Through a Second Glance at Chinese Hawaii:

Is Hainan housing market in a forever tropical paradise?

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Abstract:

Hainan province, as the only tropical region in China, suffered a housing bubble in the 1990s when the bubble burst. This was the first case of a bubble in the Chinese housing market. However, in the latest decade, Hainan housing market has become again heated up; the price of housing keeps increasing and new record housing prices have been reached. Is the housing bubble back again to this tropical paradise or is the high price of housing grounded in the changes of economic fundamentals? Through the measures of housing bubbles and analysis of economic fundamentals for Hainan housing prices, this thesis aims to explore the Hainan housing market from the 1990s to the present time in order to find out the answers to the research questions and to draw conclusions.

Keywords: Hainan housing market; Bubble definition and measures; Economic fundamentals; Correlation and Granger causality analysis.

Acknowledgement

First of all, I would like to express my gratitude to center of East and South-East Asian studies in Lund University. Thanks for having given me the chance to study in this master program which has led me into a new academic field and taught me more about how to see and critically understand Asian countries.

Then I want give my hearty thanks to my supervisor Stefan Brehm. He has given me his patience, understanding, insightful advice, and inspiring guidance throughout my work on this thesis over the last few months which I truly appreciated.

Meanwhile, I will give my great thanks to my dear friend Bill who is from Portland University. Thousands thanks for his help and patience to review my thesis language and give me good advice.

Last but not least, special thanks will be given to my husband Hans Erixon for his enduring support and his encouragement during my study. The harvest of my studies cannot be separated from his understanding and great help to take care of our two lovely kids.

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Chapter 1 Introduction

1.1 Background

China's opening and reform policy has carried out the transition from a state-centered system to a market-centered system since 1978. Consequently, socialist allocated working unit-employee homes before 1980s started being replaced by the commercializing homes for Chinese peoples. The Chinese state played an essential role in accelerating the establishment of a residential real estate market in the process of housing reform during the last three decades, such as creating the first real estate companies and encouraging the private or non-state owned ones (Zhang 2006:329). An investment structure was thus formulated on the market basis and market oriented commercial housing development attracted investment from various sources, which caused a rapid increase in real estate investment (ibid. 333) [Figure 1]. Since 1998, real estate development has been regarded as one of the major economic growth propellers by the central government (Lu 2010: 19；Appendix II). According to Zhang et al. (2010: 124), concerning real estate influence on all industries, the 100 RMB demand of real estate will finally lead to 315 RMB additional demand of gross production. To illustrate, in the housing market, housing spurs consumption not only the purchase of furniture and other household items, but also results in higher home values which a family can use to refinance existing mortgages or take higher home equity loans in order to support additional consumption (Baker 2002: 108). In front of such a pursuing economic profit, increasing property investment is driving by easier availability of bank loans, more housing sales, and higher disposable income which on the other hand has positive effect on housing sales price (Li 2013: 17). At the same time, the rapid urbanization process in China also boosts housing investment. Because housing prices have increased dramatically in recent decades, households with an average income feel that they cannot afford to buy a home (Dreger & Zhang 2013: 28). This phenomenon leads to the hot discussion that housing price escalation is creating bubbles and bubbles are creating the risk of a burst. The winner of 2013 Nobel Prize in economics, Robert Shiller, has observed on several occasions, such as Shenzhen, Shanghai and other major cities, and he believes that housing bubble is a serious problem in China (People's Daily Online, 2013-20-17). On the other hand, there are those who still positive and believe that China's long-term fundamentals are strong, which indicates that China will be one of the largest construction/infrastructure market in the coming years (BMI 2014: 9).

Figure 1 Total Investment in Urban Residential Buildings in the Whole Country (1995-2010)

Unit: 100 Million RMB
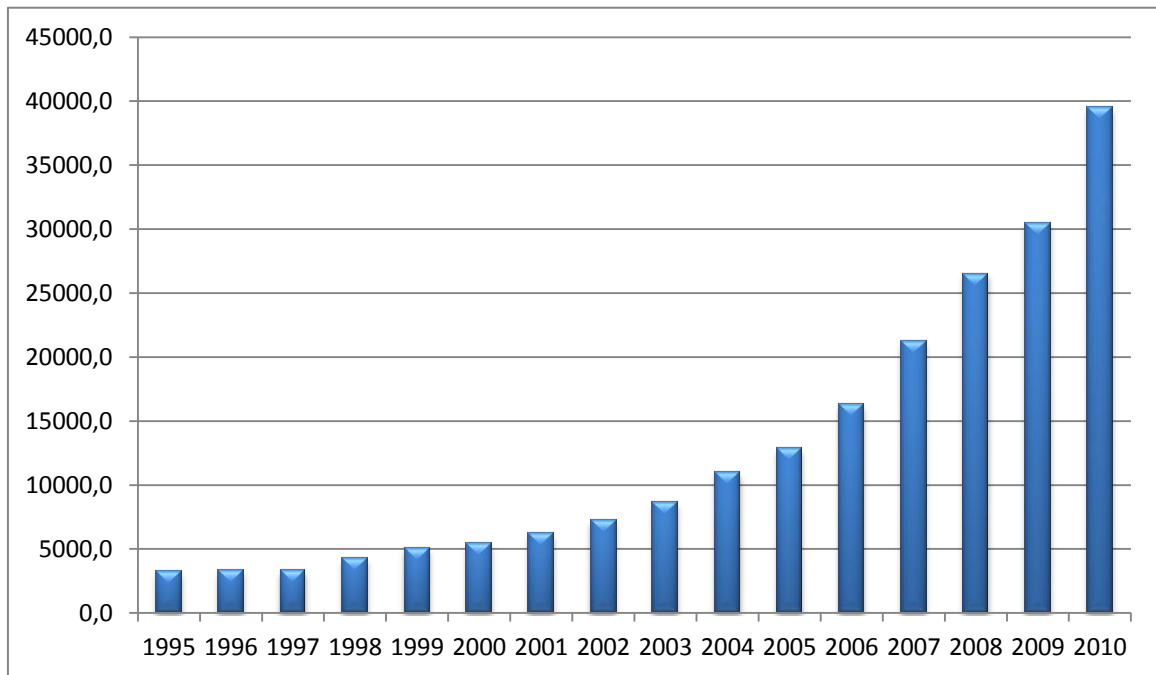
Source: Author elaboration from various years CSB

1.2 Research Purpose

As Baker (2002:101) stats, before examining the housing market, it is important to point out that the housing market varies enormously by region, even though the national statistical data indicates that the average price has increased. Similarly, the field of Chinese housing market is full of complex trends and varies differently as well in different regions in China. At the same time, it is difficult to estimate the existence of a bubble in a general average way for the whole Chinese housing market (Chiang et al. 2012:85). This thesis thus aims to take into account a perspective to broaden and deepen the understanding of the housing market from regional level.

In the 1990s, Hainan Province suffered real estate burst which resulted in hundreds of unfinished projects left until after entering the new millennium when Hainan Province stopped the stagnation. Thereafter, the price of housing in Hainan has kept increasing. Even during the world economic crisis in 2009, Hainan's housing market has not been influenced, on the contrary, the total investment in real estate development dramatically increased to reached new records in 2013 [Figure 2].

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Figure 2 Hainan Total Investments in Real Estate Development (1990-2013)
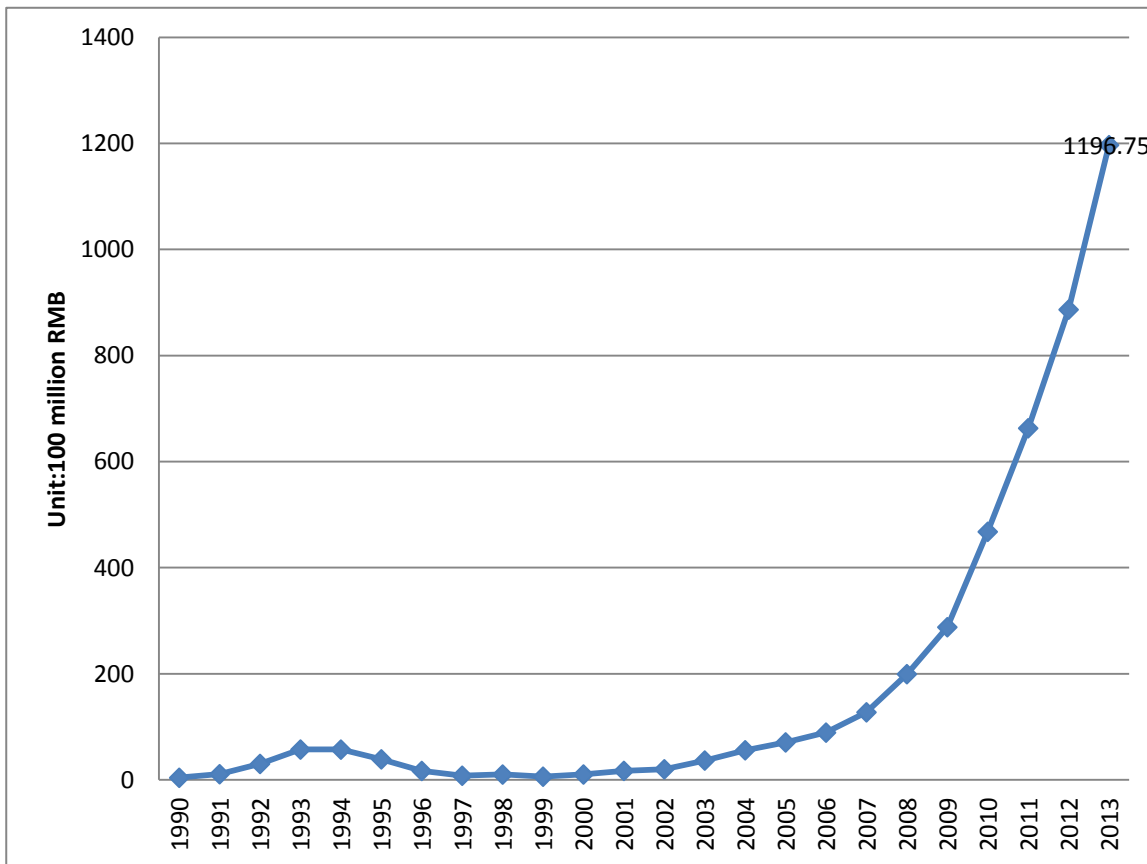
Source: author elaboration of various years HSB

In order to find out if the housing bubble is coming back again to Hainan or whether the high price of housing is due to the economic fundamentals changes during the last two decades, this research will focus on the Hainan province housing market during the period of 1990s to 2012. Data analysis will be formulated under the direction of theoretical framework and research questions. The findings might also shed light on the regional housing market in China

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1.3 Research Questions

The thesis purpose is to test, analyze and explore Hainan housing market, aiming to find out the following main questions:

1. Which economic fundamentals impact housing prices in Hainan?

2. Is the Hainan housing prices grounded in economic fundamentals changes or is there just a housing bubble?

The perspective of this thesis is closely linked to the theoretical framework and makes sense of using relative data to describe, explain and explore the Hainan housing market. The above research questions will thus be answered through the analysis of statistical data which is drawn from provincial and national statistic yearbooks from various years, together with methods to judge the relationship between housing price and economic fundamentals, the exploration of bubble measures. In order to reach that, Hainan housing market background history in 1990s will be described; economic fundamentals for Hainan housing prices, such as income, population, land supply and land price, loan interest rate, property loans, construction cost and tax cost, tourism and infrastructure will be analyzed and compared from different time periods; and two different indicators will be used to illustrate and measure if there is housing bubble in Hainan today.

1.4 Thesis Disposition

The thesis is structured with total seven chapters. The second chapter focuses on the methodology which will state and explain methods chose, research region chosen, and limitations of the research. The third chapter will first define what a bubble is for the housing market and the economic fundamental factors for housing prices, and then the background of Hainan housing market. The fourth chapter will list different economic fundamental factors to housing prices and then illustrate two indicators to measure housing bubbles. With the direction of analytical framework, the fifth chapter is devoted to the Hainan housing market metadata collection and variables definition. In the sixth chapter, the empirical analysis will give an examination of data, explore whether Hainan high housing prices are due to the economic fundamental changes in the last two decades and determine if there is evidence that housing bubbles exist in contemporary Hainan compared with 1990s. Finally, the last chapter will summarize the research and give a conclusion.

Chapter 2 Methodology

2.1 Research Approach and Strategy

As Mikkelsen (2005: 127) explains, there is paradigm behind any research study and process of inquiry, which guides the researchers in ontological, epistemological and methodological fundamentals. It is thus helpful, worthy and important to start considering the ontological and epistemological frame since *"there is no research can take place in a philosophical vacuum"* (Murray & Overton: 19). This thesis aims to analyze the housing market in Hainan province which will principally have the objectivism and positivist as the ontological and epistemological standing point respectively. As it says, methodology refers to the ways which guide us how to acquire knowledge, and denotes the concepts, theories investigation and reasoning basic principles on a subject (Mosese & Knutsen 2007:5). A quantitative approach will be used in order to reach the research aims.

Quantitative research means that with an objectivist conception of social reality, the research aims to entail the numerical data collection, to present *"a view of the relationship between theory and research as deductive and a predilection for a natural science approach"* (Bryman 2008:140). In other words, the goals of quantitative research are: *identifying general patterns and relationships, testing theories, and making predictions* (Ragin &Amoroso 2010: P165). In order to reach goals and answer the research questions, the research should be guided under the theories. The quantitative research process (ibid. 171) can be devised into four steps: *"Analytic frames in quantitative research, from analytic frame to data matrix, measuring variables, examining correlations and testing theories"*.

2.2 Methods

Methods refer to research techniques or technical procedures of a discipline which are like tools (Mosese & Knutsen 2007:5). At the same time, *"methods are linked with the ways in which social scientists envision the connection between different viewpoints about the nature of social reality and how it should be examined"* (Bryman 2008: 4). In quantitative research, quantitative methods are used in order to address the differences and focus on the covariation between attributes that vary by level (Ragin & Amoroso 2010:187). In order to answer the research questions, this thesis is thus

structured by the quantitative methods and with the theoretical considerations which help guides and influences the collection and analysis of data. Data in quantitative research is "*characterized by many of its proponents as objective, representative and most important, specified in number*" (Schyvens and Storey 2003: 38).

There are several ways to collect quantitative data such as through observations, questionnaires, structured interviews and the use of secondary data (ibid.39). Here it will mainly use secondary data which is from official statistical year books provided by Chinese government from regional and national levels. The reason to use secondary data is that statistics is the best method to conduct the research due to limitation on field work time. In order to find the answers to research questions, related secondary data need to be measured in this quantitative research. It is because once they are measured, it can provide an explanation of certain aspects in the Hainan housing market, and evidence changes of housing prices over time.

It has been claimed that "descriptive statistics are most frequently used to supplement narratives" and in the descriptive statistics, it "*breaks down the chaos that appears on the world's surface, and distil it into single, well-defined, facts*" (ibid.70, 74). Thus this thesis will start to focus on the descriptive analysis on the Hainan housing market from 1990s to 2012. Then, after the descriptive analysis, it is necessary to extend the research methods to inferential statistics, which is "*increasingly associated with attempts to infer beyond the data to something that is not direct observed*"(Moses & Knutsen 2007: 83). A multivariate analysis will be given according to different indicators. Additionally, to clarify and exemplify the understanding of the statistics data, assistant computer software SPSS and EViews will be used. In the end, in order to make up the quantitative data missing qualitative methods, the appendix part of this thesis will offer the related policies to housing market in China, plus special policies to the development of Hainan Province.

2.3 Research Filed Site Choose

The housing market varies enormously by region in large countries (Shiller 2005: 121, Baker 2002:101). Previous studies have either focused on the Chinese housing market in general, or focused on Beijing, Shanghai and Guangdong metropolitan areas which have experienced a fast pace growth of housing prices over the last decade. But this general analysis cannot give a better

explanation to the housing market in different Chinese regions. Some of the Chinese regional housing markets might not experience housing bubbles, and Chinese housing prices do not increase at the same pace everywhere due to their economic fundamentals difference. This thesis choose the Hainan housing market as research field due to its historical housing bubble and also due to its remarkable housing market recovery and dramatic housing price growth in the last decade. It aims to provide a deeper insight into the Chinese housing market's mechanisms and lead to a broader discussion on housing bubbles and housing price increase as consequence of economic fundamentals changes from a regional point of view which has not been the focus of prior academic research.

2.4 Limitations

First, there are critiques of quantitative research, for instance, quantitative research cannot *"distinguish people and social institutions from the 'the world of nature'"*; and "the reliance on the instruments and procedures hinders the connection between research and everyday life" (Bryman 2008:159). Second, one should be aware that collecting secondary data may not be necessarily truthful or valid, since there are many causes and examples of governments and other agencies published and official data which are false, selective or distorted (Scheyvens & Storey 2003:42). Also the quality of data should never be taken for granted since researchers are not very familiar with the structure and contours of the secondary data (Bryman 2008: 300). In this quantitative study of the Hainan's housing market, it suffers from the problems in the quality of housing data. Due to the backwardness of the Hainan province statistical database in the 1990s, much relevant data is missing.

Chapter 3 Bubbles, Economic Fundamentals and the Hainan Housing Market

3.1 Bubble Definition and Economic Fundamentals

What are bubbles? The term "bubble" is widely used but rarely clearly defined (Case & Shiller 2003: 299). In Kindleberger first edition of *Manias, Panics and Crashes: a History of Financial Crisis* (1978:16), he defined a bubble as "*an upward price movement over an extended rage that then implodes*". Thereafter, in his latest sixth edition of this popular economic guidebook, it states that (Kindleberger &Aliber 2011:2), bubbles by definition "*involve non-sustainable increase in the indebtedness of a group of borrowers or non-sustainable increases in the prices of real estate and stocks*" and it always implodes. Bubbles burst carry the rapid decline of real estate and stocks prices, and the "*the borrowers are the first group to incur losses; after they default, the losses cascade to the lenders*" (ibid.). It has been thought that the term "bubble" is a generic term for the asset prices movement that is unexplainable by the changes in the economic fundamentals"(Garber 2000: 4; Kindleberge & Aliber 2011:17).

According to current economic theory: A bubble exists in the housing market when the housing price exceeds prices determined by fundamental factors by a significant amount for a prolonged period; and a bubble cannot exist unless it is driven by irrational behavior or market rigidities, such as constrains on the short of housing selling (Evanoff et al. 2012:1). "Irrational behavior" has been detailed analyzed by Shiller (2005), who claims that the people's thinking change and their actions ultimately drive the makret. Shiller believes that "*it is about the psychology of speculation, about the feedback mechanism that intensifies this psychology, about the herd behaviour that can spread through millions or even billions of people, and about the implications of such behaviour for the economy and for our lives*" (ibid. xiii). Thus, the notion of a bubble is also defined in terms of people's thinking: "*their expectations about future price increases, their theories about the risk of falling prices, and their worries about being priced out of the housing market in the future if they do not buy*" (Case & Shiller 2013: 301). In other words, since prices cannot increase forever, when people observe and feel that prices have stopped increasing, their expectations of high housing prices could collapse which as a result causes diminished demand in the housing market, then the bubble burst (ibid. 300). Hence, the "bubble" signifies "*a negative judgment on the phenomenon, an opinion that price levels cannot be sustained*" (ibid.302).

Furthermore, the *"operational definition" of a bubble* has been specified by Siegel (2003: 14) who states that a bubble (*or negative bubble*) can be described at time *t* if it can be shown that the *realized* return of the asset is inconsistent over a given future time period. In other words, before a bubble can be defined, it must wait a sufficient time period to see how the future plays out. Thus, Siegel's operational definition of a bubble indicates that it is actually impossible to judge immediately after a price falls whether there was a bubble or not (ibid. 14). Opposite to Shiller's irrational behaviors, Siegel argues that bubbles *"instead of being periods of irrationality, were periods where investors bid prices up to levels where the margin over returns has shrunk to the levels consist with the risk and return profile of these assets"* (ibid.23).

But it has been argued between different economists regarding the use of the term bubble since only rapidly increases house prices by themselves cannot be conclusive evidence of bubble (Case & Shiller 2003, 300). Some economists believe that the term "bubble" is inappropriate, since they believe the suggestion of irrational behavior is highly unlikely or implausible ; on the contrary, they peruse to explain the rapid price increase in real estate or stock market are consistent with the economic fundamental factors changes (Kindleberger & Aliber 2011:18). Fundamentals should focus on the long term equilibrium expected value but allow for short term 'random shocks' influencing prices (Rooser 2000: 107). In some areas, rapidly rising housing prices might be associated with a shift in underlying fundamental factors, which make a region more attractive and people place increased value on home ownerships (Baker 2002: 96, 104). Determinant fundamental factors, such as income, loan interest rates, land prices, population, construction and taxes cost, tourism and infrastructure, can influence housing prices to a great extent (Case & Shiller 2003; Shiller 2005; Baker 2002; Black et al.'s 2006; McDonald & Stokes 2011; Wen & Goodman 2013; Glaser & Gyourko 2003; Mankiw & Weil 1989). In other words, higher housing prices may be due to fundamental factors rather than a temporary bubble, and even though housing price increases a lot with the existence of housing bubble, it does not guarantee that they will fall by a large amount in the future (Baker 2002: 96 ,104).

3.2 Housing Market in Hainan-bubble history and nowadays

Hainan Island, which has the nickname as the "ends of the earth", on August 23, 1988, separated from Guangdong Province and established China's 31st province and economic autonomous region.

The capital city Haikou and the most southeast city Sanya became the "Utopia" for speculators. Since 1988, over 20,000 real estate development companies emerged on this island (Yang 2007-08-31). Together with Mr Deng Xiao Ping's speech in Shenzhen 1992 that China should speed up and deepen the housing reform, Hainan was selected as a pilot region for housing reform. Under the encouragement of Deng's policy and profit driving, local government, banks and developers formed a closed and tight triangle relationship in Hainan during that period. Residential property bubbles had been generated due to continuous capital inflow into the Hainan real estate market from state owned banks, funds, state-owned enterprises, township enterprises and private enterprises etc. Almost all developers became bank's debtors. Land or uncompleted real estate projects were resold many times by savvy developers in order to earn more money in their pocket or had been mortgaged as security for getting bigger bank loans. Irrational behavior and the growth of easy credit pushed housing prices dramatically higher. Some housing prices in Hainan projects increased dramatically from 300 RMB/m2 in year 1989 to 7,500 RMB/m2 in year 1992 (Rapoza. 2011-08-11). It was just like Case & Shiller (2003: 299) described that *"the expectation of large prices increases many have a strong impact on demand if people think that home prices are very unlikely to fall, and certainly not likely to fall for long, so that there is little perceived risk associated with an investment in a home"*. At the same time in 1992, Haikou City economic growth reached 83%, and Sanya City reached 73.6% (Yang 2007-08-31). The real estate industry became the main source of revenue for the local governments.

However, this speculative perception and behavior stopped when the Chinese State Council announced a new policy in order to control the bank credit to the real estate industry in June, 1993. Interests rate began rising and the prices of some housing projects rapidly fell as low as 1000 RMB/ m2 (Rapoza. 2011-08-11). When a housing bubble bursts, home building is likely to fall of substantially, meanwhile it also accompanies a sharp decline in homeowners' equity and a resulting wave of mortgage defaults and bankruptcies (Baker 2002:113). Thus there were not only an uncountable number of unfinished real estate projects and unused land, but there were also over 30 billion RMB nonperformance land on the balance sheets of the banks in Hainan 1990s (Yang 2007-08-31). Thereafter, the government of Hainan took over a decade (until in the beginning of 2000s) to clean up the messes created by the bubble burst.

After 2000s, Hainan entered a new era of being the Chinese popular tourist destination, economic

fundamentals such as local people's income, infrastructure has dramatically changed, and housing prices in Hainan have been continuously increasing even during 2009 when the world suffered an economic crisis. [Figure 3] shows the information that in 2012, not only the major Chinese big cities/ or provinces like Beijing, Shanghai, Guangzhou have high housing price, but also Hainan province, which had experienced a bubble in the 90s before, reported high housing prices. To illustrate, the most expensive project was Sanya Phoenix Island, which was regarded as the Chinese counterpart of Dubai's Palm Jumeirah and the average sales price was around 150,000RMB/M2 in the beginning of year 2010 (163 News: 2013-07-22). Housing market in Hainan enters into a new hot period which has accelerated much more rapidly than in 1990s. This despite the central government's strong efforts (Appendix II) to try to cool down the overheated housing market via tightening loan available to real estate developers, but the signs of effective results have been questioned and the housing prices Hainan increased instead of decreasing. Thus, nowadays some academic researchers have argued that there is a serious bubble in the Hainan housing market [Figure 4]. But is the bubble coming back to Hainan housing market or is the high price of housing grounded in economic fundamental factors changes?

Figure 3 Housing Price Map of China (Oct, 2012)
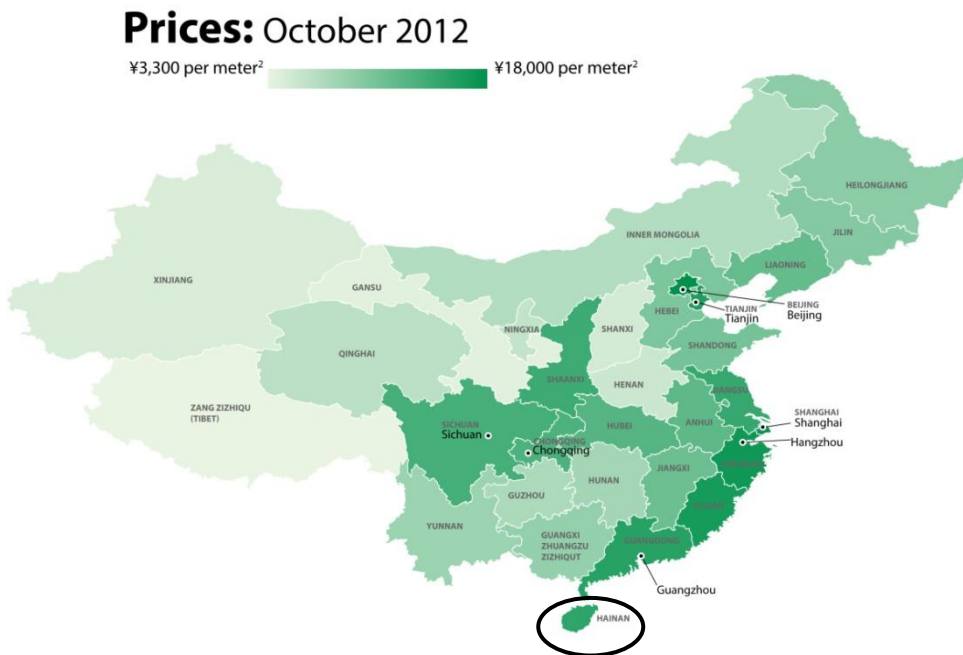
Source: Design and Geography (2013-02-03)

Figure 4 Housing Price Bubble in Major Chinese Cities (2010)
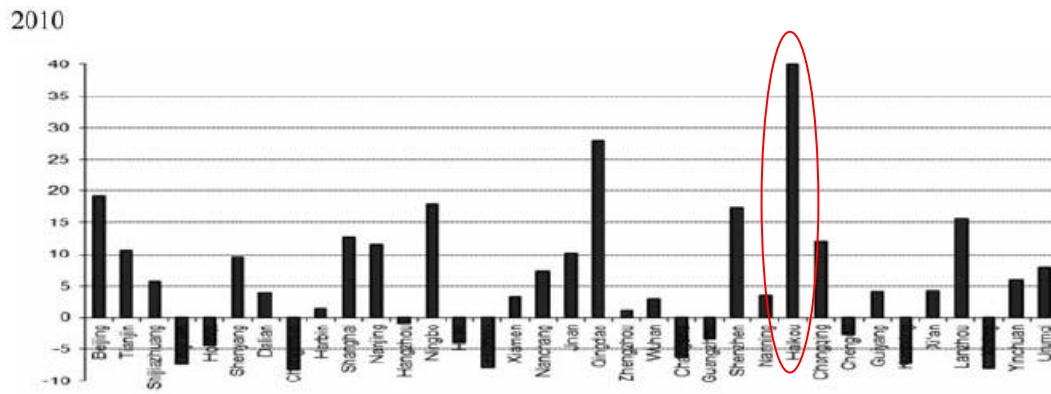
Source: Dreger & Zhang (2013:36)

Chapter 4 Analytical Framework

4.1 Theoretical Consideration

As discussed above, within the definition of a housing bubble and the consideration of economic fundamental factors shifts, there has been continuous debate on whether high housing prices are the result of a bubble or are grounded in fundamental changes. Therefore, in attempting to examine the Hainan housing market, before judging whether high housing prices are just a simple bubble which is unexplainable by economic fundamentals, one should start by determining if the housing prices are a consequence of significant changes of economic fundamentals. The analytical framework will be structured as follows:

4.2 Economic Fundamental Factors for Housing Prices

Economic fundamentals reflect the long term equilibrium expected value; a rapid increase in housing price might be associated with shifts of underlying fundamental factors rather than simply a temporary bubble. In the following part, fundamental factors, such as income, loan interest rates and availability of loans, land prices, population, construction and taxes cost, tourism and infrastructure will be discussed.

4.2.1 Income

It has been claimed that income growth alone explains the pattern of home price increases in most areas (Case & Shiller 2003: 300). It is obvious that housing supply in the short term is somewhat fixed, so a rapid rise in income is an entirely plausible cause to a temporary run up in housing prices (Baker 2002: 98). To most families and individuals, housing is the single largest expenditure item in their budgets (Quigley & Raphael 2004). Income growth can lead to a shift in people purchasing taste which let people value housing more than they had previously (Baker 2002: 96). Many statistical analyses in China base their analysis on an average wage analysis. However, average income cannot give the best reflection on fundamental changes; on the contrary, disposable income may be a better indicator to reflect those (Black et al.'s 2006).

Disposable income of urban sample households = gross income-personal income tax-personal contributions to social security (Xu 2014: 26).

But would the rapid rise in personal income lead to long-lasting and permanent increase in housing prices? In Case & Shiller's U.S housing prices analysis (2003: 307), they draw the conclusion that while income alone almost completely explains the increase of housing prices in vast majority of states, there are still parts where housing prices cannot be well explained by income patterns. It is thus essential to consider the stability of relationship between personal income per captia and a number of other variables and home prices over time and space in order to measure the housing prices increase (Case & Shiller 2003: 305).

4.2.2 Property Loan Availability and Loan Interest Rate

Housing is an expensive purchase which not all the households can afford if they have not saved enough money. Thus the increase supply of credit is a very necessary part for household to access a move to owner-occupancy. A developed housing finance system is a prerequisite to an efficient housing sector able t*o respond to* households' demand for new housing. *In order to do so, if they exist, financial institutions should be able to propose attractive interest rates and finance solutions to most* households (UNHABITAT 2009:14). Thus the growth of loan availability can led to an increase in housing prices. It is because loan availability for residential real estate increase in the short term, it will benefit real estate industry and other related industries. Housing price will increase when more people are offered easier access to bank loans to buy properties and drive the demand for increased housing. However, if the supply of loan starts to decrease, then it should be expected the ability to buy property will decrease. And at the same time, housing is far more responsive to interest rate changes than any other sector (Case 2008：179). If interest rates increase, then it should be expected that housing prices will drop back to more normal levels (Baker 2002: 106). It is because when the interest rates rise, homeowners face dramatically higher payments and many have to sell their property or face the default. In summary, the growth of loan availability and attractive interest rates can promote a more attractive housing price and reduce financing costs sufficiently, just as it has been stated that falling interest rates can clearly explain much of the run-up housing price (Case & Shiller 2003: 300).

4.2.3 Population

One of Shiller (2005: 41)'s precipitation factors or fundamentals for the increase in housing prices is the increase in population. It is because demographics changes can influence housing price

increase/changes and there is strong correlation over time between housing prices and demographics (Baker 2002:97; Shiller 2005: 42). An increase in the number of births might have little immediate effect on the housing market, but it will generate an increase in housing demand twenty years or thirty years later hence when the infants grow up to be adults and this housing demand increase will affect the price of housing and amount of residential property investment (Mankiw & Weil 1989: 236). For instance, the aging of the Baby Boom is largely attributable to the housing price increase (ibid. 236), since when baby boomers become adults and start their own families in large numbers, the demand for housing will be increased which at the same time drives the housing market trends (Baker 2002: 97). In addition, urbanization also speeds up the population density at city level which also boosts local housing prices (Yin & Muller 2008:56). On the contrary, a decrease in population would lead to negative influence on housing market and housing prices in the coming years. Thus, population change is significant for identifying housing price valued fairly or not.

Furthermore, the relationship between age and housing demand is central to studies of demographics and housing (Myers, 1990). Homeownership rates rise with age and variation of different types of housing can be explained by demographic factors as well (Myers, D & Ryu, S. 2008: 20). Again, demographic factors have been a factor dominant for shaping housing markets. In Myers & Ryu (ibid.) research, they focus on the adults groups who most likely to own homes from 25 years old and excluded those age 24 and younger, because they believe 25 is the age for entering the market of homeownership.

4.2.4 Land Prices

Land prices are recognized as one of the economic fundamental factors for determining housing prices (Wen & Goodman 2013:10). In a particular area or region, high land prices give reflection that there is high consumer demand and also there is some sort of restriction on supply. In most countries, land is still used in agriculture, forestry or other non-intensive uses, so there is still plenty of room available for urban growth (Shiller 2005: 24). But the land- use restriction must come from the land component of housing and the availability of urban land (Glaeser & Gyourko 2003: 28).The difference in the elasticity of supply of land can explain some land price and housing price variation in appreciation (Case & Shiller 2013: 300). The inelastic supply of land naturally creates

high land prices and limits on the supply of new housing, which causes volatile prices in housing markets (Glaser & Gyourko 2003:28; Holstein et al 2013: 17; Case 2008: 174). Since the price of land is one major key to revealing the availability of land and housing price booms or bubbles, market with an elastic supply of developable land could avoid volatile housing prices. In the case of China, land is owned by the state, and when the central and local governments and authorities are reluctant to release much land for development, it is no surprise that home prices have been booming in China. In Wen & Goodman (2013:16)'s empirical research in the Chinese housing market, they conclude that "housing price and land price have an endogenous relationship, these two prices have a mutually causal relationship, and their interactions are all positive". Owning to this endogenous relationship, it is important for this thesis to analyze the Chinese housing market with the concern of the interaction mechanism of urban land prices and housing prices.

4.2.5 Construction cost and Tax cost

Volatile housing prices are also relevant with the cost of housing. Housing costs include land and land access cost, construction cost, market and sales cost, developers profit, tax, fees, and on-site infrastructures and facilities. It has been believed that the physical construction cost of housing is more sensible to influence on housing prices (Glaeser & Gyourko 2003:21). Even though, there was tendency to emphasize that building cost were the ultimate determinant of housing prices, it has been argued that the emergence of the new materials, new construction equipments, prefabrication, as well as new technology for building high rise buildings, will help make housing cheaper (Shiller 2005: 23, 26). Thus there is no forever positive trend for construction cost increase. The additional costs, land acquisition and on-site infrastructure do vary, it is because high-cost places generally have either very attractive local amenities (great weather or good schools) or strong labor markets. However, a number of taxes, fees, profits and on site "support" facilities vary widely by city and even by nature and location of a particular estate (ibid. 13). In Marshall & Steekelenburg (1999) Chinese urban housing research, it has highly stated that tax measure worth being considered in Chinese housing market, especially those developers must pay which on the contrary will add up in the housing sales price. Applicable land value added taxes, other related housing building projects tax need to be paid to local and central governments. Since local governments are the primary tax assessors and collectors, to a great degree, they determine what volume of resources remain locally as revenues and as after-tax net earnings and what is collected as taxes and shared with central

governments (World Bank 1992:18). Thus, the tax rate correlate with housing prices changes in urban level over time (Poteraba 1991:165).

4.2.6 Tourism and Infrastructure

Higher disposable income, better transportation facilities, highways cause the tourist industry to develop a new image (Child 1970:94). Rising disposable income increases the demand for travel. It is because most of the world's people live in a temperate climate- as a result it makes them thus seek areas which have more desirable weather (ibid. 96). Leisure cities which are famous for sun, sand and sea (3S) are distinct types of popular tourist destination (Gladstone 1998: 10). The symbolism for leisure tourist destination emphasizes the laid-back atmosphere of an easy beautiful life by the sea (ibid.). But the travel industry is unique because its market is travelers, and the travelers shall be brought to the products (including plant, facilities and services) (Child 1970:93). Thus infrastructure such as highway is important for the accessibility of tourist destination. The cities or region which have better infrastructure and are dedicate to developing tourism industry will find out that it becomes more stable-easier to finance with lower risk; and at the same time it will bring considerable potential value-which is reflected in higher real estate values (ibid.). Thereafter, when tourism has been established as their main economic activity for these cities and regions, it will bring an increase speculation in real estate, residential segregation and population growth (Luchiari & Serrano 2002:260). In general, the better infrastructure, the higher potential for tourism development, the higher property values and the higher potential revenue for governments (Smith & Gihring 2004:3; Litman 2002: 65; Child 1970:10; Cervero & Duncan 2001:2).

4.3 Two Indicators to Measure the Bubbles

In the context of this part, two popular used bubble measure indicators are reviewed, which are in line with the objectives of this study. There first indicator which use to measure housing bubble is house price to income ratio, and the second focuses on the loan to value ratio.

4.3.1 Housing Prices to Income Ratio:

The home price to income ratio is the basic measure for housing affordability in a given area. People's willingness to engage in purchases of residential property is closely linked to income. The

correlation between housing prices and income is supported by many previous studies but in different methods. For instance, Case & Shiller (2003) have used ratios of home price to annual income per capita to analyze and evaluate if there is a bubble in the housing market. They believe the least volatile housing market shows remarkable stability and very low ratios. On the other hand, the most volatile housing market shows remarkable instability and high ratios. As a result, it is necessary and justifiable to use housing price to income ratio when address the issue of housing price bubbles in this thesis study after having analyzing the different economic fundamentals.

There are several ways to choose statistical data to calculate this ratio, some academics choose median income and median housing price data, and some choose average income and housing price data. Black et al.'s (2006) gives the study of British real estate bubbles via using the price to income ratio, but in their model, they chose disposable income (real income) as a factor since they believe the disposable income can better reflect the changes of economic fundamental factors. Furthermore, there is an argument regarding how much the ratio should be to show there is a housing bubble. Based on the western-oriented official work, it seems to have become accepted that a median multiple of 3.0 times or less is a very good stable housing market (Interest.co.nz, 2014). But according to World Bank (1992:13), it estimated that for developed countries, the ratio of housing price to incomes rages from 1.8-5.5 means it is a stable housing market; and among developing countries, the ratios of 4-6 are typical affordable notions. Otherwise, when the ratio is much higher than the affordable ratio, it could give a sign that housing bubble emergence or even risk of burst.

4.3 .2 Housing Loan to Value Ratio

The housing loan to value ratio can be used as a proxy for this analysis and to measure the housing market risk or existence of a bubble. It has been recognized that there is important interplay between loan-to-value (LTV) ratios on mortgage loans and drops in real estate values (Elul 2006). LTV ratios are calculated by dividing the mortgage loan by the values of homes. In this thesis, the ration equation takes the form $R(t) = |L(t)/V(t)|$ (Ataullah et al. 2007: 116). L (t) here is the book value of home equity loan for middle-long terms and V(t) is the book value of property assets, both at time t. It is necessary and important to point out here that there are many different ways and calculate the housing debt-to-equity ratio, for instance the definition of housing loan in this thesis do not include short-term loans since assets loans in China normally belongs to middle-long terms

loan category.

In general, it has been noted that an increase in the loan to value ratio puts the owners equity at risk (Bhandari 1988: 507). High LTV ratios will cause dramatically effects on home price decreases and result in disproportionally higher default probabilities for the mortgage loan (Elul 2006). A LTV ratio above 1.00 is called a "pain point " for homeowners (ibid.), which implies that housing owner's debt value is higher than hosing equity values, and at this time housing value is negative and housing bubble is generated. In the face of depreciating housing values as negative equity, homeowners (loan borrowers) are financially overleveraged and this can distort their incentives to honor debt obligations, which will expose the mortgage and housing market to high level of default (bubble burst) and might consequently cause systemic macroeconomic risk (Schindler & Laux 2012: 1152). Thus, proceeding the aggregations of the LTV ratio at regional and national level can provide an early indication of housing markets that are generating overleveraged (bubbles) and face an increased risk of insolvency (bubble burst) (ibid. 1156).

Chapter 5 Data and variable definition

5.1 The sample

The housing market in China has a clear spatial variation, thus focus on regional level could give a clearer and deeper analysis. The sample under analysis is the regional housing market of Hainan. For the empirical analysis of Chinese housing market at regional level, this thesis tries to collect annual data from the Hainan Statistical Yearbook (HSB) from the 1990s to year 2012, with consideration of data from China Statistical Yearbook (CSB) during the same period. It is necessary to point out that statistical data from the 1990s followed different statistical categories compared with those after 2000. Meanwhile, land price data in Hainan province came after 2005, since the public bidding on land started in 2004 (see appendix). Thus the housing market data of Hainan province in this thesis is timely divided into two main categories in general: 1990 to 2012 period and from 2005 to 2012's new housing market period. The first timeframe dataset (1990-2012) is following the both CSB and HSB's period, and the second timeframe (2005-2012) dataset is mainly following the HSB data which could be accessed via Statistical authority's website data center. But there are problems due to missing data for the 1990s from both HSB and CSB, therefore some figures and tables in the following chapter are adjusted for the time period.

5.2 Data

In collecting data for this research area, this thesis will use nine variables to judge the housing prices in Hainan which have been discussed in Chapter 4: disposable income of urban households, property loan, loan interest rate, land prices, population, construction cost, tax cost, tourist's numbers and road length. The thesis dataset has been gathered and processed with computation of various years from CSB and HSB. The data collection is focused on the urban housing market of Hainan due to the structure of fixed assets investments [Table 1]. However, statistical data could lack accuracy because between provincial and central statistic data there are misalignment since their statistics are produced independently to some extent and thereby reduce the reliability of data. In addition, according to CSB (2011), up to 2010, the numbers of cities at prefecture level and above in Hainan province are only two, Haikou city and Sanya city. The other are called "County-level Administrative Units Directly under the Provincial Government" (China Land &

Resource Almanac 2009)[1].

Table 1 Structure of Total Investment in Fixed Assets

	2005	2006	2007	2008	2009	2010
Urban Investment	89.41	93.19	92.83	94.16	94.05	94.45
Rural Non-Households	1.90	1.90	2.03	1.67	1.89	1.59
Rural Individuals	8.69	4.91	5.14	4.17	4.06	3.97

Source: author elaboration of various years HSB

5.3 Variables Definition

Just as Case & Quigley (2008:164) argue that the housing market is precipitated by not only one fundamental, on the contrary it can be influenced by other fundamentals as well, of course, more than one of these fundamental may be present, and several fundamentals may interact. In order to use different fundamentals to analyze the Hainan housing market and different indicators to measure the housing bubbles, this thesis will choose several variables to facilitate the analysis.

Table 2 Variable List

Name	Meaning	Unit	Data source
HP	Urban residential housing prices	RMB/m2	CSB and HSB
PDI	Per capita disposable annual income of urban household	RMB	CSB and HSB
LP	State-owned land price for development land	RMB/m2	CSB and HSB

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[1] According to HSB (2013): In June 21, 2012, the State Council approved the establishment of the prefecture-level city of Sansha, and the Xisha, Nansha and Zhongsha Islands and their sea area are under the jurisdiction of Sansha City. But since this city establitation is mainly for South China Sea territory argue and previous statistic data to this city is missing, therefore, in this thesis it will not be included as cities at prefecture level.

POP	Registered population	10,000 person	CSB and HSB
LIR	Annual loan interest rate (middle and long term)	%	CSB
PL	Middle-long term property loan amount	100 Million RMB	HSB
CONC	Construction cost	RMB/m2	HSB
TAXC	Land value added tax, operating tax and extra charges for real estate development	RMB/m2	HSB
TOR	Total number of overnight tourists at year end	10,000 person-times	HSB
RL	Paved road length at year end	10,000 Km	HSB

Chapter 6 Empirical Analysis

The empirical analysis of the Hainan housing market is created via computation of data from HSB and CSB. The aim of empirical analysis is to generate a unique dataset of the Hainan housing market from 1990s to recent years and in order to find the answers to this thesis research questions.

6.1 Economic Fundamentals to Housing Prices

6.1.1 Descriptive Statistic Analysis

The first dataset [Table 3] is composed of the computation of statistical data of the main indicators for the Hainan housing market from 1990 to 2012. The result is a time-series dataset of Hainan with all variables [Table 2]. The dataset tells that during the last two decades, even though Hainan has experienced real estate bubble and bubble burst in 1990s, housing prices in Hainan province nowadays have increased dramatically from 1648 RMB/m2 in 1990 to 10238 RMB/m2 in 2012. At the same time, economic fundamentals in Hainan up to 2012 also changed dramatically compared with 1990s bubble burst period. LP has increased rapidly from 192.1 RMB/m2 to 7840.36 RMB/m2 within 8 years (2005-2012). LIR has been decreased from 15,12% since 1995 and kept being around 6%. The population of Hainan has increased during last two decades. CONC and TAXC has

become nearly three and four times higher respectively. Meanwhile it is worth noticing that TOR and RL also have experienced sharp changes during the last two decades.

Table 3 Hainan Housing Market Indicators Data Descriptive Analysis (1990 -2012)

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Year	23	1990	2012	2001.00	6.78
PDI	15	1650.00	20918.00	9861.53	5322.94
HP	19	1648.00	10238.00	3978.90	2733.35
LP	8	192.1	7840.36	3451.04	3549.86
LIR	18	5.76	15.12	7.60	2.56
PL	18	95.94	2842.21	755.12	809.22
POP	23	651.23	907.82	775.31	82.19
CONC	14	1154.00	4227.00	2121.7771	874.68
TAXC	7	209.05	1111.48	643.36	306.25
TOR	11	113.47	3320.37	1901.29	1168.54
RL	10	368.00	2673.00	1653.60	653.87

Source: Author elaboration of various years CSB and HSB

6.1.2 Income

First, provincial level and state level data (as a reference in this part) on home prices and the fundamental "income" over the period of last three decade (1990-2012) will be analyzed. During the last two decades, economic fundamentals in Hainan have changed significantly. The province has transferred from a separated island which in Chinese called the "corner of the earth" into an "international tourism island". The economic rapid growth can be seen from [Figure 5], per capitia disposable income of urban households in Hainan has increased from 1650 RMB/year in 1990 to 20918 RMB/year in 2012, even though this income level has been continuously lower than the average national level of disposable income of urban households except for 1994.

Housing price in Hainan suffered volatile changes during the housing bubble burst period, and thereafter it entered a period of the stagnation. Until 2006, the selling price of residential buildings came back to 1995 price levels. But, as it shows, Hainan income growth alone can explains somewhat the pattern of home price increase after the 2000s. After 2000s, it is obvious that a rapid rise in income is coupled with the run-up in housing prices. Per capitia disposable income of urban

households rose from 8124 RMB/year in 2005 20918 RMB/year in 2012. During the same time period, Hainan housing market enters a new booming period, housing price in Hainan moves much in line with the increase of income and have been rising faster than income; compared with 2855.24 RMB/m2 in 2005, average selling price in Hainan in 2012 reached 10238 RMB/m2, which is also much higher than the national average housing selling price 5430 RMB/m2 in 2012 [Figure 5].

Figure 5 Disposable Income and Residential Housing Sales Price in Hainan and China (1990-2012)
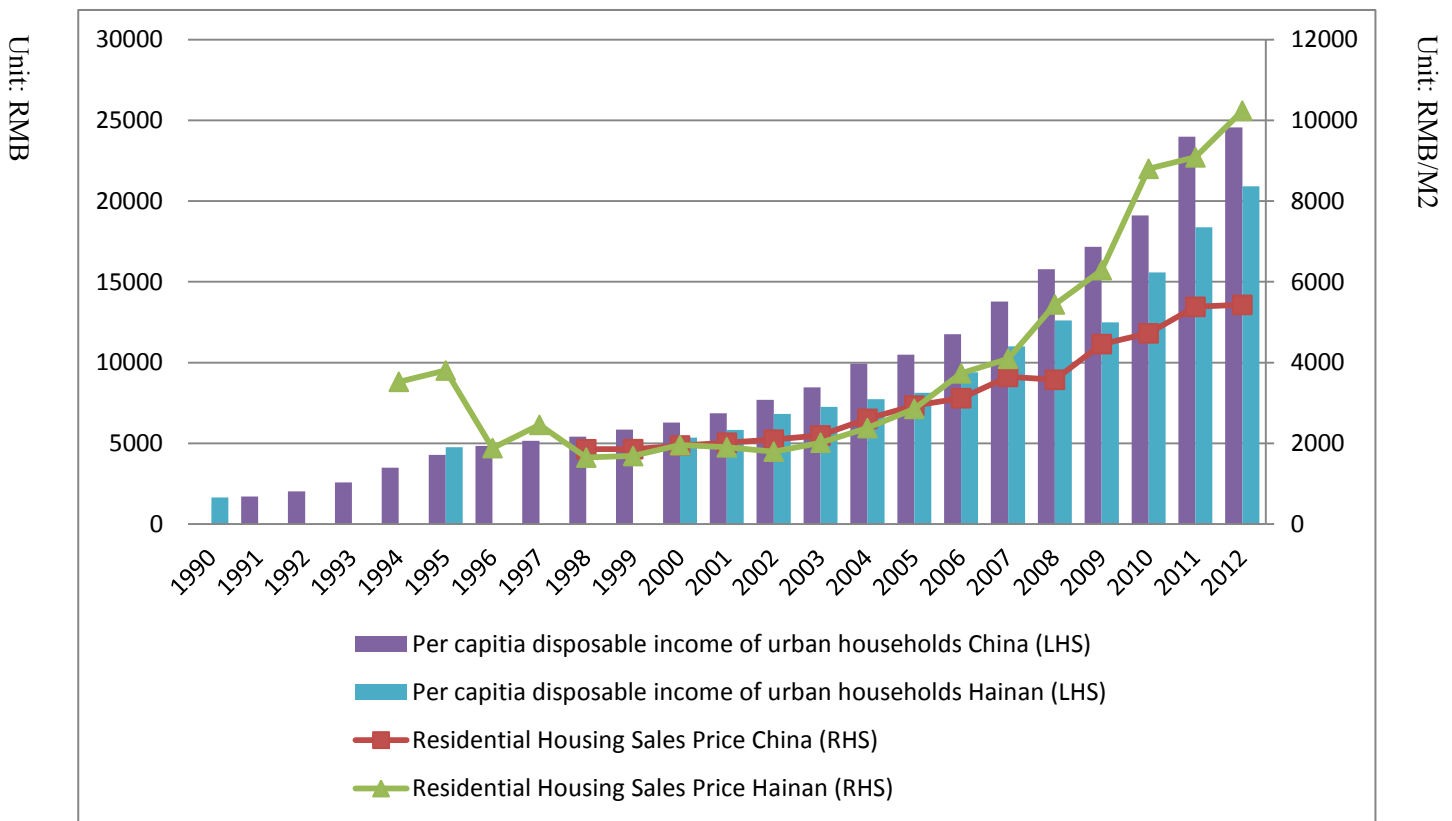
Source: Author elaboration of various years CSB and HSB

6.1.3 Property Loan availability and Interest Rate

As it stated in previous chapters, financial factors have a close relationship with the development of the housing market. In the 1990s during the Hainan housing bubble burst period, the official interest rate was actually much higher than 2000s [Figure 6]. Unfortunately, HSB cannot offer the loan amounts for property investment between 1990 and 1995. But according to the relative literature which was mentioned above, Hainan 90s housing bubble was because of loan availability increase and the interest rate decreased in the beginning of 90s. The housing market became over heated and bubble was formed. But things changed when central government increased the rate interest rate to

15.12% in year 1995 and stared to tighten the loan availability, the existing housing bubble burst. Thereafter between 1995 and 2002, even though the interest rates decreased dramatically from 15.12% in 1995 to 5.76% in 2002, the middle and long term loan amounts for property investment during the same period at year end had been kept steadily without big changes [Figure 6]. It might illustrate that during that time, the loan availability had been tightly controlled by banks and local governments since after the bubble burst there had been mass non-performance loans and non-finished projects in Hainan.

However the amount of property loans rapidly increased in Hainan since 2008. The amount increased nearly 300% which is from 852.34 (unit: 100 million RMB) in 2008 to 2842.21 (unit: 100 million RMB) in 2012 [Figure 6]. During this period, the loan interest rate stayed around 6.5% with no dramatic decrease at all. One reason for this loan increase which has been argued is the fiscal stimulus package and massive credit expansion from State Council in 2008 due to the World Economic Crisis at that time (Chen & Funke 2013:39; Dexter 2010: 18 ;appendix II). And this stimulus package and credit expansion has been regarded as spur to the Hainan high housing prices (Dreger & Zhang 2013:27). That is why it has been argued that Hainan facing an expanding risk of housing bubble in recent years (ibid.23).

Figure 6 Official Loan Interest Rate, and Medium and Long Terms Loan Amounts at Year-end in Hainan (1995-2012)

Unit:%   Unit: 100 million RMB
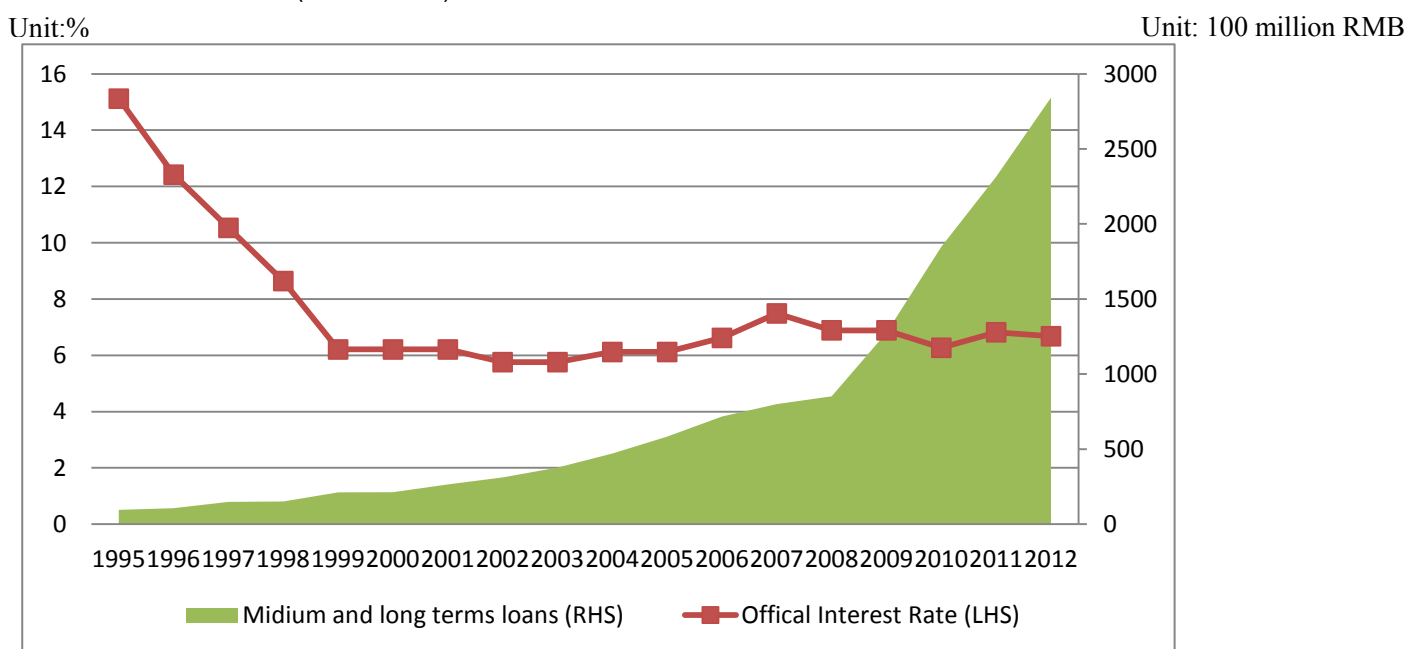
Source: Author elaboration of various years CSB and HSB

6.1.4 Population

Population changes strongly influence the housing market and housing prices. In this thesis, based on China Population & Employment Statistics Yearbook (2010) main indicators of national labor statistics, the population aged 16 and over are regarded as the population with working ability. And also the thesis secondary data depend heavily on statistic yearbooks age proportion groups, thus the age groups are divided according to the methods which statistics yearbooks use instead of the above Myers & Ryu (2008)'s age group division.

[Figure 7] shows that in the last two decades Hainan's population has experienced a steady increase, the total registered population changed from 651.23 million in 1990 to 901.93 million in 2012. This indicates in the first half of the 90s housing bubble period, Hainan had around 2.5 million populations less than today. In 1990, Hainan province had a higher birth growth rate of 18.6%. The proportion of population who are aged 15-64 has increased from 61.51% in 1990 to 72.43% in 2012 [Figure 8]. It indicates that an increase of young adults who are born in early 1990s during housing bubble period will generate an increase in housing demand and can affect today's housing prices. However, because of China's birth control policy, the population growth rate reduced significantly during last two decades as well in Hainan. The birth growth rate decreased from 18.6% in 1990 to 8.85% in 2012 [Figure 7]. The population growth trend shows that in the following thirty years, the Hainan population structure change will transform into an aging society, more population will be entering over 60 years age group which should reduce the demand for housing.

Urbanization in China over the past 30 years has been extremely broad based (Naugton 2007:127). Urban population changed dramatically due to the fast pace of urbanization, including Hainan province. During the 1990s housing bubble period, Hainan's urbanization rate was only 20.98%, the speculation in the Hainan housing market transferred into bubble burst due to oversupply that was greater than real demand. But the urbanization started growing from 20.98% in 1990 into 37.95% in 2012 [Figure 7]. Cities in Hainan have sprawled into the countryside. Urbanization causes an increase in non-agriculture population which can also affect housing demand in the cities. This urbanization process will continue further as the economic development goes forward. Thus the urban population change is significant for identifying whether the house prices are economically justified.

Figure 7 Populations, Population Growth and Urbanization in Hainan (1990-2012)

Unit: Million

Unit:%
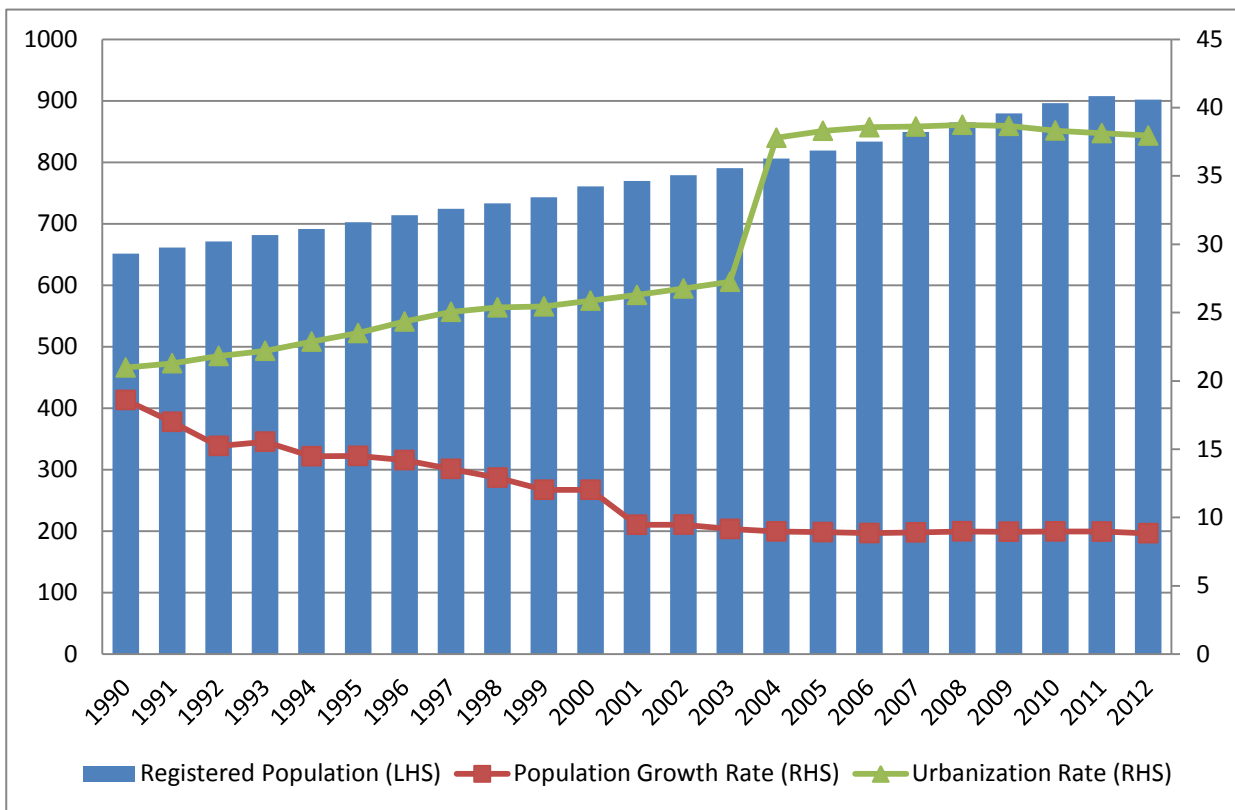
Source: Author elaboration of various years HSB.

Figure 8 Proportion of Hainan Population (1990-2012)

Source: Author elaboration from various years HSB.
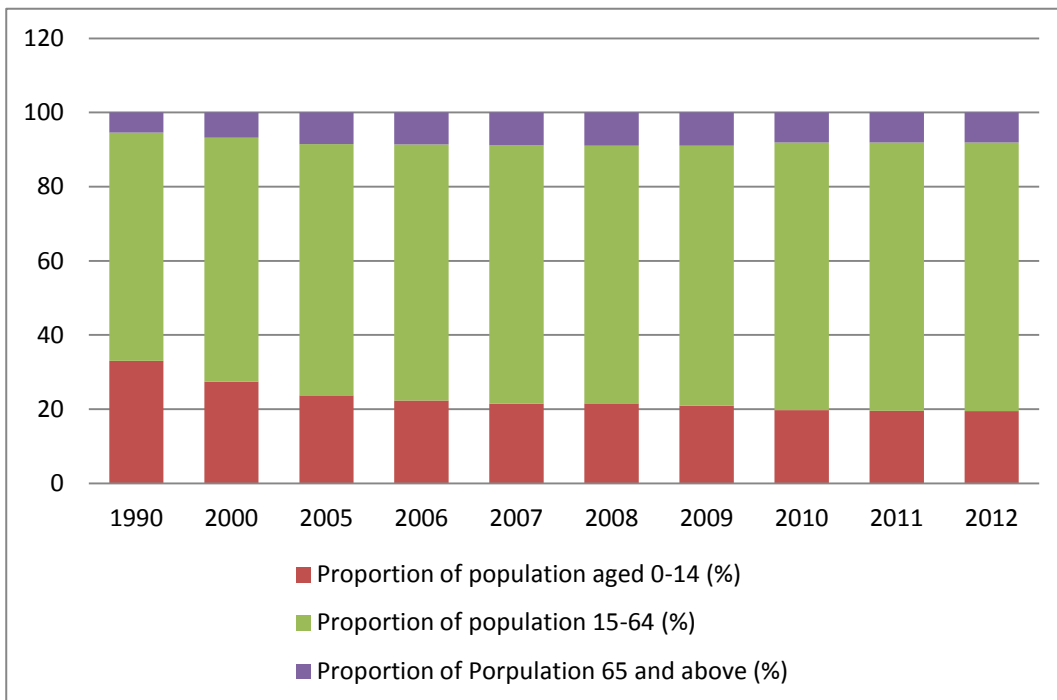
6.1.5 Land Prices

Land prices are considered one of the economic fundamentals factors for determining housing prices. Hainan's high housing prices reflect that land prices are high and that there might be some restriction on land supply. During the 90s housing bubble and bubble burst period in Hainan, it has been said that land price could become two times higher after one night, and there had been over supply land which could not be developed at all before the bubble burst. Due to there is no detailed available statistical data in the 90s Hainan Statistical Yearbook, it thus could only offer the statistical data analysis from 2005 to 2012. [Figure 9] shows that in the last decade in Hainan, there has been a limited supply of state-owned land for real estate development except 2008 in which over 900 hectare state-owned land was devoted for real estate development. Thereafter the total provincial supply of state-owned land for real estate development stays around 300 hectare per year. It is worth noticing that land price went up dramatically from 615.26 RMB/m2 in 2008 to 7840 RMB/m2 in 2010 which could explain the volatile increase in housing selling price since 2008 as well. Meanwhile, [Figure 10] shows that 83% total real estate development in 2010 went into eastern coastal region of Hainan which has only 33% Hainan total land area [Figure 11]. On the contrary, very little went into Hainan's central or western region. Urban land supply for real estate development is limited from the eastern coastal region and the whole Hainan region due to land use restriction. According to the various years HSB statistic figures, urban land area was very low in Hainan province, up to 2012, only around 3.86% of total land area in Hainan province is used as urban land [Table 4]. The rest of land area in Hainan is still mainly used in agriculture and forestry which is 23.7% and 61.5% respectively (HSB 2013). At the same time, the Chinese collective land system and strict restraints on allocation of land for real estate construction give Hainan provincial and local government legal rights to control the land supply in the land market. Urban land supply elasticity can also be explained by that urban land collection process from agriculture land has been controlled by local governments which in recently years become relative slowly due to the central government policies for reducing land conflicts and "respect rural peoples collective land owing right" (Appendix II). Thus this restriction and elasticity of land supply can cause the high land price and explain the volatile Hainan housing prices in the recent years.

Figure 9 Land Supply and Land Price in Hainan (2005-2012)

State-owned Land Supply (Total Purchased area,LHS, Unit: hectare)
Land price (RHS,unit: rmb/m2)
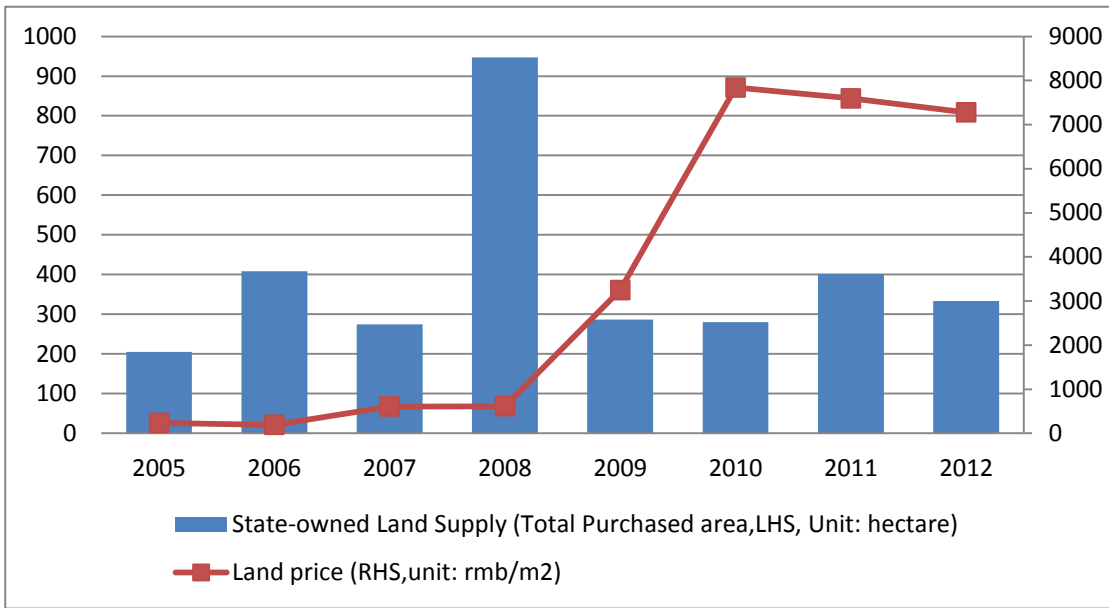
Source: Author elaboration of various years HSB.

Figure 10 Hainan Province Investments in Real Estate Development (2010)

Eastern Region of Hainan

Western Region of Hainan

Central region of Hainan
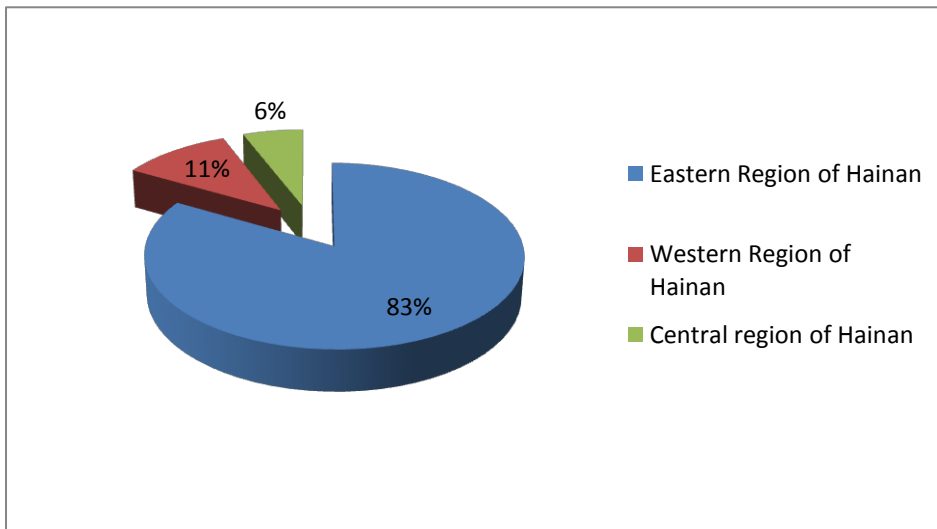
Source: author elaboration from China Statistic Yearbook 2011

Note: Eastern region includes Haikou City , Sanya City, Wenchang City, Qionghai City, Wanning City and Lingshui Country; Central Region includes Wuzhishan City, Ding'an Country, Tunchang Country, Qiongzhong Country, Baoting Country   and Baisha Country; Western Region includes Danzhou City, Dongfang City, Chengmai Country, Lingao Country, Ledong Country and Changjiang Country , Yangpu incorporated into Danzhou City (Hainan Statistics 2011).

Figure 11 Proportion of Total Hainan Administration Land Area
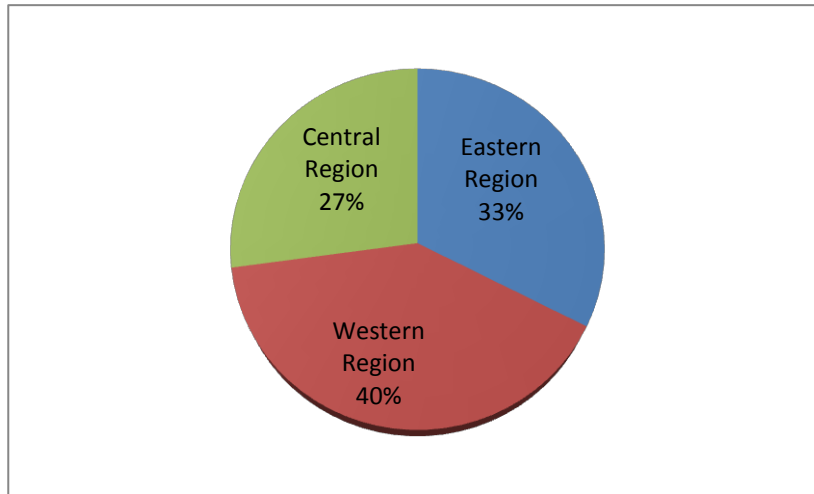
Table 4 Percentage of Urban Land Area to Total Land Area in Hainan Province (2000-2012)

Year	Unit:%
2000	1.89
2005	2.20
2010	2.92
2011	2.97
2012	3.86

6.1.6 Construction Cost and Tax Cost

Construction cost during the Hainan housing bubble period was round 1394 RMB/m2 in 1995, thereafter, in the following decade the construction cost did vary a little but continued to stay under 2000 RMB/m2. However, the cost changed dramatically after 2007. It increased from 1805 RMB/m2 in 2007 to 4227 RMB/m2 in 2012 [Figure 12]. This increase in construction cost influenced Hainan increasing housing prices. The reason for the rapid increase in construction cost is not actually due to a rapid increase in the cost of raw materials. [Figure 13] shows that the price of cement and steel bar increased rapidly between 2005 and 2008, but there after it has decreased sharply between 2008 and 2009 and kept been stable in last three years in Hainan province, even though the construction cost still keeps increases in the relevant years. One way which could explain the increase construction cost is that real estate developers try to disguise profits with the aim of avoiding higher land value added tax. Land value added tax, operating tax and other charges for real estate development companies have increased since 2008 [Figure 12]. To illustrate, in 2006

the tax cost after computer calculation is around 209 RMB/m2, but till 2012, the tax cost reaches to 1111 RMB/m2. Among this tax cost, the operational tax and extra charges for real estate developers has standard fixed ratio according to the local government policies. But the land value added tax shall be levied in four progressive levels according to the related regulations [Table 5]. The higher land added value amount is, the higher value added tax need to be paid by the developers. Thus, in order to reduce the land value added tax rate and gain higher profit, the developers must try to increase the deducted amount in the calculation of land added value. There are five items for deduction parts as [Table 6] shows. It indicates that if the construction cost is higher, than the deducted amount will be increased, thereafter, the land added value will be decreased, which will influence the land added value tax rate in the end.

Figure 12 Construction Cost and Tax Cost in Hainan (1995-2012)

Unit: 100 million RMB

Unit: RMB/m2
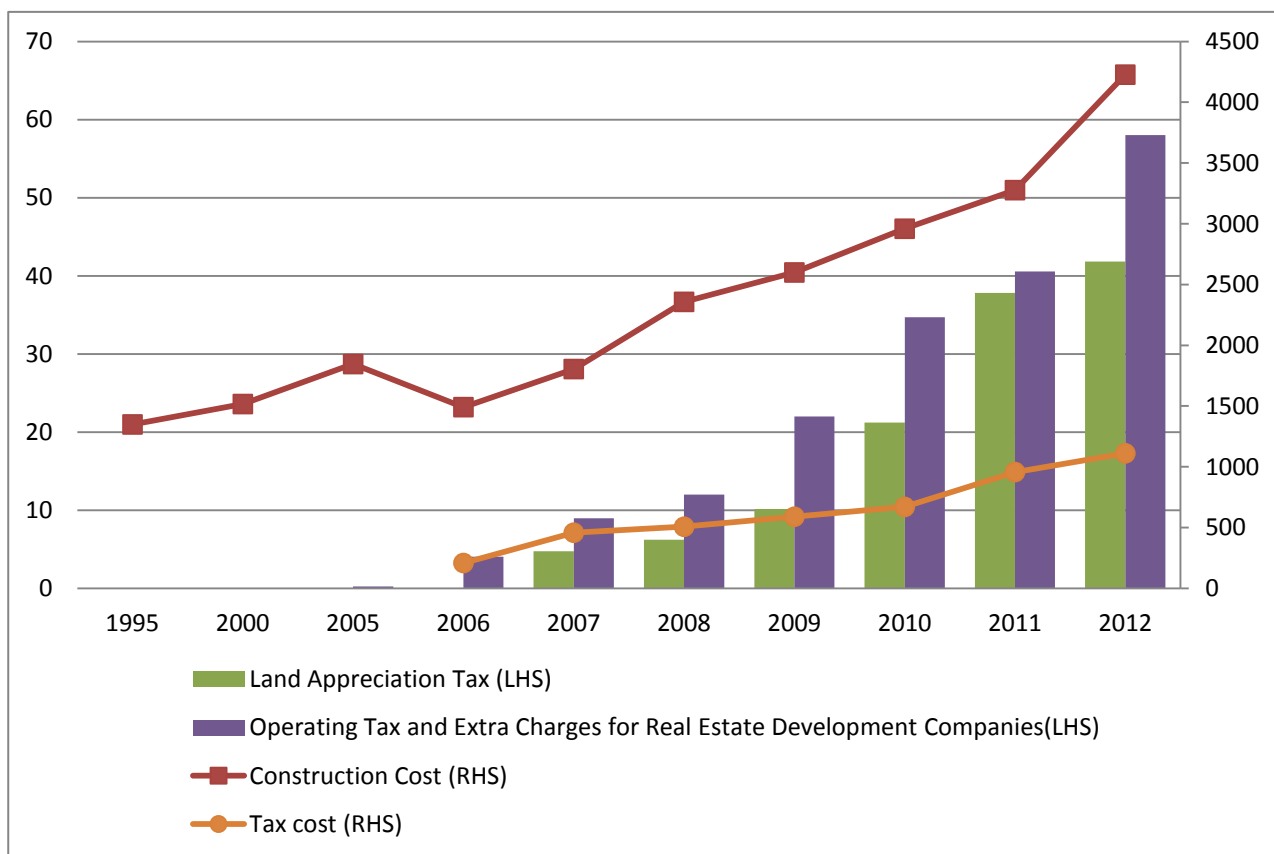
Source: Author elaboration of various years HSB

Figure 13 Price Iindices for Construction Materials Cost in Hainan Province (2005-2012)
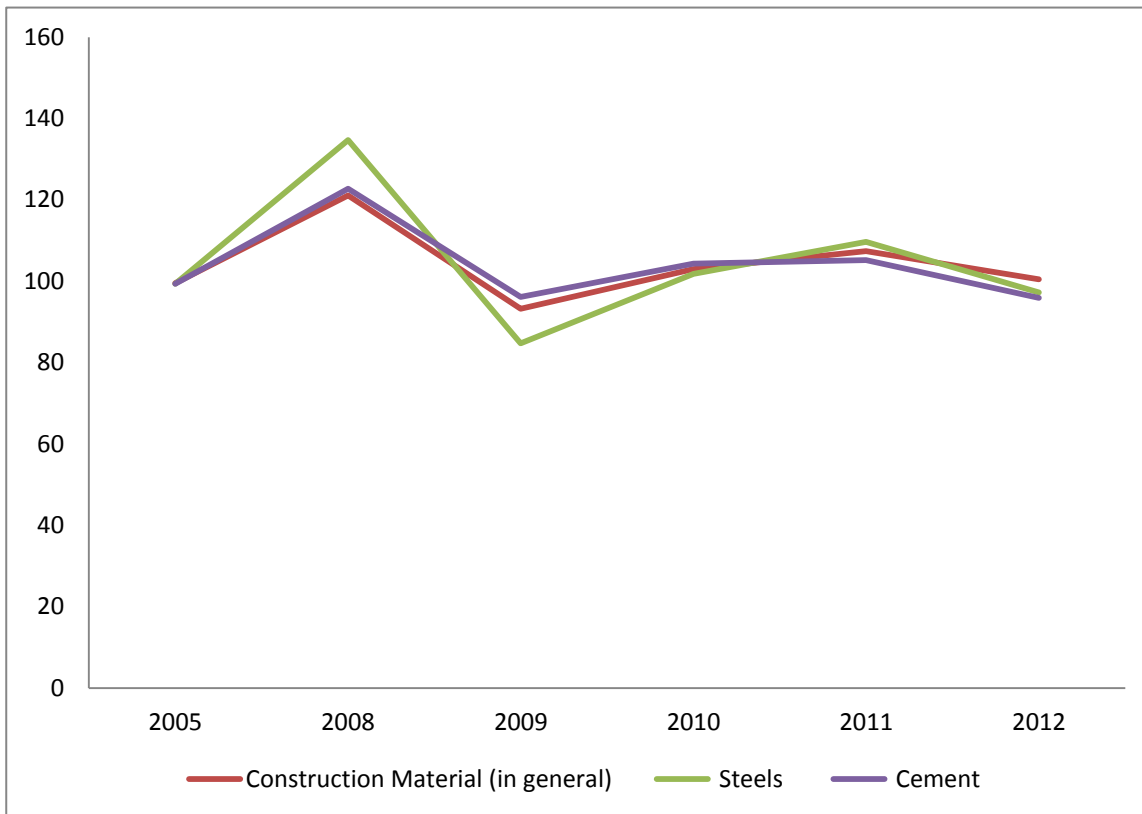
Source: Author elaboration of various years HSB

Table 5 Land Value Added Tax Rate

Four levels	Tax rate for the part of the added value (Unit: %)
Added Value ≤50% of the deducted amount	30%
50% ≤ Added Value≤100% of the deducted amount	40%
100% ≤ Added Value≤200% of the deducted amount	50%
200% of the deducted amount≤ Added Value	60%

Source: Author elaboration based on the China Land Added Value Tax Regulation (1993)

Table 6 Items List of Deductions Part in the Calculation of Land Added Value

The lease price paid for the use of the land;

The cost and expenses spent in the development of the land

The cost and expenses in the construction of new buildings and attached installations, or the evaluated prices of old buildings and structures;

Tax payments involved in the real estate transference;

Other deductions as prescribed by the Ministry of Finance.

Source: Author elaboration based on China Land Added Value Tax Regulation (1993).

Again, despite developers attempting disguise the profit and avoid paying higher tax, tax measure shall not be neglected when it talks about housing price high. Therefore, even though it has been strongly argued that in 2010, Hainan housing prices have reached historical highs, if we take consideration into construction cost, tax cost, and land cost, it might give causes to the high housing prices.

6.1.7 Tourism and Infrastructure Development

Sun, sand, and sea tourism (3S tourism) is the unique character of the Hainan tropical landscape which was not recognized by Chinese people in the 1990s. But economic fundamentals have changed a lot during the last two decades in both China and Hainan, as [Figure 5] shows in the last two decades household disposable income have increased rapidly. People have extra money for holiday consumption and investment in a second home outside their working and living places. The Hainan tourism industry today compared with 1990s is more developed. In the 1990s housing bubble and bubble burst period, the annual number of overnight tourists in Hainan was less than 3 million person-times [Figure 14], whereas at the end of 2012, the number of overnights tourist has reached over 33 million person-times, nearly 10 times more than in the1990s. At the same time, in accordance with the national plan-"to develop Hainan into an International Tourism Island" in 2010, Hainan province is being positioned to become a popular tourist hotspot and more focused and special policies will be implemented in order to reach this goal, which did not exist in the 1990s

Hainan housing bubble period. In addition, more and more mainland cities are suffering more and more serious air pollution problems in recent decades after China entering into middle age of reform and opening period, however Hainan has whole year 100% proportion days of air quality equal to or above to Grade II (HSB 2013) which also promote Hainan Tourism and push up housing prices.

Furthermore, [Figure 15] also gives different perspective on Hainan's infrastructure condition today compared with 1990s Hainan. In 1998, just after the Hainan housing bubble burst, there were only 3.6 million Km paved roads in all of Hainan province. Less accessibility and bad infrastructure condition which separated Hainan from mainland China was also reason why Hainan housing market in the 1990s bubble burst. But things have been changed rapidly, since entering the new millennium, the Hainan government has increased investment on infrastructure buildings, paved road length has reached 26.73 million Km at the end of 2012. It means fast and convenient travel accessibility has been built between attractions and cities, between Hainan and Mainland China. The improved infrastructure has made Hainan an ideal destination for vacation and second home choice, which leads an increasing real demand from non-local house buyers in Hainan. [Figure 16] gives up to 2010 the main customers' geography analysis in Sanya city, it illustrates that non-local house buyers from mainland China have become the main purchaser groups.

Figure 14 Total Numbers of Overnight Tourists in Hainan (1990-2012)
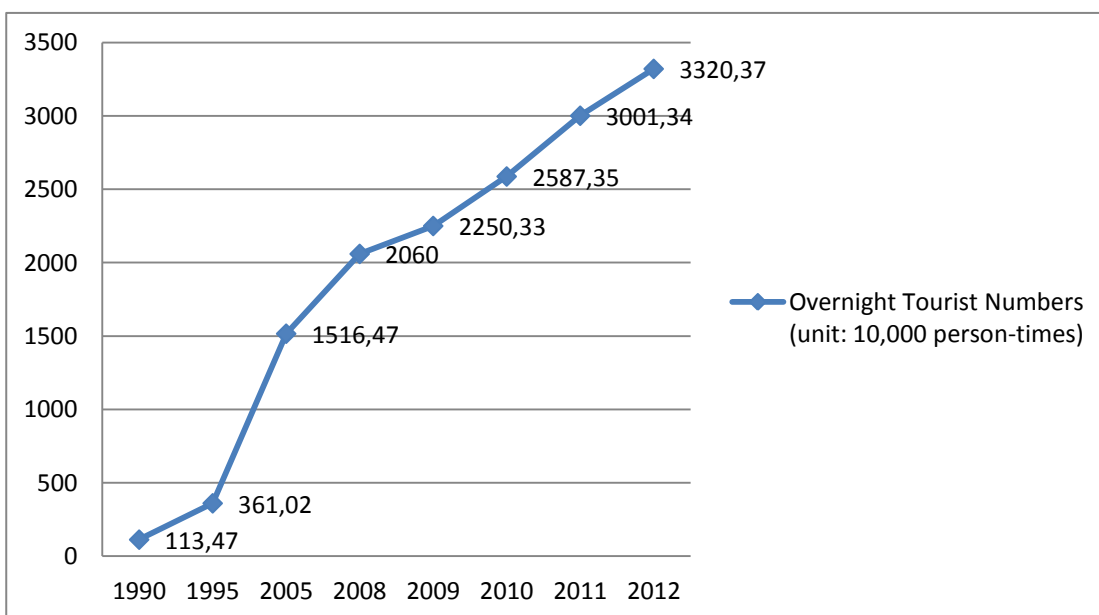
Source: Author elaboration of various years HSB.

Figure 15 Lengths of Paved Roads at Year-end in Hainan (1998-2012)
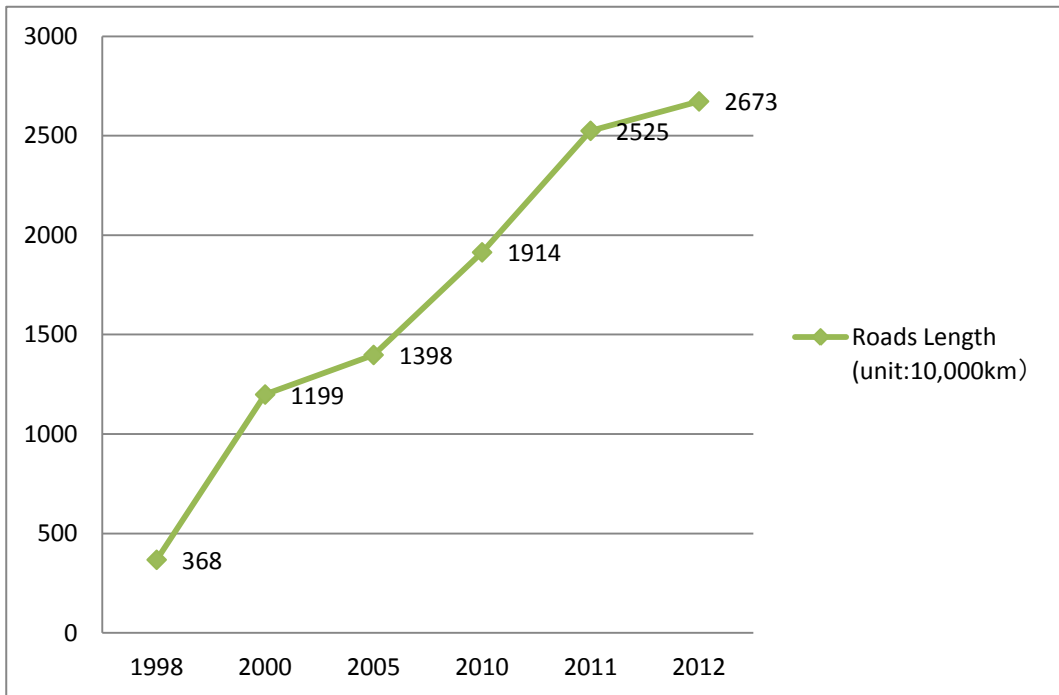
Source: Author elaboration of various years HSB.

Figure16 Sanya Housing Market Customers' Geography Analysis
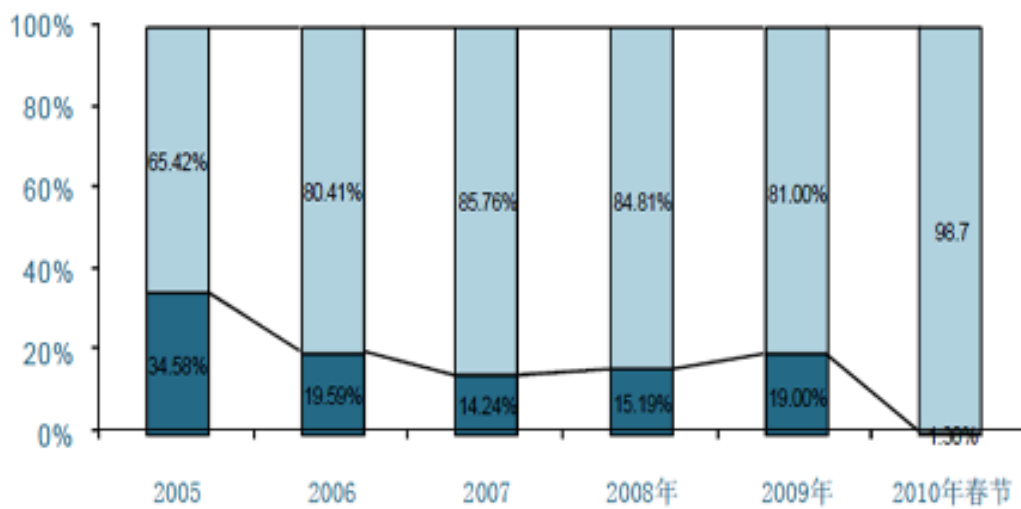
people from Hainan Island, the people from mainland.
Source: Sina News (2010)

6.1.8 Correlation Analysis

After the above analysis of different economical fundamentals, [Figure 17] shows that there might be relationships between these fundamental factors and housing prices. In order to uncover the relationships between variables and search for evidence that there is coincidence with variation between different variables, a correlation analysis has been processed via SPSS software.

Figure 17 Variables of Hainan Housing Market (1995-2012)
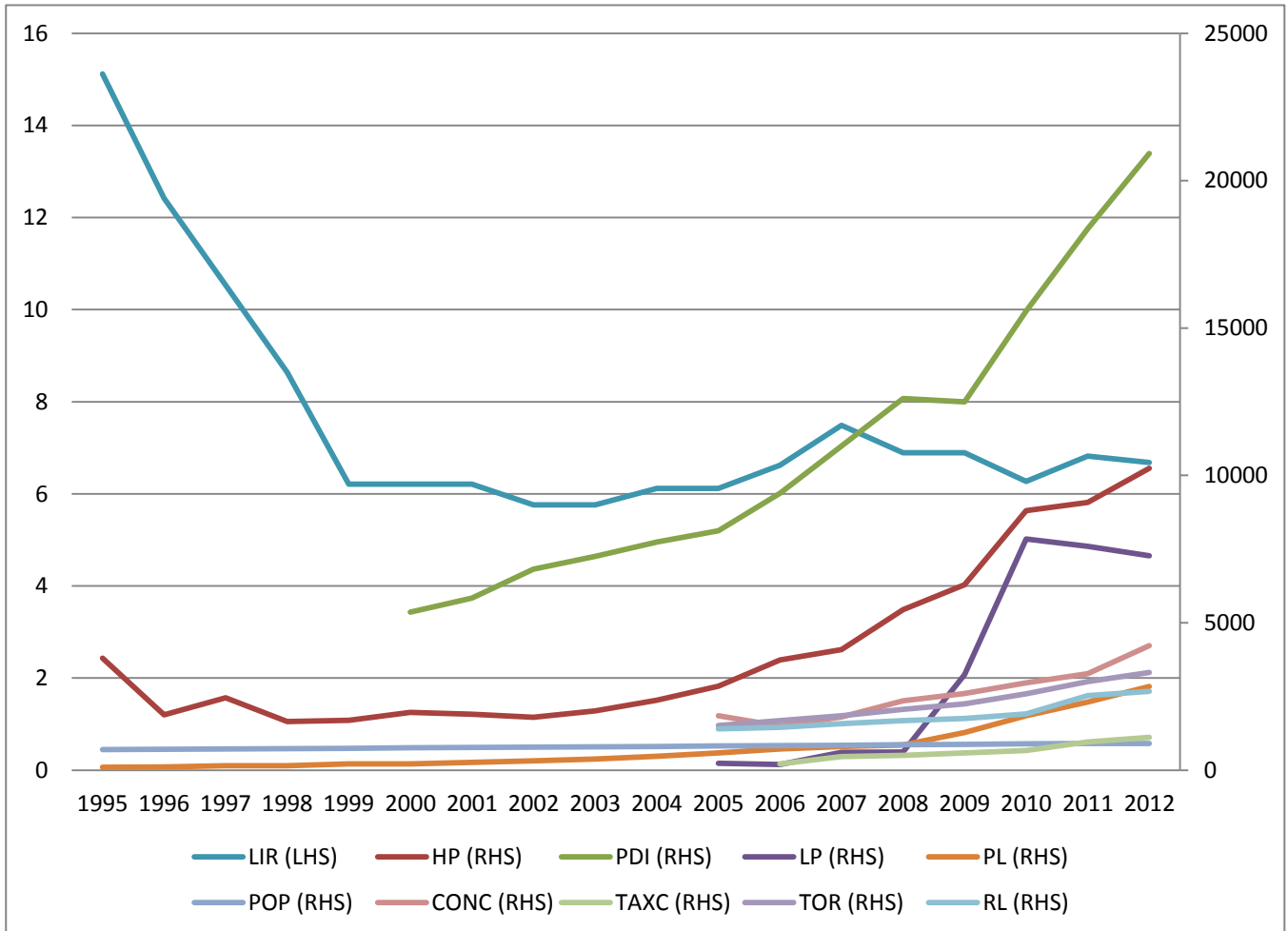
Source: Author elaboration of various years HSB

The matrix took the data from 1990 to 2012. First, out of expectation, there is no significant correlation between LIR and HP [Table 7], it could depend on that the loan interest rate has been quite stable after 2000, even though there was higher interest rate during the bubble burst period in 1995. But the rest variables, as expected, show significant positive correlation with HP [Table 7]. And these correlations results between HP and other variables all are at significant 0.01 (1%) levels. It indicates that, for instances, HP is strongly influenced by PDI, the more people earn, the more

they will have more money tourism for their holiday and more affordability to invest property as well; the growth of PL also spurs the growth of HP; the more POP, the more demand for residential properties which will cause the increase of HP. At the same time, it also shows the more POP will also drive the LP up due to the increasing demand, and then the HP will be increased because of the increasing LP. The CONC will be increased as the PDI is increased and in turn will influence the HP going up. The TAXC increase as the LP goes up which the developer will add up into the HP. And TOR increase and RL improvement will in turn increase the HP. On the other hand, during the period 1990 to 2012, HP changes also bring the positive changes to the other variables (expect LIR).

Aiming to get into further the analysis and see if there are any different correlation results when the time period has changed, another correlation matrix dataset, which is from 2005 to 2012, has been done. Similarly, [Table 8] tells as well HP also has strong significant positive relationship with other economic fundamentals changes (except LIR). This correlation results shows there is no obvious relationship between LIR and HP, but the other variables and HP share a common positive trend with each other during the 2005 to 2012 period. The reason to no obvious relationship between LIR and HP could be that during these eight years period, interest rate has been staying stable, HP changes could not be influenced by the LIR changes, and meanwhile HP changes do not cause LIR change either. Otherwise, during this time period, the rest of the fundamentals changes do influence HP changes positively and on the other hand, HP changes also bring the positive influence on these economic fundamental factors.

Table 7 Correlation Matrix of the Dataset (1990-2012)

	HP	PDI	POP	PL	CONC	TAXC	LP	TOR	RL	LIR
HP	1									
PDI	.964**	1								
POP	.788**	.917**	1							
PL	.961**	.983**	.872**	1						
CONC	.944**	.956**	.790**	.971**	1					
TAXC	.963**	.990**	.907*	.999**	.967**	1				
LP	.956**	.894**	.914**	.931**	.873**	.889*	1			
TOR	.882**	.987**	.966**	.948**	.951**	.999**	.887*	1		
RL	.919**	.981**	.944**	.942**	.966**	.948	.795	.972*	1	
LIR	-.135	-.360	-.716**	-.315	-.361	-.562	-.208	-.792*	-.526	1

Source: Author elaboration of various years HSB and CSB

Table 8 Correlation Matrix of the Dataset (2005-2012)

	HP	PDI	POP	PL	LP	CONC	TAXC	TOR	RL	**LIR**
HP	1									
PDI	.973**	1								
POP	.965**	.928**	1							
PL	.967**	.978**	.894**	1						
LP	.956**	.894**	.914**	.931**	1					
CONC	.949**	.963**	.880**	.963**	.873**	1				
TAXC	.967**	.990**	.907*	.999**	.889*	.967**	1			
TOR	.982**	.995**	.922**	.985**	.887*	.973**	.999**	1		
RL	.927**	.978*	.875**	.974*	.861*	.944**	.981**	.978*	1	
LIR	-.065	.049	.102	-.077	-.208	-.094	-.562	.379	.944	1

Source: Author elaboration of various years HSB and CSB

6.1.9 Granger Causality Analysis

The above correlation analysis [Table 7, Table 8] gives the first impression concerning the strong relationship of different variables (except LIR) and HP. Intuitively, aggregate housing prices and other variables such as population and land prices share a common long-term trend. This time trend could cause the impression that the variables are correlated even though they are deviating in the short and medium-run. In order to find out if there is causality between two variables and give a better view of the mutual interaction of the two variables in one time series, the objective of this part is to use Granger Causality test (Granger 1969) to investigate and find out the results that in econometric terminology is "if variable X Granger causes variable Y, and Y Granger-causes X，denoted X↔Y" .

First, through Granger Causality test, it aims to find out if there is null hypothesis between HP and the other variables. The Null Hypotheses (ibid.) are that X does not Granger cause Y and Y does not Granger cause X. If there are significant results of Granger Causality test, it indicates that one can

confidently reject a hypotheses and state that X Granger causes Y and/or Y Granger causes X. Second, in this analysis, 1-year and 2-year lags will be used for a robustness test, i.e. if a result is significant for both 1-year and 2-year lags, one can believe that the test can be interpreted. On If one can only find causality for a 1-year or 2-year lag, one could suspect that the significant result is driven by a data.

[Table 9] provides both time-varying Granger Causality test between HP and the other variables. It can be concluded from the computation results that there is no other strict Granger Causality between HP and other variables, except one "robust" Granger causality" that HP Granger cause RL. To explain, HP →RL in both lags specifications show that p value are 0.0131 and 0.0250 respectively which are obvious low (<0.05), then one can confidently reject the null hypotheses and claim that HP does cause and affect the future performance of RL. However this causality runs only in one direction or asymmetry, because the p value of RL→HP in both lags specification are higher than the 10% level, which can be concluded that RL (infrastructure) is not direct determinant for HP/ or RL does not Granger cause HP. But one can argue that infrastructure investments have a major impact on the local economy - and hence there might be powerful vested interests that seek to maintain a rise in HP.

In summary, this Granger causality analysis affirms that the other variables from [Table 2] does not Granger cause HP, or the histories of these other variables values cannot be used to predict HP changes. This means that the fundamental factors, which the variables standing for, are not direct determinant for HP changes. They are exogenous to HP, but the degree of this exogeneity cannot be determined easily. These findings are illustrating that Hainan housing prices are complex and complicated symptom rather than simple causes of one or some significant economic fundamental factor shifts.

Table 9 Pair Wise Granger Causality Test (2005-2012)

Date: 04/28/14 Time: 04:15			
Sample: 2005 2012			
Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Prob.
HP does not Granger Cause CONC	7	1.80519	0.2502
CONC does not Granger Cause HP		1.29586	0.3185

Null Hypothesis:	Obs	F-Statistic	Prob.
LIR does not Granger Cause HP	7	1.18504	0.3375
HP does not Granger Cause LIR		0.41848	0.5529
LP does not Granger Cause HP	7	0.22858	0.6575
HP does not Granger Cause LP		2.23143	0.2095
PDI does not Granger Cause HP	7	0.02561	0.8806
HP does not Granger Cause PDI		1.93771	0.2363
PL does not Granger Cause HP	7	0.01933	0.8961
HP does not Granger Cause PL		2.57927	0.1835
POP does not Granger Cause HP	7	6.29594	0.0661
HP does not Granger Cause POP		0.46878	0.5312
RL does not Granger Cause HP	7	0.15819	0.7111
HP does not Granger Cause RL		18.0832	0.0131
TAXC does not Granger Cause HP	7	2.11123	0.2199
HP does not Granger Cause TAXC		9.10692	0.0392
TOR does not Granger Cause HP	7	0.92747	0.3901
HP does not Granger Cause TOR		4.77740	0.0941

Pair wise Granger Causality Tests
Date: 04/28/14   Time: 04:16
Sample: 2005 2012
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
HP does not Granger Cause CONC	6	197.178	0.0503
CONC does not Granger Cause HP		0.60374	0.6731
LIR does not Granger Cause HP	6	0.19810	0.8463
HP does not Granger Cause LIR		0.66484	0.6552
LP does not Granger Cause HP	6	39.7822	0.1114
HP does not Granger Cause LP		1.91537	0.4550
PDI does not Granger Cause HP	6	2.30319	0.4223
HP does not Granger Cause PDI		6.57899	0.2658
PL does not Granger Cause HP	6	29.5690	0.1290
HP does not Granger Cause PL		2.63884	0.3991
POP does not Granger Cause HP	6	1.23533	0.5368
HP does not Granger Cause POP		0.60676	0.6721
RL does not Granger Cause HP	6	13.7655	0.1872
HP does not Granger Cause RL		802.288	0.0250
TAXC does not Granger Cause HP	6	0.26377	0.8091
HP does not Granger Cause TAXC		9.01289	0.2293
TOR does not Granger Cause HP	6	765.028	0.0256
HP does not Granger Cause TOR		8.90267	0.2306

6.2 Bubble Measures

The above Granger causality analysis shows that none of these variables do granger cause to HP or none of these economic fundamental factors are direct determinant for the Hainan housing prices changes. Thus one might wonder if there is a bubble which exists today in Hainan. The following part will use two popular indicators to test if there are bubbles which indicate that HP increase exceeds the economic fundamentals explanation.

6.2.1 Housing Price to Income Ratio

In the 1990s Hainan housing market was driven by speculative investment, in 1995 housing price peaked at 3805 RMB/m2 and the housing price to income ratio reached 14.34. Housing bubble had expanded oversized and facing the risk of a big burst. Thereafter, Hainan's housing market experienced a bubble burst which led her into nearly 10 years stagnation period [Table 11]. Until 2006, selling price of residential buildings came back to year 1995 price level. But, housing market entered a new booming period since 2005. In 2010, Hainan housing price to income ratio reached 12.45 which was the highest in the last decade. After 2010, the house price to income ratio started to decrease steadily to 10.67 in 2012. Even though this ratio today in Hainan is still lower than the ratio 14.34 in 1995 the bubble burst year, it has risen above the safe line as it mentioned in chapter 4. Hainan people with disposable income which is lower than national level, face residential housing prices which are higher than national level. This indicates that local people have low ability to purchase residential properties.

But if it goes back to look at [Figure 5], it shows that Hainan housing prices actually follows relatively closely to disposable increasing income trend in China, and [Figure 16] also gives the proof that the house buyers in Hainan are more from mainland China than Hainan local residents. With this consideration, another housing price to income ratio table is generated which chooses China urban household disposable income instead of that of Hainan. [Table 11] shows the Hainan housing price to China urban household disposable income ratio, whose results were lower than Hainan [Table 10] s, except in 2012. That could assume that Hainan housing prices are relatively more affordable for mainland Chinese than local Hainan residents. However both of these two house price to income ratio tables show that since 2010, ratios have reached the highest points

which indicates the housing markets have been over heated or are experiencing bubbles.

Table 10 Selling Price of 80 m2 Housing Unit to Urban Household Disposable Income Ratio Hainan (1995-2012) [2]

Year	Residential housing Sales Price (RMB/m2)	Selling price of a 80 m2 housing unit (RMB)	Per capitia disposable income (RMB)	Size of household (person)	Disposable income of urban households (RMB)	Housing price to income ratio
1995	3804.59	304367.2	4770	4.45	21226.5	14.34
2000	1956.2	156496	5358	4.11	22021.38	7.11
2001	1903.9	152312	5839	4.31	25166.09	6.05
2002	1796.42	143713.6	6823	4.23	28861.29	4.98
2003	2017.44	161395.2	7259	3.98	28890.82	5.59
2004	2379.7	190376	7736	4.16	32181.76	5.92
2005	2855.24	228419.2	8124	3.83	31114.92	7.34
2006	3734.57	298765.6	9395	3.94	37016.3	8.07
2007	4094.6	327568	10997	3.85	42338.45	7.74
2008	5441.29	435303.2	12608	3.75	47280	9.21
2009	6291.15	503292	12497	3.75	46863.75	10.74
2010	8800.01	704000.8	15581	3.63	56559.03	12.45
2011	9083.17	726653.6	18368	3.58	65757.44	11.05
2012	10238	819040	20918	3.67	76769.06	10.67

Source: Author elaboration of various years CSB and HSB

Table 11 Selling Price of 80 m2 Housing Unit in Hainan to China Urban Household Disposable Income Ratio (1995-2012)

Year	Residential housing Sales Price (RMB/m2)	Selling price of a 80 m2 housing unit (RMB)	Per capitia disposable income (RMB)	Size of household (person)	Disposable income of urban households (RMB)	Housing price to income ratio
1995	3804.59	304367.2	4283	3,65	15632,95	19,47
2000	1956.2	156496	6280	3,44	21603,2	7,24
2001	1903.9	152312	6860	3,46	23735,6	6,41
2002	1796.42	143713.6	7703	3,41	26267,23	5,47
2003	2017.44	161395.2	8742	3,4	28804,8	5,60
2004	2379.7	190376	9942	3,36	33405,12	5,70
2005	2855.24	228419.2	10493	3,13	32843,09	6,95
2006	3734.57	298765.6	11759	3,17	37276,03	8,01
2007	4094.6	327568	13786	3,17	43701,62	7,50

[2] 80 sqm sample is based on the 28.3 sqm average residental area per person in urban area (CSB 2008)and three persons per urban household.

2008	5441.29	435303.2	15781	3,16	49867,96	8,73
2009	6291.15	503292	17175	3,15	54101,25	9,30
2010	8800.01	704000.8	19109	3,1	59237,9	11,88
2011	9083.17	726653.6	23979	3,02	72416,58	10,03
2012	10238	819040	24565	2,9	71238,5	11,50

Source: Author elaboration of various years CSB and HSB
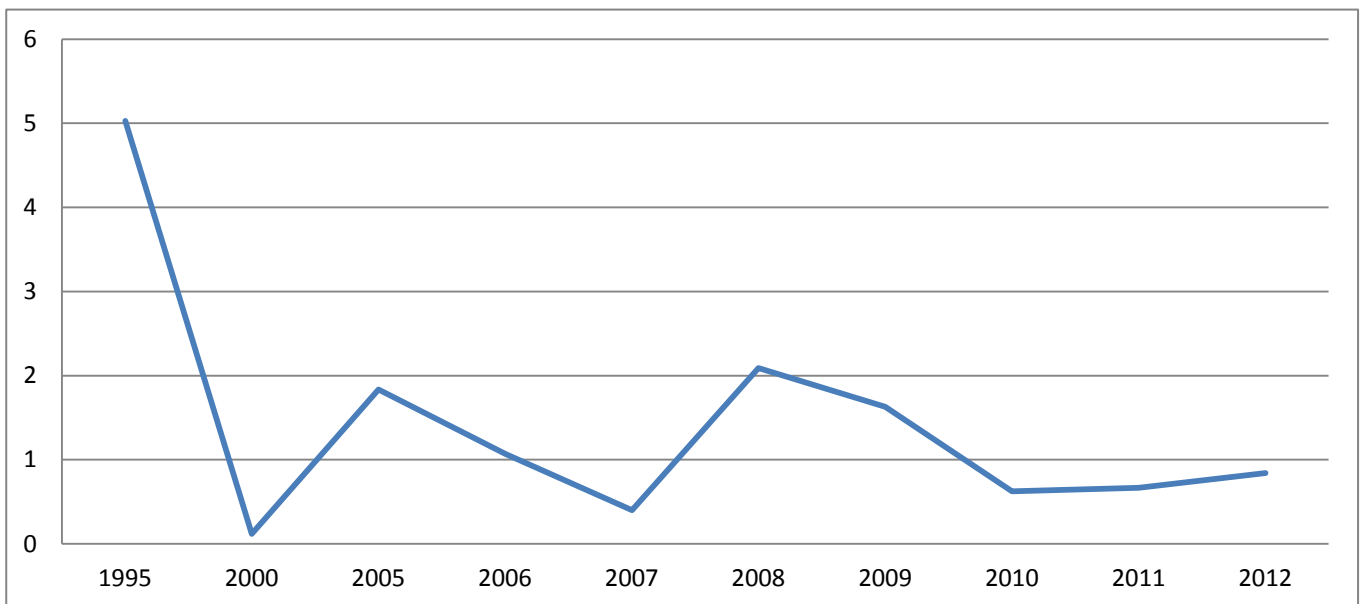
6.2.2 Housing Loan to Value Ratio

[Figure 18] presents ratios of housing loan to value in Hainan province during 1995-2012. It shows that the ratios had been most volatile during the Hainan bubble burst period in the 1990s and around 2005 and 2008. It needs to highlight that housing loan to value ratio is important for analyzing the risk of a housing market, but due to the Chinese state controlled socialist economy which is different from U.S.A market economy, the property loans offer have been deeply influenced by central government polices during different periods [Appendix II]. Thus to analyze the volatile loan to value ratio changes one needs to consider the corresponding central policies.

Due to China's housing reform policy at the end of 1980s, the Hainan housing market entered into an over exploited period as discussed above. It can be seen in 1995, the loan to value ratio came to historical high points which was around 5.02 and much higher than the "pain point" 1.0. This dramatic high loan to value ratio in 1995 implied that the loan value was much higher than the housing values. Negative housing values at that time resulted in borrowers facing enormously financially overleveraged risk. There was an overheated housing market bubble at that time in Hainan, and as the Chinese central government came up with policies to curb this overheated market strongly, many loan borrowers in Hainan in the 1990s failed to honor their debt obligations, and left their equities to the banks. Thus the Hainan housing bubble burst and the Hainan housing market began a period of stagnation. Thereafter the loan to value ratio decreased to 0.12 in year 2000 in Hainan, which shows the stagnation of the Hainan housing market and also reflected the banks strict control on credit supply.

But as times goes by, the loan to value ration changes as well. In 2003, central government acknowledged that the real estate industry is a pillar of the Chinese national economy, commercial housing was promoted and in 2008, when world economic crisis expanded its impact on China, the Chinese central government came up with a series of policy changes to support the property market, lower mortgage rates, reduced down payments, and increase access to credit. As a consequence, in

2005, the loan to value ratio of the Hainan housing market reached 1.84 which is higher than the "pain point 1.0"; and in 2008 and 2009, the ratio came to 2.09 and 1.628 respectively. Corresponding with [Table 10] house price to income ratio, [Figure 18] loan to value ratio implies that the Hainan housing market during the period 2005-2009 was overheated and one can draw the conclusion that a bubble exist. However, after 2009, new central polices were announced in order to curb the overheated real estate market (Appendix II). Thus, different from housing price to income ratio's result, after 2009, the loan to value ratio started decreasing to under the "pain point 1.0", and entering a relative safe area. From 2010 to 2012, the ratio has been around 0.6-0.8, which implies the housing value is no longer negative and there seems no bubble in the Hainan housing market.

Figure 18- Housing Loan to Value Ratio in Hainan (1995-2012)

Source: author elaboration of various years HSB

As a result, the loan to value ratio and housing price to income ratio during the 2010 and 2012 time period illustrates there are conflict results regarding whether there is a clear indication of a bubble existing in Hainan housing market. This might indicate that these two popular bubble measurements might one of them or both of them be unsuitable to determine whether there is a bubble or not in the Hainan housing market. Meanwhile, the conflicting results on bubble measures indirectly respond to the Grange causality test [Table 9] results that both disposable income pattern and housing loan availability are not direct determinant for the housing prices in Hainan. Thus these two bubble measures might not explain, either can give a clear indication of the existence of a bubble.

Chapter 7 Conclusion:

A housing bubble in Hainan happened during the beginning of Chinese opening and reform period. But economic fundamentals have changed a lot in Hainan since that time. This thesis after introducing the background of the research, through a positivist enquiry, has collected statistical data from CSB and HSB from 1990 to 2012. The aim of this thesis is to explore whether Hainan today is facing the same housing bubble situation as in the 1990s, or whether the high price of housing is just the results of economic fundamentals shifts. Through the chronological analysis and review the statistical data, the related economic fundamental factors and indicators for housing prices bubbles have been studied via an empirical analysis of the Hainan housing market.

The analysis of the economic fundamentals has explored that economic fundamentals shifts have played an influential role in Hainan housing prices. First, through the analysis of per capita disposable income of urban households, it shows that today Hainan people have much higher disposable income than during the housing bubble period in the 1990s, and income growth somehow follows the pattern of home price increases. Meanwhile, during the last decade, the interest rate has been kept stable without a big adjustment, the housing price in Hainan kept increasing and the overheated housing market could also be caused by an increase in loan availability after 2008 due to the central government stimulus plan following the world economic crisis.

Secondly, today Hainan has around 2.5 million more population than two decades ago with higher income. And during the last two decades, Hainan has improved its infrastructure, nearly eight times longer paved road and access from mainland has become much easier. Hainan's unique tropical temperature becomes more attractive for Chinese tourists. Tourists increase bring not only economic development, but also bring house purchasers from mainland China where has more than 1.3 billion people and even if only a few of them will come to Hainan to buy second homes, this keeps Hainan housing prices high since the demand is higher than supply due to Hainan limited land resources. So even if Hainan is experience a housing bubble today, its current property market is backed by economic growth and fundamentals changes and it is healthier compared with the 1990s.

Thirdly, the restriction and elasticity of land supply in Hainan causes the high land price and can

help to explain the volatile Hainan housing prices in the recent years. Increasing construction cost and higher land added value tax also make the developers add these amount into the housing selling prices. So when it come to judge the high price of housing, one needs to consider the cost of buying land, building, selling and paying tax. The Hainan house prices might go down if the related cost could be decreased.

Fourthly, results of the correlation analysis for the economic fundamentals show that except LIR, all the other variables show that they have strong positive relationship with HP changes. But the granger causality test states that there is no other strict Granger Causality between HP and other variables, except one "robust" Granger causality" that HP Granger cause RL. Thus the correlation and Granger causality analysis affirms that the economic fundamental factors in this thesis, which the list variables standing for, do have positive influence to HP (except LIR), but they are not direct determinants for HP changes. They are exogenous to HP. This illustrates that Hainan housing prices are complex and complicated symptom rather than simple direct causes of one or some significant economic fundamental factor shifts.

Fifth, via two different housing bubble measures- housing price to income ratio and housing loan to value ratio analysis, both of them shows that up to 2009, Hainan housing prices seem to be overheated: the housing price to disposable income ratio has increased and kept at higher risk level; the loan to vale ratio shows alarming bubble signal between 2005 and 2009. However, these two ratios illustrate conflict results since 2010, the loan to value ratio of the Hainan housing market shows that it has come back into the safe point (under 1.0) again, whereas the housing prices to income ratio still remains at a high risk level. Thus it might indicate that these two popular bubble measurements might one of them or both of them be unsuitable to decide whether or not there is a bubble in the Hainan housing market or it might also assume that Hainan housing market today is rather more complicated than to be judged by bubble measures.

Last but not at least, as it says in the beginning of this thesis, housing market are different in different areas and different background. Will China International Tourism Island-Hainan Province be always a forever tropical paradise for housing market (steadily high housing price due to the changes of economic fundamental factors) without suffering typhoon (bubble and bubble burst)? It may need to wait a sufficient period of time to see how the future plays out.

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Appendix

App I:

Explanatory Notes on Some Statistical Indicators

Gross Domestic Product (GDP) refers to the final products at market prices produced by all residents units in a country (or a region) during a certain period of time. GDP is expressed in three different perspectives, namely value, income and products respectively. GDP in its value respective refers to the total value of all goods and services produced by all residents units during a certain period of time, minus the total value of input of goods and services of the nation of non-fixed assets; in other words, it is the sum of the value-added of all residents units. GDP from the perspective of income includes the primary income created by all residents units and distributed to resident and non-resident units. GDP from the perspective of products refers to the value of all goods and services for final demand by all residents units minus the imports of goods and services during a given period of time. In the practice of national accounting, GDP is calculated from three approaches namely production approach, income approach and expenditure approach, which reflects gross domestic products and its composition from different angles (CSB).

Registered population refers to the citizens who have registered in public security organs of household register management, regardless of whether or not to go out and no matter the length of time (CSB).

Non-agriculture population refers to total population under the jurisdiction of city and the population of towns under the jurisdiction of countries (CSB).

Natural Growth Rate of Population refers to the ration of natural increase in population (number of birth minus number of death) in a certain period of time (usually a year) to the average population (or mid-period) of the same period which is often expressed in ‰. Natural Growth Rate of population=(Number of Births-Number of Deaths)/Annual Average population*1000‰ (CSB).

Age Composition Ratio refers to the ratio of non-working-age population to the working-age population, express in %. Describing in general the number of non-working-age population that every 100 people at working ages will take care of. This indicator reflects the basic relation between population and economic development from the demographic perspective (CSB).

Average Wage refers to the average wage in money terms per person during a certain period of time for staff and workers in enterprises, institutions, and government agencies, which reflects the general level of wage income (CSB).

Average wage=Total wage bill of employed persons at the reference time/ Average number of persons employed at reference time.

Investment in Real Estate Development refers to investment by real estate development companies, commercial buildings construction companies and other real estate development units of various types of ownership in the construction of house buildings, such as residential buildings, factory buildings, warehouse, hotels, guesthouse, holiday villages, office buildings and the complementary service facilities and land development projects, such as roads, water supply, water

drainage, power supply, heating, telecommunications, land leveling and other projects of infrastructure. It excludes the activities in simple land transactions (CSB).

Loan is a form of credit by which banks and other credit institutions provide funds at certain interest rate to enterprise and individuals which the latter will repay by an agreed time frame. Loan includes short-term, medium-and long-term loan, fiscal loan, foreign exchange loan and other loans. Meanwhile, loans from Chinese banks include circulating capital loans, fixed assets loans, loans to urban and rural individuals engaged in industrial and commercial business and agricultural loans (CSB).

Urbanization % of total population living in urban areas. Urbanized states tend to be more conducive markets for real estate development, as they have deeper, more mature markets BMI (2014:68). Urbanization = Urban Population /Total population. Here urban population data will be regarded as non-agricultural population data which is available collected from statistic yearbook. Just as Naughton (2007: 126) defines, the percentage of Chinese citizens classified as "non-agricultural" that is those with urban residence permits.

App II:

National Real Estate Control Policies at a Glance (1993-2013)

Time Period	Real Estate Market Condition	Control Policies
1993-1996	1995:Hainan province real estate bubble burst	1993: "National sixteen" rules from State Council: proposed policy measures to rectify the financial order and to strengthen macro-control 1994:"A decision on Deeping the Urban Using Reform" is issued, which defines the goals and overall stragegy of reform.
1997-2002	1997: Asian financial crisis China's economy began to show "deflation",real estate market entered to downturn period. 2000:The end of housing allocation in China	1998: State Council issued the "Circular on Further Deepening the Urban Housing System Reform and Accelerating Housing Construction " (Document No. 23). "To promote the housing industry into a new economic growth point" and opened the housing system reform in China which is characterized by the abolition of welfare housing distribution. 1999: The "Guildlines for Personal Consumptioin Credit Operations" marks the beginning of personal loans, including mortgages.
2003-2005	Land public bidding system was enacted, starting on Aug 31, 2004, all lands are publicly bid and auctioned, which results in land prices and housing prices sharp rise.	2003 June: "Further strengthening of the real estate credit business management notice" (Document No. 121), to adjust individual housing loans policies of commercial banks in order to take measures to curb the overheated real estate market: for those borrowers who purchase high-end real estate, villa or second or more (including the second set) real estate properties, an appropriate increase in the proportion of down payment, and interest rates are no longer perform preferential housing requirements. 2003 Aug "Circular on Promoting the Continuous and Healthy Development of the Real Estate market" which acknowledges that the real estate industry is a pillar of the Chinese national economy.
2005-2007	Real estate development continued to maintain a rapid development , rapidly rising house prices remained unchanged which is represented by the cities like Shenzhen and Beijing. Housing price has become the social focus topic.	The" Eight Rules" (March 2005), the "New Eight Rules" (April 2005) , "Six Rules" (May 2996) and "Opinion of Such Departments as the Ministry of Construction on Effectively Stabilizing Housing prices" signal the central government's first efforts to rein in home prices. Land, credit, tax and other regulation intensively launched in order to cool down the property market, standardize the market order and curb speculation (especially the suppression of foreign investment in real estate).

		2007 Property right law is launched.
2008	Under the world financial crisis expanded impact and the influence of the central government pre-control policies ,there is the rapid decrease in real estate investment and the withdrawal of international hot money. The real estate market enters into a downturn state and housing prices also declined.	A series of policy changes is announced to support the property market: lower mortgage rates, reduced down payments, lower transaction taxes. In Dec, further measures are announced to support the property market, including cuts in business and transaction taxes for real estate sales and polices to make it easier for developers to obtain credit.
2009	In 2009, China's real estate market changed from the beginning of "exploratory hunters", to the "heavy volume rose" in the middle of the year, to "panic buying" at the end of the year. , the Chinese property market is rapidly changing from downtown and recession into excitement and prosperity.	In Dec, in order to curb housing prices in some cities, central government decided gradually abolished the 2008 stimulating policy to housing market, and not to extend the end of 2008 the introduction of second-hand housing sales tax exemption incentives. Meanwhile, it announces that individuals must own their homes for five years to be eligible for sales tax exemption. " Four rules" to "increase the effective supply of ordinary commercial housing; continue to support and improve the housing consumption for residents own using property, suppress speculative investment; strengthen market supervision; continue promoting large-scale construction of affordable housing projects. "
2010-2012	First quarter of 2010, the housing market continued its myth, and housing prices continued to climb.	2010 April: " Ten rules" is issued. It announced that down payments requited on the second homes to 50%. 2011: "New Eight rules" is issued. It announced that increase minimum down payment for second mortgagees to 60%. 2012: Provident funds in some regions ease loan policies for the first-time homebuyers.
2013	Housing prices continued to climb in big regions, such as Beijing, Shanghai and Shenzhen. But ghost cities in the west and other relative undeveloped regions come up more and more .	2013 Feb: "five rules" is issued to improve the stability of housing prices; strictly enforce the restriction of purchasing and expand around the property tax pilot; increase land supply; shall finish build 4.7 million units of affordable housing national wide; strengthen the management of real estate pre-sales. May: National Land Ministry announced to to eliminate land collection violence incidents

Source http://finance.sina.com.cn/leadership/mroll/20101011/14468758127.shtml

Source: http://news.sanya.soufun.com/zt/201401/2013sylsbpszc.html

State Council's Suggestion on Promoting the Construction and Development of Hainan International Tourism Island State Issue[2009]No,44 December 31, 2009

Provinces, autonomous regions and municipalities, ministries or commissions, agencies directly:

Hainan is China's largest special economic zone and the only tropical island province.Hainan province as a 20 years's special economic zone, which have made remarkable achievements in economic and social development.However, because the late development and poor infrastructure , the current overall level of economic and social development in Hainan is still low, protecting the environment, adjusting the economic structure and promoting scientific development is still in an arduous task.Making full use of Hainan island's location and resources advantage, creating international tourist resorts are the international competitiveness of hainan, which is to speed up the development of modern service industry and realize the sound and rapid eco-social development of major move, the adjusting and optimizing economic structure and change development mode plays an important role model for entire country.To promote international tourism in hainan island construction development, we put forward the following opinions.

First, a positive development, service-oriented economy and open economy, ecological economy, form for bibcock, modern service industry is the dominant characteristic of economic structure.Strive to improve the quality of tourism development, to create features with Hainan and reached the international advanced level of the tourism industry system.To guarantee and improve the livelihood of the people, develop social undertakings vigorously,accelerate the urban and regional harmonious development, therefore will become beautiful ecological environment construction of hainan gradually, culture unique charm and social civilization and peaceful open, green island, civilization, and harmonious island.

Second, strengthen the construction of ecological civilization and enhance the ability of sustainable development.

Third, play the dominant characteristic of Hainan to raise the overall level of tourism management.

Fourth,develop modern services and tourism-related vigorously, promote transformation and upgrading of services

Fifth, actively developing tropical modern agriculture, accelerate the process of urbanization.

Sixth, strengthen infrastructure construction and enhance service ability.

Seventh, promoting the emphasis on improving people's lives for social construction, and speed up the formation of humanistic intellectual support.

Eighth , making full use of the local resources, intensive development new industry

Ninth, organizing and coordinating the implementation of safeguards

The relevant departments of the state council shall conscientiously implement the opinions of each task and policy measures in planning and implementing policy, system innovation, to actively support etc.According to the people's government of Hainan province to the opinion of' Hainan international tourism island development plan outline, the state development and reform commission approval to implement, and further prepared related special planning and construction planning area, formulating refined scheme and measures.In the policy implementation process, we should pay attention to study new situations, solve new problems, regular lessons-learned, major issues in a timely manner to the State Council.

<div align="right">State Council</div>

Source: http://www.petrohi.com/en/NewsShow.asp?NewsId=1210

App IV:

Interim Regulations of the People's Republic of China on Land Value-added Taxes

The State Council

Decree of the State Council of the People's Republic of China

No.138

"Interim Regulations of the People's Republic of China on Land Value-Added Taxes" was adopted the at the 12th Executive Meeting of the State Council on November 26, 1993 and is hereby promulgated, and shall come into force on the day of January 1,1994.

Premier of the State Council Li Peng

December 13, 1993

Interim Regulations of the People's Republic of China on Land Value- Added Taxes

Article 1

These regulations are formulated to standardize the marketing of land and real estate, reasonably regulate the gains from added value of land and safeguard the rights and interests of the State.

Article 2

Units and individuals (hereinafter referred to as taxpayers) shall pay land value-added taxes on their incomes derived from transference of use rights of State-owned land and property right of buildings and attached installations thereon (hereinafter referred to as transference of real estate) according to stipulations in these regulations.

Article 3

The land value-added taxes are levied on increased values the taxpayers derive from the transference of the real estate at rates specified in Article 7 of these regulations.

Article 4

In calculating the added value, costs and expenses listed in Article 6 of these regulations shall be deducted from the tax payers gains from the real estate transference.

Article 5

Taxpayers' gains from his real estate transference includes incomes in cash, kind and other forms.

Article 6

Deductions to be made in the calculation of land added-value:

(1) The lease price paid for the use of the land;

(2) The cost and expenses spent in the development of the land;

(3) The cost and expenses in the construction of new buildings and attached installations, or the evaluated prices of old buildings and structures;

(4) Tax payments involved in the real estate transference;

(5) Other deductions as prescribed by the Ministry of Finance.

Article 7

Land value-added taxes shall be levied in four progressive levels:

The tax rate is 30% for that part of the added value which does not exceed 50% of the deducted amount.

The tax rate is 40% for that part of the added value which exceeds 50% but less than 100% of the deducted amount.

The tax rate is 50% for that part of the added value which is greater than 100% but less than 200% of the deducted amount.

The tax rate is 60% for that part of the added value which exceeds 200% of the deducted amount.

Article 8

On one of the following conditions, a taxpayer is exempt from land value-added tax:

(1) The taxpayer builds houses of ordinary standard for sale and the added value does not exceed 20% of the deducted amount;

(2) Land and properties recalled and requisitioned by the State according to law for construction purposes.

Article 9

On one of the following conditions, the land value-added tax rates are set according to the evaluated prices of the real estate:

(1) Concealment and falsification in reporting the transaction prices in real estate transference;

(2) Untrue reporting of the deducted amount;

(3) The transaction prices in the real estate transference are lower than the evaluated prices for no justifiable reasons.

Article 10

A taxpayer should declare the real estate transaction at the tax authority in the place where the real estate is located within seven days of the signing of the contract for the transference of the real estate and pay the land value-added tax within the time limit ascertained by the tax office.

Article 11

The land value-added taxes are to be collected by the tax offices. The land and house property administration departments shall supply the tax offices with relevant materials and assist them in the levy of the land value-added taxes according to law.

Article 12

Land and house property administration departments shall not perform the procedure for changes in the proprietary rights for the taxpayers who fail to pay the land value-added tax in accordance with these regulations.

Article 13

The collection and administration of the land value-added taxes shall be carried out according to relevant stipulations in the Law of the People's Republic of China on Administration of Tax Collection and the relevant provisions of these regulations.

Article 14

The Ministry of Finance is responsible for interpretation of these regulations and in charge of formulating detailed rules for their implementation.

Article 15

These regulations will enter into force as of January 1, 1994. All measures of the localities for the collection of the land value-added taxes that contravene these regulations will cease to be effective at the same time.

Send to: People's government of various provinces, autonomous regions and municipalities directly under the Central Government, all ministries and commissions of the State Council and organizations directly under the State Council.

I.   General Office of the Central Government, General Office of the Central Military Committee, General Office of the Standing Committee of the National People's Congress, General Office of the National Political Consultative Committee, the Supreme Court and the Supreme Procuratorate.

The State Council 1993-12-13

Source: http://www.asianlii.org/cn/legis/cen/laws/irotprocolvat655/