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The Impact of Housing Rental Market Development on Household Consumption and Its Mechanism: Evidence from 69 Large- and Medium-Sized Cities in China

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Abstract: In recent years, to address the sluggish domestic demand caused by the epidemic, consumption has declined. The General Office of the State Council has introduced a series of policy measures around the improvement and development of the housing rental market. The paper empirically investigates the influence mechanism of the development of the housing rental market on residents' consumption using relevant data from the 2010–2019 *City Statistical Yearbook* and the Xi Tai database. It is found that the increase in the scale of housing rentals significantly raises the level of residents' consumption. Specifically, the increase in the scale of housing rentals can increase government expenditure, firm up residents' consumption confidence, and thus raise residents' consumption level; urban labor inflow plays a negative moderating role in the development of the housing rental market to promote residents' consumption level. The heterogeneity study shows that the improvement and development of the housing rental market in the eastern coastal region has a more significant role in promoting residents' consumption level, while it is not significant for residents' consumption level in the central and western regions. The study suggests that to release the vitality of residents' consumption, government spending should be increased, the impact of inflowing labor on the labor market should be reduced, and the development of the housing rental market should be improved and nurtured.

Keywords: housing rental market; residential consumption; government spending; labor inflow

1. Introduction

Consumption, investment, and exports are the troika driving China's economic growth. In 2021, final consumption expenditure, gross capital formation, and net exports of goods and services contributed 5.3, 1.1, and 1.7 percentage points to economic growth, respectively, contributing 65.4, 13.7, and 20.9% to economic growth. This shows that consumption plays an indispensable role in China's economic growth. In order to accelerate the cracking down of the most direct, prominent, and urgent institutional barriers that restrict the consumption of residents and enhance the fundamental role of consumption in economic development, on 24 September 2018, the General Office of the State Council issued the "Implementation Plan for Improving the Institutional Mechanism for Promoting Consumption (2018–2020)", put forward six key tasks to be implemented from 2018 to 2020. Among them, in improving the policy system to promote the upgrading of the physical consumption structure, it is proposed that the housing rental market should be vigorously developed, and the introduction of urban housing security regulations, housing rental regulations, and housing sales management regulations should be accelerated, which shows that the development of the housing rental market is of great significance to residents' consumption. Due to the impact of the new coronavirus, China's economic growth rate has plummeted from 6.1% in late 2019 to 2.3% in 2020. In order to reinvigorate consumption, on 20 April 2022, the General Office of the State Council issued "Opinions of the General Office of the

State Council on Further Releasing Consumption Potential to Promote Sustained Recovery of Consumption", which proposed 20 key measures in five major areas to promote the sustained recovery of consumption, of which Article 12 emphasizes the need to improve long-term rental housing policies, expand the supply of guaranteed rental housing, and support depositors to withdraw housing provident funds for rentals. The policy once again highlights the strategic position of the improvement and development of the housing rental market in raising the consumption level of residents. Is the development of the housing rental market able to promote residents' consumption? Is it possible to test it empirically in a statistical sense?

It has been shown that rent decreases can significantly raise residents' consumption in the short run and can reduce consumption inequality [1]; however, other scholars argue that rising rents exhibit wealth effects and boost resident consumption, and that industrial structure upgrading positively contributes to the above mechanism [2]. Although scholars have explored the impact of rental characteristics of the housing rental market on residents' consumption, the views have not yet reached a consensus and the mechanisms of their influence still needs to be added; therefore, the main question of this paper is whether the development of the housing rental market has a facilitating effect on residents' consumption and its regional heterogeneity, and what are the mechanisms by which the development of the housing rental market affects residents' consumption?

Based on the above background and discussion, this paper uses panel data from the 2010–2019 City Statistical Yearbook and the Xi Tai database to study the impact of the development of the housing rental market on residents' consumption and its impact mechanism. To address the endogeneity issue, this paper uses the share of rental households in other cities in the same province and the lagged one-period rental size as the instrumental variables of rental size. The main findings of this paper are the development of the housing rental market has a positive contribution to residential consumption, and the positive contribution is stronger in cities with a better economic development level in the east, government expenditure is a mediating variable for the development of the housing rental market to promote the residential consumption level, and labor inflow has a negative moderating effect on the housing rental market to promote residential consumption.

This paper has the following contributions and innovations: First, it empirically investigates the positive contribution of the level of development of the housing rental market to the level of residential consumption and its regional heterogeneity, providing evidence on related policies. Second, it provides a new influence mechanism and empirically examines the mediating role of government expenditure as a mediating variable in the development of the housing rental market to raise the level of residential consumption. Third, the moderating role of labor inflow in the development of the housing rental market affecting residential consumption is systematically examined.

2. Literature Review

As one of the troikas driving economic growth, residential consumption has long been a hot topic of academic research. Macroeconomic policies, urban characteristics, household assets, and individual consumption preferences are all important factors that influence residential consumption. Many scholars put the research perspective at the household and individual level and conclude that factors such as labor supply, life cycle, happiness, and social security can have a significant impact on the total and structure of consumption [3–5]. On macroeconomic policies, scholars point out that fiscal, tax, industrial, and investment policies can have an impact on the consumption of residents [6]. Robert J. Barro concluded through theoretical analysis that fiscal expenditure has a positive impact on household consumption [7]. Scholars such as Bill Dupor demonstrate how the addition of nominal wage rigidity to a standard, closed economic sticky price model creates, by itself, a mechanism whereby an increase in government spending causes an increase in consumption [8]. Kuncoro uses the Almost Ideal Demand System (AIDS) model to analyze the impact of government spending on household consumption, investment,

and imports, and finds that there is a crowding-out effect of government spending on household consumption, with the lowest elasticity of government spending relative to income and the highest elasticity for investment [9]. In addition, in terms of heterogeneity studies, the impact of local fiscal spending on residential consumption is generally lower in regions with high levels of economic development than in regions with low levels of economic development [10]. Bachmann argues that an increase in government spending will firm up consumer confidence, which leads to a sustained increase in consumption, especially in times of economic recession, and that an increase in government spending can boost productivity [11]. In addition, some scholars argue that certain factors in the labor and housing markets in urban characteristics may be the source of changes in residential consumption. For local residents, labor inflow may compress local residents' consumption by reducing their income, Laamanen found that an increase in the labor supply may generate negative externalities in the local labor market [12]. When one group of individuals increases their labor supply and jobs, other individuals may be displaced as a result. In other words, labor inflows may lead to higher work intensity and lower wages. The role and mechanisms of certain factors in the housing purchase and sale market on household consumption are relatively well researched, with some scholars arguing that rising house prices imply an increase in own wealth, which in turn promotes higher consumption and economic improvement [13–15]. While some scholars hold a different view, they argue that rising house prices increase the cost of buying houses for investors and rents for tenants, instead reducing consumption levels [16,17]. Browning Martin found no significant effect of housing wealth on residential consumption using Danish population data [18]. Different scholars' studies have reached different conclusions.

The housing market is composed of two parts, the housing sale market and the housing rental market, and the housing sale market has been more abundantly studied on residential consumption. So, does the housing rental market have an impact on residents' consumption? In recent years, scholars have begun to shift their research perspective to the relationship between the housing rental market and the consumption market. Studies have shown that the "housing investment effect" of falling rents stimulating consumption or rising rents squeezing consumption exists for both homeownership and homeless households [19–21]. Different scholars have reached conflicting conclusions in the impact of rent changes on residents' consumption. Sun Weizeng used (China Household Tracking Survey) CFPS data to study for the first time the impact of rent changes on residents' consumption from the perspectives of aggregate effect, categorical effect, consumption structure, and consumption inequality [1]. The study shows that a decrease in rent can significantly raise residents' consumption in the short run and can reduce consumption inequality. However, an empirical study carried out using provincial panel data found that rent increases exhibit wealth effects and promote residential consumption and that industrial structure upgrading has a positive contribution to the above mechanism [2].

In sum, scholars have studied the issue of residents' consumption at different levels from macroeconomic policies to individual consumption preferences. In particular, in terms of the influence of housing sales and the purchase market on residents' consumption, scholars have conducted more in-depth studies on its influence mechanism, heterogeneity, etc. However, the housing market includes two parts: housing sales and the purchase market and the housing rental market, and the study of the housing rental market on the consumption market is still lacking, and some scholars have studied the influence of rent changes on residents' consumption, but the conclusions obtained are contradictory. In terms of the mechanism of housing rental, some scholars have studied the impact of rent changes on residents' consumption, but the conclusions obtained are contradictory, and the mechanism of the housing rental market affecting residents' consumption still needs to be added. Based on this, the main questions for this paper are the following: Does the development of the housing rental market have an impact on residents' consumption levels and are there any regional differences? How does the development of the housing rental market affect residents' consumption level?

3. Theoretical Mechanism

Housing can be considered as a commodity, and all other things being equal, if the supply of the commodity increases (or decreases), the supply curve of the commodity shifts right (or left), and the price of the commodity decreases (or increases). When the scale of renting in a city grows to a certain level and continues to increase, the rent level in that city will decrease due to market-based competition. For people who solve their housing problems by renting, the decrease in rent level will allow these people to spend more of their income on consumption. For landlords, lower rents will make them spend less as they have less return on their housing investments. In the private rental housing market, landlords and tenants correspond one-to-one, and the decrease in landlords' income corresponds to the decrease in tenants' rent. The relative size of the "rental income effect" of landlords and the "consumption substitution effect" of tenants depends on their consumption income elasticity [1]. According to the law of diminishing marginal utility in economics, tenants are usually more willing to use the reduction in rent for consumption to make themselves more useful, i.e., tenants' consumption income elasticity is greater, and the total consumption of tenants and landlords will increase. The development of the housing rental market can also curb the rise of house prices [22], reducing the crowding-out effect of house prices on residents' consumption, and increasing liquid assets in the hands of residents and releasing their consumption dynamics. In sum, this paper concludes that the housing rental market can raise residents' consumption level.

Hypothesis 1 (H1). *The development of the housing rental market can raise the consumption level of residents.*

Since the 12th Five-Year Plan put forward the idea of restructuring China's existing housing system, the development of the housing rental market has received great attention from the government, and some cities have set up special funds to support the development of the housing rental market. For example, the Beijing Municipal Housing and Urban–Rural Development Commission issued a document entitled "Notice of the Beijing Municipal Bureau of Finance on the Issuance of Interim Measures for the Management of Special Funds for the Development of the Housing Rental Market in Beijing", and Hangzhou, Xiamen, Jinan, Wuhan, Guangzhou, Shenzhen, Chongqing, Chengdu, and other cities have also issued documents setting up special funds for the development of the housing rental market. There is no doubt that the development of the housing rental market has increased the government's financial expenditure. The study shows that increased fiscal spending has a significant positive effect on household consumption, because fiscal spending can strengthen residents' confidence in consumption and thus stimulate their consumption dynamics [11]. The increase in government spending on housing rental market development shows the government's attitude and determination to strongly support the development of the housing rental market, giving residents the right to choose their living style, releasing the financial pressure on the housing sale and purchase market, and daring residents to consume. Therefore, the development of the housing rental market can influence residents' consumption level through government spending.

Hypothesis 2 (H2). *The development of the housing rental market can increase government spending, which in turn can raise the consumption level of residents.*

The development of the housing rental market has led to the solution of the housing problem of the incoming labor force, and the urban labor force inflow has implications for the consumption of both the incoming labor force itself and the local residents. For the incoming labor force, urban migration leads to a change in its consumption structure, increasing its consumption in recreation and health care and decreasing its consumption in housing and food. For local residents, inflowing labor can harm the local labor market, increase competition in the local labor market, and reduce residents' wage income [12]. The

proportion of inflowing labor in the total urban population is relatively low, and inflowing labor is still dominated by the squeezing effect of inflowing labor on the labor market, i.e., inflowing labor can intensify local labor market competition, lower residents' wages, and thus compress residents' consumption. Therefore, urban labor inflow has a negative moderating role in the impact of the development of the housing rental market to promote resident consumption.

Hypothesis 3 (H3). *Labor inflow has a negative moderating effect in the impact of the development of the housing rental market to promote residential consumption.*

4. Empirical Evidence

4.1. Data Sources

The geographical administrative division of China operates at provincial, municipal, and county levels. The sample data at the provincial level are too wide geographically and vary in economic and political culture from city to city, while the sample data at the county level are too small and the lease size is low, making the data difficult to obtain. Therefore, the sample at the municipal level was selected for the study. China's housing rental market is still in the developing stage, and the rental scale in some central and western cities with poor economic development levels is extremely small, and the economic benefits brought by the housing rental market and the percentage of residents' consumption are extremely low. In addition, based on the availability of rental scale data, this paper selects 69 large- and medium-sized cities as the research sample (the data of the *Dali Statistical Yearbook* is more seriously missing, so these data are excluded). Academic research has a strong timeliness, so a research sample of the last 10 years should have been selected; however, due to the impact of the epidemic, the time range of 2010–2019 was selected in order to prevent the interference of liquidity restrictions in this study. The number of housing rental transaction units was obtained from the Xi Tai database, which is the largest property database in China. Data on total retail sales of consumer goods, population (household and resident population), GDP, per capita disposable income, house prices, health care level, and human capital were obtained from the *China Statistical Yearbook* 2011–2020.

4.2. Model Setting and Key Variable Selection

The empirical model of this paper is set up as follows:

$$y_{it} = \beta_0 + \beta_1 \ln RMS_{it} + \beta_2 \ln HP_{it} + \beta_3 X_{it} + c_i + w_t + \varepsilon \tag{1}$$

The explanatory variable y_{it} denotes the indicator of consumption level of residents in city i at year t. $\ln RMS_{it}$ and $\ln HP_{it}$ denote the level of housing rental market development and house price level of city i at year t. X_{it} denotes the city characteristics of sample i at year t, including population, GDP, income level, health care level, and human capital level, as control variables in the empirical model. c_i denotes the city fixed effects and w_t denotes the year fixed effects.

The core explanatory variable of this paper's study is the level of residential consumption, which we measure using the total retail sales of consumer goods after deflating the consumer price index. The definitions and descriptive statistics of each variable are given in Tables 1 and 2.

Table 1. Variable definition and design.

Variables	Variable Symbols	Variable Name	Variable Design
Explained variables	Consumption	Consumption level	Logarithm of total retail sales of consumer goods (100 million yuan) after the adjustment of the consumer price index
Core explanatory variables	RMS	Housing rental market size	The number of rental housing units (sets) takes logarithm
Adjusting variables	FP	Floating population	Difference between permanent population and registered population (tens of millions)
Intermediary variable	GE	Government expenditure	The logarithm of general government budget expenditures
control variable	Population	population	The logarithm of total population (10,000) at the end of the year
	ED	Level of economic development	The logarithm of GDP (billion yuan) after the GDP index is deflated
	Income	Income	The logarithm of per capita disposable income
	HP	Housing price	The ratio of residential commercial housing sales and residential commercial housing sales area after the adjustment of the consumer price index is logarithm
	ML	Medical level	The logarithm of the number of beds in a hospital or health center
	HR	Human capital level	Number of college students or above/permanent resident population of the city

Table 2. Descriptive statistics of each variable.

Variables	(1) N	(2) Mean	(3) sd	(4) min	(5) max
Consumption	690	7.120	0.979	4.154	9.430
RMS	690	11.28	1.391	7.388	14.70
FP	690	75.01	205.0	−418.5	1,028
GE	690	6.227	0.874	3.980	9.030
Population	690	6.280	0.623	4.043	8.136
ED	690	7.733	0.888	5.490	9.934
Income	690	10.23	0.756	4.625	11.21
HP	690	8.683	0.532	7.640	10.71
ML	690	10.25	0.688	7.657	12.09
HR	690	3.767	2.853	0.311	12.76

4.3. Endogeneity Issues

There are two main endogeneity issues in the empirical study of this paper. First, the development of the housing rental market not only directly affects urban residents' consumption levels, but in turn, residents' consumption levels crowd out their housing consumption expenditures, thus affecting the development of the housing rental market, i.e., there may be a reverse causality problem. Second, there may be other urban characteristics that affect residents' consumption levels but are not included in the empirical model in this paper, i.e., the missing variable problem. In order to solve the above endogeneity problem, first, this paper uses the city's one-period lagged lease size as an instrumental variable to alleviate the endogeneity problem. Second, this paper refers to Chen Zhuo's method [23]; the mean value of the share of housing rentals in other cities in the province where the city is located within the sample is selected as the instrumental variable of the city's rental size to alleviate the endogeneity problem. The reason for using this mean value as an

instrumental variable is that cities in the same province are highly correlated in terms of politics, economy, and culture, and the development of the rental market is interrelated, which has the requirement of correlation; in addition, the share of the housing rental market in other cities in the province does not have much correlation with the consumption of residents in that city, which satisfies the requirement of exogeneity.

4.4. Empirical Results

The first column in Table 3 shows the results of the benchmark regression of the scale of leasing on the level of residential consumption, and the second column shows the results of the robustness test. The impact of the development of the housing rental market on residential consumption is strongly related to the degree of policy support, and the impact of housing leasing on residential consumption may be amplified if the national support for the housing rental market in that city is strong. Therefore, to avoid this effect, this paper conducts regressions after excluding the first 12 housing rental pilot cities in 2017, and the regression results are consistent with the baseline regression results. R-squared of the empirical result is 0.8725, indicating a good goodness of fit, indicating that the model has a strong ability to interpret data. According to the regression results in the first column, controlling for population, GDP, income level, house price, medical level, and human capital level, the housing rental scale is significantly positive at least at a 1% significance level, indicating that the rental scale has a positive effect on the level of residential consumption, and the larger the rental scale, the higher the level of residential consumption, and when the rental scale increases by 10%, it will make the level of residential consumption increase by 0.36%; hypothesis 1 passes the empirical test. In addition, from the control variables, the effect of income on consumption is significantly positive, which is consistent with the relationship between income and consumption in microeconomics. Housing price has a significantly negative effect on urban residents' consumption, i.e., housing price has a crowding-out effect on residents' non-housing consumption, which is in line with the results of others [24,25]. In order to reduce the influence of a policy tilt, after excluding the first pilot cities in the sample, this paper finds that the rental scale is positive at 1% significance level and its coefficient of 0.0421 is little different from the coefficient of 0.0365 in the benchmark regression, which means that the consumption elasticity of the residential rental scale is around 0.4%, i.e., when the rental scale increases by 10%, the residential consumption level increases by about 0.4%. The conclusion that the development of the housing rental market raises the consumption level of residents passes the robustness test.

The F-value of 1009.94 in the first column of Table 4 for the one-stage regression results of the instrumental variables is greater than 10, indicating that there are no weak instrumental variables. Second, both instrumental variables indicate a positive effect of instrumental variables on lease size at the 1% significance level, satisfying the relevance of instrumental variables. The results of the second column of the two-stage regression of instrumental variables indicate that the effect of lease size on residents' consumption level is positive at the 5% significance level after using the instrumental variables, which is consistent with the estimated results of the benchmark regression, indicating that the development of the housing rental market is indeed beneficial to the increase in residents' consumption level, and the absolute value of the coefficient becomes larger compared with the results of the benchmark regression, indicating that there is an inverse effect on lease size in model (1). The absolute value of the coefficient becomes larger compared with the results of the benchmark regression, indicating that there are unobservable factors in model (1) that have an inverse effect on the scale of renting. For example, when the credit constraint is relaxed, more investors put their capital into the housing purchase and sale market, and the house prices increase, but the rental scale decreases.

Table 3. Baseline regression and robustness test.

	(1) Principal Regression	(2) Exclusion of Pilot Cities
lnRMS	0.0365 ***	0.0421 ***
	(2.73)	(2.71)
Population	0.1159	0.1501 ***
	(1.19)	(2.64)
GDP	0.7503 ***	0.3548 ***
	(12.74)	(10.6)
Income	0.5358 ***	0.4671 ***
	(7.75)	(27.91)
HP	−0.0754 **	0.2046 ***
	(−2.00)	(6.65)
ML	−0.0281	0.4914 ***
	(−0.56)	(10.56)
HR	0.0117	−0.0165
	(1.38)	(−1.05)
Constant	−4.4809 ***	−8.0900 ***
	(−4.04)	(−23.93)
Observations	690	590
R-squared	0.8725	0.9519

Note: **, *** denote 5%, and 1% significance levels, respectively.

Table 4. Regression results of instrumental variables.

Variable	(3) First Stage Regression	(4) Second Stage Regression
lnRMS		0.0452 **
		(2.49)
L.lnRMS	0.7005 ***	
	(25.24)	
lnRMS IV	1.3758 ***	
	(6.47)	
Population	−0.1020 *	0.1266 ***
	(−1.87)	(3.68)
GDP	0.3728 ***	0.5061 ***
	(9.08)	(21.26)
Income	−0.0252	0.4509 ***
	(−1.15)	(39.21)
HP	−0.0677 *	0.0855 ***
	(−1.84)	(3.91)
ML	0.0359	0.3561 ***
	(0.66)	(10.73)
HR	0.0483 ***	0.0145 ***
	(8.02)	(4.54)
Constant	1.6264 ***	−7.1519 ***
	(4.32)	(−29.44)
One stage regression F-value	1009.94	
Observations	621	621
R−squared	0.9408	0.9642

Note: *, **, *** denote 10%, 5%, and 1% significance levels, respectively.

4.5. Heterogeneity Test

The sample was filtered by geographic location for regression, and the sample was divided into eastern cities and central and western cities, and the results for the geographic location of the cities are shown in Table 5.

Table 5. Geographical division of cities.

Geographical distribution	Eastern Cities	Beijing, Tianjin, Shijiazhuang, Tangshan, Qinhuangdao, Shenyang, Dalian, Dandong, Jinzhou, Jilin, Harbin, Mudanjiang, Shanghai, Nanjing, Wuxi, Xuzhou, Yangzhou, Hangzhou, Jinhua, Wenzhou, Ningbo, Fuzhou, Quanzhou, Xiamen, Qingdao, Jinan, Yantai, Jining, Guangzhou, Shenzhen, Huizhou, Zhanjiang, Shaoguan, Haikou, Sanya
	Midwest Cities	Taiyuan, Hohhot, Baotou, Hefei, Bengbu, Anqing, Nanchang, Jiujiang, Ganzhou, Zhengzhou, Luoyang, Pingdingshan, Wuhan, Yichang, Xiangyang, Changsha, Yueyang, Changde, Nanning, Guilin, Beihai, Chongqing, Chengdu, Luzhou, Nanchong, Guiyang, Zunyi, Kunming, Xi'an, Lanzhou, Xining, Yinchuan, Urumqi, Changchun

The heterogeneity test results are shown in Table 6. The regression results for the sample of eastern cities are positive at the 5% significance level, again confirming the above empirical results that the development of the housing rental market is conducive to the increase in residents' consumption levels. When the rental scale in eastern cities increases by 10%, the level of residents' consumption increases by 0.44%. Secondly, the regression results in the central and western cities are not significant, indicating that there is heterogeneity in the geographical location of the effect. The economic development level of the eastern cities is generally better than that of the central and western cities. Therefore, the development of the housing rental market in cities with higher levels of economic development is more conducive to the improvement of residents' consumption levels. This paper argues that this is related to the economic scale and industrial structure of the developed cities in the east, where the types of industries are more abundant than those in the central and western cities. When the housing rental market develops, it can drive the development of its related industries, such as transportation and service industries, to form economies of scale, thus greatly enhancing the consumption level of residents.

Table 6. Heterogeneity test results.

	(5) Eastern City	(6) Midwestern Cities
lnRMS	0.0442 **	0.0098
	(2.28)	(0.54)
Population	0.0263	0.2831 **
	(0.16)	(2.39)
GDP	0.7785 ***	0.5922 ***
	(10.29)	(5.33)
Income	0.0926	0.7856 ***
	(0.74)	(10.31)
HP	−0.1134 **	−0.0092
	(−2.17)	(−0.17)
ML	0.0860	−0.0975
	(1.17)	(−1.44)
HR	0.0446 ***	−0.0246 **
	(3.30)	(−2.37)
_cons	−0.6343	−5.9042 ***
	(−0.36)	(−4.42)
Urban fixed effect	Y	Y
Time-fixed effect	Y	Y
N	350	340
R-squared	0.8542	0.9147

Note: **, *** denote 5%, and 1% significance levels, respectively.

4.6. Mechanism Testing

The analysis of the theoretical mechanism shows that among the mechanisms by which the development of the housing rental market affects the level of residents' consumption, the development of the housing rental market can promote residents' consumption by increasing government spending, and labor inflow has a negative moderating effect on urban residents' consumption. Accordingly, this paper constructs the following mediating effect model and moderating effect model:

$$\ln GE_{it} = \beta_0 + \beta_1 \ln RMS_{it} + \beta_2 control_{it} + c_i + w_t + \varepsilon \tag{2}$$

$$\ln consumption_{it} = \beta_0 + \beta_1 \ln GE_{it} + \beta_2 control_{it} + c_i + w_t + \varepsilon \tag{3}$$

$$\ln consumption_{it} = \beta_0 + \beta_1 \ln RMS_{it} + \beta_2 FP_{it} \times \ln RMS_{it} + \beta_3 FP_{it} + \beta_4 control_{it} + c_i + w_t + \varepsilon \tag{4}$$

where $\ln GE$ denotes government expenditure, $\ln RMS$ denotes the development level of the housing rental market, $\ln consumption$ denotes the level of residential consumption, FP denotes inflow labor, control denotes control variables, i and t denote city and year, respectively, c denotes year fixed effect, w denotes city fixed effect, and ε denotes random disturbance term. Models (2) and (3) are mediating effect models with government spending as a mediating variable, and model (4) is a moderating effect model with labor inflow as a moderating variable. β_2 in model (4) is used as the coefficient of the cross term between labor inflow and lease size, indicating the magnitude of the moderating effect.

According to the theoretical analysis, the development of the housing rental market will increase government spending, and the government spending can strengthen the confidence of residents' consumption, thus stimulating the vitality of residents' consumption and enhancing their consumption. This paper uses a stepwise regression method to test this mediating effect empirically, and the first and second columns of Table 7 show the results of the mediating effect test. The regression results in the first column show that the development of housing rental market will significantly increase government spending when the rental scale increases by 10%, and government spending will increase by 0.38%, controlling for house prices, income, and other factors. The second column of the regression results shows that an increase in government spending can stimulate consumption dynamics by firming up residents' confidence in consumption. Other factors being unchanged, for every 1 unit increase in government spending, residents' consumption level will rise by 0.1146 units. Therefore, the development of the housing rental market can boost the consumption level of residents by increasing government spending and firming up their consumption confidence. According to the analysis of the theoretical mechanism, the inflow of mobile population will significantly raise their own cultural and recreational consumption and lower their housing and food consumption. For local residents, the inflow of mobile population will harm the local labor market, increase the competition in the local labor market, lower the wages of local residents, and reduce their consumption. The interaction terms of the moderating variables inflow of labor and inflow of labor with lease size are added to the baseline regression model. The regression results in the third column of Table 7 show that the inflow of labor has a negative moderating effect on the development of the housing rental market to promote residents' consumption; when there is more inflow of labor, the more competitive the local labor market is, the lower the wages are, and the more it inhibits residents' consumption.

Table 7. Mechanism test.

	(7)	(8)	(9)
	Mediating Effect		**Regulating Effect**
lnRMS	0.0379 ***		0.0391 ***
	(2.87)		(2.89)
GE		0.1146 ***	
		(2.80)	
FP * lnRMS			−0.0854 **
			(−2.05)
FP			0.8678
			(1.53)
Population	0.2527 ***	0.0585	0.0744
	(2.63)	(0.60)	(0.71)
GDP	0.4668 ***	0.7012 ***	0.7659 ***
	(8.04)	(11.32)	(12.85)
Income	0.4369 ***	0.4923 ***	0.5342 ***
	(6.41)	(6.89)	(7.71)
HP	0.0573	−0.0665	−0.0655
	(1.54)	(−1.78)	(−1.71)
ML	0.1131 **	−0.0389	−0.0400 *
	(2.27)	(−0.77)	(−0.78)
HR	0.0098	0.0099	0.0113
	(1.17)	(1.17)	(1.33)
_cons	−5.3283 ***	−3.5127 ***	−4.0382 ***
	(−4.87)	(−3.14)	(−3.59)
Urban fixed effect	Y	Y	Y
Time-fixed effect	Y	Y	Y
N	690	690	690
R-squared	0.9250	0.8726	0.8738

Note: *, **, *** denote 10%, 5%, and 1% significance levels, respectively.

5. Conclusions and Policy Implications

Article 12 of the Opinions of the General Office of the State Council on Further Releasing Consumption Potential for Sustained Recovery of Consumption, issued by the General Office of the State Council on 20 April 2022, is to improve long-term rental housing policies and expand the supply of guaranteed rental housing. Using data on the number of rental units and consumption in 69 large- and medium-sized cities from 2010 to 2019, this paper systematically investigates the impact of housing rental scale on residents' consumption level and its mechanism. Further, the role of the size of the mobile population on this effect and its transmission mechanism are examined.

Research shows that the development of the housing rental market significantly raises residents' consumption level; the development of the housing rental market can strengthen residents' consumption confidence and stimulate consumption vitality through the increase in government expenditure; the inflow of labor has a negative moderating effect in the scale of housing rentals to promote residents' consumption level, and the inflow of labor will suppress the local labor wage level by intensifying the competition in the local labor market, thus suppressing it. In the heterogeneity study, the incoming labor force has a negative moderating effect on the level of residential consumption. In the heterogeneity study, the development of the housing rental market in eastern cities has a significant effect on the level of residential consumption, and its elasticity coefficient is greater than that of 69 large- and medium-sized cities, while western cities fail to reach a significant level. Therefore, in the coastal cities with more developed economies in the east, the increase in residents' consumption level brought on by the increase in rental scale is more obvious. Accordingly, the following relevant policy recommendations are given.

First, promote the healthy development of the housing rental market and release the vitality of residents' consumption. The development of the housing rental market can not only make the basic life of the middle- and low-income groups secure, but also

promote residents' consumption. According to the theoretical mechanism part, the increase in housing rental scale can enhance residents' consumption in three aspects. Firstly, the increase in housing rental scale can reduce the rent and the crowding-out effect of rent on residents' consumption; secondly, the increase in housing rental scale can calm down the housing price and reduce the consumption pressure brought on by housing loans to residents; thirdly, it can increase the liquidity capital in the hands of residents and release the consumption vitality. Therefore, it is recommended to start from the following three aspects. First, establish a sound system of "equal rights for renting and buying", as "different rights for renting and buying" is the primary problem that restricts the development of China's housing rental market. Secondly, to increase "financial support", financial institutions should increase credit support, provide long-term loans in a market-oriented manner, and revitalize the stock market.

Second, moderately increase the government's support for the housing rental market. The government's support for the housing rental market can strengthen residents' confidence in consumption and stimulate consumption vitality. This paper suggests that we can start from the following aspects. First, provide appropriate tax and fee reductions for enterprises developing the housing rental market and increase the supply of land for housing rental. Second, provide appropriate rental subsidies to low-income groups who rent housing to reduce the cost of renting. Third, increase the financial expenditure on the housing rental market to improve the productivity of housing rental market construction. Finally, vigorously publicize the government's determination to develop the housing rental market to strengthen residents' confidence in consumption.

Third, the employment-friendly policies should be more supportive for cities with more labor inflows. It can be seen from the regression results that the inflow of labor has a negative externality on consumption because it damages the local labor market and depresses the wage level of local labor. If the employment policy support can be used to increase jobs in cities with higher inflow of mobile population, then the negative externality of the inflow to the labor market can be reduced, which instead has a pulling effect on the consumption of that city.

Fourth, the scale of housing rentals is allocated in a graded manner according to the level of urban economic development. It can be seen from the heterogeneity regression results that the effect of housing rental market in boosting consumption is not significant in central and western cities. In other words, the development of the housing rental market in cities with higher levels of economic development is more effective in boosting consumption, and the demand for rental housing is higher in cities with higher levels of economic development; therefore, when the state formulates policies related to the supply of rental housing, it can consider allocating the housing rental supply in a graded manner according to the level of urban economic development.

References

1. Sun, W.; Deng, X.; Wan, G. Housing rent and residential consumption: Effects, mechanisms and inequality. *Econ. Res.* **2020**, *55*, 132–147.
2. Liu, G.; Chang, X.Y. The Impact of Rising Housing Rent on Residents' Consumption and Its Underlying Mechanism. Empirical Evidence from China. *J. Orig. Res.* **2021**, *11*, 1–15. [CrossRef]
3. Blundell, R.; Pistaferri, L.; Preston, I. Consumption inequality and partial insurance. *Am. Econ. Rev.* **2008**, *98*, 1887–1921. [CrossRef]
4. Yang, B.; Ching, A.T. Dynamics of consumer adoption of financial innovation: The case of ATM cards. *Manag. Sci.* **2014**, *60*, 903–922. [CrossRef]
5. Blundell, R.; Pistaferri, L.; Saporta-Eksten, I. Children, time allocation, and consumption insurance. *J. Political Econ.* **2018**, *126*, S73–S115. [CrossRef]
6. Luo, S.; Sun, Y.; Zhou, R. Can fintech innovation promote household consumption? Evidence from China family panel studies.International. *Rev. Financ. Anal.* **2022**, *82*, 102137. [CrossRef]
7. Robert, J.B. Output Effects of Government Purchases. *J. Political Econ.* **1981**, *89*, 1086–1121.
8. Dupor, B.; Li, J.; Li, R. Sticky wages, private consumption, and Fiscal multipliers. *J. Macroecon.* **2019**, *62*, 103157. [CrossRef]
9. Kuncoro, H. The impact of government consumption on the private expenditures in developing country: The case of Indonesia. *Bus. Econ. Horiz.* **2018**, *14*, 1–16. [CrossRef]
10. Zhang, C.; Gan, M.Q.; Xu, L. Research on the regional differences of the relationship between local fiscal expenditure and residents' consumption. *East China Econ. Manag.* **2018**, *32*, 63–69. [CrossRef]
11. Bachmann, R.; Sims, E.R. Confidence and the transmission of government spending shocks. *J. Monet. Econ.* **2012**, *59*, 235–249. [CrossRef]
12. Laamanen, J.-P. Home-ownership and the Labour Market: Evidence from Rental Housing Market Deregulation. *Labour Econ.* **2017**, *48*, 157–167. [CrossRef]
13. Case, K.E.; Shiller, R.J.; Quigley, J.M. Comparing Wealth Effects: The Stock Market versus the Housing Market. *Adv. Macroecon.* **2005**, *5*, 1235. [CrossRef]
14. Benjamin, J.D.; Chinloy, P.; Jud, G.D. Real Estate versus Financial Wealth in Consumption. *J. Real Estate Financ. Econ.* **2004**, *29*, 341–354. [CrossRef]
15. Iacoviello, M.; Minetti, R. The credit channel of monetary policy: Evidence from the housing market. *J. Macroecon.* **2008**, *30*, 69–96. [CrossRef]
16. Sheiner, L. Housing Prices and the Savings of Renters. *J. Urban Econ.* **1995**, *38*, 125. [CrossRef]
17. Campbell, J.; Cocco, J. How do House Prices Affect Consumption? Evidence from Micro Data. *J. Monet. Econ.* **2007**, *54*, 591–621. [CrossRef]
18. Browning, M.; Gørtz, M.; Leth-Petersen, S. Housing Wealth and Consumption: A Micro Panel Study. *Econ. J.* **2013**, *123*, 401–428. [CrossRef]
19. Cocco, J.F. Portfolio Choice in the Presence of Housing. *Rev. Financ. Stud.* **2005**, *18*, 535–567. [CrossRef]
20. Bostic, R.; Gabriel, S.; Painter, G. Housing wealth, financial wealth, and consumption: New evidence from micro data. *Reg. Sci. Urban Econ.* **2009**, *39*, 79–89. [CrossRef]
21. Marjorie, F.; Takashi, Y. Owner-Occupied Housing and the Composition of the Household Portfolio. *Am. Econ. Rev.* **2002**, *92*, 345–362. [CrossRef]
22. Di Pasquale, D.; William; Wheaton, C. The Markets for Real Estate Assets and Space: A Conceptual Framework. *J. Am. Real Estate Urban Econ.* **1992**, *20*, 181–198. [CrossRef]
23. Chen, Z.; Chen, J. The share of rental households, the main supply of rental housing and house prices. *Stat. Res.* **2018**, *35*, 28–37. [CrossRef]
24. Weida, K. Housing Price Changes and Consumption of Chinese Urban Residents. *J. World Econ.* **2011**, *10*, 21–34. [CrossRef]
25. Xie, J.; Wu, B.; Li, H.; Zheng, S. Housing Price and Household Consumption in Chinese Cities. *J. Financ. Res.* **2012**, *6*, 13–27.