

The Effect of Economic Policy Uncertainty on Housing Price of China before and after Covid-19: A Literature Review

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Abstract—With the global epidemic of COVID-19, it is worth studying whether the gradual increase in the economic policy uncertainty index will lead to fluctuations in China's housing prices. This paper aims to find research gaps by combing the relevant literature on economic policy uncertainty and determinants of real estate prices in recent years. In this way, research gaps can be further explored in the future by using research methods from related literature.

Keywords—Economic Policy Uncertainty, Housing Price; COVID-19.

I. INTRODUCTION

After the financial crisis in 2008, the development of the real estate industry had an important impact on China's economic operation, and the relationship between housing prices and the financial market was highly valued by government departments. The global outbreak of COVID-19 in January 2020 disrupted the development of the real estate market and posed serious challenges to policy formulation. As China's economic development enters the post-epidemic era, the uncertainty facing China's economic system has increased. This article will sort out the relevant literature on economic policy uncertainty and China's housing prices, provide a literature basis for studying whether economic policy uncertainty has a significant effect on China's real estate market, and focus on the impact of the COVID-19 epidemic on the relationship.

II. BACKGROUND

In January 2020, the coronavirus disease 2019 (COVID-19) broke out in Wuhan and began to spread rapidly around the world. In terms of the speed of transmission and the number of people infected, COVID-19 far surpasses SARS, the world's first coronavirus outbreak in 2003. As a serious public health crisis, the epidemic has disrupted the normal economic order of human society, thereby affecting the expectations of producers, consumers and investors (Zhang, 2020). As far as China's housing prices are concerned, the changes in the sales prices of commercial residential buildings in December 2020 show that among the 70 large and medium-sized cities, 43 of the 70 large and medium-sized cities saw an increase in second-hand housing, 1 remained unchanged, and 26 cities fell. The top ten cities in terms of increase are

Shenzhen, Ningbo, Xuzhou, Yinchuan, Tangshan, Chengdu, Xining, Shenyang, Guangzhou and Wuxi. Among them, Shenzhen housing prices rose as high as 14.1%. However, compared with the sales prices of commercial residential buildings in 70 large and medium-sized cities in June 2022, the housing prices in 34 cities including Tangshan are already lower than the level two years ago in June 2020, accounting for nearly half of the 70 cities. In 27 of these cities, house prices are already below their June 2019 levels. In addition, housing prices in six cities including Zhengzhou have fallen back to the levels five years ago (National Bureau of Statistics of China, 2022). Figure 1 below illustrates that average housing price in China have been growing steadily from 2012 to 2021.

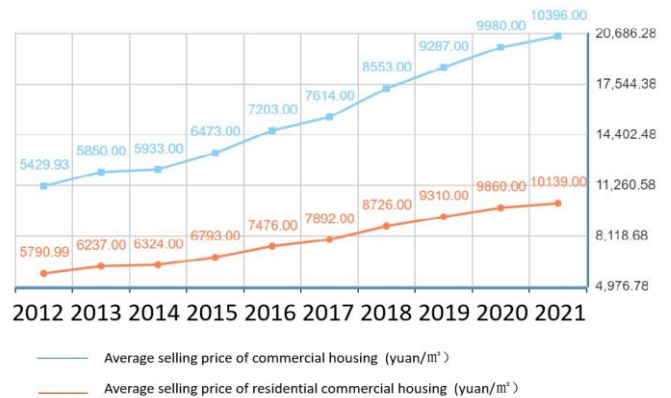


Figure 1: The Average Selling Price of Commercial Housing in China (2012-2021) (Source From: <http://www.stats.gov.cn/>)

Baker et al. (2016) defined "Economic Policy Uncertainty" (EPU) as follows: due to the randomness of the government's formulation and implementation of economic policies, it is impossible to accurately predict future policies, resulting in economic risks. The uncertainty of economic policy mainly comes from two aspects: one is the economic recession caused by external shocks, such as financial crisis, war, natural disasters, etc.; the other is the economic recession itself will also generate uncertainty, mainly manifested in the government during the economic downturn. Frequent implementation of regulatory policies to intervene in the economy leads to the endogenous self-occurrence of policy

uncertainty. During recessions, policymakers need to make more policy adjustments to get out of the recession, thereby increasing uncertainty about economic policy; during booms, there is no need to make too many adjustments to economic policy to sustain the economy development (Pastor & Pietro, 2013; Baker, et al., 2016). Since the subprime mortgage crisis in the United States in 2008, the global financial market has experienced unprecedented turbulence. Governments around the world have successively issued a series of large-scale, strong and unconventional economic policies to save the financial market and the real economy. The uncertainty brought about by the frequent over-adjustment and intervention of economic policies has aroused widespread concern and concern in the academic and political circles. Therefore, Baker et al. (2016) used the EPU index to study the United States and 11 other major economies and found that the increase in economic policy uncertainty in recent years has had a significant negative impact on the U.S. macro economy.

At present, with the deepening of theoretical research and policy practice, researchers have gradually realized that the EPU is closely related to the fundamentals of the national economy, thus having a profound impact on the regulation of the real estate market (Zhang et al., 2015; Liu and Bi, 2018). Although studies have confirmed that EPU has a potentially important effect on housing prices, the relationship between the two lacks in-depth empirical research because EPU is difficult to quantify. When Baker and others constructed the China EPU Index, they only used reports from the English-language newspaper "Southern Morning Post" published in Hong Kong, which is difficult to objectively and fairly reflect the overall picture of the Chinese mainland's macro economy. Therefore, Huang and Luk (2020) used 10 mainstream newspapers published in mainland China to construct daily and monthly indices of China's EPU since January 1, 2000. Not only that, Huang and Luk (2020) also constructed different types of EPU monthly index EPU from four dimensions of fiscal policy, monetary policy, trade policy and exchange rate policy, which provides a new way to further explore the linkage mechanism between China's EPU and house price fluctuations.

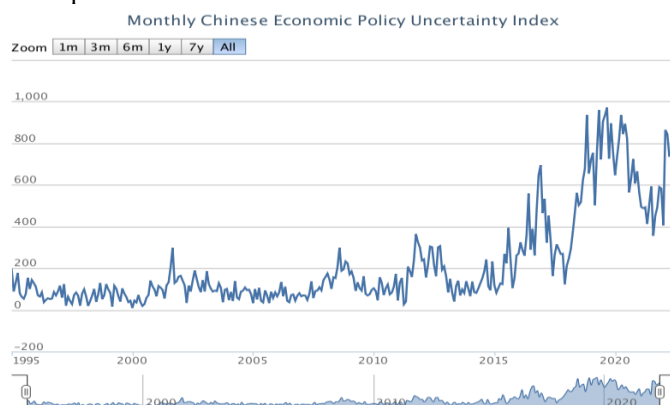


Figure 2: Monthly Chinese Economic Policy Uncertainty Index (Source from: <https://www.policyuncertainty.com/>)

Regardless of which quantification method above is used, as shown in Figure 2, China's EPU index has risen

significantly after the COVID-19 pandemic in early 2020. This kind of fluctuation has made how the EPU index affects the financial, real estate and other industries also more and more concerned by the academic community.

III. DEFINITION OF TERMS

A. Economic Policy Uncertainty (EPU)

Baker et al. (2016) gave the following definition of "Economic Policy Uncertainty" (EPU): Due to the randomness of government's formulation and implementation of economic policies, economic risks cannot be accurately expected for future policies. The uncertainty of economic policy mainly comes from two aspects: one is the economic recession caused by external shocks, such as financial crisis, war, natural disasters, etc.. Secondly, the economic recession itself will also generate uncertainty, which is mainly manifested in the frequent implementation of regulatory policies by the government to intervene in the economy during the economic downturn, resulting in endogenous self-generation of policy uncertainty. During a recession, policymakers need to make more policy adjustments to get out of the recession, increasing economic policy uncertainty. However, during periods of economic prosperity, economic development does not need to be adjusted too much (Pastor & Pietro, 2013; Baker, et al., 2016).

B. Housing Price

Housing price is a complex economic category. Housing price (real estate price) refers to the market value of the building and its occupied land within a certain period of time, that is, housing price=land price + building price, which is the most important factor in real estate economic operation and resource allocation (Glaeser, E. L. et al, 2005).

C. COVID-19

Corona Virus Disease 2019 (COVID-19), referred to as "New Coronary Pneumonia", named by the World Health Organization as "2019 Coronavirus Disease", refers to pneumonia caused by 2019 Novel Coronavirus infection. Since December 2019, some hospitals in Wuhan City, Hubei Province have successively discovered a number of cases of pneumonia of unknown cause with a history of exposure to the South China Seafood Market, which were confirmed to be acute respiratory infectious diseases caused by 2019-nCoV infection. On February 11, 2020, World Health Organization Director-General Tedros Adhanom Ghebreyesus announced in Geneva, Switzerland that the pneumonia caused by the new coronavirus was named "COVID-19". On March 11, 2020, World Health Organization considered that the current COVID-19 outbreak could be called a global pandemic (World Health Organization, 2020).

IV. LITERATURE REVIEW

Many scholars have made in-depth research on the factors that affect housing price. Most of them believe that economic fundamentals are an important factor affecting real estate market prices. Economic fundamentals generally include GDP, population factors, residents' income, and employment levels.

Mankiw and Weil (1989) explored the impact of demographic change on the U.S. housing market and found that the growth in housing demand will be particularly slow as the generation born in the "Baby Valley" reaches home-buying age. Abranam and Hendershott (1994) used the equilibrium regression model of real estate prices to conduct an empirical study on the factors affecting house price changes in 30 cities from 1977 to 1992, and found that employment change rate, real income growth rate and real after-tax interest rate can effectively explain the flow of house prices. Clapp and Carmelo (1994) found that an increase in the unemployment rate will significantly reduce housing prices, and changes in the unemployment rate can effectively predict the changes in housing prices. Takats (2012) used the panel data regression method to study the impact of population aging and per capita GDP on housing prices. Empirical research shows that a 1% increase in per capita real GDP will increase real housing prices by about 1%; on the contrary, if the population aging indicator increases by 1%, housing prices will decrease about 2~3%. Algieri and Bernardina (2013) studied the main drivers of real house prices in five major European countries (Germany, France, Italy, Spain and the Netherlands) and the United Kingdom and the United States from 1970 to 2010, and found that income growth had a significant impact on real estate prices. Grum and Govekar (2016) analyzed the macroeconomic factors affecting housing prices in Slovenia, Greece, France, Norway and Poland based on a multiple linear regression model, and found that real estate prices were significantly correlated with unemployment.

In terms of non-economic fundamentals, a large number of scholars have found that economic policies can affect changes in housing prices, but the conclusions are inconsistent. Luo et al. (2012) analyzed China's housing price data from 2002 to 2011 by constructing a VAR model. Macro-control policies should pay attention to the government's choice of monetary policy, credit policy, land supply, purchase restriction policy, and sales restriction policy. Generally in the early stage of policy adjustment, monetary policy is the first choice of policy makers. Meanwhile, loose monetary policy will prompt real estate prices to rise. Similarly, Wen (2015) used China's 2001-2012 data to establish a DSGE model to study the impact of housing demand and money supply on housing prices. The results show that a positive effect on the money supply does increase housing prices. On the contrary, Guo (2017) analyzed the transmission mechanism of monetary policy affecting housing prices from a theoretical point of view, arguing that the main target of monetary tightening policy is the demand side, which will only reduce housing prices in the short term, while loose monetary policy acts on the supply side, long-term decline in house prices. In addition, Zhao et al. (2015), Zhang (2014) and Chen (2016) believe that China's financial system is incomplete, insensitive to policies, and the development of the real estate market is immature and other reasons that lead to the failure of economic policies to achieve satisfactory results. In terms of credit policy regulation, many scholars have conducted detailed analysis. Hirata & Hideaki (2012) and Song (2014) both believed that rising interest rates have an inhibitory effect on housing prices,

and the frequency of housing price fluctuations will continue to increase after the implementation of the policy. However, Moulton's (2014) empirical results show that when the real estate market is in a bubble stage, the intervention of housing security policies and loan restriction policies on the real estate market is inefficient. In addition, studies by Chinese scholars Wang & Zhang (2013) and Li (2015) agree with that Chinese housing prices are not significantly affected by bank lending rates. Liang Bin (2015) found that the main factor of China's real estate price fluctuations is the impact of real estate costs rather than economic policies through variance decomposition by constructing a Bayesian general equilibrium model.

Economic policy uncertainty (EPU) is related to the government's system, which means that the government cannot determine whether a policy will be released, when it will be released, the scope of its release, and the possible effects after its release (Baker, 2016). There is uncertainty in the real estate policy itself, which often lead significant influence on the real estate market. In 2019, the Chinese central government proposed a long-term policy of real estate regulation that "houses are for living in, not for speculation". Various provinces and cities have begun to "implement policies according to the city", and major cities across the country have successively issued local administrative purchase restrictions to control the rapid rise in housing prices. At the same time, policies such as land policy, provident fund policy, housing security policy, purchase restriction policy, and loan restriction policy have also been implemented in a multi-pronged approach to stabilize the real estate market. However, since the beginning of 2021, the People's Bank of China has lowered the reserve ratio several times, and the credit policy has gradually loosened. Facing the decline in housing prices in some cities, local governments have begun to adopt necessary destocking policies to save the market (PBC, 2022). It can be seen from this that in the face of the new economic situation under the normalization of the epidemic, the real estate policy also has its uncertainties, which also constitutes an important part of the economic policy uncertainty. The uncertainty of China's real estate policy is embodied in the type of policy, the time of release, the intensity, the specific implementation rules and the scope of application of the policy. First, the real estate market is inseparable from the financial market, and macroeconomic policies, local government fiscal policies, and bank credit policies will all have an effect on the real estate market (Cai, 2021). Secondly, there is uncertainty about whether the government will issue corresponding policies for regulation and what type of policies will be used due to the variability of house prices and inventory. Moreover, due to factors such as economic development, industrial planning, regional culture and population structure in various regions and cities in China, the development speed and level of the real estate market are not the same. Therefore, even the same central government policy, in different provinces, cities and even regions, the effective time and specific implementation of policies are also different, and these are all policy uncertainties (Zheng et al., 2022).

Since the outbreak of the global financial crisis in 2008, the impact of EPU on the real estate market has received more

and more attention from scholars. Since houses are both consumer goods and investment goods, the effect function of housing demand includes the choice of consumption and investment portfolio (Berkovec, 1989), so EPU can affect house prices through various channels (El-Montasser, et al., 2016). As a consumer product, due to uncertainty about future employment, income and wealth, households tend to respond to the situation by increasing precautionary savings, and housing demand is bound to decrease (Giavazzi & McMahon, 2012). For households, uncertainty increases financing costs (Pastor & Veronesi, 2012) and default risk (Gilchrist, et al., 2011). As an investment, housing is usually a household's single largest asset, and housing investment decisions can lead an obvious influence on its long-term wealth and consumption levels. From an investor's point of view, a high degree of uncertainty in economic policies will reduce investors' expectations and confidence in the market, thereby inhibiting their consumption and investment behavior (Zhang, 2019). Bloom (2009) believes that EPU will lead to changes in housing prices in the real estate market. Subsequently, a growing body of literature confirms the significant role of EPU in the real estate market, but most focus on the case study of developed countries. For example, Su et al. (2016) investigated the causal relationship between EPU and German housing market returns. El-Montasser et al. (2016) studied the relationship between EPU and house prices in seven developed countries, including Canada, France, Germany, Italy, Spain, the United Kingdom, and the United States, and found that there is a two-way causal relationship between the two. Antonakakis and Floros (2016) start from the case of the United Kingdom and find that EPU has a certain impact on the real estate market, stock market and macro economy. Christou et al. (2017) used a Bayesian approach to analyze panel data from OECD member countries and found that EPU had a significant effect on predicting real estate market returns. Christidou and Fountas (2018) researched US states through GARCH model and found that EPU can promote the growth of real estate investment and restrain the rise of house prices. Jeon (2018) analyzed the VECM model and found that the EPU of important Asian economies such as South Korea, Japan, and China all had a significant negative effect on South Korean housing prices.

Compared with developed countries, research on the relationship between EPU and housing prices in developing countries is relatively scarce. Chow (2018) conducted a causal test on EPU and house price indices in China and India from a nonlinear perspective, and found a significant relationship between them, which confirmed that EPU plays an important role in predicting real estate market trends. Huang et al. (2020) started from the macro level and found that the volatility of China's EPU make a significant effect on housing prices. Besides, Zhang et al. (2015) pointed out that there are differences in the impact of macroeconomic variables on housing price fluctuations under two different conditions of high EPU and low EPU. Hu (2017) showed that when EPU is used as a variable, exchange rate expectations have obvious asymmetric characteristics of house price fluctuations. Based on the EPU perspective, Liu Bi (2018) found that the

regulation of housing prices by monetary policy has significant time-varying characteristics and asymmetry. To sum up, most of the existing literature is research on developed countries, and the research on the relationship between EPU and house price fluctuations in China still exist certain limitations. Therefore, this study will provide a more in-depth analysis of how EPU affects house price volatility in China based on the new EPU index and panel data.

In addition, pay attention to the epidemic. Existing research has focused on the impact of Covid-19 on US Treasuries (He et al. 2020), sovereign Eurobonds (Sene et al. 2020), corporate bonds (Haddad et al. 2020) (2020; Kargar et al.) and stocks (Baek et al., 2020; Gormsen and Koijen, 2020; Just and Echaust, 2020). However, research linking Covid-19 to house prices is lacking. Real estate is less liquid compared to financial assets, house price responses may lag shocks, and uncertainty remains about the impact of Covid-19 on real estate markets (Francke and Korevaar, 2020). Current research documents terrorism (Abadie and Dermisi, 2008; Arbel et al., 2010; Mills, 2002), violence (Besley and Mueller, 2012), earthquakes (Deng et al., 2015), hurricanes (Hallstrom and Hallstrom and Strom and Strom and Strom and Strose (Smith, 2005) and nuclear accidents (Zhu et al., 2016). However, after the outbreak of COVID-19, some changes have taken place in real estate in the United States, China and other countries. Housing prices in the United States have risen sharply, while some cities in China, such as Shanghai, Shenzhen, and Tianjin, have seen a trend of rising first and then falling (Wang, 2021). There is a research gap between the changes in the EPU index after the COVID-19 outbreak and whether it has a significant impact on the changes in real estate prices.

V. CONCLUSION

Combining the above existing literature, the following research gaps can be identified:

The transmission path of economic policy uncertainty affecting housing prices needs to be verified. Also, in the study of housing prices, scholars generally believe that the reasons for changes in housing prices are mainly concentrated in supply, demand, policies and other aspects. Among the existing studies on the factors affecting housing prices, most qualitative studies come from macro policies. However, for quantitative research, the selection of variables is not comprehensive and systematic enough, and there is a certain lag in the selection of model methods. More importantly, most existing studies are static and do not pay attention to the time-varying effect of housing prices. Therefore, follow-up research will focus on the empirical analysis of the time-varying impact of EPU on house prices, especially the changes before and after the COVID-19 epidemic.

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