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Urban Land and Housing Market in the Post-pandemic China: Patterns and Causes

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Abstract: *The Chinese housing market has been widely perceived to be undergoing a depression after the Covid-19 pandemic. Based on qualitative analysis of relevant data and papers, this research indicates that China's housing market is currently facing a significant slump, one that is unprecedented in recent decades, largely due to the cumulative effects of long-standing issues that have been persistently tolerated, proven by the fact that almost all main indicators in the housing sector are worsening. This downturn is expected to pose a severe risk to the entire Chinese economy, with implications extending beyond just the housing market. From the author's perspective, this situation serves as an alarm for the unhealthy financial system and economic operations in China, necessitating immediate action from the Chinese government to build a more resilient economic framework to support the country's long-term development. It is imperative that the government engages in thorough consultation and adopts sound policy measures to handle and navigate the economy through this crisis. The paper evaluated potential consequences of the scenario and analyzed the causes behind, toward the end the paper concludes with a set of policy suggestions aimed at addressing these issues at this critical juncture moment.*

Keywords: *housing market, post-pandemic era, housing price, real estate, domestic demand, China*

1. Introduction

1.1. Research Questions

The research question chosen is “Urban land and housing market in the post-pandemic China: Patterns and Causes”, and based on the meticulous deliberation of the research topic, the research questions to be raised are as follow:

a) What is the overall trend of the housing market change in Chinese mainland after the Covid-19 pandemic?

b) What are the potential consequences of the trend of change?

c) What are the factors that contributed to the formulation of the trend and what may help in improving the housing market sustainability of the country under the circumstance found.

1.2. Study Area

The area that the research focuses on is Chinese mainland.

1.3. Time Period

The research will study the fluctuations in the Chinese housing market after the Covid-19 pandemic.

1.4. Research Method

In light of the complexity of the Chinese housing market and the wide range and great variety of actors and factors involved in the evolvement of it, especially after the COVID-19 pandemic, the research is primarily qualitative for the purpose of capturing a holistic picture of all dimensions, whether quantifiable or not. Meanwhile, qualitative method also allows higher flexibility which help digging deeper into the fundamental evidences and underlying reasons, therefore providing meaningful insight as regard the issue. In particular, literature research will be the main theme of the research paper, including identification, collection and interpretation of past research papers and reports from different

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sources, and conclusions will be reached based on the examination and discussion of such information. However, data statistics from authoritative sources, for example the National Bureau of Statistics of China, are also be taken into account in the analysis to assist better understanding of the trend in the Chinese housing market and the potential causes behind the trend.

1.5. Significance

In academic sense, in recent decades, whether there is a significant real estate market bubble in the Chinese mainland, the size of the bubble, the impact of the real estate market bubble on China's social and economic development and other issues have aroused widespread concern in academic circles [1][2][3][4]. Before and after the epidemic, it can be said to be a major blow and turning point in China's property market to some extent, so that the gradient of house prices tends to flatten, and the price premium is discounted from the epicenter to the surrounding areas and expanded to the whole region[5]. There are disputes on the exact magnitude of the impact the pandemic actually have. The deduction on the possible burst of housing bubbles in the Chinese housing market and overvaluation of the Chinese real estate properties in regards to the economic development, particularly clued in certain case studies on specific regions[6][7], is referenced. Nevertheless, there is a research gap that few of the researches offer a through and comprehensive examination on various aspects of the circumstance of the Chinese housing market in the post-pandemic era. By exploring the trend and the characteristics and root causes of it, this research intends to shed light on the correlational relationship between the current situation in the Chinese housing market and different potential contributing factors in a dialectical pattern, therefore assist in the formulation of effective policy measures to inject fresh impetus into the market and facilitate healthy and sustainable social-economic development of Chinese in the future, avoid falling into the vicious trap of recession.

In a nutshell, the research paper is of proper academic significance and practical policy implication.

2. Description of Trend

2.1. Background

The real estate market of China has long been prosperous and the housing price has been growing steadily before the Covid-19 pandemic, with the nationwide average housing price almost quadrupled in the last two decades, from 2,778.00 yuan per square meter in 2014 to the peak value 10,322.67 yuan per square meter in 2021 (Figure 1), with significant and universal increase in the prices of properties for all purposes of use in between (Table 1). However, along with the booming trend, a question that has been haunting the market and covered by academic researches is whether it is a bubble disguised by false flourishment instead of a trendy that is supported by solid economic foundation. Deductively, some of the speculative bubbles may have burst before the pandemic in certain local markets in China[8], engendering collapse of local housing price and recession of economy, for example in the Hegang city of the northeastern province Heilongjiang. However, prior to the pandemic, it occurred only at the regional level, or more specifically, within cities or even lower administrative levels. Therefore, it can be attributed to the adverse local environment and poor management of the local government, rather than the real estate market downturn.

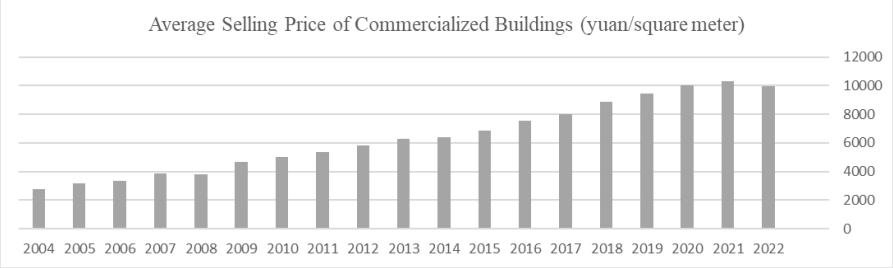

Figure 1. Average selling price of commercialized buildings between 2004 and 2022 (Source: National Data, National Bureau of Statistics of China)[9].

Table 1. Average selling price of commercialized buildings by use between 2014 and 2023 (Source:

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National Data, National Bureau of Statistics of China)[9].

Indicators (yuan/sq.m)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Average Selling Price of Commercialized Buildings	10438.00	10210.00	10546.00	10248.00	9673.00	9045.00	8160.00	7699.00	6932.00	6427.00
Average Selling Price of Commercialized Residential Buildings	10864.00	10608.00	10825.00	10385.00	9667.00	8886.00	7893.00	7433.00	6622.00	6048.00
Average Selling Price of Villas, High-grade Apartments	N/A	N/A	N/A	N/A	17886.00	16252.00	14965.00	15911.00	15157.00	12965.00
Average Selling Price of Commercialized Office Buildings	13781.00	14385.00	14444.00	15697.00	14840.00	14890.00	14019.00	14725.00	13150.00	11983.00
Average Selling Price of Houses for Business Use	10422.00	10097.00	10969.00	10887.00	11170.00	11107.00	10512.00	9917.00	9630.00	9874.00
Average Selling Price of Other Commercialized Buildings	4165.00	4104.00	4675.00	4877.00	5180.00	5445.00	5459.00	4905.00	4888.00	5198.00

After years of growth, as illustrated in the study conducted by Tian et al[10] and reflected in the housing market data as shown in the Figure 1 and Table 1, the Covid-19 pandemic hit the Chinese housing market severely and led the market to drop in macro-level, with those less resilient to the spread of pandemic being more deeply affected. Fims focusing on real estate development was largely impacted in the process, and the negative effect on the volatile small firms that have their development projects concentrate in s specific region, who are actually more fragile to the market changes was even greater than those larger firms which diversified their investment geographically[11]. This is demonstrated in the total number of persons employed in the enterprises for real estate development recorded by the National Bureau of Statistics of China (Figure 2), cut down to the lowest number since 2013 in 2022. Such universal drop that took place in all categories of use simultaneously was unprecedented in the recent decades, marking a turning point in the evolvement of the Chinese housing market.

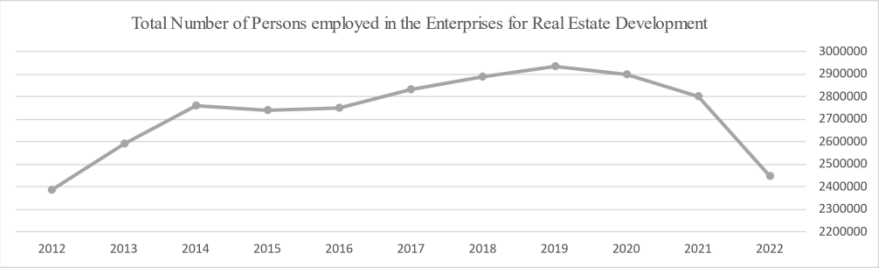

Figure 2. Total number of persons employed in the enterprises for real estate development between 2012 and 2022 (Source: National Data, National Bureau of Statistics of China)[9].

2.2. Current Trend

The overall trend observed in the Chinese housing market since the pandemics can be persuasively deemed as a significant downturn as reflected by the data available, though the exact scale of the change is divided in different indicators.

From the total sale of commercialized buildings sold by use data released by the National Bureau of Statistics of China, it is clear that the figure in all of the categories had been growing steadily in the decade until it abruptly dropped by approximately a quarter from 17,694,56 million yuan in 2021 to 12,965,56 million yuan in the year 2022, and the trend continued into 2023 with same direction but a relatively mild magnitude to 11,662,20 million yuan (Table 2a), while a very similar trend was also witnessed in the data on the total floor space of commercialized buildings sold by use, dropping from 1,714.146 million square meter in 2021 to 1,297.66 million square meter in 2022 and then slide down to 1,117.35 in 2023 (Table 2b). At the same time, it is worth mentioning that the change in residential sales

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is more pronounced than in other categories, which can be explained in part by the more pronounced damage to purchasing power and motivation. In the same period, there is already hint in the data of 2022 that the average price of the properties sold started to step down from the peak seen in the year 2021 (Table 1), marked by an overall decrease from 10,322.67 yuan per square meter in 2022 to 9,991.00 yuan per square meter in 2022.

From these data, we can easily conclude that there is enough evidence to suggest that China's housing market began to brake and become inert in the wake of the COVID-19 pandemic, compared with the previous high tide. For whatever reason, this trend not only shows up in the overall data, but also proves to be true in terms of the purpose of use in almost every building category. The change was so sudden that there was not even significant period of stagnation in the statistical data, turning directly from an upward swing to a plunge.

Table 2a. Total sale of commercialized buildings sold by use between 2014 and 2023 (Source: National Data, National Bureau of Statistics of China)[9].

Indicators (100 million yuan)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total Sale of Commercialized Buildings	116660.90	124720.39	170158.66	162752.25	150335.88	141267.49	126804.48	112385.35	84230.01	74092.97
Total Sale of Commercialized Residential Buildings	103013.19	109583.35	152636.66	145319.73	131727.35	119884.33	105122.66	95010.47	70558.86	60938.80
Total Sale of Villas, High-grade Apartments	N/A	N/A	N/A	N/A	6993.06	7179.90	7098.43	7112.42	5286.00	3950.86
Total Sale of Commercialized Office Buildings	3742.11	4295.10	4459.72	4798.24	5075.46	5991.30	6174.57	5346.06	3687.48	2913.12
Total Sale of Houses for Business Use	6628.31	7298.06	8702.23	8896.85	10041.29	11763.12	12035.51	9703.56	8200.45	8341.42
Total Sale of Other Commercialized Buildings	3277.29	3543.89	4360.05	3737.43	3491.78	3628.74	3471.75	2325.26	1783.21	1899.64

Table 2b. Total floor space of commercialized buildings sold by use between 2014 and 2023 (Source: National Data, National Bureau of Statistics of China)[9].

Indicators (10000 sq.m)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Total Floor Space of Commercialized Buildings	111761.62	122154.48	161354.02	158819.29	155415.79	156188.72	155400.38	145972.62	121512.12	115291.30
Total Floor Space of Commercialized Residential Buildings	94818.89	103305.77	141006.67	139926.57	136265.02	134910.12	133187.10	127816.43	106544.46	100757.54
Total Floor Space of Villas, High-grade Apartments	N/A	N/A	N/A	N/A	3909.73	4417.77	4743.44	4470.00	3487.40	3047.35
Total Floor Space of Commercialized Office Buildings	2715.38	2985.91	3087.61	3056.74	3420.18	4023.75	4404.58	3630.55	2804.08	2431.12
Total Floor Space of Houses for Business Use	6359.64	7228.28	7933.82	8172.05	8989.53	10590.60	11449.28	9784.81	8515.38	8448.16
Total Floor Space of Other Commercialized Buildings	7867.71	8634.53	9325.92	7663.94	6741.06	6664.25	6359.43	4740.82	3648.19	3654.48

Meanwhile, the supply side is also quite sensitive and has made immediate response to the change in the market condition by decreasing the space of building started and investment into the real estate

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development. In aggregate term, the overall floor space started shrink from 1,988.95 million square meter in 2021 to 1,198.68 million square meter in 2022, and continued to drop to 953.76 million square meter in 2023 (Table 3a). Coherently, the investment actually completed in 2022 stood only at 1,269,712.00 million yuan, compared to the 13,627,520.00 million yuan in 2021, and the trend was also continued to 2023, declining to 11,091,288.00 yuan (Table 3b). Specifically, the floor space started of residential buildings again witnessed rather large degree of downturn, from 1,463.79 square meter in 2021 to 692.86 square meter in 2023, more than halved in only two years. The scenario is immensely shocking when compared with the steady increase in the years before 2022, indicating the property developers lack of confidence on the future of the market recovery of the residential buildings. That is even more convincing in from the perspective of the supply side due to the property of the housing supply that the investment and construction will not generate housing supply in the next day, but is linked to a relatively more distant future. To spell it out, that can be interpreted as the real estate developers prone to project that the market demand is very unlikely to recover in the short term as far as they can tell.

Table 3a. Total floor space of buildings started this year by enterprises of real estate development by use between 2014 and 2023 (Source: National Data, National Bureau of Statistics of China)[9].

Indicators (10000 sq.m)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Floor Space of Buildings Started	95957.96	119943.95	198895.05	224433.13	227153.58	209537.16	178653.77	166928.13	154453.68	179592.49
Floor Space of Buildings Started of Commercialized Residential Buildings	69669.14	87620.71	146378.56	164328.53	167463.43	153485.36	128097.78	115910.60	106651.30	124877.00
Floor Space of Buildings Started of Villas, High-grade Apartments	N/A	N/A	N/A	N/A	4227.34	5469.96	4282.68	3662.14	3318.41	4275.01
Floor Space of Buildings Started of Commercialized Office Buildings	2619.80	3175.20	5223.89	6603.71	7083.59	6101.51	6139.66	6415.29	6569.12	7349.10
Floor Space of Buildings Started of Houses for Business Use	6493.42	8120.50	14105.53	18012.32	18936.28	19995.39	20483.93	22316.63	22530.29	25047.73
Floor Space of Buildings Started of Other Commercialized Buildings	6493.42	8120.50	14105.53	18012.32	18936.28	19995.39	20483.93	22316.63	22530.29	25047.73

Table 3b. Total investment actually completed by enterprises for real estate development by use between 2014 and 2023 (Source: National Data, National Bureau of Statistics of China)[9].

Indicators (100 million yuan)	2023	2022	2021	2020	2019	2018	2017	2016	2015	2014
Investment Actually Completed	112142.25	123847.80	137633.32	132013.68	123610.14	112740.23	103427.38	96900.01	90911.49	90247.21
Investment Actually Completed of Commercialized Residential Buildings	84961.22	93420.11	103281.53	97122.10	90462.96	79643.61	70683.79	64809.07	61056.93	60950.57
Investment Actually Completed of Villas, High-grade Apartments	N/A	N/A	N/A	N/A	3875.71	4430.41	4015.44	3478.74	3481.37	3844.72

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Investment Actually Completed of Commercialized Office Buildings	4571.05	5034.77	5684.84	6179.88	5875.28	5725.76	6459.16	6258.18	5970.83	5452.85
Investment Actually Completed of Houses for Business Use	8067.20	9722.17	11363.40	11952.40	12111.72	13003.55	14396.79	14634.57	13572.49	13390.06
Investment Actually Completed of Other Commercialized Buildings	14542.79	15670.74	17303.55	16759.30	15160.19	14367.31	11887.63	11198.19	10311.24	10453.72

Moreover, when zoom in to the details of the data reported in the Table 2 and Table 3, people may argue that there had already been a number of fluctuations in the Chinese housing market far before the Covid-19 pandemic, for example, the average selling price of the commercialized office buildings fell between 2016 and 2017 from 14,375.57 yuan per square meter to 13,620.46 yuan per square meter, and the floor space started for houses for business use started to fall since 2015, nevertheless, those fluctuations only took place in certain types of buildings and usually in a short period and small scope, while the change since the pandemic has been a unprecedented downward trend consistently seen in almost all categories in a very significant way. This can prove that the Chinese housing market is truly experiencing a depression rather than a regular market adjustment period.

To summarize, the change in the Chinese housing market is seems rather gloomy and pessimistic, with most of the key indicators available on a fairly negative pattern of change since the Covid-19 pandemic and no clue of a reversion has been seen from the data, and the downturn seems to haven' been seen in the recent years even though the exact size of the depression varies across the categories of buildings and time periods.

3. Assessment and Explanation

3.1. Consequences of the Trend

As suggested by Deng et al[12], due to the fact that the saving and investment instruments that are available to the general Chinese population is still very limited and they therefore tend to store a considerable portion of their wealth in real estate, in other words, the housing market, the fluctuations in the Chinese housing market have overwhelming impact on their personal wealth and consequently their purchasing power. To be more specific, when the housing price fall, the total wealth of those households with homes will shrink accordingly to a very large extent as long as a major portion of their wealth are store in terms of their housing. With total wealth shrinking, those households will on average inevitable cut their expenditure on unnecessary consumption goods and services, and the market confidence may be hurt thereby. In this sense, the negative wealth effect caused by the sharp drop taking place in the Chinese housing market is projected to pose a long and broad threat to the demand, not only in the housing market, but the aggregate domestic demand. Consequently, if the spillover effect of the housing market jeopardizes the whole, which is seems happening, it will very likely to drag the growth of the nation's economy development into a vicious trap.

Gyourko et al[13] explained the Chinese government's high reliance on the land finance system and described the system as "a key contributor to the economic miracle over recent decades", with profits earned from land sale constituted over 40% of budgetary income of the local governments and also being the fundamental for the Local government Financing Vehicle (LGFV). The successful of the system in fueling the past economic development depends on three main preconditions: the institutional arrangement make sure local governments can acquire land-use right (LUR) at a relatively low cost, a rising trend in urban land prices and local governments' spending activities that further fuel future urban land price increases. However, the efficacy and sustainability of land finance system and LGFV have already come into question since 2017 when the market started to adjust against the potentially misprices assets and gradient of housing prices change flatten. Even before the pandemic, as the central government pinned down the policy orientation to contain the reliance on land finance represented by the "housings are for living, not for speculation statement and the housing market started to cool down, the local governments incline to not be able to fulfill the requirement, and the system break down was initiated.

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Now as the land market face obstacles and housing price dive, the overreliance and overutilization of the source of profit would possibly induce a systematical risk on the local government's funding structure, which will be further exacerbated by the accumulation and inability to solve the local government debt problem that have been widely recognized and assumed to be risky but tolerated by the central government so far[14], if there is no immediate and effective replacement.

Moreover, the investment-oriented system adopted by the Chinese government has provided the impetus for economic growth, thanks to the reinvestment of income generated from land transactions into the development sector. It requires sustained borrowing to support this process, which partly explains the accumulation of government debt [15]. Likewise, motivated by the decentralized government financial system and the commercialized land system, investment made by local government has been pivotal in catalyzing the accelerating urbanization process in the past[16][17]. Now as the political and economic incentive and material resources that can be derived from land market shrink, the overall economic development and urbanization are also supposed to slow down under insufficient domestic demand resulted by the decrease in investment and the multiplier effect thereafter.

3.2. Causes of the Trend

Glaeser et al[18] concluded in their research paper that "In many respects, China looks like a classic housing bubble. Housing prices have soared. New construction is enormous. Vacancies are large and pervasive".

One fundamental reason of the trend may be fairly obvious, which just lie in the affordability issue of the properties when considering the average income of the Chinese population. The nationwide average disposable income of China in 2023 only stands at 39,218 yuan of which the urban value stands at 51,821 yuan and the rural value stands at 21961 yuan according to the National Bureau of Statistics. At the same time, according to the agency's data, the national per capita expenditure is 26,796 yuan/year. Combined with the income data, it can be calculated that the average annual savings of China citizens is 12,422 yuan. In other words, buy a house of 100 square meters. A family with two working members takes an average of 40.21 years to afford it. The latest average house price in 2022 is 9,991 yuan per square meter, as shown in Figure 1c. In this sense, complaints about overpriced housing remain valid, especially as new rural migrants move into urban areas in increasing numbers, reaching 286.52 million by 2023, who may want to buy housing at the higher wages they earn in urban areas (Figure 3).

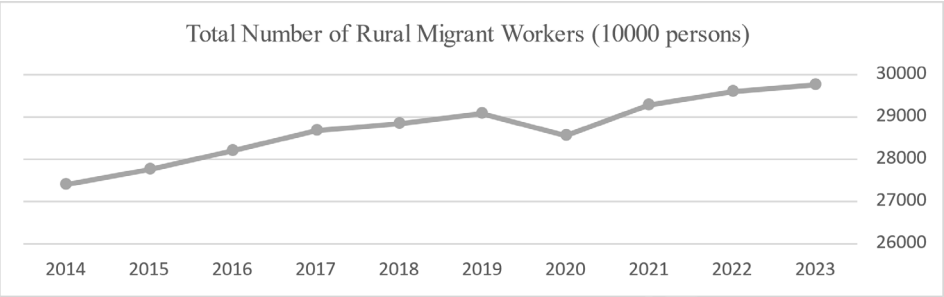

Figure 3. Total number of rural migrant workers between 2014 and 2023 (Source: National Data, National Bureau of Statistics of China)[9].

Wu et al[19] argued that the commodified housings have long been regarded as a channel for investment that offers return though its appreciation that is far higher than the interest of bank deposit from the perspective of the Chinese general public, playing a crucial role in the credit creation and thus the rapid development of the Chinese economy in the recent decades. The state in the past relied on the housing market financialization to create liquidity for economic development by converting the household's saving into the funds deployed by the central and local governments that are used to finance new development projects planned. While providing revenue for development, this phenomenon poses systematic risk to the fund-raising system of Chines government. As the Chinese housing market sliding into potential decline, it will be much more difficult in the future for Chinese governments at whatever levels to raise fund through land finance. At the same time, the situation may become even worse for the Chinese government on the debt repayment capability, particularly the local government, because of the disruption in their income through the real estate market as a result of the housing market downturn, and the debt problem may pose further threats to the government fund-raising capability[20][21].

Moreover, Wu [22] points out that it is well known that local governments rely on land finance for

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public revenue, or more accurately, land-based public finance. The monopoly of local governments in controlling and distributing primary land supply, coupled with the emphasis on urbanization and economic development throughout the political organizational structure of government, is closely linked to the promotion of local officials. Local governments should therefore have a natural tendency to promote speculation on local land in order to extract higher revenues from it. If there are sufficient competition or supervision, even though the tendency exists, it is hard for the local governments to actually carry out and achieve overpricing of the local land resources, but unfortunately, owing to the absence of liberal market institution and rigorous financial regulation, it can be deemed to be viable for the local governments to manipulate the land market in sake of profit. Under the distorted land management system and underregulated local government behavior, it is perfectly perceivable that there is very likely to be endeavor of the local governments in the inflation of housing before, which risk burst and drop like what is happening recently. In this sense, those speculating local governments and their affiliated entities that issue the municipal investment bonds are also supposed to be held responsible for the current situation in the housing market.

As revealed by the study of by Tan et al[23], the housing vacancy rate (HVR) in 49 Chinese cities investigated stood at the range between 15.0% and 24.3%, of which the HVR in the first-tier, new first-tier and second-tier cities was 19.9%, 20.5% and 21.3% respectively. Comparing the circumstance indicated by the study with the data of the major OECD countries (Figure 4), it is noteworthy even the highest in the set, namely Spain, Japan and Portugal, reported HVR lower than 15.0%, the lowest value in the Chinese cities, and other countries including Austria, United States and France reported values smaller than 10.0%. The sharp contrast between China and OECD countries shows to some extent that the current construction of housing units has far exceeded the actual needs of China citizens. The excessive supply associated with overpriced housing in many cities in China has undermined the basis for a stable demand-supply system in a sustainable market economy.

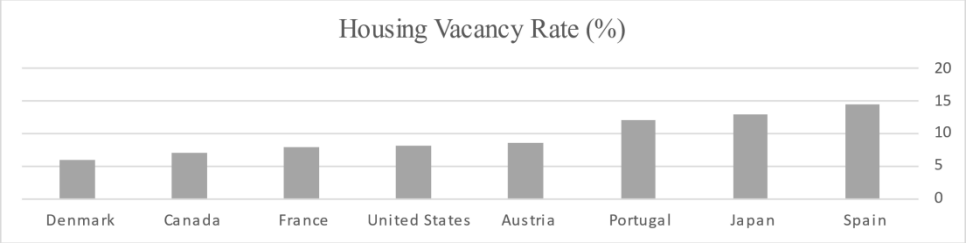

Figure 4. The housing vacancy rate in major OECD countries in 2022 or latest year available (Source: Affordable Housing Database, Organization for Economic Cooperation and Development)[24].

Furthermore, according to the research of Chen and Sun[25], the rent-to-sale ratio has strong implication for the housing price variation. In the booming cycle, housing price changes and rent-to-sale ratio changes show a negative correlation, meaning that housing price increases are accompanied by a deterioration in the rent-to-sale ratio, and the economic basis of housing price growth are gradually becoming fragile. And in the downturn cycle, house price changes and sales ratio changes show a positive correlation. The more serious the cumulative deterioration of rent-to-sales ratio, the greater the decline in house prices. On the contrary, the more obvious the improvement in sales ratio, the stronger the resilience of house prices to the downturn. The ratio in China has long been debated and can be regarded as problematic in some sense based on the fact that the time period to retrieve the fund spent on purchasing the properties has become ultra-long, though the exact length varies across regions[26]. Therefore, the disparity between rent and sale may also be a methodologically sound potential contributing factor to the downturn in the Chinese housing market.

Another potential contributing factor may come from the change in marriage market. According to Yu and Xie[27], it has been observed the first marriage age in China for both male and female has increased, which reflects a tendency of the younger generation to defer or even avoid marriage, while Wei et al[28] found that the motivation to get competitive edge in the Chinese marriage market which is stepping into substantial gender imbalance may be one of the explanation for the housing market that had been expanding more quickly than the economic development. Combining the two arguments together, if as supposed, the Chinese younger generation are not that interested in getting marriage anymore for whatever reasons, they are leaving the fiercely competing marriage market and therefore become less motivated to purchase more expensive houses, constituting an explanation for part of the decreased housing market downturn.

Additionally, from a long-term perspective, the situation may also have correlation or causation

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relationship with the demographical change in China in the recent years. The fertility rate of China, after long period of stagnation since the 1990s, started to decline again after 2015, with the figure dropped to 1.2 births per woman in the year 2022 according to the data of the World Bank Group Gender Data Portal (Figure 5), which is far below the estimated replacement level of approximately 2.1births per woman, and ranked at the far bottom of the countries with data available. Similarly, the total population of China for the first time decline in the recent decades in the year 2023, which can be easily seen on the Figure 6 that it is following similar pattern as the change in total sale of commercialized building sold based on the data collected from the National Bureau of Statistics of China (Figure 6). Though we can not directly conclude with the crude data that the drop in fertility rate and population directly caused the downturn in housing market, but there is possibility that there are causation or correlation relationship to a certain degree between them logically as when other variables are controlled, when population decline, the demand of housing will naturally decline parallelly.

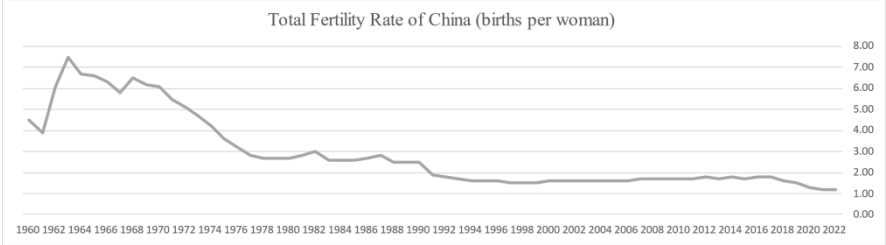

Figure 5. Total fertility rate of China between 1960 and 2022 (Source: Gender Data Portal, World Bank Group)[29].

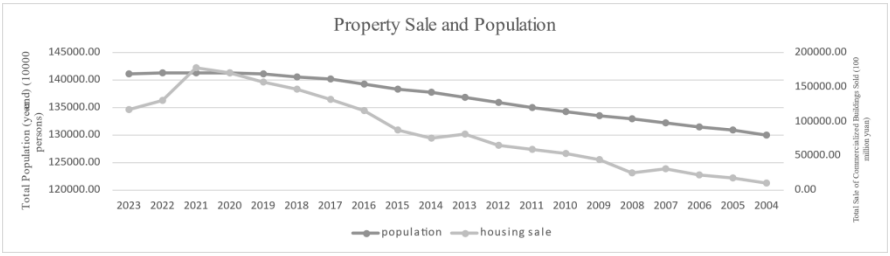

Figure 6. Total population at the end of year and total sale of commercialized buildings sold between 2004 and 2023 (Source: National Bureau of Statistics of China)[9].

4. Policy Implications

One potentially feasible policy solution to the scenario so far is for the central government of China to take actions to gradually purchase the excessive housing inventory in the market and convert them into public housing projects comparable to those of Singapore, which can be regarded as an effective practice and example in the history of public housing provision[30], therefore increase market demand and maintain a relatively stable housing market system to avoid abrupt changes that strike market confidence heavily.

Another policy measure that may help to improve the situation is to provide bank loan extension and restructuring for the real estate developers who are stuck in the crisis. By doing so, the burden on the developers can be alleviated and the companies then won't rush to dump their inventory to the market in a vicious competition that hurt all the participants for the purpose of securing liquidity. That can be understand as a prisoner's dilemma[31], which means if all the companies dump their inventory to the market in a aim to ensure sufficient budget, they may end up with only sell their property at a very low price, by contrast if they can release their inventory gradually together in a patient manner, they can all get higher return by selling the same property (Figure 7). The Government can play the role of mediator in such cases. On the one hand, it can relieve the financial pressure of enterprises and ensure that they do not go bankrupt in between. On the other hand, it can coordinate the interaction of developers, guide their behavior to achieve Pareto efficiency, and avoid planning only for the excessive profits of their own companies.

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Company 2 / Company 1	**Dump**	**Not Dump**
Dump	Price is L for both companies	Price is H + n for company 1 and L – n for company 2
Not Dump	Price is H + n for company 2 and L – n for company 1	Price is H for both Companies

Note: H, L and n are all positive numbers, where H is larger than L (Source: Original diagram made by the author of the paper).

Figure 7. Illustration of the prisoner's dilemma faced by the Chinese developers.

Furthermore, price discrimination can be employed to ameliorate the situation. Although the measure is accused of being unfair to those who have to pay higher prices for the same goods, it may be an effective measure to cope with insufficient demand. Specifically, the government can provide different packages of subsidies and support measures for home buyers, especially for families still living in rental housing, such as migrant workers working in large cities to maintain their livelihoods, according to income levels and household wealth. By doing so, the problem of unaffordability and income disparity can be ameliorated to a certain degree, and households would be more likely to purchase house in the period of depression with the subsidies, as even if the houses they buy depreciated further in the future, it won't incur significant loss as they have already been paying a lower price with the subsidy. Meanwhile, this act may also work in boosting the domestic market confidence and consumption willingness as it could take part of the burden of housing off the working class, and in this sense the spillover effect of the policy may benefit the whole domestic economy at the same time.

Last but not least, it is still important for the government to accommodate to the new trend in the housing market, for the reason that even if the trendy can be reversed and the government successfully get the nation's economy out of the trap, the over reliance on the land finance has been widely reckoned as unsustainable and unhealthy and the appreciation of real estate like the past decades can hardly be reproduced in the future considering the already high housing price of China even in the depression. In this term, the government need to steer the economy to a new path and look for new impetus to drive the development of the Chinese economy. In other words, it is now even more crucial for the government to find new industries with high economic value added to replace the traditional source of income, land. These industries may include biotech, communication artificial intelligence, electric vehicle manufacture, etc. Only by occupying an advantageous position in those industries with high value added, the country's economy can continue to prosper in the long run.

5. Conclusions

To encapsulate, the research fins that the housing market of China is currently experiencing a significant downturn that haven't been seen in decades partly due to the accumulation of effect generated by the deep-rooted and persistent problems tolerated. With most of the indicators deteriorating in almost all aspects in the housing market, including average price of property, investment actually completed, floor space started, etc., the change is projected to pose tremendous and serious threat on the whole Chinese economy, not limited to the housing market itself. Based on the result findings and the potential causes proposed, a range of policy suggestions has been formulated toward the end of this paper. This circumstance, in the view of the author, can be illustrated as a signaling to the unhealthy finance system and operation of the Chinese economy, and it is urging the Chinese government to take action to establish a more robust economic system in support of the long-term growth of the nation. At this challenging moment, only by consulting meticulously and making rational policy measures, the government can guide the economy through the crisis.

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