

UNIVERSITY OF MACAU
FACULTY OF BUSINESS ADMINISTRATION

**AN EXAMINATION OF THE EXISTENCE OF BUBBLES IN THE
HONG KONG PROPERTY MARKET**

Li Ying, Lynne

M-B0-4356-2

Thesis presented to the
Faculty of Business Administration
University of Macau

In partial fulfillment for granting the Master of Science in Finance Degree

2012

Abstract

Studies of the financial crises happened in Thailand in 1997 and in US in 2007 reveal the importance of real estate market. It not only makes a large contribution to the government revenue, but also has a strong influence power to the whole economy. Therefore, it is essential to maintain the health of the property market in order to have a sound financial system and smooth economic activities. One way of ensuring the health of the market is to examine the existence of the bubbles.

In the last few years, many noticeable events had acted on the property market. Except for the sub-prime mortgage crisis, a huge amount of “hot money” inflow to Hong Kong market at the end of 2008. Property price increased dramatically after 2009 which even -led to the shock brought by US negligible. With the persistent boom of the industry, we are interested in whether there is a bubble in the market. Given the unique background of Hong Kong market, we also would like to study the regime shift behavior after Hong Kong returned back to China.

In this thesis, we focus on the price movement of private domestic unit with the interest rate and also the rent in Hong Kong real estate market from 1980 to 2011. The lagged effect with these two explanatory variables is measured by testing the fundamental equation which has been developed by Lai and Van Order (2010) with various lags. Results show that both the interest rate growth and expected growth rate of rent have negative effect on the difference of growth rate of price and rent, and the effects normally last for about two years. The error terms generated by the fundamental equation are then used to examine the existence of bubbles. Result

shows that bubbles become obvious after 1997, but not explosive. Regime shift behavior is studied by comparing the variance of the error terms of periods before and after the handover of Hong Kong, and the shift is found in the market toward a more stable regime after 1997. Studies of this paper extend our knowledge of Hong Kong market.



Acknowledgements

It is a good chance for me to express my gratefulness for the people who have helped me with my thesis writing. First and foremost, I would like to make a special thank for my supervisor, Prof. Rose Lai, who have given me a lot of valuable advises and inspiring guidance. She has met me so many times to discuss the result with me and answer my questions. She has also taught me a lot about the theories and models and inspires me to think about the meanings behind those figures. She is always willing to support me no matter how busy she is. Thanks for her patient and carefulness, I have a better understanding about this area and have corrected many mistakes I have made before getting this fruitful result.

I would also thanks to my friends and classmates who have gave me a lot of support and encouraged me with their friendship, especially Ms. Deng Jie, who give me a lot of advices and comments on the format issue.

A special word of thanks is given to my residential college, East Asia College, and also Prof. Iu Vai Pan, Mr. Kevin Huang, and Ms. Monica Liu. They have given me a lot of administrative support and care.

Finally, my heartfelt thanks dedicate to my families and my boyfriend for their constant encouragement and endless love.

Table of Contents

Abstract	i
Acknowledgements	iii
List of Figures	vi
List of Tables	viii
Chapter 1. Introduction	1
1.1 The general nature of property and real estate	1
1.2 Studies of financial crisis—Case in Thailand	2
1.3 Studies of financial crisis—Case in the United State	3
1.4 Studies of Hong Kong Real Estate Market	8
1.4.1. Reasons for the study of Hong Kong Market	8
1.4.2. The background of Hong Kong real estate market	14
Chapter 2. Literature Review	18
2.1 Market Efficiency	18
2.2 The Fads Model	19
2.3 “Market Fundamentals” and “Price Bubble”	20
2.4 Empirical debate on the existence of bubbles	21
2.5 Various method for testing the bubbles	22
Chapter 3. Data and Methodology	27
3.1 Description of Data	27
3.2 Methodology	29
3.2.1. Model adopted in this paper	29
3.2.2. Equation chosen for testing the panel data	31
Chapter 4. Results	34
4.1 Estimate of fundamentals	34

4.2	Estimate of Error Equation	41
4.3	Volatility of the Error Terms	52
4.4	Additional Support with Monthly Data	57
Chapter 5.	Conclusion	61
5.1	Summary of findings	61
5.2	Limitations and Further Research.....	62
Reference		63
Appendix		67



List of Figures

Figure 1 Federal Funds Effective Rate	5
Figure 2 US Primary Mortgage Market.....	5
Figure 3 Originations of Single-Family Mortgages in US, 1990 - 2011 Q2.....	6
Figure 4 Percentage Change of US House Price Index Year-On-Year	6
Figure 5 Monthly data of Hang Seng Index from 1986 to 2012	10
Figure 6 The total receipts in real estate sector and relative percentage change in current year compared with last year in Hong Kong market.....	11
Figure 7 Domestic sales in Hong Kong property market	13
Figure 8 Rental and Price Indices of Hong Kong Private Domestic Unit.....	15
Figure 9 Rental Indices for different categories of properties in Hong Kong.....	16
Figure 10 Price Indices for different categories of properties in Hong Kong	17
Figure 11 Average Price of Hong Kong Private Domestic Unit by Class and Average Wage Rates for all selected industry sections	39
Figure 12 Private Domestic (Small/Medium Units).....	43
Figure 13 Private Domestic (Large Units)	44
Figure 14 Growth Rate of Price and Rental Indices of Hong Kong Private Domestic Units	44
Figure 15 Monthly Data of Private Domestic unit of Class A	60
Figure 16 Quarterly Data of Private Domestic unit of Class A.....	60
Figure 17 Hong Kong mortgage Outstanding and Fed Funds Target	67
Figure 18 Property price change in Hong Kong market with Fed Fund Target.....	67
Figure 19 Monthly Data of Private Domestic unit of Class B.....	72
Figure 20 Quarterly Data of Private Domestic unit of Class B	72

Figure 21 Monthly Data of Private Domestic unit of Class C..... 73

Figure 22 Quarterly Data of Private Domestic unit of Class C..... 73



List of Tables

Table 1	Industry Structure of Real Estate Sector in Hong Kong, 1997, 2004 and 2009.....	12
Table 2	The Price Index of different class of asset from 1980 to 2011.....	16
Table 3	Fixed Effect Model results for the fundamental equation (various lags)	37
Table 4	Comparison of sum of coefficients from the fundamental Equation (14).....	40
Table 5	Comparison of sums of coefficients of the error equation from the fundamental equation.	47
Table 6	Descriptive Statistic for Price and Rental Indices	51
Table 8	Test of differences in variance of two discontinuous sample periods: 1982Q3-1997Q1 and 1998Q3-2008Q1	55
Table 9	Comparison of sums of coefficients of the error equation from the fundamental equation with monthly data: post-1997	58
Table 10	Comparison of sums of coefficients of the error equation from the fundamental equation with monthly data: post-2003.....	58
Table 11	Comparison of sums of coefficients of the error equation from the fundamental equation of Class A,B, &C for the post-1997 period	59
Table 12	Number of significant coefficient for the error equation for the Pre- and Post-1997 period.....	68
Table 13	Number of significant coefficient for the error equation for the period 1982Q3-1997Q1 and 1998Q3-2008Q1	69
Table 14	Results for the fundamental equation (various lags)—monthly data	70