

# Relationship Between Housing Price and Income in China

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**Abstract.** The average house price to income ratio of the 100 key cities in China monitored in 2022 is 12.4, which is lower than that in 2021. According to international standards, the housing price to income ratio is a rational range between 3-6 times, and China is 12.4 times, which is far higher than the international reasonable range. At the same time, China's house price to income ratio has continued to decline in recent years, and the level in 2022 will be lower than that in 2021. However, even so, China's house price to income ratio is still very high, especially in first-tier cities and hot second-tier cities. From the current situation, the real estate market can hardly be called "stable", whether it is to boost market confidence, or balance the ratio of house prices to income, it will take time. This paper starts with some background information to the housing market and income to demonstrate the negative conditions in both real-estate market and living conditions for Chinese citizens. Secondly, the relationship and the negative effect of these conditions are reviewed. Finally, how people's relative responses to difficulties create a new set of problems is shown.

**Keywords:** housing prices, income distribution, price-to-income ratio.

## 1. Introduction

Housing price has always been a topic of public concern as an indispensable portion of people's life. The rapid growth of housing price has made an enormous change cooperating with factors of inflation, economic situation, interest rate, and income in China.

In fact, the continued decline in the ratio of house prices to income this year is within the forecast. With the full liberalization of epidemic prevention and control, local governments have accelerated the recovery of economic activities in various industries, and residents' incomes have maintained a steady rise. However, the road to recovery of the real estate market is bumpy. In the first quarter of the year, the initial backlog of housing demand accelerated release, and the recovery continued to weaken in the second quarter, the market cooled down again, and the wait-and-see sentiment increased. At the same time, in the face of obstacles in the market recovery and increased uncertainty about the future market, the willingness of owners to continue to hold real estate was not high, the number of second-hand housing listings rose, and the contradiction between supply and demand became prominent. Affecting housing price expectations, many places in the country are facing downward pressure on housing prices, which in turn leads to a decline in the ratio of housing prices to income, and the overall easing of the pressure on residents to buy homes.

This article discusses about the housing price and income situation for recent 20 years (from 2003 to 2023) using statistic approach. In the next section, the basic statistics and data which are needed for the understanding of the background is presented. Then, the relationship between housing price and income is interpreted with data of Gini coefficient and price-to-income ratios. Finally, the evaluation of land-using and income related challenges which China is facing are presented.

## 2. Housing price and Income in China

### 2.1. China's Housing Price Overview

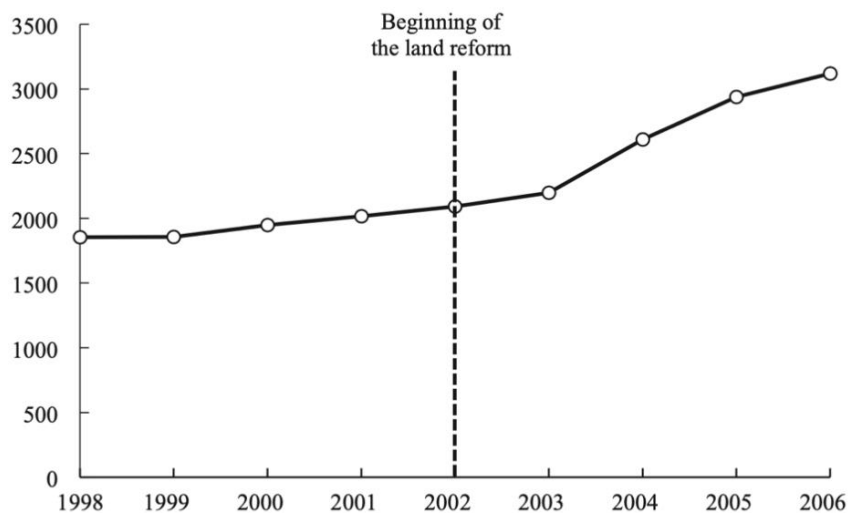
To specify the situation of housing prices in China, CEIC (China Electronics Technology Group Corporation) has provided recent data of growth in average house prices from July 2003 to July 2023.



**Figure 1.** Average changes in house price in China from July 2003 to July 2023  
 (% , Source: CEIC Data)

Refers to Figure 1, the distribution of the growth trend of average house prices in China seems to be multimodal with several peaks and four noticeable troughs in 2009, 2012, 2014 and 2022 respectively. The four troughs refer to the financial crisis in Asia, freeze of purchase restrictions, decrease in population growth rate and fall in production due to COVID-19 respectively.

In general, consist of devaluation of CNY overtime, housing price in China has been sustainably growing since 1999 with an average YoY growth rate of 7.8%. With the background of the beginning of land reform in 2002, the increase in housing price after 2003 contributes most of the year-on-year growth rate. Research (as in Figure 2) shows that housing price in China began its growth under the implement of land reform policy in 2002, despite the price from 1998 to 2006 [1].



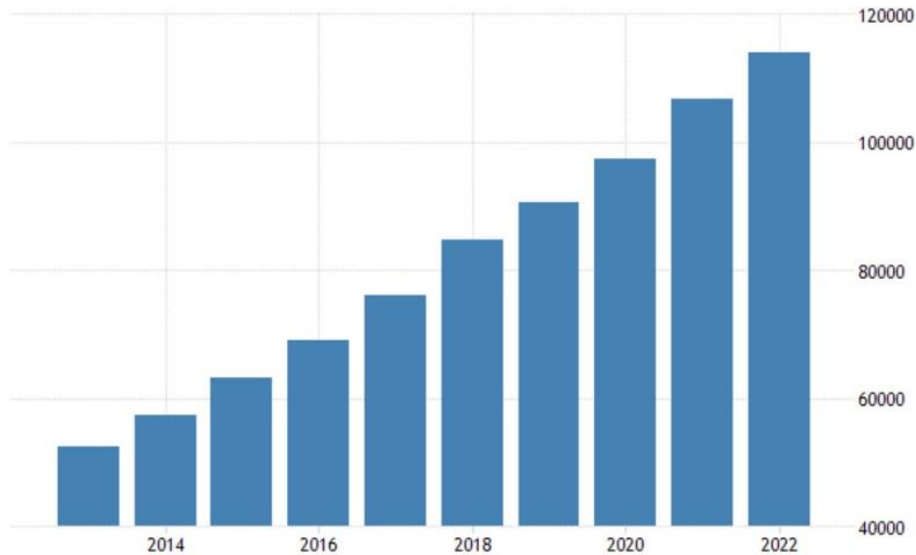
Source(s): China Statistical Yearbooks

**Figure 2.** Land reform and housing price (yuan/square meter)

## 2.2. China’s Income Overview

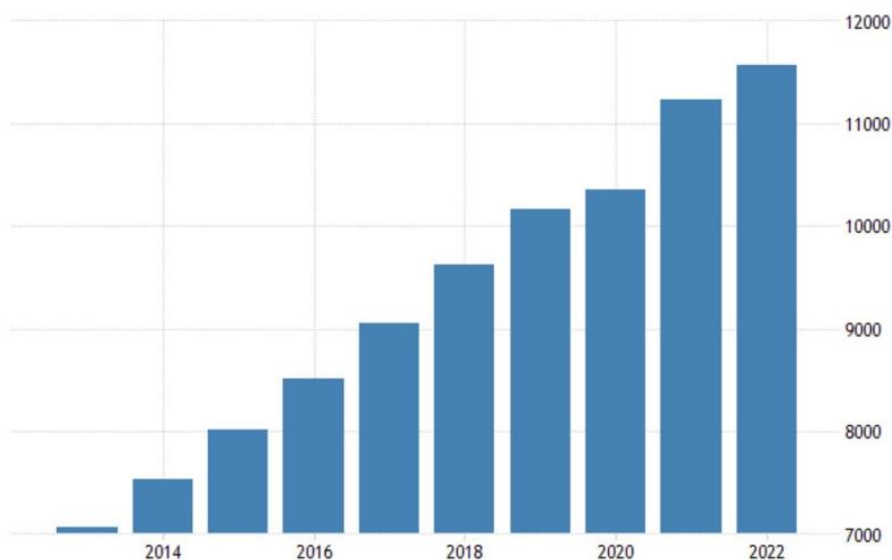
The average yearly wages in China are presented in Figure 3 with data collected by the National Bureau of Statistics of China. The annual growth rate seems to be average at around 70%. Refers to data as of December 2022, the unemployment rate is about 5.2%, the average yearly wages is 114,029.00 yuan (approximately 15,617.30 US dollars), average yearly wages in manufacturing is around 97,528.00 yuan (approximately 13,357.34 US dollars). The change in China’s average income links closely to the industrialization and urbanization in China. Research proposed that the current situation of income in China suggests that people with income level above the median care more

about investment than those who are below. The the process of industrialization develops in a growing trend while the investment channels diverse between classes, which results in a more significant investment structure between people above middle income and people below middle income. Eventually, the upgrade in industrialization leads to a greater income gap between classes [2].



**Figure 3.** China average yearly wages in CNY (source: National Bureau of Statistics of China)

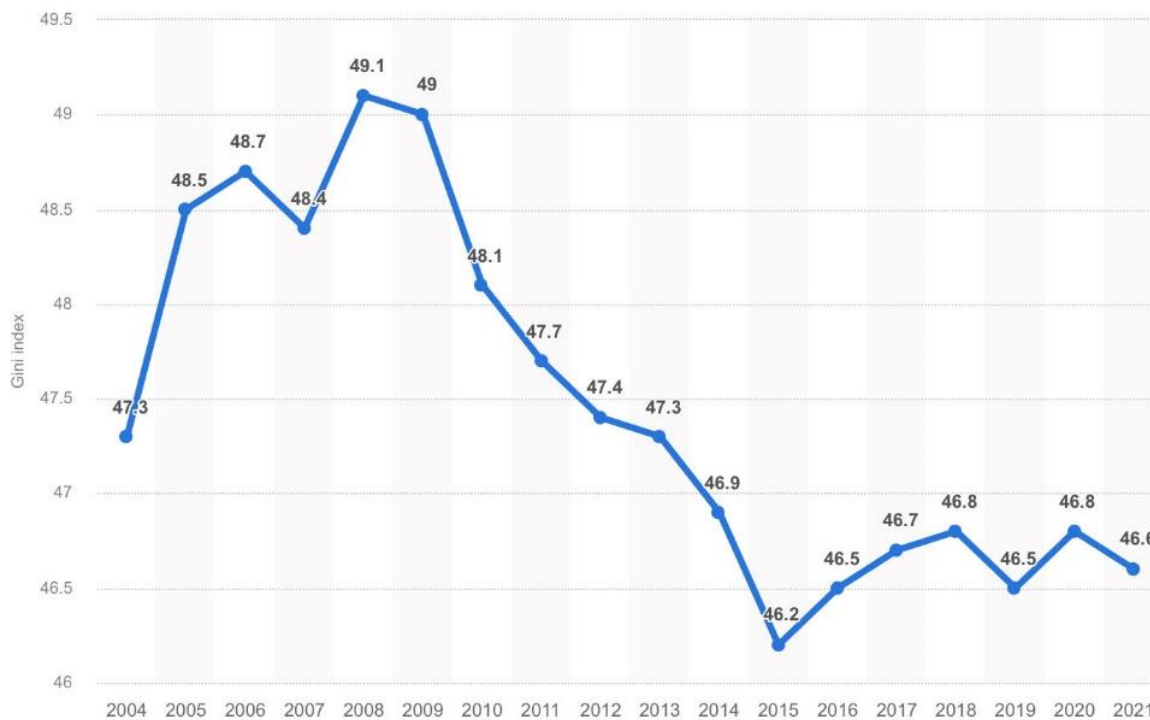
According to Figure 4, GDP per capita in China was about 11560 US dollars in 2022, which is equivalent to 92 percent of the world’s average. After adjusting by inflation and total population, the GDP per capita of China increased around 63.4% overall and 7.1% annually from 2013 to 2022. The annual growth between 2020 and 2021 seems higher than other annual growth with 2021’s GDP around 17.7 trillion US dollars, which increased about 3 trillion US dollars compared to 2020. With global headwinds and COVID-related factors dampening China’s economic growth outlook around 2021, this huge growth seems surprising.



**Figure 4.** China GDP per capita in USD (source: World Bank)

The fact is that, many big cities’ economies have navigated themselves out of the haze of the pandemic disruption, returning to normalcy. Provinces such as Guangdong, Hainan, Jiangsu, and Shanxi seem to led the regional economic growth with their highest ranking of the GDP ranking in China. On the other hand, in terms of GDP per capita by province, top trading provinces such as Beijing and Shanghai remained the highest rankings. With these average growth on each province, the recovery from the pandemic seems to be efficient.

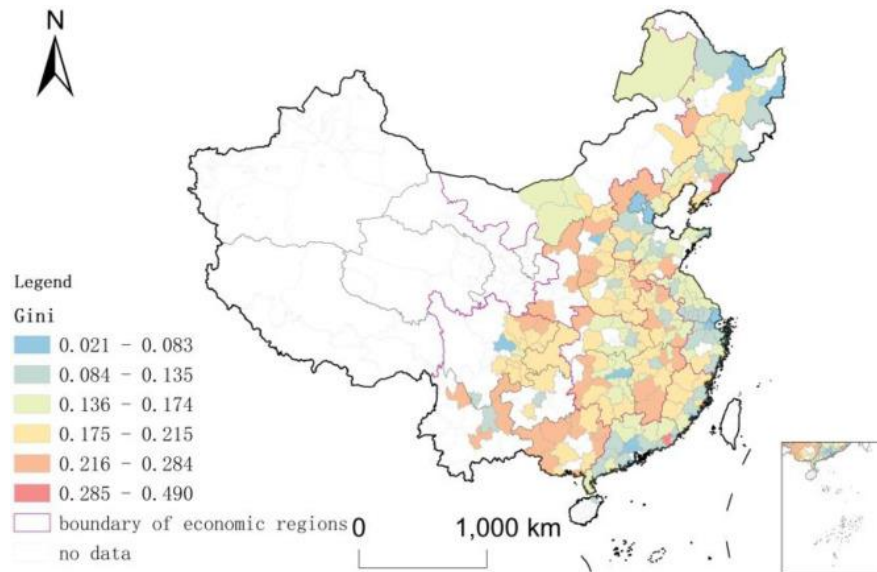
One major problem resulted from the effect of this advanced industrialization across China is the inequality of income distribution. Based on Gini coefficient, Figure 5 depicts the income distribution in China between 2004 and 2021. In 2021, the score reached to 46.6 points, which decreased 0.2 point from 2020, and became about the same with year of 2019 and 2016. It seems like since 2008 with the highest score of 49.1, there is a declining trend until 2016, when the Gini coefficient bounced back and stayed around 46.5. In 2021, China is the 20th country with greatest Gini coefficient worldwide, which means its inequality of income distribution is the top 20 among all countries.



**Figure 5.** Gini coefficient in China from 2004 to 2021 (Source: Statista)

The income disparity between urban and rural areas is significant. Since industrialization and urbanization play important role in recovering economy from the pandemic, infrastructure expansion does contribute to a noticeable part of the recovery. However, research provides evidences that its impact on these two areas differs. Urbanization tends to benefit urban agglomeration areas by introducing more quantity of labors and productive capitals. On the other hand, less-developed rural areas even become poorer with their transferred human resources, which results in regional income disparity [3].

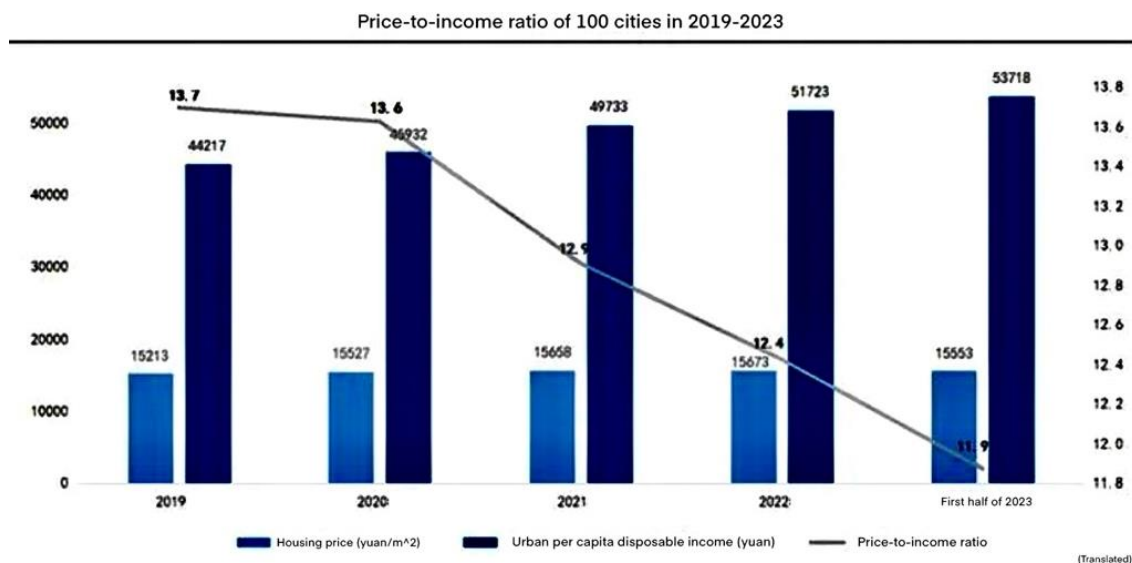
Figure 6 presents the spatial variety of Gini coefficient in eastern part of China in 2016 [3]. The area with greatest regional variety of Gini coefficients between income of rural and urban residents are in Liaoning and Guangdong provinces, while regions in Heilongjiang, Jiangsu, and Zhejiang seems to have relatively low Gini coefficients across the provinces. The distribution of spatial variety of Gini coefficient is very scattered and vague, but it still can be told that it is generally low along the costal line except for the two extremes mentioned. Developed economic centers such as Jiangsu and Zhejiang require a relatively high level of basic spending in such provinces, correspondingly, the ability to live in these areas is a requirement for a stable income. On the other hand, the less-developed provinces, although they also have their own trading centers, the presence of rural areas always creates a certain gap between income and living standards, which pushes up the Gini coefficient. This also shows the disparity between developed and underdeveloped areas in the same province.



**Figure 6.** The spatial variety of Gini coefficients in 2016 [3]

### 2.3. Relationship between Housing Price and Income

Understanding the relationship between housing price and income is essential of making valuable policy and promoting healthy economy structure. Especially about housing price in urban areas, exogenous variables of income, population and construction cost are essential factors to interpret the situation in real-estate market. As growing trend of both housing price and income mentioned before, the relationship between the growth rate becomes essential as a factor to interpret the situation between them. The annual growth rate of housing price shows a faster rate of increasing of 0.7% (7.8% - 7.1%) than the annual growth rate of income from 2003 to 2022. According to the research by house China, the ratio of house price to income in the first half of 2023 was 11.9, compared with 12.4 in 2022, a decline of 4.45%, an increase of 0.69 percentage points, but the ratio of house price to income is still far beyond the reasonable range. The decline in the price-to-income ratio in the first half of 2023 is mainly due to the combined effect of declining housing prices and steady growth of residents' income. Data show that the per capita disposable income of residents in 100 cities in the first half of 2023 is 53,718 yuan, an increase of 3.86% compared with 2022; In the first half of 2023, the average price of 100 cities was 15,553 yuan/m<sup>2</sup>, down 0.76% from 2022. Figure 7 shows the comparative data from 2019 to the first half of 2023 [4].



**Figure 7.** Price-to-income ratio of 100 cities in 2019-2023 (Source: Regional Statistics Bureau, Zhuge data research center)

### 3. Challenges

#### 3.1. Land-Use Policy and Urbanization

The increase of land factor cost will lead to the increase of house price. Land resources are a part of market economy, and land resources are a very important element. The core principle of market economy is the balance between supply and demand, and demand determines price. Therefore, the regulation of land fiscal policy makes the auction price of land rise, and the price of land purchase by land development enterprises also increases accordingly. This increases the cost of land, which in turn triggers a rise in property development and sales prices, becoming a major factor in pushing up housing prices. In addition, because house prices tend to rise much faster than wages, the declining purchasing power of real estate will have a significant impact on the demand in the real estate market. Since the reform and opening-up, the land demand from enterprises increased sharply. Theoretically, the change of the scale of land fiscal policy will affect the fluctuation of real estate market. Land finance is an important source of finance for local governments, especially in the costly urbanization process. Therefore, the scale of land transfer fee and the change of tax rate will directly affect the local financial income. In addition, urban planning and land use area decisions will affect the relationship between supply and demand in the real estate market, resulting in fluctuations. If the land policy is too strict, making the land cost too high, or too loose, resulting in oversupply, these factors will have great fluctuations in the real estate market [5].

The current problem in land use is due to the process of urbanization in China, which rooted in the fast rural to urban transformation. In this process, a large number of villagers migrated to the city, and the city had a trend of rapid expansion. Meanwhile, the demand for land increases along with booming small towns and non-agricultural industries in the rural areas. Still, research has shown that Population growth in urban area in China is about 3.5% per year, which is below the 5 to 6% that is experienced by other developing countries during high economic growth. Correspondingly, China's urbanization level is about 46%, which has not yet reached the level of countries with similar real income per capita (55%), and far below that of developed economies (70% to 85%) [6]. The continuing growth of urbanization since 1980 enlarges the urban-rural income gap as separation grows larger [7].

#### 3.2. Low Income Level

Statistics show that 90 percent of Chinese people earn less than 50,000 yuan (approximately 6847.95 US dollars) a year, which means only 10 percent of the population is paying taxes. Since the population is about 1.4 billion in China, proportionally, more than 1 billion people are classified as low-income groups. China currently stipulates that the threshold for personal income tax is more than 60,000 yuan (approximately 8217.54 US dollars) per year, which means that most people's lives cannot be well protected. Thus, the disparity between the rich and the poor in society is significantly large. China is a big agricultural country, under the integration of urban and rural construction, the rural living environment has been greatly changed. According to the data, there are about 300 million migrant workers around the country, they do not receive high income, and the mobility is particularly large, which means they do not pay any taxes either. Under the influence of such factors, China Merchants Bank has collected data that shows only 2% of people in China have more than 80% of the assets. In addition to housing problems, people with low-income also face employment difficulties and lack of health care. The consumption of large low-income groups cannot be met, while the expectation of consumption is increasing, which makes China's domestic demand become weaker, and the total retail sales of social consumer goods not only did not grow, but also declined, which makes the overall recovery of China's economy in a relatively slow state [8].

#### 3.3. Asian Culture

Another problem is that, in traditional Chinese terms, buying a house seems to become a necessary condition for a marriage. The traditional Chinese concept of marriage is not only about the feelings

between two people, but also about the union between two families. Therefore, in a marriage, the distribution and security of family assets is particularly important. House, as one of the most important properties of the family, is considered to be one of the necessary conditions for marriage, which can not only guarantee the stability of the marriage, but also show the economic strength of the family. However, the impact of the real estate market with high housing prices have forced many young people to abandon marriage plans or delay marriage.

In many areas, house prices continue to rise, making property an important part of young people's financial burden. High down payments, loan interest, and the cost of maintaining a home all pose financial challenges for young adults. In addition, an unstable job market and low wages have made it harder for them to afford mortgages and living expenses. At the same time, young adults' concerns about environmental awareness and sustainable development also have an impact on home buying, marriage and childbearing [9]. They pay more attention to environmental protection and resource utilization, hoping to promote sustainable development by reducing population pressure and resource consumption. This has led some young adults to choose not to have children or to have fewer in order to reduce the pressure on resources [10].

#### 4. Conclusion

This paper presents the situation of social implications of the growing real estate market in China. The difficulty in economic recovery from the COVID-19 recession and the continuing growth of housing price since the land-reform policy in 2002 combined with the harsh income distribution have proved that several social problems have occurred in these years.

Using data of price-to-income ratio of 100 cities in 2019-2023, the occurrence of income which is unable to afford the cost of housing is significant. The price-to-income ratio decreases about 44.6% for each year from 2020 to the first half of 2023. Evenmore, China's level of urbanization of 46% which is far below the standard of 70-85% in developed economies. At the same time, according to statistics, more than 1 billion of the population in China are classified as low-income population. In such economically-unstable condition, delayed marriage and low fertility rate have become a way for young adults to defend themselves for their economic and career independence.

Ever since the housing reform in 1990s, China has own one of the highest homeownership rates in the world. Apart from the negative consequences of the sharp increase in housing price and difficult situation in real estate market in existing researches, this paper further analyzes the particular group that has been targeted in the real estate market.

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