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# Risk of a Housing Bubble Collapse in China Extremely Remote

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## Summary

1. Investment in real estate development has provided impetus for China's rapid economic growth. Unlike Japan, where land is the main focus of real estate development, real estate investment in China is directed primarily toward housing.
2. Since the autumn of 2011, there have been growing fears that China could experience a housing bubble collapse, leading to a slump in consumer spending and fixed asset investment and the destabilization of local government finances and the financial system.
3. However, the risk of a housing bubble collapse on a national scale is extremely remote at present. While there are signs of a housing bubble in some areas because of demand for housing for investment purposes, this is limited to major cities, such as Beijing and Shanghai, and resort areas, such as Hainan Island. In most other regions, strong real demand has kept housing prices at a level commensurate with incomes. Major cities account for only a small part of the overall Chinese economy, and small and medium-sized cities make up a far bigger share.
4. In the future, there is a strong likelihood that the housing market in small and medium-sized cities, which form the overwhelming majority, will continue to expand steadily in step with real demand. The reasons for this include (1) urbanization in inland regions, (2) rising income levels, and (3) an increase in the number of income earners with urban residential registration following changes to the household registration system.

## Introduction

On September 30, 2011, a British newspaper, the *Financial Times*, carried a story claiming that there were signs of a collapsing real estate bubble in China. The article reported that the number of real estate transactions had been below normal since the start of 2011, and that developers were being forced to cut prices. It also referred to the risk that real estate developers would be unable to repay their debts if sales continued to fall.

Predictions of a collapse of China's real estate bubble have proliferated since the autumn of 2011, but are such fears really justified? While a real estate bubble has formed in some areas because of investment-driven demand for housing, this has been limited to major cities and resort areas. Housing prices have also risen sharply in small and medium-sized cities, but there has also been substantial growth in people's incomes, and house prices have remained stable at around six times annual household income. In most regions, the prices of houses are commensurate with incomes.

Even if the bubble collapses in major cities, the impact is likely to be minimal, since the major cities make up only a small part of the overall Chinese economy. Real demand remains strong in small and medium-sized cities, which constitute an overwhelmingly large majority.

Part 1 of this paper provides an overview of the Chinese real estate market. Part 2 analyzes the risk factors that would be associated with a collapse of the housing bubble. It also presents the writer's view of the situation and the grounds for that view. Part 3 examines the outlook for the real estate market.

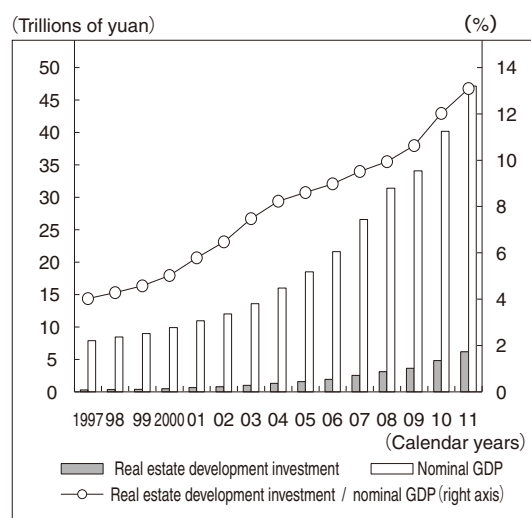
## 1. The Real Estate Market as a Growth Driver

Real estate development investment in China has continued to expand. In 2011 it accounted for 13.1% of nominal GDP. In Japan real estate investment focuses mainly on land, but in China housing accounts for around 70% of investment.

### (1) Expanding Investment in Real Estate Development

Real estate development investment in China has expanded rapidly in recent years. Regional governments have sold land acquired at a minimal cost to government-affiliated real estate companies for low prices. The real estate companies have then earned huge profits by developing and building property, especially housing. Real estate development investment has also been a key driver of China's rapid economic growth. Since the introduction of private housing ownership in 1998, real estate development investment has consistently expanded at a faster pace than economic growth<sup>(1)</sup>. Between 2000 and 2005, nominal GDP almost doubled from 10 trillion yuan to 19 trillion yuan. Over the same period, real estate development investment tripled from 0.5 trillion yuan to 1.6 trillion yuan. Similar trends continued in the five years after 2005. Nominal GDP doubled to 40.2 trillion yuan, while real estate development investment tripled to 4.8 trillion yuan. This pattern is reflected in a continual rise in the contribution of real estate development investment to nominal GDP, which reached 13.1% in 2011 (Fig. 1).

**Fig. 1 Nominal GDP and Real Estate Development Investment in China**



Source: Compiled by JRI using *China Statistical Yearbook* (various years) and data published by the National Bureau of Statistics of China

## (2) Housing the Mainstay of the Real Estate Market

The following analysis of the situation focuses on the housing market. Japan's housing bubble is generally defined as a rapid upward trend in land prices. Land is the main focus of real estate transactions in Japan, since land can be privately owned, and a market has evolved in which land can be bought and sold. In China, land is owned by the government and cannot therefore play a central role in real estate transactions<sup>(2)</sup>.

Offices and commercial facilities are also classed as real estate, but the amount of such property is very small compared with housing. The real estate development investment statistics referred to above were calculated by aggregating completed investments by companies involved in real estate development and management. These statistics include not only investment in housing, office buildings and commercial facilities, but also investment in factories and infrastructure, such as water supply and wastewater systems. In 2011, investment in commercial buildings and office buildings amounted to 737.0 billion yuan and 254.4 billion yuan respectively. These figures are equivalent to just 11.9% and 4.1% respectively of total real estate development investment in China.

**Table 1 Breakdown of Real Estate Development Investment in China (Value Basis)**

Year	Housing	Commercial buildings	Office buildings	Others
1997	48.4	13.4	12.2	25.9
98	57.6	13.2	12.0	17.2
99	64.3	11.8	8.3	15.6
2000	66.5	11.6	6.0	15.9
01	66.5	11.9	4.9	16.8
02	67.1	12.0	4.9	16.0
03	66.7	12.8	5.0	15.4
04	67.2	13.1	5.0	14.8
05	68.3	12.8	4.8	14.1
06	70.2	12.1	4.8	12.9
07	71.2	11.0	4.1	13.7
08	71.9	10.8	3.7	13.6
09	70.7	11.5	3.8	14.0
10	70.5	11.7	3.7	14.0
11	71.8	11.9	4.1	12.2

Source: Compiled by JRI using *China Statistical Yearbook* (various years) and data published by the National Bureau of Statistics of China

Housing investment reached 4,430.8 billion yuan, or 71.8% of total investment (Table 1).

## 2. Bubble-Prone Major Cities, Bubble-Free Small and Medium-Sized Cities

A collapse of the housing bubble would inevitably lead to declines in consumer spending and fixed capital formation and the destabilization of regional government finances and the financial system. If we may look ahead to the conclusions reached in this article, however, the possibility of a real estate bubble collapse seems extremely remote at present.

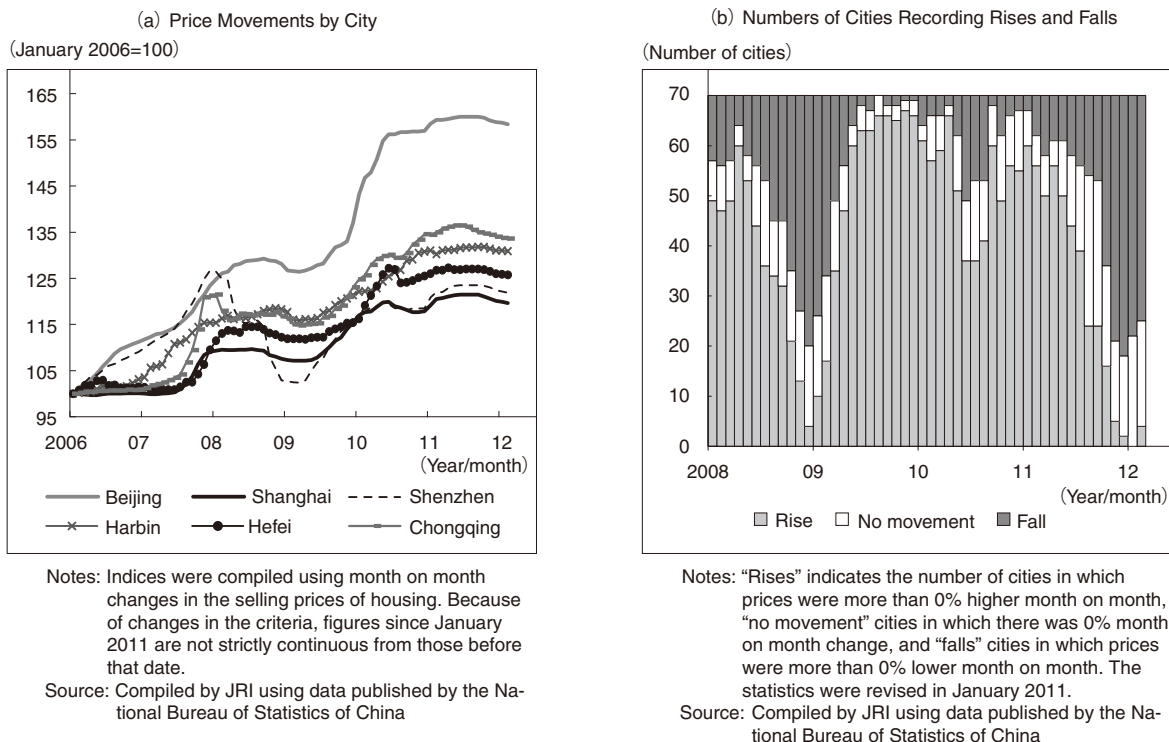
### (1) Growing Concerns about a Bubble Collapse

Since the fall of 2011, there has been growing concern that the housing bubble is about to collapse. For example, on September 30, 2011, the British *Financial Times* newspaper carried a story with a headline suggesting that there were signs of a collapsing real estate bubble in China<sup>(3)</sup>. The article reported that the number of real estate transactions had fallen in September 2011, even though September and October are normally the busiest months, forcing real estate developers to cut prices. It also included an analysis stating that if sales contracts shrank by 30%, over one-half of developers, including some major companies, would be unable to repay their debts.

There is certainly evidence that a correction is under way in the Chinese housing market. Sales prices for new subdivision housing in major cities have been falling since the autumn of 2011. This price decline is no longer limited to just a few cities and is spreading nationwide. In January 2012, there was not a single city in which prices moved upwards on a month on month basis, and downward movement was recorded in 48 of the 70 cities covered (Fig. 2).

If the housing market correction deepens, the business environment for real estate developers can be expected to deteriorate as predicted by the

**Fig. 2 Sales Prices for Newly Built Subdivision Housing**



British *Financial Times*. Any increase in the number of developers unable to meet debt repayment obligations would leave banks holding an expanding amount of non-performing debt, putting the stability of the financial system at risk.

In addition to the financial implications, such a situation would also have a negative impact on the real economy. First, falling asset prices would be likely to erode confidence. Real estate is the biggest asset for Chinese households. In May-July 2002, the National Bureau of Statistics conducted a nationwide survey of 3,997 urban households, the results of which showed that real estate made up 47.9% of the assets of urban households. This is far higher than the percentages for other assets, such as savings (24.2%), stocks (3.5%), government bonds (1.5%) and pensions/insurance (1.5%)<sup>(4)</sup>. This means that any fall in real estate values would be highly likely to cause a downturn in consumer spending, especially on top-brand goods and other luxury items. There would also be a risk of reduced fixed asset investment, especially in housing-related industries. After the Lehman shock of September 2008, housing prices fell in many cities. This in turn produced a rapid

decline in the activities of developers. The impact also spread to other related industries, including iron and steel, cement, furniture and electrical appliances<sup>(5)</sup>.

Another issue is the heavy reliance of regional governments on income from land transfers. This means that they would face financial problems in the event of a dramatic fall in housing prices.

## (2) No Justification for Overstated Bubble Warnings

### ① Government-Led Fall in Housing Prices

Yet an analysis of the housing market in China indicates that the possibility that the market correction will deepen is extremely remote. The current correction is a government-led trend, and a shift to monetary easing or the relaxation of policies designed to curb real estate prices could be expected to revitalize the housing market and push housing prices back onto an upward trend. The Chinese government has hitherto maintained a tight monetary stance. Interest rates were raised five times, in October and December 2010 and February, April and July 2011, while the deposit

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reserve ratio was increased twice in November 2010 and once every month between December 2010 and June 2011.

Monetary measures were not the only means used to curb real estate prices. Two approaches were particularly effective in the housing market. The first was the “Notification of the State Council Concerning the Determined Suppression of Rapid Rises in Housing Prices in Certain Cities” (State Council Document 10 of 2010), which is commonly known as the “10 Articles of the State Council.”

This package, which was announced by the State Council on April 17, 2010, contained four specific measures. First, the government directed that the supply of housing should be increased. The 10 Articles called for major expansion of the supply of housing land, public rental housing and small and medium-sized ordinary subdivision housing in cities where housing prices were rising too quickly. Second, the collection of capital gains taxes on real estate would be tightened. A real estate ownership tax system targeting home owners was immediately formulated, requiring the stringent collection of capital gains taxes in accordance with the tax regulations. A tax rate of 20% or higher was established for capital gains above a certain level. However, houses occupied for at least five years were exempted. Third, the government declared its intention to tighten its supervision of the housing market. Fourth, the government called for steps to curb lending on housing. The required deposit for a first home (limited to houses with a floor area of 90 square meters or more) would be raised from 20% to at least 30%, and that for second homes from 40% to at least 50%. Second-home buyers would also be required to pay an interest rate not less than 1.1 times the standard housing loan interest rate. When lending to people who were buying three or more homes, commercial banks would be required to apply substantially higher deposit ratios and interest rates according to their own risk management policies. In some regions, even tougher measures were introduced, including the suspension of housing loans to third-home buyers, the temporary suspension of new housing loans to non-residents, and

the imposition of a limit on the number of houses that could be bought by one family within a specified period.

The second approach was contained in the so-called “Eight Articles” issued by the Standing Committee of the State Council on January 26, through which the central government required each regional government to set a target for the curbing of real estate prices. The government also directed that the supply of low-cost housing for low-income people should be expanded, and that the deposit for second-home purchase should be increased to 60% of the purchase of the price. In Beijing and Shanghai, the government announced restrictions on second-home buying and the purchasing of houses within five years of relocation to the cities. Similar measures were subsequently introduced in small and medium-sized cities (Table 2).

## ② Small and Medium-Sized Cities—the Bubble-Free Majority

The measures introduced by the central government to curb real estate prices have mainly targeted certain major cities and resort areas. As far as small and medium-sized cities are concerned, the goal appears to be the prevention of overheating. Housing prices in the major urban areas of Shanghai and Beijing and the resort areas of Hainan Province have risen dramatically because of increased purchasing for investment purposes. Because housing prices have risen faster than incomes, the average selling price for subdivision housing has climbed to over 10 times the annual household income. At this level, housing is no longer affordable for those planning to buy homes. On this basis, it may be reasonable to conclude that a housing bubble is occurring in major cities (Fig. 3).

This situation reflects high rates of return on housing investment. With interest, a 1 million yuan deposit in 2004 was worth 1.12 million in 2008. A condominium in Beijing purchased for 1 million yuan in 2004 could be sold for 1.3 million in 2008<sup>(6)</sup>.

Similar conditions existed in Japan before the collapse of the bubble. In a public opinion survey

**Table 2 Key Measures to Curb Real Estate Prices**

Year	Date	Details
2010	Jan. 10	Regional governments and government agencies are urged to take steps to stabilize the real estate market, including the expansion of housing supplies, stringent collection of real estate added value tax, and an increase in the housing loan deposit ratio (from 30% to 40%).
	April 17	The government announces measures to curb housing prices, including an increase in the housing loan deposit ratio.
	Sept. 29	The Bank of China tightens measures to curb housing prices, including the suspension of loans for the third-home or subsequent purchases.
2011	Jan. 26	The government announces measures to curb real estate prices (the "New Eight Articles"). Each regional government will be required to set a target for curbing real estate prices, increase the supply of low-cost housing and raise the deposit ratio for housing loans. A directive is announced restricting second-home buying and housing purchases by residents of less than five years' standing in Beijing and Shanghai. These measures were subsequently also applied to small and medium-size cities.
	Jan. 27	A real estate acquisition tax is introduced in Shanghai and Chongqing targeting owners of two or more homes and luxury condominiums.
	March 5-14	The National People's Congress calls on regional governments to expand the supply of low-cost housing and sets a housing supply target of 10 million units in 2011.
	Dec. 12-14	The Central Economic Work Conference decides to maintain measures to curb housing prices.

Notes: The dates are the dates on which the measures were announced.  
Source: Data published by Chinese government agencies

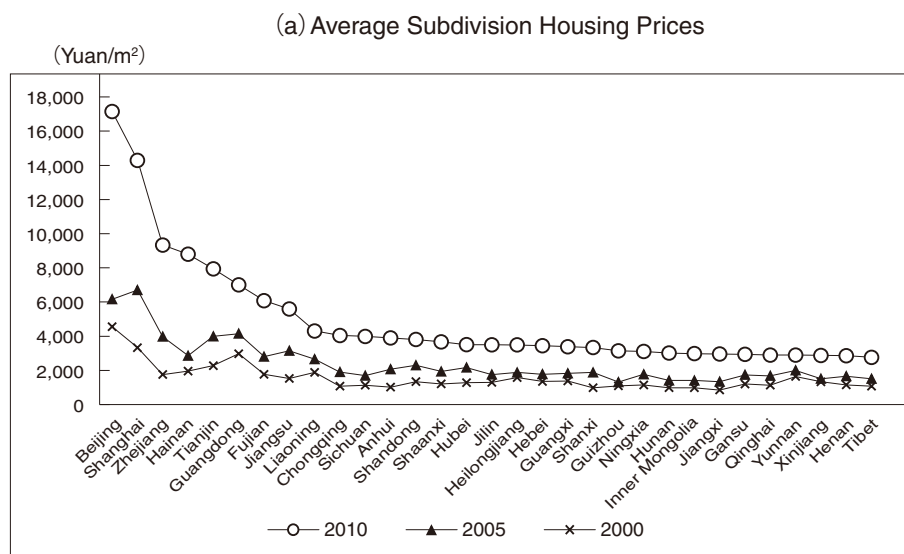
on land conducted by the Prime Minister's Office in June 1988, 64.1% of respondents thought that land offered greater advantages than other assets, such as savings and shares. In the second half of the 1980s, Japan saw massive amounts of money flood into the real estate market, causing land prices to rise dramatically<sup>(7)</sup>. The desperate efforts of the Chinese government to control flows of liquidity from throughout China into the real estate markets of Beijing and Shanghai suggests that it has learned from Japan's experience.

However, the housing bubble phenomenon is limited to major cities. Housing prices in the regions, which account for by far the biggest share of the Chinese economy, are at levels commensurate with real economic conditions, and the risk of rapid price rises is minimal. While housing prices are rising in small and medium-sized cities, the trend is in step with income growth, and there has been no significant increase in the ratio of housing prices to annual incomes. As shown in Fig. 3, housing prices in small and medium-sized cities have doubled over the past five years. However, per capita disposable incomes have also doubled over the same period, with the result that the average selling price of subdivision housing has remained stable at around six times annual household incomes. We can therefore conclude that there has been no housing bubble in small and medium-sized cities.

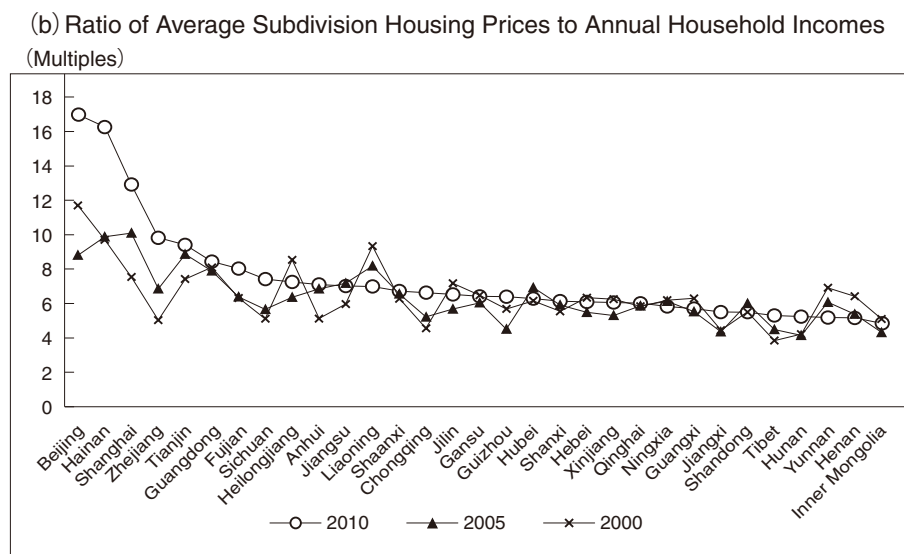
Small and medium-sized cities make up an overwhelming majority in China. This means that even if housing prices fall in major cities, the overall impact will be limited. Beijing and Shanghai have populations of 19.61 million and 23.02 million respectively, which are equivalent to just 1.5% and 1.7% respectively of China's total population. In terms of economic scale, the shares are 3.5% for Beijing and 4.2% for Shanghai. Furthermore, Beijing accounts for just 6.0% of total real estate development investment and Shanghai for only 4.1% (Table 3).

Could a bubble collapse in major cities also trigger panic selling in small and medium-sized cities? Such a situation could arise if prices in small and medium-sized cities had been pushed up by investment-related housing demand, as in the major cities. However, given the strength of real demand in the small and medium-sized cities at present, a price collapse in major cities would be unlikely to have a major impact on small and medium-sized cities. Residents of small and medium-sized cities who have bought houses for their own use would be unlikely to sell their own living spaces simply because of a price slump in major cities. If large numbers of houses were being purchased for investment purposes, this would be reflected in fluctuations in the ratio of housing prices to income in small and medium-sized cities. As noted above, the ratio for small and medium-sized

**Fig. 3 Average Subdivision Housing Prices and the Ratio to Annual Household Incomes**



Notes: See Appendix 1 for detailed data.  
Source: National Bureau of Statistics of China



Notes: See Appendix 1 for a description of the estimation method used.  
Source: Based on data compiled by the National Bureau of Statistics of China and the Ministry of Construction

cities has remained stable at around 6 times over the past 10 years. While prices are rising in these cities, which form the overwhelming majority in China, price levels are still commensurate with added value. Of course, the writer expects that China will learn from Japan's experience and will be able to control the bubble in major cities.

The strength of real demand in small and medium-sized cities is driven by the dynamism of urbanization and rising income levels. Urbanization generates substantial new housing demand in cit-

ies. The urban population has risen dramatically because of migration from rural to urban areas. Between 2006 and 2009, China's urban population grew by 44.8 million. The populations of small and medium-sized cities increased by a total of 42.29 million during this period, compared with a total increase of 2.51 million in the populations of Beijing and Shanghai.

Rising income levels have meanwhile become a source of sustained replacement demand. Income levels in inland China have consistently shown

**Table 3 Regional Shares of National Statistics (2010)**

	Population	GDP	Real estate development investment		Population	GDP	Real estate development investment
Beijing	1.5	3.5	6.0	Henan	7.0	5.8	4.4
Tianjin	1.0	2.3	1.8	Hubei	4.3	4.0	3.4
Hebei	5.4	5.1	4.7	Hunan	4.9	4.0	3.0
Shanxi	2.7	2.3	1.2	Guangdong	7.8	11.5	7.6
Inner Mongolia	1.8	2.9	2.3	Guangxi	3.4	2.4	2.5
				Hainan	0.6	0.5	1.0
Liaoning	3.3	4.6	7.2	Chongqing	2.2	2.0	3.4
Jilin	2.0	2.2	1.9	Sichuan	6.0	4.3	4.5
Heilongjiang	2.9	2.6	1.7	Guizhou	2.6	1.1	1.2
Shanghai	1.7	4.3	4.1	Yunnan	3.4	1.8	1.9
Jiangsu	5.9	10.3	8.9	Tibet	0.2	0.1	0.0
Zhejiang	4.1	6.9	6.3				
Anhui	4.4	3.1	4.7	Shaanxi	2.8	2.5	2.4
Fujian	2.8	3.7	3.8	Gansu	1.9	1.0	0.6
Jiangxi	3.3	2.4	1.5	Qinghai	0.4	0.3	0.2
Shandong	7.2	9.8	6.7	Ningxia	0.5	0.4	0.5
				Xinjiang	1.6	1.4	0.7

Source: *China Statistical Yearbook (2011)*

double-figure growth over the past 10 years. People are steadily relocating from aging condominiums with poor facilities and living environments into better units in newly built condominium complexes. According to census data, the percentage of households that have no toilets in their homes and must rely on shared facilities has fallen from 28.7% in 2000 to 21.6% in 2005. However, there is still considerable room for improvement in the residential environment, and people in small and medium-sized cities are likely to continue to give priority to the purchase of housing for the benefit of children and parents ahead of the improvement of lifestyle goods for themselves.

In many regions, the level of real demand is reflected in housing shortages that are pushing up the housing prices<sup>(8)</sup>. As we have already seen, however, the rate of increase is reasonable because it is in step with the pace of income growth. In contrast with major cities, such as Shanghai, Tianjin and Beijing, and regions where the small size of housing markets is reflected in instability, such as Shanxi, Ningxia, Qinghai and Tibet, demand in small and medium-sized cities, which make up the overwhelming majority in China, remains ahead of supply because the area of new subdivision housing sold exceeds the area of new construction completions<sup>(9)</sup> (Table 4).

### 3. Outlook

The government is likely to continue its efforts to curb real estate prices in major cities and resort areas, where the ratio of prices to annual income remains persistently high. While the government may seek to prevent overheating in small and medium-sized cities, however, it is unlikely to take active steps to curb prices. Continued active measures to curb prices in small and medium-sized cities would have a harmful effect by preventing healthy market development. Although a prolonged correction phase is predicted for the housing markets of major cities and resort areas, the housing markets of small and medium-sized cities should continue to expand steadily in step with real demand.

Real demand in small and medium-sized cities is likely to remain strong for the following three reasons. First, there is the trend toward urbanization<sup>(10)</sup>. Until now there has been conspicuous population growth in major cities in coastal regions, such as Shanghai, Beijing and Shenzhen. In the future, this trend is expected to spread to small and medium-sized cities in inland regions as part of the expansion of economic spheres. There is a strong possibility that urbanization will continue



**Table 4 Construction Completions and Sales of New Subdivision Housing (2011)**

(Millions of square meters)

	Sales	Completions		Sales	Completions		Sales	Completions	
Eastern (Coastal)	444.66	352.99	Central (inland)	261.58	201.42	Western (inland)	264.06	162.51	
Shandong	87.46	51.98	Henan	57.48	46.47	Sichuan	59.44	35.20	
Guangdong	69.69	46.12	Hunan	44.44	32.78	Chongqing	40.63	28.27	
Jiangsu	67.90	61.48	Anhui	39.70	24.02	Inner Mongolia	30.00	19.39	
Liaoning	66.32	52.60	Hubei	37.85	26.48	Shaanxi	28.86	9.73	
Hebei	53.12	42.50	Heilongjiang	29.14	23.96	Guangxi	27.24	18.37	
Zhejiang	30.06	29.87	Jiangxi	20.85	15.13	Yunnan	27.16	11.82	
Fujian	22.07	19.93	Jilin	20.61	13.71	Guizhou	17.06	11.07	
Shanghai	14.74	15.50	Shanxi	11.51	18.67	Xinjiang	15.79	10.95	
Tianjin	14.55	16.42				Gansu	7.34	5.54	
Beijing	10.35	13.16				Ningxia	7.02	7.62	
Hainan	8.41	3.44				Qinghai	3.32	4.35	
						Tibet	0.18	0.19	
National totals							995.39	745.58	
	Totals for regions with housing shortages							900.23	637.37

Notes 1: With the exception of Hainan, regions in which the area of sales exceeds the area of construction completions are classified as regions with housing shortages (shaded). Since the ratio of subdivision housing sales prices to household incomes in these regions have remained stable at around 6 times for the 10 years, we can conclude that housing shortages are being caused by real demand.

Notes 2: See Appendix 2 for information about the situation up to 2010.

Source: Compiled by JRI using *China Statistical Yearbook*

to drive the expansion of new demand for housing in small and medium-sized cities.

Second, income levels are rising. Although urban residential environments have improved in recent years, there is still room for further improvement. Efforts to improve urban residential environments are likely to accelerate as income levels rise. Companies have responded to labor shortages, especially in coastal regions, by raising wages. As labor shortages spread into inland regions, continued wage growth can also be expected in small and medium-sized cities.

Third, China is reforming its residential registration system. There has been substantial migration from rural to urban areas, and large numbers of people without urban residential registration now live in Chinese cities. In 2009, the government began to relax the requirements for the acquisition of urban registration in 10 cities, including Shenzhen and Shanghai. This pattern is likely to spread to other cities if labor shortages emerge in small and medium-sized inland cities. Cities offer advantages in many areas, including medical services, education, labor insurance, employment and social insurance, and the number of people obtaining urban registration is therefore expected

to increase. As soon as people achieve urban registration, they are likely to start thinking about the purchase of housing.

From now on the expansion of real estate development investment in inland regions is expected to function as a growth engine for the Chinese economy.

## Conclusions

Alarmed by reports of large numbers of vacant properties and observing that housing prices have doubled over the past five years, many commentators have instinctively become fearful that a bubble has formed in the Chinese real estate market and could burst at any time.

The land myth that gripped Japan in the 1980s eventually triggered a real estate bubble that burst in the 1990s, pushing the Japanese economy into long-term stagnation. This experience has given people living in Japan an underlying phobia about real estate bubbles.

We have said throughout this article that there is nothing in the present situation to justify fears of a collapsing real estate bubble in China. We have also seen that real demand for housing is likely to

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remain strong in the foreseeable future because of rising incomes and increasing urbanization rates, along with the restructuring of the household register system.

However, this does not mean that China will never experience a collapsed real estate bubble. While there is ample real demand at present, it is possible that a bubble could form and collapse at some stage. For example, Chinese financial institutions currently refuse to provide loans for the purchase of second houses in accordance with the government's window guidance, since such purchases are classed as investment-based housing demand. As China moves increasingly toward the internationalization of the yuan and financial deregulation, however, the effectiveness of window guidance is likely to be eroded. Japan's experience illustrates that when large amounts of surplus funds suddenly flood into the real estate market, a real estate bubble can form and collapse.

Although excessive fears about a bubble are not justified, therefore, we cannot afford to be overly optimistic about the future. To avoid missing precursors of a collapsing bubble, we should continue to monitor the ratio of housing prices to income levels, the property supply and demand situation and other data. The writer hopes that China will learn how to manage property bubbles by carefully studying Japan's experience.

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## End Notes

1. The *Notification of the State Council Concerning Deepening of Urban Housing System Reform and Acceleration of Housing Construction* (State Council Document 23 of 1998, July 3, 1998) abolished the material distribution of housing. See Institute on Research on Household Economies (1998) for a discussion of the housing system before that time.
2. House buyers acquire land-use rights at the time of purchase but are not able to sell those land-use rights separately.
3. A Japanese translation of this article was carried in the October 3, 2011 edition of the *Nippon Keizai Shinbun*.
4. A more detailed analysis can be found in Yamaguchi, Guo [2007].
5. See Seki [2010] for a detailed analysis of the linkage between housing investment and iron and steel production.
6. These estimates are based on standard interest rates for one-year deposits and the selling prices of second-hand housing in Beijing.
7. See Study Group on Asset Price Fluctuation Mechanisms and Their Economic Effects [1993]
8. Studies concerning the analysis of supply and demand in the Chinese real estate market include Wang, Xuan [2011] in Japanese and Niu [2005] and China Industrial Map Editorial Committee, China economic Monitoring & Analysis Center [2006] in Chinese.
9. In China, consumers normally pay the purchase cost of condominiums before they are completed.
10. Recent studies estimating the impact of urbanization on the Chinese real estate market include Deng, Zhang, Zhuang [2009] and Wang, Xuan [2011].

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# Appendix 1 Selling Price of Subdivision Housing Per Square Meter, Urban Per Capita Income, Ratio of Housing Prices to Annual Household Incomes

	2000			2005			2010		
	Selling price per m <sup>2</sup> of subdivision housing	Urban per capita disposable income	Ratio of housing price to annual household income	Average price of new house	Urban per capita disposable income	Ratio of housing price to annual household income	Average price of new house	Urban per capita disposable income	Ratio of housing price to annual household income
	A	B	a/b times	a = (A×83.2)	b = (B×3.13)	c/d times	c = (C×83.2)	d = (D×2.96)	e/f times
	yuan	yuan		yuan	yuan		yuan	yuan	
National	1,948	6,280	8.2	162,074	19,656	7.9	4,725	19,109	393,120
Beijing	4,557	10,350	11.7	379,142	32,395	8.8	17,151	29,073	1,426,963
Tianjin	2,274	8,141	7.4	189,197	25,480	8.9	7,940	24,293	660,608
Hebei	1,350	5,661	6.3	112,320	17,719	5.5	3,442	16,263	286,374
Shanxi	985	4,724	5.5	81,952	14,786	5.9	3,338	15,648	277,722
Inner Mongolia	984	5,129	5.1	81,869	16,054	4.3	2,983	17,698	248,186
Liaoning	1,882	5,358	9.3	156,582	16,770	8.2	4,303	17,713	358,010
Jilin	1,299	4,810	7.2	108,077	15,055	5.7	3,495	15,411	290,784
Heilongjiang	1,578	4,913	8.5	131,290	15,377	6.4	3,492	13,857	290,534
Shanghai	3,326	11,718	7.5	276,723	36,677	10.1	14,290	31,838	1,188,928
Jiangsu	1,527	6,800	6.0	127,046	21,285	7.2	5,592	22,944	465,254
Zhejiang	1,758	9,279	5.0	146,266	29,044	6.9	9,332	27,359	776,422
Anhui	1,020	5,294	5.1	84,864	16,569	6.9	3,899	15,788	324,397
Fujian	1,767	7,432	6.3	147,014	23,263	6.4	6,077	21,781	505,606
Jiangxi	854	5,104	4.4	71,053	15,974	4.4	2,559	15,481	246,189
Shandong	1,343	6,490	5.5	111,738	20,314	6.0	3,809	19,946	316,909
Henan	1,152	4,766	6.4	95,846	14,918	5.4	2,856	15,930	237,619
Hubei	1,280	5,525	6.2	106,496	17,292	6.9	3,506	16,058	291,699
Hunan	987	6,219	4.2	82,118	19,465	4.1	3,014	16,566	250,765
Guangdong	2,973	9,762	8.1	247,354	30,554	7.9	7,004	23,898	582,733
Guangxi	1,382	5,834	6.3	114,982	18,262	5.5	3,382	17,064	281,382
Hainan	1,956	5,358	9.7	162,739	16,772	9.9	8,800	15,581	732,160
Chongqing	1,077	6,276	4.6	89,606	19,644	5.2	4,040	17,532	336,128
Sichuan	1,135	5,894	5.1	94,432	18,449	5.7	3,985	15,461	331,552
Guizhou	1,096	5,122	5.7	91,187	16,033	4.5	3,142	14,143	261,414
Yunnan	1,646	6,325	6.9	136,947	19,796	6.1	2,893	16,065	240,698
Tibet	1,075	7,426	3.8	89,440	23,244	4.5	2,761	14,980	229,715
Shaanxi	1,210	5,124	6.3	100,672	16,039	6.6	3,668	15,695	305,178
Gansu	1,199	4,916	6.5	99,757	15,388	6.0	2,938	13,189	244,442
Qinghai	1,136	5,170	5.8	94,515	16,182	5.9	2,894	13,855	240,781
Ningxia	1,145	4,912	6.2	95,264	15,376	6.1	3,107	15,344	258,502
Xinjiang	1,328	5,645	6.3	110,490	17,668	5.3	2,872	13,644	238,950

Notes 1: Areas shaded in gray indicate figures estimated by the author.

Notes 2: According to the Ministry of Construction, the area per housing unit in urban areas in 2005 was 83.2 square meters.

Notes 3: According to the National Bureau of Statistics of China, the number of persons per urban household was 3.13 in 2000, 2.96 in 2005 and 2.89 in 2010.

Source: Compiled using *China Statistical Yearbook* (various years), Ministry of Construction, *2005-nian Chengzhen Fangwu Gaikuang Tongji Gongbao* [2005 Summary Report on Urban Buildings]

## Appendix 2 Completions and Sales of New Subdivision Housing (2003-2011)

(Millions of square meters)

		2003	2004	2005	2006	2007	2008	2009	2010	2011
Eastern Central	Completions	191.27	207.18	235.41	241.45	252.41	253.05	287.77	304.00	352.99
	Sales	168.49	201.95	286.57	287.19	348.31	273.50	432.88	443.09	444.66
Beijing	Completions	20.81	23.44	28.41	21.93	18.54	13.99	16.13	14.98	13.16
	Sales	17.71	22.86	28.24	22.05	17.31	10.31	18.80	12.01	10.35
Tianjin	Completions	7.51	10.14	12.71	13.09	14.18	14.62	15.81	16.04	16.42
	Sales	7.21	7.96	12.61	13.32	14.06	11.35	14.61	13.53	14.55
Hebei	Completions	8.83	7.10	8.11	10.53	10.80	10.01	16.39	26.51	42.50
	Sales	7.51	7.88	12.10	15.94	18.63	18.39	27.08	42.13	53.12
Liaoning	Completions	17.12	17.41	20.61	24.10	26.46	30.30	34.04	36.63	52.60
	Sales	12.99	15.78	22.94	27.32	35.13	36.68	48.64	60.11	66.32
Shanghai	Completions	21.40	30.76	27.40	26.99	27.52	17.63	15.09	13.96	15.50
	Sales	22.24	30.60	28.46	26.15	32.79	19.66	29.28	16.85	14.74
Jiangsu	Completions	25.73	32.17	38.81	43.45	46.39	54.90	62.27	62.68	61.48
	Sales	24.02	27.59	42.09	52.11	65.80	47.30	87.76	80.42	67.90
Zhejiang	Completions	24.32	25.33	29.44	28.82	29.45	30.59	26.71	27.57	29.87
	Sales	22.05	23.70	45.46	29.96	38.82	23.95	47.45	38.33	30.06
Fujian	Completions	10.79	12.61	14.27	11.29	13.44	12.72	16.91	17.17	19.93
	Sales	10.73	12.25	17.08	17.43	20.96	12.55	24.21	21.39	22.07
Shandong	Completions	20.69	19.45	26.72	28.69	30.57	31.51	42.62	42.13	51.98
	Sales	17.90	22.07	32.81	34.65	45.23	46.27	64.02	84.43	87.46
Guangdong	Completions	33.13	27.76	27.44	31.79	33.09	34.76	38.37	42.48	46.12
	Sales	25.09	30.09	42.36	46.38	56.67	43.78	65.57	65.53	69.69
Hainan	Completions	0.95	1.00	1.48	0.76	1.96	2.01	3.43	3.86	3.44
	Sales	1.03	1.18	2.44	1.86	2.91	3.25	5.45	8.34	8.41
Central	Completions	60.25	71.48	81.85	96.81	119.50	117.44	146.45	170.16	201.42
	Sales	53.02	67.71	99.75	124.36	165.45	139.09	199.91	238.49	261.58
Shanxi	Completions	3.33	3.95	4.14	5.83	6.52	7.48	6.98	8.97	18.67
	Sales	2.75	3.50	6.10	7.18	8.09	8.04	9.46	10.57	11.51
Jilin	Completions	4.03	3.72	3.87	5.51	8.84	9.18	10.96	15.62	13.71
	Sales	3.32	3.47	5.97	8.92	10.27	12.03	16.60	20.63	20.61
Heilongjiang	Completions	6.51	6.99	10.39	11.54	12.45	11.08	15.64	17.78	23.96
	Sales	6.62	6.94	10.50	12.99	15.19	13.02	17.50	23.81	29.14
Anhui	Completions	10.40	13.04	14.80	17.28	20.18	20.02	23.51	24.02	24.23
	Sales	9.06	11.80	16.86	20.38	27.77	25.24	36.69	36.05	39.70
Jiangxi	Completions	6.67	9.08	11.80	12.54	13.22	10.73	14.38	15.55	15.13
	Sales	6.04	9.87	13.51	15.52	19.49	13.64	21.08	22.66	20.85
Henan	Completions	8.75	9.68	11.51	14.06	23.39	23.73	29.92	38.53	46.47
	Sales	7.84	9.38	15.39	22.09	35.75	27.43	40.19	50.92	57.48
Hubei	Completions	11.79	13.30	14.12	16.05	18.07	18.05	20.07	21.37	26.48
	Sales	10.15	12.45	15.49	19.15	23.80	18.10	25.76	32.42	37.85
Hunan	Completions	8.78	11.73	12.00	14.01	16.84	17.18	25.01	28.31	32.78
	Sales	7.24	10.30	15.92	18.15	25.08	21.59	32.62	41.43	44.44

(Millions of square meters)

		2003	2004	2005	2006	2007	2008	2009	2010	2011
Western	Completions	70.48	68.11	82.79	94.22	105.77	107.00	142.72	137.99	162.51
	Sales	63.51	68.53	111.62	132.37	177.28	146.28	220.15	248.94	264.06
Inner Mongolia	Completions	4.82	4.79	6.75	10.77	15.53	14.32	18.86	17.99	19.39
	Sales	4.44	5.31	9.21	12.40	18.09	18.66	21.49	25.35	30.00
Guangxi	Completions	4.62	7.41	10.74	9.47	10.80	10.07	12.20	13.43	18.37
	Sales	4.38	7.50	14.16	13.72	18.34	16.10	22.50	26.07	27.24
Chongqing	Completions	12.33	11.87	17.12	17.00	17.69	19.51	23.85	21.80	28.27
	Sales	11.34	11.38	17.90	20.23	33.10	26.70	37.71	39.86	40.63
Sichuan	Completions	21.72	19.12	18.95	24.64	25.40	25.25	35.21	33.90	35.20
	Sales	20.45	18.39	27.88	36.72	45.21	29.77	54.85	58.49	59.44
Guizhou	Completions	3.94	5.29	4.91	4.36	4.60	4.93	10.28	8.09	11.07
	Sales	3.96	4.94	7.82	7.65	9.50	8.05	15.09	15.96	17.06
Yunnan	Completions	4.57	4.04	5.35	6.99	7.54	8.83	14.08	12.58	11.82
	Sales	4.16	4.80	12.08	13.89	17.27	14.78	20.40	26.59	27.16
Tibet	Completions	0.00	0.08	0.16	0.15		0.44		0.11	0.19
	Sales		0.10	0.04	0.19	0.11	0.61	0.13	0.19	0.18
Shaanxi	Completions	6.21	4.31	6.73	6.96	8.02	6.53	7.91	7.63	9.73
	Sales	5.33	4.73	8.49	10.59	13.78	13.40	19.96	24.72	28.86
Gansu	Completions	2.26	2.56	2.68	3.72	3.75	3.08	4.62	5.01	5.54
	Sales	2.03	2.35	4.20	4.83	5.56	4.51	6.57	6.92	7.34
Qinghai	Completions	1.38	1.13	0.74	1.07	1.45	2.02	1.57	2.42	4.35
	Sales	0.88	0.84	1.05	1.05	1.45	1.30	2.10	2.66	3.32
Ningxia	Completions	3.23	3.25	4.20	4.18	4.07	4.79	6.03	7.46	7.62
	Sales	1.88	2.68	3.19	3.37	4.48	4.47	6.78	8.17	7.02
Xinjiang	Completions	5.42	4.25	4.45	4.90	6.91	7.23	8.11	7.56	10.95
	Sales	4.66	5.53	5.59	7.73	10.38	7.94	12.58	13.96	15.79

Source: National Bureau of Statistics of China, *Yuedu Shangpinzhuzhai Tongji* [Real Estate Development Investment Situation] (Monthly)