

The Impact of Property-Purchasing Limitations Policy on Housing Price: Evidence from Xiamen and Shantou

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Abstract. In 2010, the Chinese government published the property-purchasing limitations policy to restrain the rising housing prices. From May 1st, Beijing households are limited to purchasing only one property. They are required to complete a family member condition form to prevent fraud and buyers who tend to speculate on housing prices. The property-purchasing limitations policy is then carried out in 49 cities that are above the prefecture level. Since 2004, an increase in the living standards in tier 1 cities such as Beijing and Shanghai have attracted an abundance of people from other cities to relocate to tier 1 cities. Since then, housing prices have increased as the demand for properties has increased. This essay will discuss the effect of housing prices due to the existence of property-purchasing limitations policy in Xiamen and Shantou. According to the analysis, the existence of a property-purchasing limitations policy in the short run does not restrain the increasing housing price but does restrain the housing price in the long run. However, the effect could be more remarkable, leading to other reasons affecting housing prices, which could be discussed with possible reasons in the following essay. Overall, these results shed light on providing a more healthy and balanced real estate market.

Keywords: Property-purchasing limitations policy, housing price, Xiamen, Shantou.

1. Introduction

The Xiamen Special Economic Zone was approved in October 1980, and specific free port policies were gradually implemented. Subsequently, the State Council successively approved the establishment of three Taiwanese investment zones, Haicang, Xinglin, and Jimei Peninsula, to implement the special economic zone policy, allowing more opportunities for economic development and city prosperity. Xiamen's average house price per square meter is ranked number 15 worldwide and number 4 in domestic China in 2023. After experiencing the rise in housing prices in 2016-2017, the housing prices decreased in 2018-2019. Even though the housing price rebounded in 2020 and 2021, Xiamen's housing price is still facing a downward trend since the beginning of 2023. Siming and Huli districts are two districts that have the highest average housing prices and were the main target of the Xiamen government to restrain the housing prices back in 2016. Meanwhile, the government aims to increase the construction and supply of affordable housing and return commercial housing to commodity attributes. Thus, promoting the idea of "stabilizing land prices, stabilizing housing prices, and stabilizing expectations."

However, another special economic zone city, Shantou, does not implement the property-purchasing limitations policy. Shantou Special Economic Zone was established on a trial basis on July 19th, 1981. According to national regulations, the Shantou Special Economic Zone was built as a special zone focusing on processing and export while also developing tourism and other industries. Even though Shantou is a special economic zone city, the housing price is relatively lower than Xiamen, as people in Guangdong province may also choose to live in other special economic zones such as Shenzhen. This made Shantou's housing prices more stable and affordable for people in Shantou. As housing is not a massive concern in Shantou, residents in Shantou may encouraged to have less stress on housing issues.

From the perspective of investors, the policies published aiming at restraining the housing price may have a significant influence while making economic decisions. However, the increasing development of China's real estate market has brought some issues for consumers. The increasing

price has made the property less affordable in many cosmopolitan cities in China. It is imperative to acknowledge whether the restraint of housing prices has positive or negative externalities on people's living standards and well-being. While researching from the past, most of the investigation has based on investigating the impact of real estate on the process of citizenization [1], patterns and determinants of metropolitan house [2], the impact of real estate on personal consumption and other behaviors [3-5]. These investigations demonstrate how real estate has an impact on people's daily lives. Therefore, investigating the impact of the existence of property-purchasing limitations policy in two special economic zones may reflect the effect of implementing the policy towards providing more affordable properties in each city. Meanwhile, others believed that the purchase restriction policy had alleviated the adverse effects caused by the rise and spread of urban housing prices to a certain extent, but the out-of-control housing prices are a structural problem caused by the mismatch of supply and demand [6]. The publication of property-purchasing limitations policy is a factor that may have an impact on housing prices. Thus, the essay will be based on the investigation of the impact on housing prices due to the existence of the property-purchasing limitations policy in Xiamen and Shantou from 2016 to 2023. The changes in housing prices between these years may show a complete change in the two cities' housing prices due to the effect of the existence of the property-purchasing limitations policy.

2. Methodology

This paper attempts to gather data based on the housing price of each month in Xiamen and Shantou. Data are found in the platform on Anjuke, a mainstream real estate platform in China. By calculating the mean of each month's housing price, the paper selected the mean as the housing price of the year from 2016 to 2023. 2016 is the year when the property-purchasing limitations policy was first published, and 2023 is when Xiamen eventually ended the property-purchasing limitations policy. Fig. 1 demonstrates the housing prices of Xiamen and Shantou each year from 2016 to 2017. The paper then used the data to continue the experiment by selecting each year's housing price as a sample to continue the investigation.

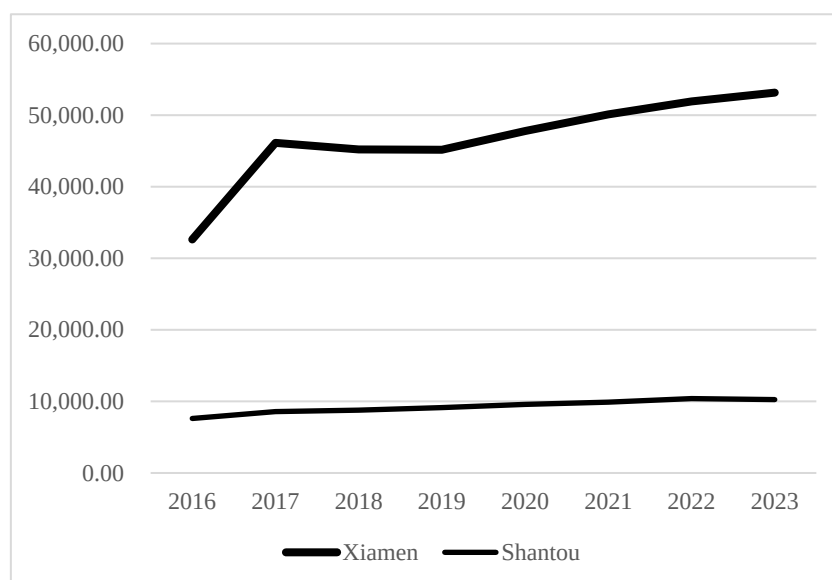


Figure 1. Xiamen and Shantou's Housing Price from 2016 to 2023 (Unit: RMB/m²)

The experiment is carried out using a Difference-in-difference model to evaluate the impact of the existence of the property-purchasing limitations policy on two cities. Property-purchasing limitation is an administrative intervention, an exogenous variable that occurs independently of the economic system. Due to the publication of the Xiamen property-purchasing limitation in 2016, the essay selected 2016 as the base year for both cities and compared the housing prices of the two cities until 2023. The Difference-in-difference model equation is as follows

$$Y_i = \alpha + \beta Ti + \gamma ti + \delta (Ti \cdot ti) + \varepsilon_i \quad (1)$$

In a traditional equation of the Difference in Difference model, Y_i would be the outcome of the experiment, and ε_i is a random, unobserved "error" term that contains all determinants of Y_i that the model omits. The coefficients of the equations are then presented down as α is constant term, β is the treatment group specific effect, γ is the time trend common to control and treatment groups and δ is the true effect of treatment.

By implanting Eq. (1) into the experiment of this essay, the outcome would be the housing price of the city. Due to the existence of treatment in Xiamen, all samples would be defined as one, and samples from Shantou would be defined as zero. The coefficient β would be the policy effect due to concern. The empirical evidence is delivered using Stata 17. Due to the significant difference in the standard deviation of 19721.038 shown in Table 1, errors may be made while experimenting. Therefore, this paper generated the logarithm of the variable Housing Price in order to continue the following experiment result. Table 2 shows the variable logarithm housing price with a lower standard deviation of 0.839. This may reduce the error while going through the experiment.

Table 1. Descriptive Statistics of normal condition

Variable	Obs	Mean	Std. Dev.	Min	Max
HP	16	27896.438	19721.038	7617	53147

Table 2. Descriptive Statistics of logarithm data

Variable	Obs	Mean	Std. Dev.	Min	Max
ln HP	16	9.935	.839	8.938	10.881

3. Results and Discussion

The study uses the Difference-in-difference model to analyze the impact of the housing price in Xiamen and Shantou due to the existence of property-purchasing limitations. The paper used the housing prices in each city from 2016 to 2023 to analyze the effect of the property-purchasing limitations policy. Since both of the cities are China's Special Economic Zone cities, they play an essential role in the economy. Thus, the housing prices of two cities may reflect the living standards, urban construction, residents' housing stress, etc. The increasing housing price made the properties less affordable to people in Xiamen compared to Shantou, and by seeing the result, this paper may inform that with the existence of a property-purchasing limitations policy, the restrain of housing price is negative as the coefficient of DID has a positive integer. However, this essay may also discuss how other factors may influence housing prices; the property-purchasing limitations policy does restrain housing prices, but the impact is not remarkable.

According to Table 3, the result demonstrates the effect of the existence of the policy. The Difference in Difference variable has a coefficient of 1.607, which illustrates that the housing price was not heavily restrained by the effect of the property-purchasing limitations policy. However, the positive coefficient may show that Xiamen is experiencing economic development, but the large gap between the income and housing prices in Xiamen does cause housing issues for people. Shantou, as a compared group that does not implement the property-purchasing limitations policy in this experiment, allows the observation of the impact on the housing price.

Table 3. Regression results

Variable	ln_HP
DID	1.607*** (0.0653)
Constant	9.131*** (0.0462)
Observations	16
R-squared	0.977

Note: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$

Even though Xiamen's housing price has fluctuated in the past years, it still increases as the demand for housing remains high. For Xiamen in the past 20 years, the city's population has increased as the rich and the poor from surrounding cities in Fujian Province migrate to Xiamen. Low-income people seek higher income and benefit from the healthcare and education in such a developed city. Meanwhile, the rich migrated to Xiamen, bringing more consumption and expenditure on commodities and consumer goods; Xiamen has faced an incredible economic aggregate. Meanwhile, the Xiamen export-oriented economy has increased significantly, with the total foreign trade import and export volume increasing from US\$141 million in 1980 to 691.577 billion yuan in 2020, with an average annual growth of 18.0%, accounting for 49.3% of the province's total foreign trade competitiveness, ranking sixth among the top 100 cities in the country. This evidence of Xiamen's development has driven the city to become a more prosperous and well-developed city. Because the rural population continues to flow into small cities, and the population from small cities into medium-developed cities has brought about a rigid demand for housing, thus weakening the effect of the property-purchasing limitations policy [7].

A separate issue of Shantou compared to Xiamen is that there are other Special Economic Zone cities in the same Guangdong province, such as Shenzhen. The migration of Shantou has less effect on the population and the demand for housing, leading to the housing price in Shantou being relatively lower than Xiamen's housing price. Therefore, Shantou has no restrictions on purchasing property, unlike the majority of other Special Economic Zones in China. Comparing the GDP of the two cities, Xiamen has over two times greater GDP than Shantou, which may clearly demonstrate the circumstance of Shantou being less competitive than Xiamen. The two cities both play an essential role in exporting and importing goods and services, leading to an unstable permanent resident migration. This may also be a factor influencing the housing prices in both cities. This could also be why the property-purchasing limitations policy in Xiamen was not remarkable.

Another possible reason for Xiamen and Shantou having a relatively large housing price gap is that Xiamen has a smaller jurisdiction area of 1700.61 square kilometers. In contrast, Shantou has a 2245 square kilometers of jurisdiction area. While both cities have more than 5 million permanent residents, Shantou has a relatively lower population density than Xiamen. Areas with higher population density are more likely to have higher housing prices [8].

Concurrently, Shantou's housing price increases steadily from 2016 to 2023, remaining a stable housing price for people. Xiamen housing prices increased rapidly from 2016 to 2017. From 2016 to 2017, the first year Xiamen implemented the property-purchasing limitations policy, the effect of the policy restraining housing prices was not remarkable. After 2017, the Xiamen housing prices started to increase gradually and less rapidly; this demonstrates the effect of the policy on Xiamen's housing prices. Though the housing price increased less rapidly compared to 2016 to 2017, the effect of property-purchasing limitations is not heavily noticeable.

The result of the non-remarkable impact of the property-purchasing limitations policy may also be argued as the urban construction of Xiamen is more convenient and well-developed for others to invest in and migrate. Xiamen Gaoqi International Airport is an international airport located 10 kilometers from Xiamen city center and opened to air traffic in October 1983. This brought a massive convenience for residents and non-residents to travel to Xiamen as there were 182 domestic and overseas routes, including 145 domestic routes and 37 international and regional routes. This provides a more significant attraction for foreign investors to invest locally and increases the economic aggregate towards the city. Such macroeconomic fundamentals influence the housing price [9, 10]. In comparison, Shantou's Jiayang Chaoshan International Airport has a lower passenger throughput than Xiamen. Therefore, the tourism and popularity of the city may also influence the increase in housing prices. Thus, the effectiveness of the property-purchasing limitations policy is less noticeable.

4. Conclusion

To sum up, this study used data from 2016 to 2023 of the housing prices from Xiamen and Shantou to construct the Difference in Difference model, by implanting the samples from each city and using the existence of a property-purchasing limitations policy as a controlled variable. The results demonstrate that the existence of a property-purchasing limitations policy does restrain housing prices in the long run. However, the effectiveness of restraining the housing price could be more remarkable as many other factors may cause the continuous rise of housing prices, such as the migration population and population density. Meanwhile, the reason for the existence of a property-purchasing limitations policy implemented in Xiamen rather than Shantou, while both are Special Economic Zone cities in China, is that Xiamen has a relatively more active housing market than Shantou. Comparing the population density and urban constructions of the two cities may inform the idea that the existence of property-purchasing limitations is relevant to housing prices as these are the factors that may have an impact on housing prices. To further extend, this essay provides some possible suggestions while using the property-purchasing limitations policy.

It is believed that in order to restrain the housing price completely, it is also imperative for the government to provide more smaller housing space properties. As smaller housing space properties have a relatively lower total price on the property, it may be more affordable for individuals and smaller families. Since 2016, when Xiamen first started to implement the property-purchasing limitations policy, the housing prices in Xiamen have continued to increase. In the first year of the property-purchasing limitations policy, its effectiveness could have been more inconspicuous as housing prices continued to increase rapidly. Though the housing price has increased gradually since then, the effectiveness of the property-purchasing limitations policy needs to be revised. In the short run, more residents are able to purchase a property to live in, which reduces the demand of the real estate market; this allows the housing price to be restrained in the long run.

The use of property-purchasing limitations policy and other policies, such as sales restriction policies, should be based on the current situation. After experiencing the COVID-19 pandemic, China's economic growth rate has been decreasing for the past years. If the government continues to restrain the housing price and the chances for people to purchase property, the consumption of housing decrease and drive the market to become less active. This may cause the people to have less interest and willingness to invest and generate negative externalities. If the economy continues to be inactive and consumption decreases, this may cause a recession for the whole economy. In the meantime, in November 2023, Xiamen canceled the property-purchasing limitations policy. This may inform that the government hopes to see an active real estate market as the housing price has continued to decrease from the start of the year. Optimizing the regulations and policies allows more freedom for home buyers and sellers. Meanwhile, attracting nonresidents to invest and seek opportunities in Xiamen. This positively affects the real estate market and the economy as a whole, as more economic aggregate may be generated through more migration and willingness to consume.

While implementing the property-purchasing limitations policy, the supply for new properties should be secured to reduce the stress of insufficient secondhand properties. In the short-run, the property-purchasing limitations policy may restrain buyers' possibility of speculating on housing prices. However, while housing prices continue to decrease, homeowners may be less willing to sell their property, which may cause an imbalance in the real estate market. An unhealthy real estate market may also cause negative social impact. In recent years, tier 1 cities such as Shanghai and Guangzhou have provided public rental housing. These houses allow new employment groups and cleaners to pay a lower rent to live in the city. Other cities may take this as an example and provide such type of housing to reduce the stress of "no house available to purchase" under the real estate control. Minimizing the chance for buyers to speculate on the housing price and providing a sufficient amount of housing for people to live in. Finally, it allows people to adhere to the position that houses are for living in, not for speculation, as well as being able to meet the demand for improved housing.

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