



Skyrocketing Housing Price in Hong Kong: Stimulus and Future Directions for Development

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Abstract. The skyrocketing housing price is a considerable urban issue in Hong Kong, China, which not only is the crucial reason for the social conflicts but also is a vital factor for enlarging the wealth gap and gentrification. However, the Hong Kong Government has failed to effectively address the problem of housing inequality. Housing prices have been steadily rising for many years. Hence, it is critical to identify driving forces behind this urgent problem and to set future direction for sustainable development. In this paper, data were selected from the Census and Statistics Department, which is the government of the Hong Kong Special Administrative Region. The method of OLS linear regression is adopted to analyze the reason why the housing price has grown consistently in Hong Kong. Female disposable income, population, and the CPI index are used as research objects in the motivations analysis. According to the results, the population and the disposable income of employed women have a significant positive impact on housing prices, whereas the CPI index has no bearing on it. In terms of the scarcity of developable land in urban areas, high-density developments combined with transit-oriented development are an emerging option for Hong Kong to cope with this situation. This study provides implications for Hong Kong, even other cities, to analyze the driving forces behind the surged housing prices and the solutions to balance the rigid demand of property and insufficient housing supply.

Keywords: Housing Price · Female Income · High-density Development · Transit-orientation Development · Gentrification

1 Introduction

1.1 Background

Hong Kong is a typical compact city, with mixed land uses, a diverse population, high-density towering buildings and highly developed and sophisticated transit systems consisting of subways, buses, ferries, taxis, and MTR (Mass transit railway) train [1]. It is widely acknowledged that Hong Kong has the largest population and employment density in the globe, owing to the fact that the vast majority of developable land in city regions had been nearly depleted by the late 1960s and attracting plenty of migrants to this place for better education and work opportunities [2]. Since its return to China

in 1997, the housing price has steadily increased for many years until now, and also it has been the world's priciest housing market for many years. According to the data illustrated by Census and Statistics Department [3], residential property price indexes increased almost 2.6 times between 2010 and 2020. In terms of the skyrocketing housing price in Hong Kong, it is the vital reason for the widening disparity between the wealth and poor, and also the impetus for gentrification in this subject area. However, the Hong Kong government has failed to address the inequality in property sources by continuing to implement some of the British colonial housing policies. Besides, the local government chooses to collaborate with the land agent because of the substantial return. As a result, land transaction prices rise continuously, making it difficult for middle-income families to purchase a home. Consequently, middle and even upper-income families can only afford to live in high-density housing. What is more, this problem is exacerbated by the continuous growth of population, which is frequently associated with social conflicts such as intense housing contradictions. It is noteworthy that an increasing number of females who do have considerable income and job positions than before, booming the housing price in the subject area have continued to rise. Hence, it is extraordinarily significant to analyze the incentives of the costly high property price in the subject area and find out effective solutions to cope with this crucial urban issue.

1.2 Literature Review

In recent years, the high housing prices in Hong Kong have attracted the attention of many scholars.

Deng et al. used Hong Kong as a case study to examine how a public housing programme established can meet the needs of the environmentally conscious. A lack of available land, three crises such as squatter risk, civil upheaval, and SARS, as well as three shifts in living patterns, demands, and demography are all major challenges for it. As user demands change, so do the needs for public housing. Therefore, for the purpose of sustainability at various scales, pre-post adaptation, standardisation, and creativity should be satisfied on target for public housing programs [2].

Furthermore, Huang et al. examine the effectiveness of the government's plan to increase the land supply for residential buildings in order to increase the actual housing supply. A decreasing internal rate of return on developers' housing investment was discovered by analysing time-series data, which was primarily caused by high land transaction prices. However, simply increasing land supply will not solve the housing shortage in the subject area. Due to developer-determined new housing supply, Hong Kong's new housing supply is independent of government-supplied land. As a result, the surrounding amenities of the supplied land should be improved in order to raise the corresponding housing price and compensate for the decrease in the internal rate of return. The main goal for the government is to encourage developers to build new houses [4].

In addition, solving the housing problem has also become the focus of these researches, Hui and Ho investigate the impact of Hong Kong's land-use planning system and land supply on house prices. Hong Kong residents are extremely concerned about rising housing prices. On the one hand, developable or re-developable land is scarce about the city's sizable population's keen demand for various types of land uses. On the

other hand, a housing shortage leads to constant price increases, which are driven in part by speculation. As a result, the government implements its land-use planning system to regulate and constrain land supply and development [5].

Liang et al. examine the development of private lands use for public housing programs, how it affects housing searching behaviour in the local property market, and how new public housing projects should be constructed. Since private housing neighbourhood changes will have an impact on nearby urban areas. Therefore, Hong Kong should seek out more available land resources in the long term to supply public housing [6].

Lau et al. examine three generations of multiple intensive land use fabric and discuss the integrating design variable, with a focus on Hong Kong's lifestyle and design approaches. Because valid case studies in the subject area have five uses for land, such as residential, commercial, recreational, community, and transportation systems. Besides, this theory is being used in subsidised public housing programmes. The intensively combined concept allows formal and informal developers to use commercial space profits to subsidise the residential element. On the other hand, it could provide more space for transportation interchanges and connections [7].

Furthermore, Lau and Wei investigate the factors that may be driving the rise of micro-flats, such as population changes, livability concerns, and government land-sale policy proposals. Many of these micro-flats have been constructed in the main urban area, and a sizable percentage of micro-flat residents are renters, especially in these areas. It is obvious that the supply of micro-flats should be increased in order to provide a more economical buying option for people who do not wish to rent for an extended period of time [8].

However, scholars have not focused on the role of women in driving high property prices. As a result, the research on the female disposable income can fill the research gap of gender division in housing prices' incentives in Hong Kong, China.

1.3 Objective

This paper intends to investigate the causes of skyrocketing housing prices, a critical urban issue that Hong Kong is currently dealing with. In addition, the effective solutions to improve residents' living conditions and reduce social conflicts will be discussed. The former is examined by using data from the Census and Statistics Department and developing an appropriate math model to explore the relationships between those factors and housing prices. The latter is to work on the available approaches derived from previous unsuccessful measures and feasible further direction for the development, which should be compatible with the specific economic, historical, and geographical characteristics, as well as its current situation of Hong Kong.

The remainder of the paper is structured as follows. Section 2 presents the methodology and data, Sect. 3 illustrates the results, Sect. 4 depicts the interpretations for these three research objects, and Sect. 5 concludes this study.

2 Method and Data

This paper assumed that the housing prices of Hong Kong were influenced by three factors, including the earnings of employed women, the population and CPI, the residential

property pricing model (RPPM) was proposed as Eq. (1).

$$Y = aX_1 + bX_2 + cX_3 + e \quad (1)$$

where the Y is the expected residential housing prices for Hong Kong, China, X_1 is defined as the median monthly employment wages of employed women (excluding foreign domestic helpers), X_2 as the number of population in the subject area, and X_3 presents the CPI of Hong Kong. In addition, a , b and c are the coefficients of the variables X_1 , X_2 and X_3 respectively, and e is the error term. All data used in the model are derived from the Census and Statistics Department, which were collected for the 11-year period from 2010 to 2021.

3 Result

A series of basic features of data which applied to Eq. (1) refers to Table 1.

Figure 1 demonstrates that the income of employed women was substantially climbed from the period of 2010 to 2021. According to Fig. 2, it illustrates that the population growth was remarkable until 2019, followed by a declining tendency because of COVID-19. Furthermore, Fig. 3 reveals that the CPI index marginally rose during this time.

Table 1. Basic features of the Variables

Variable	Mean	Maximum Value	Minimum Value	Standard Deviation
Y Variable	290.79	392.7	150.9	80.88
X Variable 1	13,700	17,200	10,100	2350.18
X Variable 2	7,293,067	7,507,400	7,024,200	155,171.53
X Variable 3	193.04	201.4	174	7.30



Fig. 1. Housing Price Index and The wages of Employed Women in Hong Kong, China (2010 to 2021)



Fig. 2. Housing Price Index and Population in Hong Kong, China (2010 to 2021)

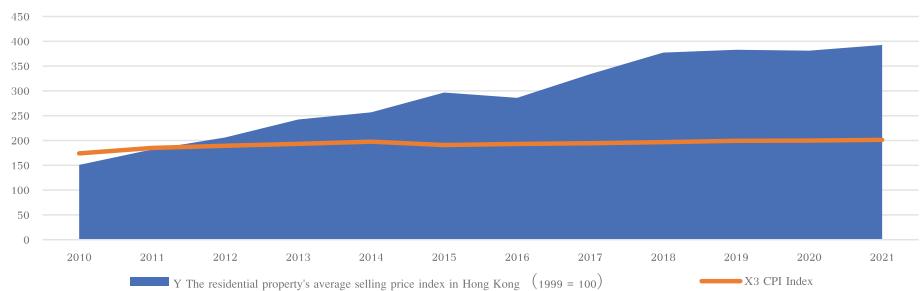


Fig. 3. Housing Price Index and CPI Index in Hong Kong, China (2010 to 2021)

Table 2. Multiple regression results of the analysis in Hong Kong, China

Item	Coefficients	Standard error	t Stat	P-value
Intercept	-1814.3959	541.92073	-3.34808	0.01011
X Variable 1	0.01657	0.00566	2.92950	0.01901
X Variable 2	0.00023	0.00009	2.64317	0.02957
X Variable 3	0.96984	1.01000	0.96025	0.36505

As shown in Table 2, at 5% significant level, the P-values for X_1 and X_2 were significantly lower than 0.05 and positive, indicating that rising disposable wages among employed women and a growing population have a positive impact on housing prices. However, X_3 is insignificant with no obvious effect. In other words, the earnings of employed women and population growth are positively correlated with housing prices in Hong Kong, China, whereas the CPI index is uncorrelated with consistently rising housing prices in the selected periods.

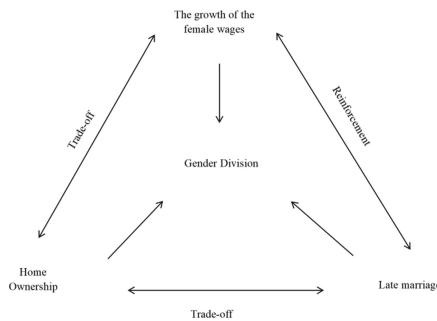


Fig. 4. The conceptual framework of female buyers in Hong Kong, China

4 Discussion

4.1 Interpretation

4.1.1 The Wages of Employed Women

This research object is represented by X_1 in the model and has a P-value of 0.01901.

The conceptual framework is as followed (Fig. 4).

Women in China have been partly positioned as the subordination of a family, owning far fewer housing assets than men due to males having a higher income and a better work opportunity than females in general. Females, on the other hand, receive fewer intergenerational transfers than males due to patrilineal societies [9]. However, there are cultural differences between Mainland Chinese women and Hong Kong females in terms of a hybrid of traditional Chinese culture and Western values introduced to the study area during the British colonial period. With the rapid development of Hong Kong's economy, women have become more financially independent, assertive, and career-focused in the years since. Though, the male-dominated social structure continues to exist in some aspects. It is noticeable that the median employment wages of employed women per week were 10,100 in 2010, while it rose to 17,200 in 2021, which the growth was 1.7 times over this decade based on the data demonstrated by Census and Statistics Department. As a result of rising incomes, an increasing number of women, particularly single women, now have the financial ability to buy their own houses. According to reports, the number of women purchasing housing in major cities has increased by 29% over the previous year, indicating that it has a positive influence on residential property prices in Hong Kong [10]. Furthermore, the shift from rental to owner-occupied housing has been identified as a telltale sign of gentrification [11]. In regard to women prefer to purchase their own property rather than rent one, it is driving gentrification in Hong Kong. Therefore, women can be viewed as the driving force behind the middle class in a growing service economy. In addition, the proportion of single women with a higher wages in developed cities is increasing. This trend has reverberated throughout the economy, boosting the local real estate market [10].

4.1.2 Population

In the model, this research object is represented by X_2 and has a P-value of 0.02957.

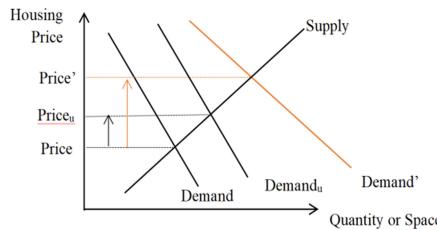


Fig. 5. The economic pattern for housing prices in Hong Kong, China

The demand and supply line represents the normal situation which is explained by the simple economic standard. As the increase in population, so does property demand notionally. As shown in Fig. 5, $Demand_u$ increases with the growth of population. Besides, the line of $Demand'$ presents the rise of property demand in Hong Kong.

As mentioned above, the population also has a positive impact on Hong Kong housing prices. It is a simple economic pattern that as the population grows, so does the demand for housing. Hong Kong is an extreme case with one of the highest population densities in the world, the slope of the demand line should be steeper than usual, and the increase should also be greater than usual, as shown in Fig. 5. It is difficult to explain the Hong Kong real estate market using standard basic rules or simply learning successful examples from other cities. Furthermore, Hong Kong is an immigrant city that demographic development is an important component of the city's economic system. In fact, the increase in the number of people in Hong Kong over the years has been determined not only by natural population growth, but also by the immigration opening policies of Hong Kong. In 2019, there are 16,446 such individuals. Despite a 44.7% drop in population due to the new crown epidemic and travel ban, there will still be 9,093 people in 2020 [12]. Housing are both a consumer good and an investable product [13]. Some people would be willing to buy extra property for speculation or long-term investment, which would necessitate some relevant knowledge and sufficient funds to support this activity. In fact, the high-income new immigrants are also a major factor influencing the development of the real estate market [13].

4.1.3 CPI Index

According to Table 2, the CPI index of Hong Kong, has no obvious effect on housing prices based on the P-value of X_3 is 0.36505. The CPI index is a cost-of-living index that measures the prices of various goods and services consumed by households [14]. On the contrary, rapidly rising housing prices may increase Hong Kong's CPI index due to rising home prices have a direct impact on household wealth and household affordability [14]. However, the insignificant result reveals that the impact of the high cost of living on house prices is limited.

4.2 Solution

Hong Kong is a special case since it has evolved its pattern of development as a highly functional organic urban form as a result of historical, geographical, and political influences [1]. It is widely acknowledged that the large public housing program run by the local Hong Kong government is not producing the expected result. As designed, the purpose of this plan is to provide a minimum standard of housing for all residents while also acting as a substitute at the lower end of the private property market [15]. However, it has a limited impact on the housing price in the study area because of the small proportion of public housing supply in comparison to total housing demand. Besides, the great ideals of garden cities that have been successfully implemented in Singapore are not applicable in this city based on previous unsuccessful experiments [1]. When it comes to the insufficient buildable land in urban areas, the relevant authorities try to cope with the problem vertically rather than horizontally. The high-density towering building is the inevitable development for the future of Hong Kong. As a result, an urgent option for Hong Kong is to better plan, design, and manage, which can make such densely populated areas a far better place for residents to live. Not only is the external environment of buildings being improved by fulfilling the potential of the land, but new building techniques and materials are also being used sustainably, mixed land-use patterns are being consolidated and so on [16]. But it also improves building interior environments, for instance, timely building management and maintenance, new building design, and so on.

On the other hand, Hong Kong can also encourage transit-oriented development (TOD). The definition of TOD corresponds to a mix of uses in a pedestrian friendly environment that allows citizens and employees to pass easily by taking public transit, riding a bicycle, walking, or driving a private vehicle [17]. In recent decades, Hong Kong has created a successful model - the 'Rail plus Property' (R + P) Model, where a railway is built concurrently with residential buildings above or nearby [18]. Therefore, super rise buildings serve as major TOD nodes and people who live near public transportation will less rely on private vehicles [19].

In other words, a mixed-use building with commercial and residential components and subway underground access, as well as access to nearby available transit stops and taxi ranks, demonstrates how a large population can be accommodated in a small area while reducing passive influences on the quality of life for residents.

5 Conclusion

This paper obtained the data from the Census and Statistics Department and used OLS linear regression to break down those data in order to explore the reason and solution for the skyrocketing housing price in Hong Kong. According to the results of Table 2, it indicates that the population and the growth of female average wage are significant factors in stimulating housing prices in Hong Kong when compared to the CPI index. Hence, this thesis fills the research gap from the female perspective.

Hong Kong stands out as an extreme case because of its specific geographic, historical and economical characteristics. It is difficult to address the issue of rising housing prices solely through the public housing programme or by studying Singapore's successful

case study - Garden City. Due to a scarcity of buildable land in urban areas, high-density development is an unavoidable option. As a result, high-density developments in conjunction with transit-oriented development have emerged as a viable solution to this serious problem. It is worth noting that female is taking an increasingly important role in the real estate market and gentrification with the development of society. Therefore, the Hong Kong Government have to place a strong emphasis on women when determining the future direction of the residential housing property. Since high-density development is an unavoidable result in well-developed countries or cities, it is necessary to construct in a mixed-use pattern with a sophisticated transportation system sustainably to provide residents with a better living environment.

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