

The Effects of Housing Price on Unemployment Rate and Stock Market

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Abstract—House price has always been the focus of people's attention. At present, previous studies have drawn different conclusions by analyzing the effects of housing price to unemployment rate and the stock market through different methods and theories. Therefore, this paper mainly analyzes from theoretical perspective based on macroeconomics, financial market, mass psychology and national conditions by combining some data basis, try to find the common ground of these existing conclusions and study the real impact from housing price on unemployment and stock market in China. The results show that the effect of housing price to unemployment rate is positively correlated in the long run and negatively correlated in the short run; the effects of house price on stock price tends to be positively correlated in China. The advice for China's housing market is that the government needs to both curb excessive price growth and ensure a soft landing, as well as enact property purchase restrictions and improve housing mechanisms.

Index Terms—Housing price, unemployment rate, stock market, wealth effect theory.

I. INTRODUCTION

In the first decade of the 21st century, the bursting of the real estate bubble in the United States and triggered the global financial crisis, which severely damaged numerous economies around the world. This major fact successfully attracted the public attention to the house property. In addition, the fluctuation of housing prices and the mechanism of economic effects have also become a hot topic for relevant scholars to research. Naturally, there have been numerous studies so far on the effects of property price to related factors in China, but many studies with the same goal have drawn to completely different conclusions. Therefore, this paper decided to focus on two of these economic and financial market factors, to study the real effects on them from housing prices in China. Among them, the unemployment rate severely affected by the epidemic this year and the stock market which has created a circuit-breaker record were selected as the key factors to be studied in this paper. Both housing price, unemployment rate and stock market play the important roles in society and people's economic life. Only by studying the accurate effects on unemployment and stock market will help the government make appropriate decisions and remedy in the

context of high housing prices, which is also more urgent now when the economy is affected by the epidemic.

This paper will be divided into three main parts. Firstly, from the theoretical perspective, based on macroeconomics, financial market, mass psychology and special national conditions of China, this paper analyzes the effects of housing price to unemployment rate and uses some data to support these; Secondly, discuss and analyze the effects of housing (house prices) on the stock market (stock prices). Finally, according to the newly issued relevant policies and national conditions, feasible suggestions for China's housing price regulation are offered.

II. THE EFFECTS OF HOUSING PRICE TO UNEMPLOYMENT

Housing price and unemployment rate are regarded as the main source of social and economic shocks, and are highly concerned by the government. Firstly, the impact of housing price on unemployment rate is analyzed.

First of all, considering the contribution to employment of real estate itself, which has been soaring in price as a booming business. The expansion of the real estate industry and the increase of companies provide more job opportunities. Especially in China, as shown in Table I, the real estate industry has witnessed a boom since the beginning of this century. From 1997 to 2017, the number of real estate development enterprises in China increased by a staggering 71,519, nearly tripling.

With the vigorous expansion of the real estate market, the real estate development enterprises have created new jobs for the publics. As is shown in Table II, the number of employees in China's real estate development enterprises grew by 242.8 % from 1998 to 2017, adding more than 2 million job opportunities. In contrast, the housing price in the United States continued to rise from 1191 to 2005, and the employment related to residential construction increased from 4.2% of the total employment in the United States in 1996 to 5.1% of the total employment in 2005. But with the bursting of the housing bubble, home equity fell sharply, while housing-related employment fell to 3.0% [3].

This implies that rising property prices will be accompanied by a fall in unemployment, which is negatively correlated with house price. However, the ability of real estate to drive employment is the lowest among the various sectors of the national economy [10]. It is therefore arbitrary to judge the positive impact on employment simply by the fact that real estate is a booming industry. It is necessary to consider the long-term and real impact of housing prices on the unemployment rate from various perspectives.

Firstly, from the perspective of consumption, the rise of

house price means the improvement of assets, which undoubtedly brings the corresponding improvement of consumer confidence. As the wealth effect theory indicates, because the rise of housing price increases the people with wealth will increase the consumption expenditure, thus leading to the increase of social aggregate demand [12]. This is also evidenced by a similar growth trend and fluctuations in Fig. 1 and Fig. 3 combined with stable growth trends in Fig. 2. Moreover, every 1% increase in housing wealth would leads to a 0.08% increase in consumption, fully four times the wealth effect of the stock

market [2]. The value of the housing assets is larger than the general assets. Even in China, the real estate accounts for 77.7 percent of the household assets on average, far higher than the 34.6% in the United State [15]. Therefore, even a small wealth effect will bring significant effects on households and aggregate demand in society. The increase of social aggregate demand will no longer merely attract the capital increase of the real estate industry, but all industries will be positively influenced to expand production, thereby increasing employment opportunities and reducing the unemployment rate.

TABLE I: NUMBER OF ENTERPRISE FOR REAL ESTATE DEVELOPMENT (UNIT) [17]

| Year Region | Number of Enterprises | | | | Enterprises with Funds from Hong Kong, Macao and Taiwan | Foreign Funded Enterprises |
|----------------|--------------------------|-----------------------------------|----------------------------|-------------------------------------|--|----------------------------------|
| | | Domestic Funded Enterprises | State-owned Enterprises | Collective- owned Enterprises | | |
| 1998 | 24378 | 19960 | 7958 | 4538 | 3214 | 1204 |
| 2000 | 27303 | 23277 | 6641 | 3492 | 2899 | 1127 |
| 2005 | 56290 | 50957 | 4145 | 1796 | 3443 | 1890 |
| 2006 | 58710 | 53268 | 3797 | 1586 | 3519 | 1923 |
| 2007 | 62518 | 56965 | 3617 | 1430 | 3524 | 2029 |
| 2008 | 87562 | 81282 | 3941 | 1520 | 3916 | 2364 |
| 2009 | 80407 | 74674 | 3835 | 1361 | 3633 | 2100 |
| 2010 | 85218 | 79489 | 3685 | 1220 | 3677 | 2052 |
| 2011 | 88419 | 83011 | 3427 | 1023 | 3565 | 1843 |
| 2012 | 89859 | 84695 | 3354 | 904 | 3451 | 1713 |
| 2013 | 91444 | 86379 | 1739 | 570 | 3391 | 1674 |
| 2014 | 94197 | 89218 | 1476 | 457 | 3414 | 1565 |
| 2015 | 93426 | 88773 | 1329 | 409 | 3235 | 1418 |
| 2016 | 94948 | 90408 | 1093 | 364 | 3232 | 1308 |
| 2017 | 95897 | 91608 | 943 | 319 | 3066 | 1223 |

TABLE II: NUMBER OF EMPLOYED PERSONS IN ENTERPRISES FOR REAL ESTATE DEVELOPMENT [17]

| Year Region | Average Number of Employed Persons | | | | Enterprises with Funds from Hong Kong, Macao and Taiwan | Foreign Funded Enterprises |
|----------------|---|-----------------------------------|----------------------------|-------------------------------------|--|----------------------------------|
| | | Domestic Funded Enterprises | State-owned Enterprises | Collective- owned Enterprises | | |
| 1998 | 825888 | 708738 | 332834 | 134939 | 83784 | 33366 |
| 2000 | 971942 | 862245 | 292252 | 116416 | 79066 | 30631 |
| 2005 | 1516150 | 1366743 | 140106 | 40978 | 90674 | 58733 |
| 2006 | 1600930 | 1442158 | 132259 | 38367 | 97688 | 61084 |
| 2007 | 1719666 | 1541336 | 121137 | 34498 | 100398 | 77932 |
| 2008 | 2100362 | 1906029 | 127511 | 29602 | 109246 | 85087 |
| 2009 | 1949295 | 1763867 | 123866 | 29049 | 109965 | 75463 |
| 2010 | 2091147 | 1908969 | 155156 | 25428 | 105846 | 76332 |
| 2011 | 2256964 | 2075474 | 135420 | 21237 | 112990 | 68500 |
| 2012 | 2386772 | 2199815 | 123593 | 20398 | 116849 | 70108 |
| 2013 | 2591814 | 2397762 | 66072 | 12976 | 121807 | 72245 |
| 2014 | 2760070 | 2561817 | 61512 | 11414 | 129287 | 68966 |
| 2015 | 2738454 | 2551484 | 57273 | 10771 | 124494 | 62476 |
| 2016 | 2752298 | 2576545 | 47085 | 9916 | 118495 | 57258 |
| 2017 | 2830960 | 2663954 | 37904 | 9092 | 113221 | 53785 |

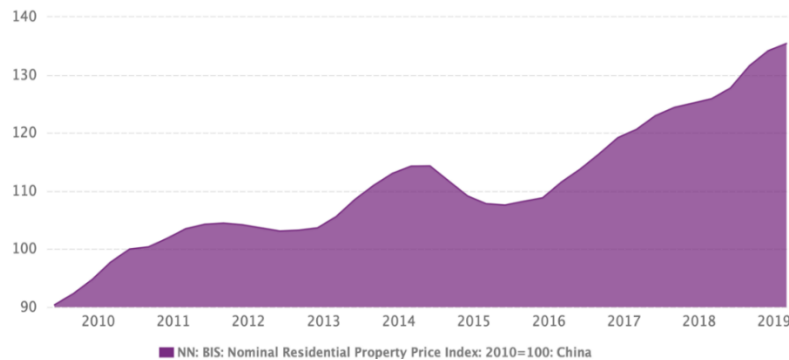


Fig. 1. China nominal residential property price index [16].

Secondly, from the perspective of investment, the excellent and booming markets can attract more investment (as the Fig. 4 shows), thus increasing the size of the industry and providing more jobs opportunities. Undoubtedly, in countries with an upward economic cycle, the real estate industry is also in an upward stage, which ensures that the real estate industry can become a low-risk investment object with excessive profits under the influence of land premium and other factors. The real estate industry naturally attracts incomputable investors to pour into this industry, which in turn brings new capital and demand, thus further expanding the market and raising the price. In addition, the ratio (Q value) of the market value of the project to the replacement cost determines whether an enterprise or an individual will choose to invest. Due to the land premium, the

characteristic of real estate projects is that the market value is generally much larger than the replacement cost, which also attracts the continuous investment of speculators. The future economic growth of countries in the upward phase of the economic cycle is expected to be positive, and it is generally believed that the market value of assets will rise and the cost of external capital will fall. Therefore, the Q value at this stage will significantly increase due to the soaring market value and the shrinking replacement cost. Rising housing prices once again give investors an incentive, and social investment becomes active again, and the cycle repeats. A sustained increase in investment activity will boost employment, leading to a reduction in the unemployment rate.

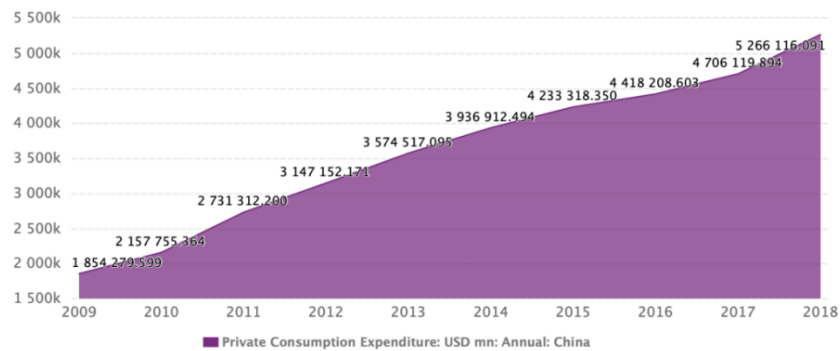


Fig. 2. China private consumption expenditure [16].

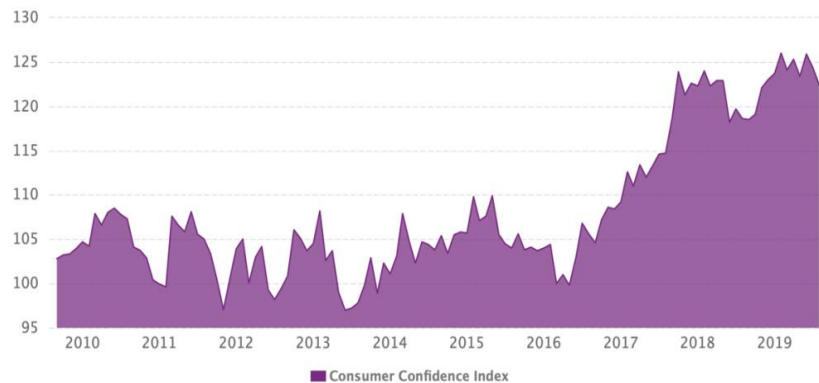


Fig. 3. China consumer confidence index [16].



Fig. 4 China Real Estate Inv: ytd [16].

Thirdly, considering the perspective of demand for housing. For China, the one-child policy, introduced in the last century, has dramatically slowed the growth rate of those born in the 1980s and 1990s, pushing the country further toward to aging population. China's population distribution tends to shrinking population pyramid. In generally, the only child will inherit most of the parents' property, so a young couple can get the real estate and other

assets from two families. As a result, a large proportion of the younger generation, especially those born in the 1990s and early 2000s, who have been in the workforce for several years or are about to enter the workforce, no longer have a pressing need for rigid demand property with poor ancillary conditions and a lower housing price if they choose to live in their hometown. As the China business climate index of real estate in Fig. 5 shows, even ignoring the impact of the

crash in 2020 (see Fig. 6), the growth rate of the index has dropped significantly from 2018, although it has been rising overall. Meanwhile, China's unemployment rate has broken the steady fluctuation of the previous seven years since the end of 2017, showing a significantly accelerated decline (see Fig. 7). With economic zones centered around several new first-tier cities, more and more people can choose to stay in their home provinces and cities and achieve good development [8]. In this context, high-end housing with large appreciation space, excellent location and good supporting resources can continue to be attractive to buyers, but the rigid demand house, which accounts for a large part of the total number of properties, may fall into the impasse of write-off. The continued rise in the price of luxury housings in prime locations will also gradually reduce buyers' determination to take on a mortgage for many years and discourage them from raising the value of

their assets through purchasing property that can appreciate. Under this trend, young people's work pressure will be greatly reduced, because they do not need to bear heavy mortgage. In this case, candidates and positions can be more quickly matched, because candidates no longer expect exorbitant salary that is not commensurate with their abilities, and no longer waste time waiting for better opportunities at the risk of devaluing their skills. Instead, candidates start with positions that match their qualifications or are relatively easier to apply for. In addition, the public is no longer under pressure to repay their mortgages, and more money can flow into the market for consumption, which is also a boost to the real economy and job growth in the short term. Therefore, the sustained rise in the price of prime real estate and the steady or modest decline in the price of rigid demand real estate leads to a drop in unemployment rate.

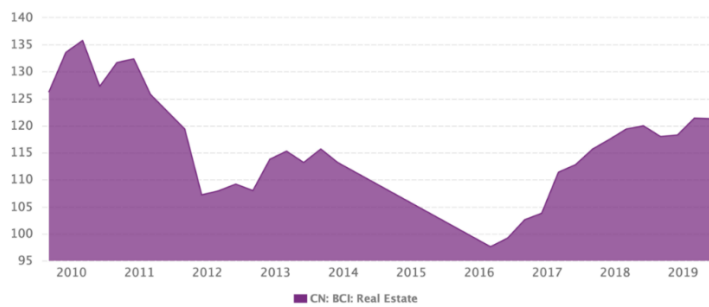


Fig. 5. China business climate index: Real estate [16].

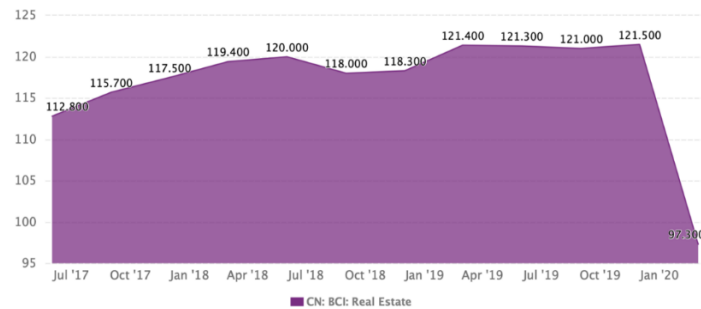


Fig. 6. China business climate index: Real Estate: June 2017-March 2020 [16].

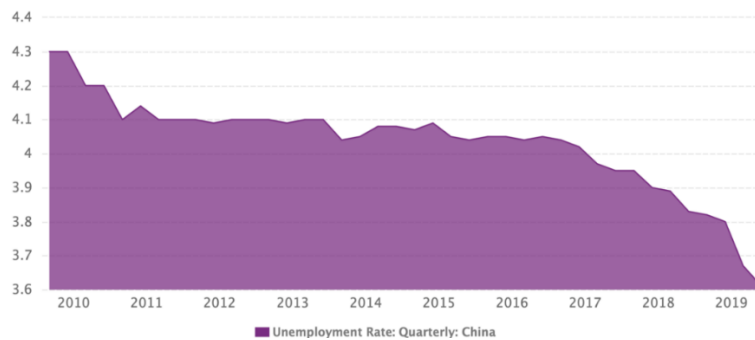


Fig. 7 China unemployment rate [16].

In addition, Lovenheim (2011) [11] estimates that for every \$10,000 increase in home equity, the possibility of family members going to university increases by about 0.7%. This effect that is particularly pronounced for young people from low-income families, at about 5.7%. An increasing number of high school graduates choose to continue rubbing their own skills and going to university for further education, which is helpful to alleviate the high unemployment rate.

Noteworthy, Lan (2007) [9] analyzed the impact of high housing prices on employment in terms of investment, consumption, tertiary sector of the economy and urban competitiveness, claiming that high housing prices exert negative effects on employment in the long time. In addition, from the perspective of cost, on the one hand, the housing price is directly linked to the housing cost, which constitutes a certain proportion of the living cost of residents. The cost of housing accounts for 29 percent of the cost of living in

US cities published by the Institute for Business Research. This means that rising house prices will inevitably lead to an increase in people's living costs [7]. The attractiveness of supporting resources such as excellent medical care and education in first-tier cities cannot offset the pressure from rising housing costs. In the face of this pressure, the migrant labor force without housing tends to move out of the region, reducing the supply of urban labor force and reducing the unemployment rate in the short term [7]. In the long run, however, a continuing exodus of people can lead to a vicious cycle of successive bankruptcies in the real economy, with unemployment eventually rising. On the other hand, housing prices are an important factor in determining wage demands [4]. Therefore, the fluctuation of house price also affects the wage cost of enterprises. The rise of housing price will make enterprises face double pressure in cost, one is to pay higher wages to employees, the other is to spend more money to rent or purchase land or factories and other real estate to maintain the operation of enterprises. In the face of rising costs and reduced profits, enterprises tend to move away from their localities. In the long run, the exodus of a firm, or even of some of its related firms altogether, the jobs in the original locality will be reduced and the unemployment rate will also face the risk of rising again.

In general, the effects between housing price and unemployment rate is extremely complicated because it involves multiple factors as two main factors affecting national economy. On the whole, two conclusions can be summarized. Firstly, rising house prices to unemployment rates are negatively correlated effects in the short term. However, in the long run, however, there will be a

positively correlated effect from rising house prices with unemployment and both will deteriorate together. In addition, the effects of declining house prices on unemployment is so small as to be negligible. Secondly, the effects on the unemployment rate from prices of ordinary housing, which is dominated by rigid demand housing, is much greater than for high-end housing.

III. THE EFFECTS OF HOUSING PRICE TO STOCK MARKET

As a matter of fact, the interaction between the real estate market and the stock market has always been a controversial topic. It is difficult to sum up a reasonable linear relationship between the stock market and the housing price by observing the fluctuation of the Turnover of China's stock market (as shown in Fig. 8) or the fluctuation of the stock market capitalization in Shanghai Stock Exchange (as shown in Fig. 9). From existing conclusions, for the Chinese market, the research conclusion that there is a slightly positively correlated effect on stock markets from housing markets occupies the majority. This conclusion is similar to that of developed countries represented by the United States. In the analysis of the situation of the American stock market crash, multitudinous real estate mortgage problems caused by the decline in real estate prices are considered to be one of the important reasons for the Dow Jones industrial Average crash [5]. In addition, the returns of REITs and S&P 500 index from 1962 to 1989 also demonstrate the long-term co-integration relationship between the two markets, with house prices having a noticeable positive impact on the stock market [1].

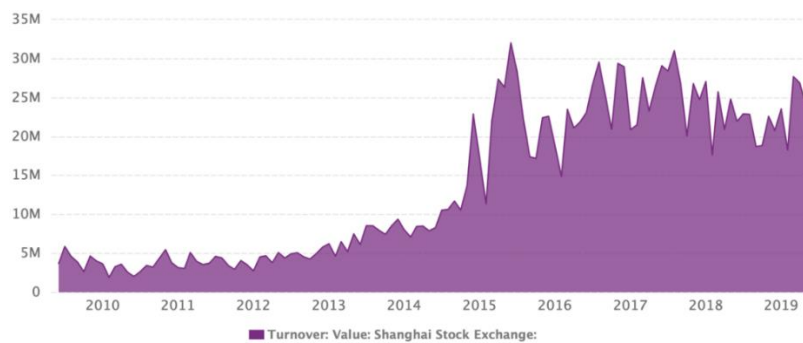


Fig. 8 China Turnover: Value: Shanghai Stock Exchange [16].

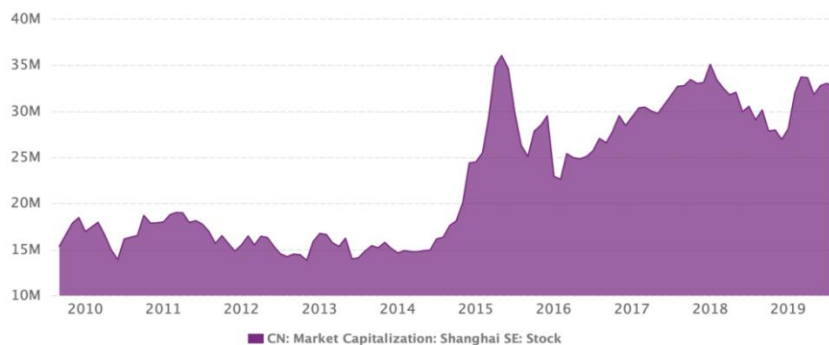


Fig. 9 China market capitalization: Shanghai Stock Exchange: Stock [16].

Firstly, consider the wealth effect. With the rise of housing prices, the overall wealth of investors with real estate increases, which will undoubtedly increase investors' investment confidence, which in turn will increase the

capital invested in various sectors of the market. Under the wealth effect, the stock market and the real estate market show a positive correlation of changes in the same direction.

Secondly, considering the credit expansion effect, when

the real estate price rises, the credit ability of individuals holding real estate also increases. Individuals have a greater opportunity to obtain a larger amount of loans to increase their investment in the stock market, thus pushing up asset prices in the stock market further along with the rise in housing prices. In addition, the rise of the real estate price in the market, for financial institutions, the market collateral is sufficient, which promotes the relaxation of bank credit and the possible reduction of market interest rate, thus further promoting the further rise of the stock market price. Similarly, a positive correlation is formed between the two markets.

Nevertheless, the substitution effect of housing market and stocks market cannot be ignored. With the improvement of economic consciousness and the increase of disposable income, people pay more and more attention to how to maintain and appreciate their property against the background of inflation. Most people are no longer satisfied simply by the interest on their bank savings. They prefer to buy assets that increase in value and provide passive income, such as a house, a facade, which can be used for appreciation and rent collection, or, for example, holding stocks or funds of quality companies, which can also bring increase in value. However, the investment threshold of the house is high, and in recent years, whether in the United States or China, the property of the house investment is declining, the property with value added property is increasingly concentrated in big cities, so the real estate investment is not suitable for most people. In this case, more attention is turning to the stock market, and money that would otherwise have been put into housing is going into the stock market instead. This implies that there is a trade-off relationship between the housing market (House price) and the stock market, where rising house prices have a negative impact on the stock market. In a study of the relationship between China's two markets and the money supply, it is found that there is an obvious substitution effect in the real estate market while the substitution effect in the stock market is not obvious [13]. Feng and LI (2013) [6] also state that the interaction between various asset markets has significant regional characteristics. In the market of prosperous regions, the real estate market has a one-way substitution effect on the stock market.

It is undeniable that in addition to these three effects, there are also some economic or non-economic factors such as speculation, expectation, foreign exchange market, unemployment rate and so on, which have a common impact on the two markets. The study of the correlation between the two markets cannot only be judged from the static perspective, the overall market environment changes may bring changes to the interaction between the two markets. It can be argued that the relationship between house prices and the stock market may be far more complex than the relationship between house prices and unemployment. Based on the VAR vector autoregression model, Zhou (2020) [14] studied the Shanghai Stock Exchange Index and the Prosperity Index of State Real Estate in China from 1991 to 2005, 2006 to 2009 and 2010 to 2018 respectively, and concluded that the stock market and housing market in China are closely related, but there are differences in different periods due to China's accession

to the WTO in 2001, the introduction of the New Securities Law in 2006 and other major related events.

In general, as the two most vital risk carriers in the macro economy, the real estate market and the stock market are influenced by various macroeconomic variables, which leads to distinctive effects of the housing price to the stock market in different countries and at different stages of development. The overall results of the existing literature still tend to agree that the current housing price has a positive correlation effect on the stock markets in China, which means that the growth of housing price can fuel a boom in the stock market [5].

IV. SUGGESTION TO CHINA

As a vital economic lifeline and an important tax source of the country, the fluctuation of housing price will inevitably bring positive or negative impacts to various sectors of the society. In the context of rapid housing price growth, the government should take measures to prevent China from following the way of Japan and South Korea with housing bubbles burst in order to maintain social stability, ensure adequate employment and healthy financial market development. Firstly, the government should curb the excessively rapid rise of housing prices. In the long run, high housing prices will lead to higher employment rate, and excessive investment in real estate will divert resources from other financial asset markets. The second is to ensure a soft landing for house prices. Although house prices must not rise too fast, simultaneously prices must not fall appreciably. Once citizens realize that assets they hold are not appreciating but depreciating, social stability will be undermined. Thirdly, the government should set restrictions on the purchase of housing. If speculators are allowed to buy value-added property blindly, the gap between the rich and the poor will be further widened, and the increase of housing prices will easily get out of control, bringing great social unrest. Policies such as limiting the number of house purchases and increasing the interest rate of house loans for those who already own houses can effectively alleviate the problem. Finally, local governments should establish a thorough housing mechanism. By setting up more low-rent housing, affordable housing and low-priced rigid demand housing, local government not only ensure the housing of the unemployed against the background of rising housing prices and unemployment, but also provide opportunities for migrants to stay in the local area and enhance the talent attraction [7].

In addition, with the outbreak of COVID-19 this year, many industries have gone through a period of lockout, which has had a great impact on the economy and society, with unemployment rising and housing and stock markets also being severely affected. Therefore, it is urgent to strengthen macroeconomic policy adjustment and implementation to restore the economy. Based on the above four measures, for house market, as real estate developers are affected by the epidemic and reduce prices to recover funds, the government needs to introduce policies to prevent the housing price from falling sharply in order to ensure that the investment expectation and purchase demand of the housing market will not decrease, so as to boost the market

confidence. For the financial market, it is crucial to take some macro-control measures to promote the recovery of the stock market, but we should also be on guard against the asset bubble caused by the loose monetary policy [14]. In addition, as for the rising unemployment rate, the government has taken measures such as stipulating the advance of autumn recruitment, increasing the number of jobs in state-owned enterprises, increasing the number of graduate students enrolled and subsidizing small and medium-sized enterprises, which can effectively reduce the unemployed population.

V. CONCLUSION

No one can deny that the effects of housing price on the unemployment rate and stock market are surprisingly tight, and that these are also incredibly sophisticated and cannot be expressed directly as positive correlations or negative correlations. According to the research result, the property of the house, the development stage of the country, the cycle of influence, the region and other additional conditions determine the diversified impact of housing price on the unemployment rate and the stock market. In China, the impact of rising house prices to unemployment rates are negatively correlated effects in the short term. However, in the long run, however, there will be a positively correlated effect of rising house prices with unemployment and both will deteriorate together. Meanwhile, The impact of current house prices on stock prices tends to be positive.

Although the epidemic has caused an undeniable impact on China's economy in the short term, China is still in the upward stage of the economic cycle, and the long-term positive economic situation has not been shaken. The government also actively introduced some macro-adjustment policies, such as reducing taxes and fees and raising the fiscal deficit ratio. The central bank also injected funds into the market after the stock market crash and lowered the reserve requirement ratio and interest rate to ensure sufficient liquidity in the market. With the help of these measures, China's economy and society have gradually recovered and the public's confidence in the market has been restored, China's stock market and housing market will continue to develop further, and the problem of employment will finally be alleviated.

AUTHOR CONTRIBUTIONS

The author conducted the research on the impact of housing price on unemployment and stock market in China. By analyzing relevant data in the past 10 to 20 years, the author has drawn a conclusion and completed the paper. The author had approved the final version.

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