

# ***A Brief Analysis of Hong Kong Public Housing Allocation Mechanism: From the Perspective of Market Design***

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**Abstract:** Housing policy be identified that the prescriptive measures established by the government for addressing housing problems and interventions nowadays. By formulating and implementing housing policies tailored to the country's specific characteristics, these policies serve to guide the development of the housing industry, manage the housing resources, and ensure a fair resolution of the housing problem. However, research and professional analysis of housing demand within a particular city is a challenging task. Our report explains Hong Kong's housing allocation mechanism from a market design perspective by analyzing arguments and historical digital evidence from relevant and reliable literature. And then we have modeled and evaluated the mechanisms of Hong Kong public rental housing allocation. We conclude that although the mechanism itself can be improved, but the housing issues in Hong Kong is more about other external factors. So, this report provides a more detailed view of Hong Kong's public housing policy compared with previous papers.

**Keywords:** Microeconomics, Market Design, Public Housing

## **1. Introduction**

Allocation of public housing has always been an important topic of policy making. Hong Kong Housing Authority (HA) has established a public rental housing (PRH) application system to facilitate the fair and orderly allocation of PRH flats to eligible applicants. Public housing in Hong Kong is like the public rental housing system in the mainland, where the government rents housing to eligible Hong Kong residents at preferential rents.

Nowadays, there are two kinds of housing policies. First, the Dual-track housing supply system. Government-led housing being public permanent housing. In addition, is the Market-led housing being private permanent housing. Hong Kong has also kept to a variety of housing schemes which the Hong Kong Housing Authority has set up corresponding eligibility criteria for PRH applicants with different requirements. In this scheme, there are three categories, such as normal family and Elderly singles.

According to the "Housing situation and housing supply in Hong Kong situation and housing supply in Hong Kong", In the past of years, there is a dramatic data about Hong Kong housing. The percentage of households living in self-owned houses in Hong Kong increased from 2011 52.1% decreased to 48.6% in 2021, with 4 young families living in self-owned homes It dropped from 49.7% to 41.5% during the same period. In the market for private housing, the combination of limited supply, consistently low interest rates, and what is known as "rigid demand" has led to a significant increase

in the prices of privately owned homes. This surge in prices has created challenges for the public in their pursuit of affordable homeownership. According to the Legislative Council Secretariat the Home Ownership Burden Index 3 reached a substantial level of 74% in the last quarter of 2021, which is considerable increase from 45% recorded in the same quarter of 2011.

### 1.1. History of Hong Kong Public Housing

Since 1954, Hong Kong's public housing has been gradually established, which has met the housing requirements of many middle and lower classes and has also intervened in the overheated housing market to a particular extent. From the 1970s onwards, the New Territories area was designed as a self-sufficient new town and became a major place for housing public housing. Hong Kong's public housing scheme has been dealing with the housing issue to foster social cohesion for more than 50 years. The architectural styles, lifestyles and customs of public housing estates continue to evolve and become a valuable historical heritage for the people of Hong Kong. There are several significant phases in the history of Hong Kong's public housing policy, there are the elimination and prevention phase (1953), the condition improvement phase (1972), the long-term strategy phase (1987) and the sustained stability phase (1997).

### 1.2. Research Question

Today, Hong Kong's public housing system has been in operation for nearly 80 years, affecting tens of millions of Hong Kong residents, making a lot of progress but also creating new contradictions and problems. In terms of achievements, the Hong Kong government has been providing affordable housing to nearly half of Hong Kong residents in a sustainable way, and has been working to overcome inequality, From the Shek Kip Mei fire in the 1950s where a limited number of houses provided only for the victims to the Government's Low Cost Housing Scheme for low - and middle-income groups in the 1960s, Then there is the large-scale housing construction program in line with the Home Ownership Scheme (HOS), and now the entire low and middle income group in Hong Kong is covered by the public housing scheme [1].

Despite the existence of low rental costs and extensive coverage of public housing, many residents still find it difficult to enjoy this benefit, such as the widespread problem of long queues. In addition, media such as the Hong Kong 01 News have also reported the phenomenon that some home buyers on the mainland have also successfully applied for public rental housing in Hong Kong, which has become a hot topic. This reflects both that there is still a shortage of supply of public rental housing and that there are certain loopholes in the public rental housing allocation mechanism itself.

In this connection, we have raised the following questions: To what extent is the existing allocation mechanism for public rental housing in Hong Kong reasonable and maximizing the welfare of low and middle-income earners, and is there a better mechanism that can be introduced?

## 2. Literature Review

In the following, we will explore the advantages and disadvantages of the public rental housing program through a literature review.

First, the public rental housing program has always been dedicated to the affordable rental of housing to low- and middle-income people. According to Statista's statistics, the average price of public rental housing in Hong Kong in 2023 is only HK\$67 per square meter [1], yet, as shown in the chart below, the average rental price of an ordinary house is between HK\$300 and HK\$400 per square meter, with even the cheapest, large New Territories house near the suburbs renting for HK\$211 per square meter, and the vast majority maintains a fairly high positive growth rate. Further, the average rent of a public housing unit is about HK\$2070 per month, which accounts for less than 10% of the

median household income in Hong Kong [2,3], significantly reducing the expenditure burden of low- and middle-income households.

Secondly, public housing fairly covers the majority of low-income groups. The share of public housing in Hong Kong has undergone a significant increase, growing from 18.5% in 1966 to 44.5% by 1993. This trend has continued, with the promotion remaining relatively stable at around 45% up to the present day. Consistently, approximately half of the city's population has access to government provided public housing or home ownership schemes, ensuring that the majority of middle and low income earners are included within the affordable housing system. According to Liu Fang's research. Although Hong Kong is a typical type of surplus welfare, it has a large government housing plan. Wang Kun, Wang Zesen, and others also used public data to support this viewpoint [4].

Finally, the public housing system holds a significant position in the governance of the real estate sector. Professor Feng Bangyan, an expert in the field, highlights in his work "Hong Kong Real Estate Century" that the establishment and enforcement of the public housing system serve multiple purposes. Not only does it effectively address the proliferation of informal settlements, but it also plays a crucial role in mitigating the excessive escalation of prices and rents in commercial properties, thereby contributing to the preservation of social stability. Wen Linfeng also believes in his book "Housing Public Policy" that by controlling land supply and adjusting urban planning to optimize land use, the public housing system has achieved macro planning for residential development. Li Yi's "Hong Kong, Fortunately, according to Li Yi's scholarly work titled "Public Housing," the presence of a housing security system effectively mitigates the socioeconomic divide by addressing the polarization between affluent and underprivileged populations. Furthermore, this system promotes social mobility across various social strata, fostering an environment of harmony and prosperity within Hong Kong society [5-8].

However, there are also significant flaws in the public housing system that cannot be ignored.

For the public housing system itself, the waiting period for public housing applications is too long, and the calculation method of waiting time is controversial, so the actual situation is not optimistic. As of March 2022, the average waiting period for public housing in Hong Kong has increased to 6.1 years, reaching a new high since 1998. The current average waiting time is 6.0 years. It is worth noting that this average does not cover applicants who have been waiting for more than 3 years but have not been resettled, as well as those who are dissatisfied with their initial allocation of housing and continue to wait for redistribution. Therefore, the data released by the Housing Authority to some extent underestimates the true situation of waiting times for public housing. In addition, there are many backlog cases in the public housing system. In 2012, the Housing Department launched a special operation to investigate cases that had been on the waiting list for more than 5 years as of the end of June that year and found that 60% of cases were delays or omissions without reasonable reasons [9].

Regarding the external impact of the public housing system on Hong Kong society, some argue that it has to some extent exacerbated the problem of poverty. Xu pointed out that the Hong Kong government is not entirely based on the basic principles of social security when dealing with social housing issues. Some unreasonable public housing policies have not effectively alleviated poverty but have become the root cause of poverty problems. In the frenzy of the real estate market, the government and real estate developers have jointly pushed up land costs, further driving up prices in the entire real estate market, forming the appearance of "land scarcity in Hong Kong". During this process, the wealth of the government and real estate developers increased, while the living standards of ordinary citizens gradually declined. With the continuous rise of property prices, wealth in Hong Kong is increasingly concentrated among property owners, while homelessness faces the risk of social marginalization. Housing problems have become an important factor leading to social poverty. The concept of "home for all" in Hong Kong is essentially more of a superficial phenomenon. Chen

also expressed similar views in their book "Hong Kong Real Estate Mythology". Robert Dietz's research indicates that the Hong Kong government has amassed significant wealth through land transactions, facilitated by monopolies and restrictions, thereby depriving the middle and lower-income classes of the opportunity to own private property, relegating them to suboptimal living conditions in public housing [10].

There is also the previously mentioned issue of misrepresentation of housing. Although this is not a widespread problem, thanks to the government's housing ordinance, which imposes strict penalties of up to HK\$50,000 and six months' imprisonment.

### 3. Discussion

In summary we have assessed the benefits of Hong Kong's current public rental housing allocation system: it has indeed lowered the cost of rental housing for low- and middle-income families to a large extent, resulting in welfare benefits for low- and middle-income families throughout Hong Kong and a consequent increase in the demand to consume since the every-month rent costs occupies a smaller percentage of their income. It has also considered the well-being of the elderly and senior singletons with a humanistic approach. In addition, public rental housing is equipped with a full range of related facilities, public space and community services, making the hidden costs of moving into public rental housing very low.

At the same time, we have also summarized the following areas for improvement in the present public rental housing allocation system locally: (1) the average waiting time for each citizen is too long, which indicates that the allocation efficiency can be further improved; (2) the allocation process takes too few factors into consideration, and fails to pay attention to the applicant's consideration of the cost of transportation and the geographic factors; (3) there is falsification of information, and the government has not taken into account the applicant's assets outside the country, which can lead to the situation that public housing allocation does not address the problem of inequality, and housing does not go to those who really need it.

#### 3.1. Analysis of the problem

To assess how good or bad the public rental housing mechanism is and to better suggest improvements, we can start by modeling the current matching mechanism. Since applicants can only apply to one district and it is up to the government to decide whether to grant their application, we can approximate the matching mechanism as a dynamic instantaneous matching process. In this mechanism, the government divides four districts  $D_i$  (Urban, Extended Urban, New Territories, Islands), and applicant  $X_i$  applies to one of the districts, and establishes a function  $f(I, A, P)$  based on the applicant's asset and income status  $I$ , age  $A$ , and waiting time  $P$ . Each of the four districts is determined through the function  $f$  for preference ranking.

According to some related stipulations clarified by HA, we can assume equation (1) to (2):

$$I < \alpha, \frac{\partial f}{\partial I} < 0 \text{ where } \alpha \text{ is the income boundary} \quad (1)$$

$$\frac{\partial f}{\partial A} > 0 \Leftrightarrow A > \beta, \frac{\partial f}{\partial A} = 0 \Leftrightarrow A < \beta \text{ where } \beta \text{ is the elderly boundary} \quad (2)$$

$$\frac{\partial f}{\partial P} > 0$$

(Formula 3)

Different Ds then accept applicants based on the number of public housing units available for rent and their preference profiles. For example, the equation (3), if:

$$f(I_{xi}, A_{xi}, P_{xi}) > f(I_{xj}, A_{xj}, P_{xj}) \quad (3)$$

Then,

$$X_i \succ_{D_i} X_j$$

The government opens applications and acceptance at regular intervals, and we can regard each time as  $T_i$ .

From this, we can see the following problems: 1) There are only four constituencies for housing allocation in Hong Kong, and the government has not taken into account other factors such as the commuting distance of the residents and the implicit costs; 2) the actual relation of I,A,P is not clear at this stage, the government might not even have a criteria.

These drawbacks make it impossible to achieve optimal allocation. It may be possible to introduce the TTC algorithm into the allocated tenants so that they can solve the allocation problem on their own, but this will increase the transaction cost due to the lack of information. Also, improving the allocation mechanism may not lead to a reduction in the waiting time, suggesting that there is another reason for this, which will be analyzed in the following section.

### 3.2. Suggestions

Lui and Suen also analyze the public housing system in Hong Kong and conclude that it is inefficiently allocated by empirically demonstrating that the average distance to work of public housing tenants is greater than that of private housing tenants. However, we conclude, as mentioned earlier, that there are very few parts of Hong Kong's public housing allocation system that can be improved per se, and if additional steps are taken to obtain information or coordinate deliberately for the sake of optimization. Hong Kong already has a scarcity of buildable land and a dense population, and the speculation in housing before and after the 1990s and the great fall in housing prices in the 1990s have made Hong Kong's housing prices deformed. According to Rating and Valuation Department Hong Kong Property Review 2023, Hong Kong has a vacancy rate of 14%, yet many people still cannot afford to live in their homes. However, the difficulty is that Hong Kong itself relies highly on the real estate industry. It is estimated that 30% of Hong Kong's revenue comes directly or indirectly from the real estate industry. As shown in the figure below, the proportion of private housing in Hong Kong is quite huge compared to Singapore in Figure 1.

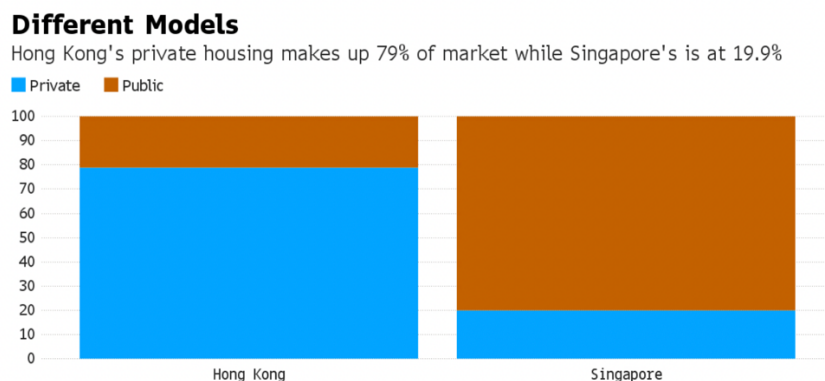


Figure 1: housing market structure of Hong Kong and Singapore

Changing the entire real estate industry in a free market such as Hong Kong is an impossibility. Therefore, what the Hong Kong government should do is to provide more rental housing so that the supply can cater to the growing demand. According to a report in EY2022, the government has set a target to augment the overall availability of public housing by 158,000 units within the next five years, aligning with our suggested course of action. Simultaneously, it is advisable for the Hong Kong government to persist in promoting transportation connectivity between Hong Kong and mainland China. According to the "Shenzhen Housing Rental Reference Prices for EY2022" released this time, the average reference rental price of commercial housing is RMB 67.5 per square meter per month, which is almost like that of Hong Kong's public rental housing. If transportation is more convenient and more Hong Kong people settle on the mainland, this will alleviate a lot of housing pressure and at the same time can drive economic exchanges between the regions.

#### 4. Conclusion

In general, the 80-year-old Hong Kong public rental housing system has effectively and continuously alleviated the housing pressure on the middle- and lower-income groups, and to a certain extent, promoted equality. Despite the following problems: long waiting time, inconvenience for housing tenants to go to work, and ineffective allocation due to incomplete information, we still believe that this is a problem outside the allocation system and that the existing allocation mechanism is good enough. What the government should do now is to keep supplying housing, designing clever surveys to know the demand for housing in the society, gradually curbing the real estate industry, finding a new economic model, and spreading the pressure on housing through further connectivity in the Guangdong-Hong Kong-Macao Greater Bay Area. At the same time, we should also note that we should always emphasize the function of real estate as a home, rather than pursuing its function as an investment, which leads to irrational exuberance.

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