall of the prices on the real estate markets has fatal consequences for the economy and in particular on the value of the balance-sheets of the various economic agents. Indeed, the fall of the real assets prices generate a fall of the financial assets prices on the whole of the markets, a deceleration of the growth and a loss of confidence resulting in a significant decrease returned of the sectors into connection with the real sector.

The international financial crisis showed that the models of economic growth deteriorated with the real estate sector tend to suffer from a great brittleness because of the strong correlation which can exist between the price level on the real estate market and the growth prospects economic.

In this direction and because of the importance of the real estate sector in Morocco, this study is interested in the analysis of the trend of real estate price and the checking of the assumption, according to which, there can be a speculative bubble on the real estate market in Morocco. For this reason, paper proposes to use several approaches to detect the speculative bubbles by using the real price indexes and of the rents.

Methods

Statistical approach's

The statistical tests were the first to be used to be able to cancel or affirm the existence of speculative bubble on the markets of the capital. These tests base on a fundamental idea, according to which, the two generating processes of the prices and the dividends must be Co integrated, in the event of absence of speculative bubble. Diba and Grossman (1988) were the first to implement this type of approach by suggesting the use of the tests of unit roots and the Co integration tests, in particular test ADF, the test of Granger and Engel and the test of Bhargava. Other recent approaches proposed to adopt new tests of unit roots allowing of stage the limits of the traditional tests. Indeed, the latter adopt the assumption of existence of deterministic bubbles answering the definition of Blanchard and Al (1979, 1982), without having to claim that the bubbles can be characterized by several regimes. Thus, other statistics, taking account of the criticism of Evans (1991), were used, it acts in particular of those of Bussetti-Taylor (2004), of Philips and Al (2011, 2012).

Structural approach

The examination of the statistical properties of the series of the real assets prices and the series of the rents confirmed the presence of an explosive nature in the first series thus representing the formation of a speculative bubble lasting the period 2006-2008. However, the statistical tests are limited only to the econometric properties of the analyzed series, without taking account of an economic design and a definition more structural of the speculative bubbles. For this purpose, other economic approaches (structural) were suggested in order to check in a relevant way the assumption of existence of bubble on the capital market.

Speculative bubbles cycles

Several work suggested using the Markov switching model to test the phases of boost and bust of the bubbles. The characteristic of these model lies in their capacity to describe in an empirical way the phase's hawser and depression of the assets prices. Indeed, the criticism formulated by Evans (1991) on the cyclic nature of the bubbles constituted a catalyst for this type of work which tries to identify the regimes of the speculative bubbles.

The model is characterized by their capacity to detect heterogeneous states of the world. In the continuation of this paragraph, one proposes a short description of these models, however, for more details, it is necessary to see work of Hamilton [1994], Kim and Nelson [1999] and Wang [2003].

Results Statistical approach

The use of the statistical tests of the first and the second generation affirms that the series of the real estate's price index is explosive and seems to be independent, not co-integrate, of the developments of the rents. This conclusion can to check the assumption according to which the trend of prices indicates the presence of a speculative bubble.

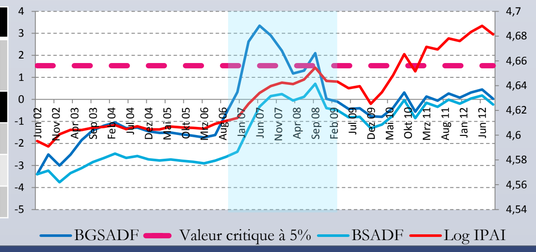
Series	ADF probability	Lag used in ADF
Log of outputs (LD)	0.0006	9
Log of the real assets prices (LP)	0.9507	9
D(LD)	0.0006	9
D(LP)	0.0000	9

Table 5 : BT test (2004)	
Log of price index of the real assets	1.4858
Critical value	
90%	0.5057
95%	1.0153
99%	5.9401

Series	Bhargava stat	Observation number
LP-LD	-1.56	51

Table 6	SADF Test	GSADF Test
Log of real assets prices	0.7058	2.6392
Log of index of the rents	-1.2689	0.1204
Critical value		
90%	2.7879782	1.1915780
95%	3.4615806	1.5360598
99%	3.5906605	2.1555409

The whole of the tests were carried out on a sample of 51 observations and with an interval r0=0.4 the breaking values were obtained on the basis of 5000 Monte Carlo simulation.



Results structural approach

The estimates gave more or less satisfactory results (Kalman filter of Euler equation).

In second time, several work suggested using the Markov switching model to test the phases of boost and bust of the bubbles

Table 10 : kalman filter estimation	
Coefficients	Value
C(1)	0.136075 (0.00)
C(2)	0.430003 (0.00)
C(3): bubbles coef	0.699998 (0.00)
State variables	
ΔD_t	0.164742 (0.00)
ΔY_t	0.066667 (0.00)
ΔB_t	-0.736229 (0.00)
LogL	-1676067
Estimate using the maximum of probability 50000 iterations	

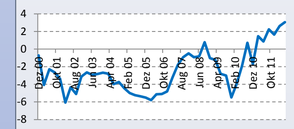
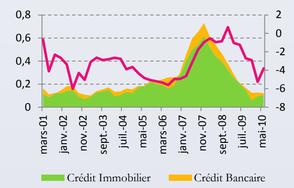


Table 12 : Identification of the Markov regimes		
States	Mean	variance
Boost (E2)	0.047453 (0.09)	2.118854 (0.00)
Bust (E1)	-3.903149 (0.00)	1.290944 (0.01)

LogL :-89.6689, the estimates were carried out by supposing the normal distribution

Table 13 : duration of bubbles cycles	
states	Expected duration
Boost (E2)	9.11 quarters
Bust (E1)	14.55 quarters



Conclusion

The results obtained confirmed that the real assets prices deviate significantly from the fundamental value, whose explanatory capacity is less important. For this purpose, a speculative bubble characterized the development of the real assets prices during the period 2006-2008. In addition, the analysis of the dating of the bubble on the real estate market lets predict the existence of two regimes which control the formation of the speculative bubble. The first state describes one period of rise of the prices, an explosion of the bubble, and a second state relative to a return at the normal or average state. According to these results obtained using the Markovian regimes we can affirm that the criticism of Evans (1991) on the cyclic nature of the financial bubbles is confirmed. Indeed, on the level of the Moroccan real estate market the explosion of the bubble lasts about 9 quarters and the normal cycle is of 14 quarters lifespan. At the end of each cycle begins another and so on.

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