

How Does Land Monopoly Reduce Consumption Levels? Evidence from China

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Abstract: Understanding the intrinsic relationship between land monopoly and a low consumption rate is of great significance for optimizing the national economic structure and reforming the land system. However, existing studies of low consumption ignore the role of the land system. This study, therefore, theoretically analyzed how a monopolistic land supply system inhibits consumption and empirically tested the causal and influencing mechanisms using the mediated effects model and provincial panel data from 2000 to 2017 in China. The results are as follows: (1) land monopoly significantly reduces the final consumption rate; the results remain robust under different model settings. (2) A heterogeneity analysis indicated that the negative effect of land monopoly on consumption is greater in the central and western regions than in the eastern regions; economic catch-up and government intervention increase such harm as well. (3) Under the land monopoly system, most land income flows to the public sector and urban areas, reducing the share of private sector income and expanding the urban–rural income gap, thus limiting private consumption and total urban–rural consumption. (4) During the 2000–2019 period, the expansion of monopolistic land transfers caused an additional 1.98 percentage points of decline in the final consumption rate, contributing 23.41% of the decline in the final consumption rate. Our findings provide new insights into the causes of low consumption and suggest that economic rebalancing can be achieved by breaking land monopolies through land supply-side reforms and land marketization reforms.



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Keywords: land monopoly; low consumption rate; national income distribution; urban–rural income gap; China

1. Introduction

Consumption is not only related to the welfare that residents can enjoy [1]; it is also the driving force of economic growth. Developed countries generally have high levels of consumption; in contrast, developing countries and countries with transition economies are often plagued by low levels of consumption. The means of promoting consumption for sustainable economic development represent a common concern among government officials and academics.

The causes of low rates of consumption have been extensively explored in the international literature. Based on the life-cycle theory, the first explanation suggests that the increasing share of the labor force and the longer life expectancy during periods of high economic growth have pushed up the savings ratio [2]. The second explanation is mainly based on the precautionary savings theory. Chamon [3] and Meng [4] attributed the rise in the household saving ratio to increasing labor market risks. Others explored the relationship between pension insurance/health insurance and household consumption [5]. The third explanation, based on liquidity constraints, argues that low consumption stems from underdeveloped financial markets [6,7]. The fourth explanation focuses on the impact of income distribution on consumption [8].

The above studies have resulted in some widely accepted theories. Unfortunately, recent studies have found that these theories are greatly challenged when they are applied to explain China's low consumption problem. For example, in terms of the life-cycle theory, in contrast to Western countries, older and younger individuals save more than the labor force in China [3]. Regarding precautionary savings, social security coverage in China has expanded significantly in recent years, but the low rate of consumption has not been thoroughly reversed. Similarly, in the financial field, China's financial efficiency has been improving in recent years, but the consumption rate remains low [9]. As for the income distribution explanation, it is a fundamental perspective for understanding China's low consumption rate, but more importantly, the systemic reasons that determine income distribution have not been explored [10]. Given these skepticisms, we believe that China offers an opportunity to explore new causes of a low consumption rate.

With its population of 1.4 billion people, China has the world's largest consumption market, yet China's economy has long been plagued by a low domestic consumption rate [3,7]. The share of consumption in China's GDP is not only much lower than those of developed countries like the US, the UK, and Germany and OECD countries like Japan and Korea, whose cultures are similar to China's, but it is also much lower than that of transitional and developing countries like Russia, India, and Brazil (Figure 1). The fact that China's consumption rate deviates significantly from international experience implies that there must be some China-specific factors involved [10]. The central difference between China and other major countries is that the Chinese economic system is undergoing a gradual transition from planned to market. This process necessarily involves the coexistence of two economic patterns, which inevitably causes some institutional distortions in the market. Typical of these, China's land factor market has long been subject to government intervention and control. The Chinese government has long implemented a monopolistic land supply policy. It is therefore reasonable to speculate that there may be some intrinsic link between special land policies and special low consumption rates. Therefore, this paper aims to reveal the potential causal relationship and mechanism between land monopoly policy and low consumption. Based on China's provincial panel data from 2000 to 2017, we propose a new hypothesis that monopolistic land supply policies may lead to low rates of consumption by distorting the pattern of income distribution.

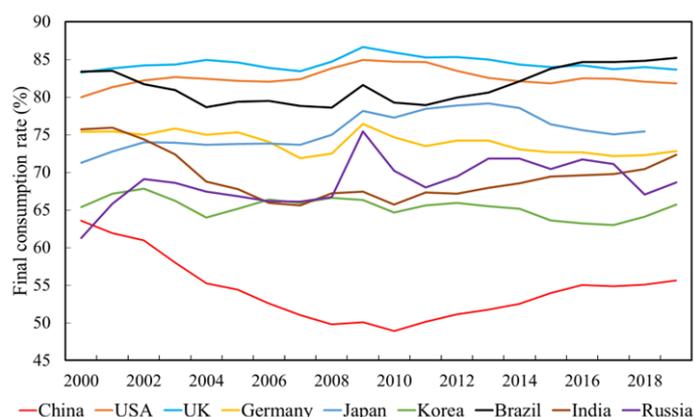


Figure 1. Share of consumption in the GDPs of several major economies. Source: The World Bank (<https://data.worldbank.org.cn/indicator/NE.CON.TOTL.ZS?end2015&start=1960&view=map&year=2019> (accessed on 17 August 2023)).

Our work contributes to several branches of the literature. First, we provide new insights into the problem of low consumption. Most of the research in this area has focused on a few classical theories such as the life-cycle theory [2] and precautionary savings theory [3,5]. So far, few scholars have specified the relationship between land policy and low consumption, but in fact, land policy directly determines income distribution. This paper extends these studies by examining the effects of land monopoly policies on

consumption rates, providing empirical evidence of how land policy distortions can hurt consumption. Second, we extend the literature on the relationship between land policy and the macroeconomy. Studies have focused on the linkages between land policy and economic growth [11], real estate markets [12], finance [13], structural upgrading [14], and poverty reduction [15]. Consumption, an important aspect of macroeconomics, has been neglected. Although Dai et al. [16] noted the relationship between the structure of land supply and consumption, they ignored the monopolistic nature of supply behavior and therefore underestimated the impact of land policy.

The rest of this paper is organized as follows. Section 2 describes the theoretical mechanism of the land monopoly’s effect on consumption. Section 3 introduces the methodology and data, while Section 4 presents the empirical results. Section 5 provides a relevant discussion of the results, and Section 6 summarizes the conclusions and policy implications.

2. Theoretical Framework

In China, land monopoly is a formal system built on law. As specified in 1982 by Article 10 of the Constitution, “Land in the cities is owned by the state. Land in the rural and suburban areas is owned by collectives, except for those portions that belong to the state in accordance with the law; house sites and private plots of cropland and hilly land are also owned by collectives”. This regulation established China’s dualistic urban–rural land ownership structure. On that basis, China revised the Land Management Law in 1998, stipulating that “All units and individuals that need land for construction shall, in accordance with law, apply for the use of state-owned land. The ‘state-owned land’ mentioned in the preceding paragraph includes land owned by the state and land originally owned by a farmer collective but expropriated by the state”. This law also stipulated that “where land for agriculture is to be used for construction purposes, the formalities of examination and approval shall be gone through for the conversion of use”. After the promulgation of the Land Management Law, relevant supporting policies were issued, and the land reserve system was established. This series of laws and policies stipulate that state expropriation is the only legal way for any land to enter the market. Local governments have since become the only buyers of collective land and the only suppliers of industrial, commercial, and residential land. In this way, the land supply process is indirect. The land must be expropriated from the countryside by the government and then sold to the land user. As shown in Figure 2, this monopolistic land supply system has produced two income distribution effects (described below) and, ultimately, lowered the rate of consumption.

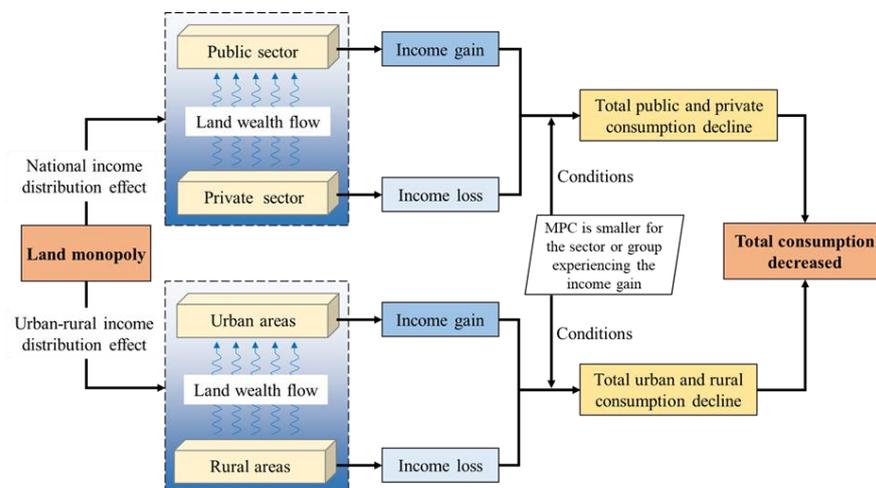


Figure 2. Theoretical mechanism through which land monopoly restrains consumption.

- (1) The national income distribution effect. This means that land monopoly increases the income share of the public sector and reduces the income share of the private sector.

Compared to the direct supply of land by farmers' collectives, land monopoly actually diverts the value-added income of agricultural land conversion from the private sector to the public sector, resulting in a reversal of income share for the two sectors. Based on a rough estimate of the Yangtze River Delta, the average compensation standard for farmland was CNY 375,000–450,000 per hectare, and the average assignment fee for land use right was CNY 2,100,000–5,250,000 per hectare; the former is around one-tenth of the latter [17]. Obviously, land income is distributed in a way that favors the government, greatly increasing the share of public revenues in the national income. According to China's official statistics, land revenue is maintained at more than half of the local government revenues, so much so that it is able to have a decisive impact on the share of public sector revenues in the GDP. In China, local governments generally prefer investing in infrastructure rather than spending on education, healthcare, and social security [18]. Therefore, the increasing income share of the public sector results in an increase in the share of investment in the GDP, thus squeezing consumption. The decline in the income share of the private sector will certainly restrain the ability to consume, thus reducing the share of consumption in the national economy.

- (2) The urban–rural income distribution effect. This means that land monopoly widens the income gap between urban and rural areas, thereby reducing the total urban and rural consumption. Before the land monopoly system was adopted in 1998, rural areas had the right to develop industries based on collective land, which gave birth to a large number of township enterprises [19]. At that time, China's economy achieved "golden growth", which was accompanied by increasing income levels among farmers and a continuously narrowing urban–rural income gap. After 1998, however, the new land monopoly system removed the right to develop industry on collective land. With the demise of rural industries, rural income growth slowed, falling from 12.78% in the 1990s to 10.65% in the 2000s. As a result, the urban–rural income gap widened rapidly, skyrocketing from CNY 1258 in 2000 to CNY 14,295 in 2019. Further, local governments invest most value-added land income in urban areas, which amounts to diverting land wealth from rural areas to urban areas. In other words, the land monopoly system constructs a mechanism of providing a rural subsidy for urban residents, which certainly expands the urban–rural income gap. Previous studies have shown that the continuous expansion of the urban–rural income gap will reduce the average and marginal propensity to consume throughout the entirety of society, resulting in a decline in the consumption rate [8].

It is worth noting that there is another prerequisite that cannot be overlooked when making the above theoretical points. According to Keynes [20] and Fichtenbaum [21], the total consumption only declines when the MPC is smaller for the sector or group experiencing the income gain than for the sector or group experiencing a (relative) income loss; when the MPCs are the same but the average propensities to consume differ between two sectors or groups, the total consumption remains unaffected by the (relative) income transfer. The above theoretical analysis therefore holds true on the basis that the public sector and urban areas have higher MPCs than the private sector and rural areas.

Based on the above theoretical analysis, we propose a theoretical hypothesis: land transfer under the land monopoly system causes the distribution of land revenue to be biased toward the public sector and urban areas, resulting in a lower income share for the private sector and a wider income gap between urban and rural areas, which will lead to a low consumption rate when the sector with an increased income share has a smaller MPC.

3. Methodology and Data

The theoretical analysis above suggests that the low consumption rate may be largely attributable to China's monopolistic land system. However, this supposition requires formal testing based on further quantitative evidence. Thus, we implemented an empirical study using provincial panel data from 2000–2017 in the framework of a mediating effects model.

3.1. Methodology

In this study, a “three-step” mediating effect model was adopted to investigate causality and mediating mechanisms [22,23]. The regression model is as follows:

$$final_consum_{it} = \alpha_0 + \alpha_1 land_{it} + \alpha_2 Z_{it} + \zeta_{it}, \quad (1)$$

$$mediator_{it} = \beta_0 + \beta_1 land_{it} + \beta_2 Z_{it} + \zeta_{it}, \quad (2)$$

$$final_consum_{it} = \theta_0 + \theta_1 land_{it} + \theta_2 mediator_{it} + \theta_3 Z_{it} + \zeta_{it}, \quad (3)$$

where i is the province, t is the time, $final_consum$ is the final consumption rate, $land$ is the monopolistic land transfer area, and $mediator$ is the mediating variable. Z represents a set of control variables that are expected to affect consumption, namely, the economic development level, urbanization level, share of fiscal expenditures for people’s livelihood, population structure, employment share of state-owned enterprises, and export dependence. ζ is a random error term. α , β , and θ are coefficients to be estimated.

3.2. Variables and Data Sources

- (1) Dependent variable: the final consumption rate ($final_consum$). The final consumption rate is the share of the final consumption in the GDP. Final consumption includes both the private and public sectors or is counted as the sum of urban and rural consumption. In this paper, the final consumption rate is expressed as the ratio of provincial final consumption expenditure to the GDP.
- (2) Core explanatory variable: land monopoly ($land$). Land monopoly means that the government exclusively supplies land to the market. The government mainly transfers land to land users through bidding ($zhaobiao$), auction ($paimai$), and listing ($guapai$) to obtain monopolistic land income. Therefore, the land transfer area is a valid indicator for investigating the land monopoly system. The land transfer area refers to the area of land sold to land users by the government through bidding, auction, and listing. Since most of these transferred lands are expropriated by the government from rural areas, the land acquisition area is also an alternative measure of land monopoly. In this study, the land transfer area ($land_1$) was used as the main measurement method, and the land expropriation area ($land_2$) was used as the alternative independent variable for the robustness test.
- (3) Control variables: using studies from the literature, we also controlled a set of variables that might affect consumption in the regression model to alleviate omitted-variable bias as much as possible.

① Economic development level: the economic development level was expressed as the per capita GDP of the provincial units (revised to a comparable price based on the data from 2000). According to Keynes’s absolute income hypothesis, the consumption rate may be closely related to the level of economic development, and there may be a U-shaped relationship [20]. Therefore, the per capita GDP (per_gdp) and its square term (per_gdp^2) were added to the regression equation to control the effect of the economic development level on the consumption rate.

② Urbanization ratio ($urban$): the urbanization ratio was expressed as the ratio of the population of urban residents to the total population. Loayza et al. [24] considered the urbanization level an important factor affecting the consumption rate. The effect of the urbanization ratio can be explained along the precautionary-saving motive. Lacking the means to diversify away the high uncertainty of their mostly agricultural income, rural residents tend to save a larger proportion of their income.

③ Share of fiscal expenditures for people’s livelihoods ($live_ratio$): the share of fiscal expenditures for people’s livelihoods was expressed as the share of public expenditure for people’s livelihoods (including healthcare, education, and social security) in the total financial expenditure. Households usually need to make large precautionary savings

for health care, children's education, and social security. A greater fiscal expenditure in these areas would largely reduce the burden on households and thus stimulate household consumption.

④ Demographic structure (*depen_ratio*): demographics are generally considered to have a significant impact on consumption rates [2]. The population dependency ratio (the share of children and elderly in the total population) was used to describe the demographic structure. A larger share of dependents generally means a higher consumption level (and lower savings) at a given family income level according to the life-cycle theory.

⑤ Employment share of state-owned enterprises (*sta_emp*): the employment share of state-owned enterprises was expressed as the share of state-owned enterprise employees among the total urban employees. The effect of this factor on consumption is often controversial. On one hand, state-owned enterprises are more capital-intensive than private enterprises; thus, a larger share of employment in state-owned enterprises may lower the share of labor income in the whole economy. On the other hand, in China, state-owned enterprises often pay higher wages than private enterprises, which may increase the share of labor income.

⑥ Export dependence (*export_ratio*): export dependence was expressed as the ratio of total exports (converted with the average exchange rate of the year) to the GDP. A high export dependence means a high consumption rate in China because the characteristics of China's exports, which are concentrated in labor-intensive industries, expand the share of labor income [8].

- (4) Mediator variable: according to the above theoretical analysis, the land monopoly system leads to a low consumption rate through two channels: the national income distribution effect and the urban–rural income distribution effect. Therefore, two mediator variables are proposed here to test the two effects: ① the share of public revenues in the GDP (*public_share*), which is expressed as the ratio of the fiscal revenue to the GDP (the fiscal revenue includes tax and non-tax revenue, and the land income is included in the non-tax revenue); and ② the urban/rural income ratio (*urban_rural*), which is expressed as the ratio of the per capita disposable incomes of urban and rural residents.
- (5) Data sources and descriptive statistics: this study used data from 31 provincial units in China from 2000 to 2017. Data for land transfer and expropriation were obtained from the *China Land Resources Statistical Yearbook*. Data for fiscal revenues and expenditures were obtained from the *China Finance Yearbook*. Data for employment in state-owned enterprises were obtained from the *China Urban Statistical Yearbook*. Population data were obtained from the *China Population Statistical Yearbook*. Other data were obtained from the *China Statistical Yearbook*. Table ?? shows the descriptive statistics for the variables.

Table 1. Descriptive statistics for the main variables.

Variable	Definition	Measure	Data Sources	Obs	Mean	Std. Dev.	Min	Max
<i>final_consum</i>	Final consumption rate	Provincial final consumption expenditure/GDP	<i>China Statistical Yearbook (2001–2018)</i>	558	0.528	0.091	0.341	0.911
<i>land_1</i>	Land monopoly	Land transfer area (10,000 ha)	<i>China Land Resources Statistical Yearbook (2001–2018)</i>	558	0.706	0.682	0.003	4.239
<i>land_2</i>	Land monopoly	Land expropriation area (10,000 ha)	<i>China Land Resources Statistical Yearbook (2001–2018)</i>	558	1.135	0.887	0.000	4.507
<i>public_share</i>	Share of public revenues in GDP	Fiscal revenue/GDP	<i>China Finance Yearbook (2001–2018)</i> <i>China Statistical Yearbook (2001–2018)</i>	558	0.182	0.046	0.032	0.327
<i>urban_rural</i>	Urban–rural income ratio	Urban per capita disposable income/rural per capita disposable income	<i>China Statistical Yearbook (2001–2018)</i>	558	2.930	0.623	1.845	5.611
<i>per_gdp</i>	Per capita GDP	GDP/Total population (CNY 10,000)	<i>China Statistical Yearbook (2001–2018)</i>	558	2.274	1.842	0.266	12.272
<i>urban</i>	Urbanization rate	Urban resident population/total population	<i>China Statistical Yearbook (2001–2018)</i>	558	0.484	0.155	0.139	0.896
<i>live_ratio</i>	Share of fiscal expenditures for people’s livelihoods	People’s livelihood public expenditure (including healthcare, education, and social security)/Total financial expenditure	<i>China Statistical Yearbook (2001–2018)</i>	558	0.390	0.045	0.225	0.510
<i>depen_ratio</i>	Population dependency ratio	The population of children and the elderly /total population	<i>China Population Statistical Yearbook (2001–2018)</i>	558	0.378	0.070	0.193	0.576
<i>sta_emp</i>	Employment share of state-owned enterprises	State-owned enterprise employees/total urban employees	<i>China Urban Statistical Yearbook (2001–2018)</i>	558	0.351	0.150	0.065	0.727
<i>export_ratio</i>	Export dependence	Total exports/GDP	<i>China Statistical Yearbook (2001–2018)</i>	558	0.157	0.182	0.011	0.905

4. Results

4.1. Descriptive Analysis

We first collected macroeconomic data to provide descriptive evidence for our hypothesis. The data were obtained from published, official sources. Figure 3 depicts the dynamic path of China’s final consumption rate since 1978. As China entered the era of land monopoly in 1998, the final consumption rate continued to decline. Although the consumption rate picked up slightly after 2010, it was still at a low level, and growth has begun slow down in more recent years. The fact that the consumption rate showed a significant downshift after 1998 when the land monopoly system was launched suggests that the low consumption rate may be related to land monopoly.

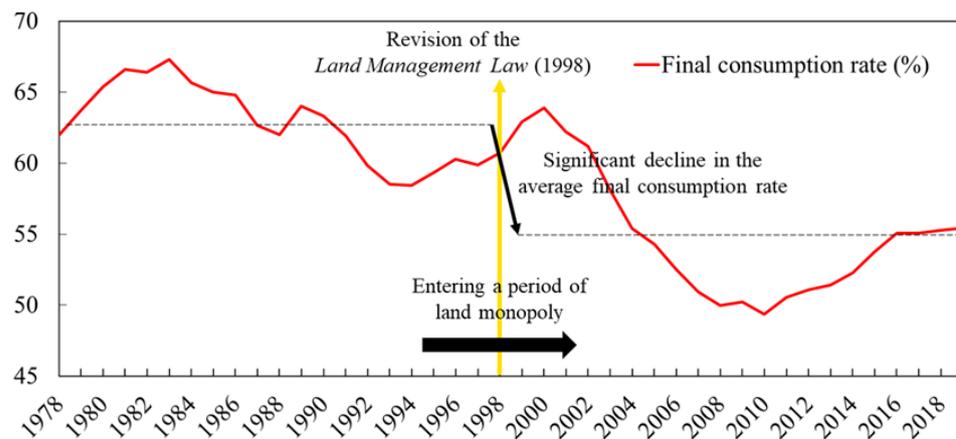


Figure 3. Land monopoly and the downshift in the final consumption rate. Source: The National Bureau of Statistics.

The empirical data for the land transfer area and the final consumption rate from 2000 to 2019 also support our view ¹. As shown in Figure 4, the polynomial-based fit portrays the opposite dynamics of these two indicators. From 2000 to 2010, with the continuous increase in the land transfer area, the share of consumption in the GDP decreased. During the 2011–2016 period, the land transfer area decreased while consumption rose slowly. Later, when the land transfer area rose again, the growth of the consumption rate stagnated. Moreover, the presence of this negative correlation is more fully described by an OLS regression line based on panel data for 31 provincial units from 2000 to 2017 (Figure 5).

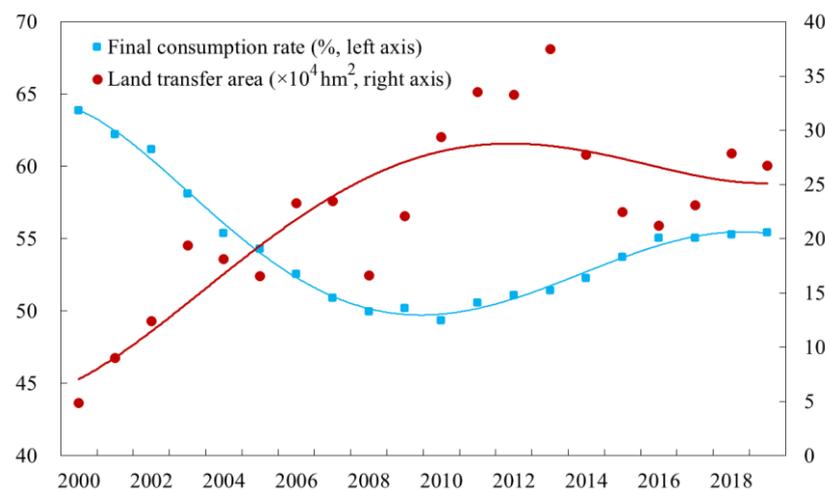


Figure 4. Dynamics of final consumption rate and land transfer area. Sources: The National Bureau of Statistics and *The China Land Resources Statistical Yearbook*.

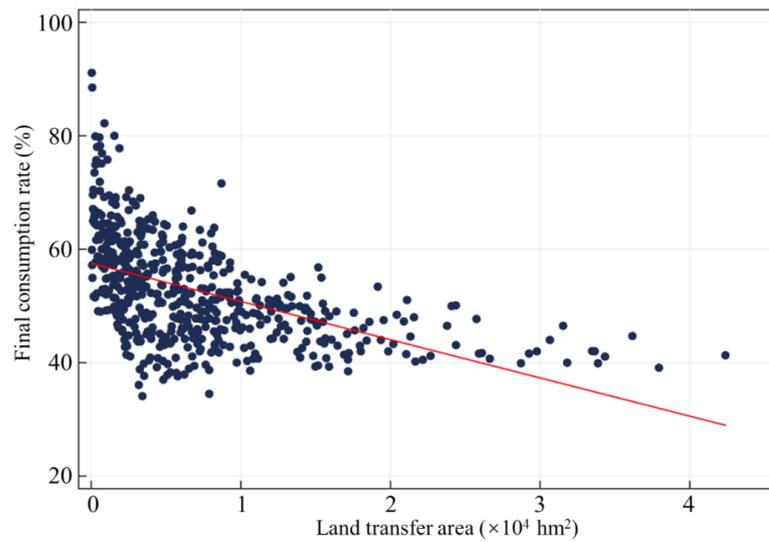


Figure 5. Scatterplot of final consumption rate versus land transfer area. Sources: The National Bureau of Statistics and *The China Land Resources Statistical Yearbook*.

Convincing evidence entails a detailed decomposition of the total consumption. As shown in Figure 6, we depict not only the dynamics of the total consumption but also the dynamics of consumption in the public and private sectors separately. In the public sector, total consumption experienced a sharp change, but the public sector’s consumption rate hardly changed. However, the share of the public sector revenue (fiscal revenue/GDP) significantly increased. In sum, the public sector showed an interesting phenomenon of a large increase in the income share but little growth in the consumption share. Since the growth of consumption failed to catch up to the growth of the income, the MPC became small. For instance, in 2001, the public sector MPC was only 0.44, lagging significantly behind the private sector (0.60). As the theoretical analysis indicates, in this case, the land income transferred from the private sector to the public sector would hardly be converted into consumption. The dynamics of the private sector’s consumption rate remain highly consistent with the dynamics of the total consumption, implying that changes in the total consumption are mainly due to changes in the private sector’s consumption. However, the decline in the private sector’s consumption rate fails to be compensated for by the public sector with an increasing income share, so the decline in the total consumption is understandable.

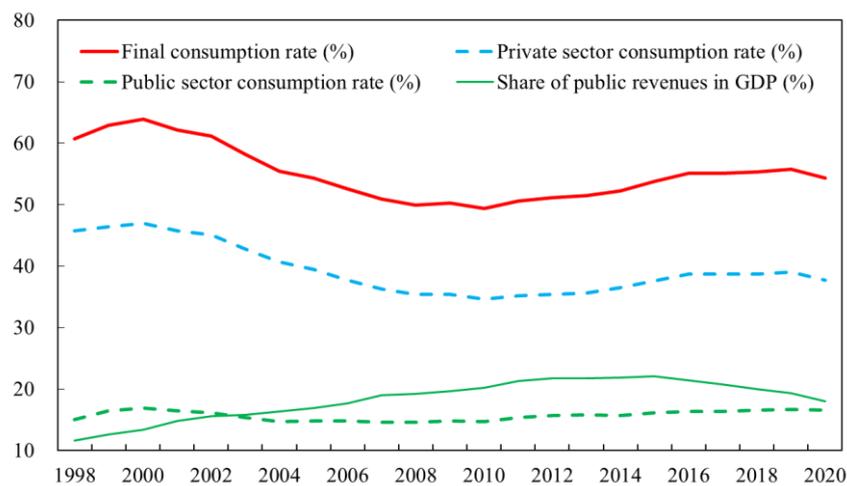


Figure 6. Decomposition of total consumption. Source: The National Bureau of Statistics.

We also collected data regarding income and consumption in urban and rural areas. As shown in Figure 7, the growth of urban residents' consumption lags behind the growth of their income, while the growth of rural residents' consumption is largely synchronized with the growth of their income. Thus, for urban areas, the added consumption is much smaller than the added income, resulting in a smaller MPC; however, for rural areas, the gap between the added consumption and the added income is much smaller, resulting in a larger MPC. Moreover, not only is the urban MPC smaller than the rural MPC, but the gap is widening. In 2001, the urban MPC was 0.02 lower than the rural MPC, and this value then increased to 0.11 in 2011 and further to 0.23 in 2019. In this case, as the theoretical analysis shows, the land income transferred to the urban areas would hardly be fully converted into urban consumption, thus hurting the total consumption.

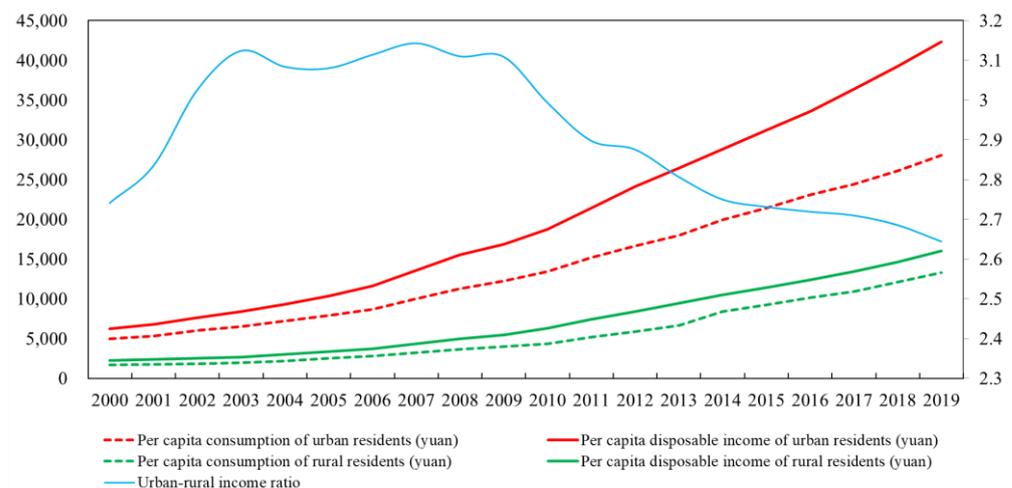


Figure 7. Income and consumption in urban and rural areas. Source: The National Bureau of Statistics.

4.2. Baseline Results and Robustness

The sample cities are in different regions, and the individual differences between provinces are significant. The F-test statistic for individual effects is 18.35, and the p -value is 0.000, implying that a panel data model should be used instead of the pooled OLS method. Furthermore, the p -value of the Hausman test is 0.013, significantly rejecting the null hypothesis and suggesting that a fixed-effects model should be adopted instead of a random-effects model. Therefore, we mainly undertook an analysis based on the fixed-effects model but also reported the results of the random-effects model and the pooled OLS (Table 2). The regression results showed that *land_1* was significantly negative at a significance level of 1%, indicating that with an increase in the monopolistic land transfer area, the consumption rate will decrease. It is evident that the land monopoly system has explanatory power for the low consumption rate in China.

The baseline regression results also indicate that the marginal effect of monopolistic land transfers on the final consumption rate is -0.028 , implying that each unit increase in land transfer area will lead to a 2.8% decrease in the final consumption rate while other factors are fixed. Accordingly, we may simulate a dynamic of the final consumption rate using the base period of 2000 (Figure 8). The actual consumption rate was reduced from 63.88% in 2000 to 55.43% in 2019, a decrease of 8.45%. The numerical simulation results showed that if the supply scale of the land monopoly remained unchanged at the level of 2000, the consumption rate would only drop to 57.41%, a decrease of 6.47%. In other words, the expansion of the land monopoly led to an additional 1.98% decline in the consumption rate during this period, which explains 23.41% of the decline in the consumption rate between 2000 and 2019. The quantitative simulation results further emphasize that the land monopoly is an important institutional cause of low consumption rates. If the monopoly were eliminated, Chinese households' welfare levels might be considerably improved.

Table 2. Baseline regression results.

Final Consumption Rate	(1)	(2)	(3)
	Pooled OLS	Random Effect	Fixed Effect
Land transfer area	−0.048 *** (0.005)	−0.032 *** (0.006)	−0.028 *** (0.006)
Per capita GDP	−0.026 *** (0.008)	−0.023 *** (0.007)	−0.024 *** (0.007)
Squared items of per capita GDP	0.003 *** (0.001)	0.002 *** (0.001)	0.002 *** (0.001)
Urbanization rate	0.033 (0.037)	0.081 ** (0.035)	0.097 *** (0.037)
Share of fiscal expenditures for people's livelihoods	−0.138 * (0.074)	0.333 *** (0.075)	0.422 *** (0.079)
Population dependency ratio	0.451 *** (0.063)	0.371 *** (0.067)	0.349 *** (0.071)
Employment share of SOEs	−0.009 (0.038)	0.062 * (0.037)	0.072 * (0.039)
Export dependence	−0.024 (0.021)	−0.022 (0.032)	−0.046 (0.042)
Constant	0.472 *** (0.053)	0.256 *** (0.049)	0.286 *** (0.055)
F-statistic/Wald-statistic	53.50	290.29	36.43
R ²	0.430	0.378	0.707
Observations	558	558	558

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, and the brackets contain the standard errors of the coefficients.

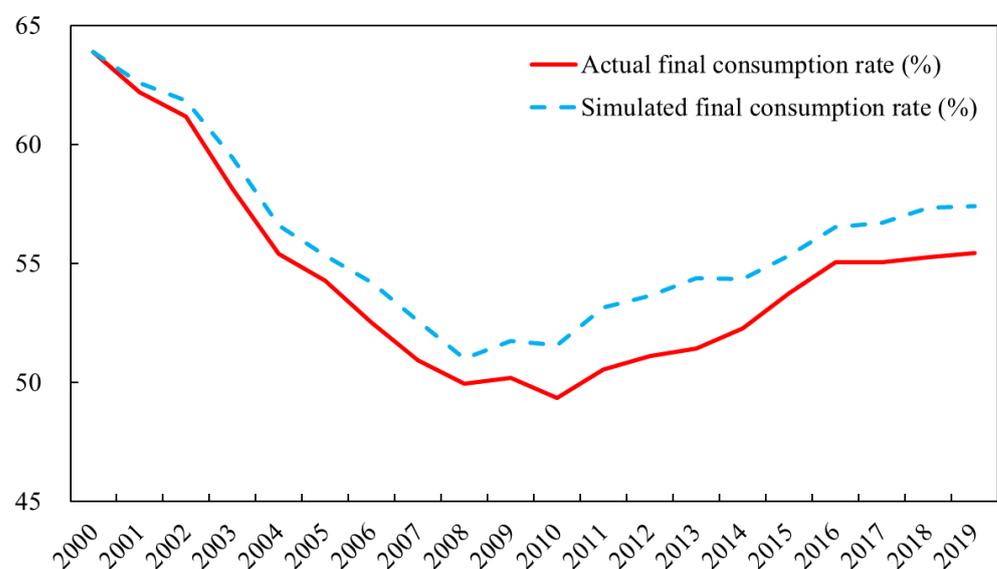


Figure 8. Simulation of final consumption rate dynamics. Note: The simulation was based on the coefficient (0.028), which was taken from the fixed effects results.

The regression results for the control variables were as follows:

- (1) *per_gdp* was significantly negative, and its square term (*per_gdp2*) was significantly positive. This suggests a significant U-shaped relationship between the consumption rate and per capita GDP, thus confirming Keynes' absolute income hypothesis [20]. The U-shaped relationship may be due to the correlation between labor income and economic development stage; when the per capita GDP is at a low level, a larger share of agriculture provides a higher share of labor income and expands household consumption. Then, the increase in the per capita GDP leads the economy into an industry-led development stage, and household consumption decreases as the labor

income share drops. Finally, a further increase in the per capita GDP represents the dominant position of the service industry (after 2012, the share of the tertiary industry exceeded the share of the secondary industry in China), and household consumption is pushed up again by the increase in labor income. In addition, the estimated turning point based on the results was CNY 60,000. During our examination period, this value was reached only in the eastern provinces.

- (2) *urban* was significantly positive, indicating that urbanization has a positive effect on promoting consumption. One potential explanation is that urbanization reduces the motive of rural residents to save preventively.
- (3) *live_ratio* was significantly positive, indicating that public expenditure for people's livelihoods is conducive to household consumption. This may be due to the fact that more public expenditure on people's livelihoods relieves household spending pressure on health and education, thus reducing the households' precautionary saving motivation.
- (4) *depen_ratio* was significantly positive, indicating that an increase in the share of the dependent population will promote consumption. This may be due to the fact that dependents contribute to the consumption but not the income of the households to which they belong.
- (5) *sta_emp* was significantly positive, indicating that a higher share of employment in state-owned enterprises may be a favorable factor for consumption because SOEs provide more employment security and thereby diminish the need for precautionary savings for households with one or more members employed by SOEs.
- (6) *export_ratio* was not significant, indicating that export characteristics might not be able to explain changes in consumption. Due to space constraints, control variables are not reported individually below.

The results of the baseline regression support the proposition that the land monopoly inhibits consumption. However, the robustness of the results may be challenged by the variable measurement methods, sample selection, and endogeneity. We performed several robustness tests based on the above regression as follows: (1) excluding municipalities. In China, municipalities are also provincial administrative units with urban-scale data which differ from provincial-scale data. We therefore attempted to re-regress the data after excluding the four municipalities. (2) Lagging the core independent variable by one period. The land monopoly variable was lagged for one period because its effect on consumption may not be current. (3) Replacing the core independent variable. The land transfer area was replaced by the land expropriation area to measure the level of land monopoly. (4) Considering the endogeneity issues. Endogeneity mainly originates from the measurement error of the level of land monopoly and potential omitted variables. In addition, the final consumption rate may reverse to affect the core explanatory variable (land transfer area), thus resulting in a potential reverse causal endogeneity. Under the political promotion motive, a decrease in the final consumption rate could inhibit economic growth, thus pushing the government to transfer more land to boost economic growth. It has been shown that local governments always tend to supply more land to stimulate economic growth when economic growth is under downward pressure [19]. To alleviate endogeneity issues as much as possible, the land reclamation area² and the first-order lag of the land monopoly³ were adopted as instrumental variables, and the two-stage least-squares method was as a test. (5) Lagging control variables by one period. To mitigate the potential endogeneity of other control variables, we lagged all control variables by one period for a regression. Table 3 shows the robustness test results. The results all support the original conclusion that land monopoly has a significantly negative impact on the final consumption rate.

Table 3. Robustness tests.

	(1)	(2)	(3)	(4)	(5)
Final Consumption Rate	Exclude Municipalities	Core Independent Variable Lags One Period	Replace Core Independent Variable	Instrumental Variable Method	Control Variables Lags One Period
Land transfer area	−0.024 *** (0.007)	−0.026 *** (0.006)	−0.021 *** (0.004)	−0.043 *** (0.012)	−0.037 *** (0.007)
Per capita GDP	−0.065 *** (0.015)	−0.020 *** (0.007)	−0.027 *** (0.007)	−0.012 (0.009)	−0.013 * (0.008)
Squared items of per capita GDP	0.008 *** (0.002)	0.002 *** (0.001)	0.002 *** (0.001)	0.001 (0.001)	0.002 ** (0.001)
Urbanization rate	0.169 *** (0.053)	0.107 *** (0.038)	0.117 *** (0.036)	0.084 *** (0.052)	0.106 *** (0.038)
Share of fiscal expenditures for people's livelihoods	0.338 *** (0.091)	0.522 *** (0.080)	0.446 *** (0.077)	0.407 *** (0.094)	0.248 *** (0.082)
Population dependency ratio	0.335 *** (0.078)	0.408 *** (0.071)	0.322 *** (0.071)	0.387 *** (0.083)	0.284 *** (0.078)
Employment share of SOEs	0.007 (0.051)	0.081 ** (0.041)	0.079 ** (0.038)	0.047 (0.064)	0.101 ** (0.043)
Export dependence	0.005 (0.058)	−0.058 (0.044)	−0.103 ** (0.042)	−0.129 ** (0.053)	−0.048 (0.043)
Constant	0.257 *** (0.065)	0.238 *** (0.058)	0.335 *** (0.055)	—	0.313 *** (0.059)
F-statistic/Wald-statistic	35.51	37.15	37.59	16.97	33.25
R ²	0.708	0.723	0.714	—	0.700
Observations	486	527	558	341	527

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, and the brackets contain the standard errors of the coefficients.

4.3. Heterogeneity Analysis

To reveal the heterogeneous effect of the land monopoly on consumption, we divided the total sample into several subsamples and then estimated and compared the marginal effects (Table 4). It should be noted that all heterogeneity estimates were based on the fixed effects equation.

Table 4. Heterogeneity analysis.

	(1)	(2)	(3)	(4)	(5)	(6)
Final Consumption Rate	Eastern Region	Central and Western Regions	Low Catch-Up	High Catch-Up	Weak Intervention	Strong Intervention
Land transfer area	−0.022 *** (0.005)	−0.048 *** (0.013)	−0.018 *** (0.006)	−0.070 *** (0.016)	−0.017 *** (0.005)	−0.107 *** (0.012)
Per capita GDP	−0.036 *** (0.007)	−0.107 *** (0.025)	−0.011 (0.007)	−0.192 *** (0.035)	−0.084 *** (0.011)	0.037 *** (0.013)
Squared items of per capita GDP	0.002 *** (0.000)	0.018 *** (0.004)	0.001 *** (0.000)	0.038 *** (0.008)	0.008 *** (0.001)	−0.002 * (0.001)
Urbanization rate	0.023 (0.036)	0.196 *** (0.061)	0.033 (0.041)	0.169 *** (0.061)	0.132 *** (0.031)	−0.314 *** (0.083)
Share of fiscal expenditures for people's livelihoods	0.519 *** (0.092)	0.351 *** (0.109)	0.339 *** (0.087)	0.321 ** (0.141)	0.040 (0.091)	0.094 (0.103)
Population dependency ratio	0.361 *** (0.078)	0.171 (0.109)	0.392 *** (0.081)	0.040 (0.118)	0.223 *** (0.071)	0.458 *** (0.093)
Employment share of SOEs	−0.181 *** (0.055)	−0.019 (0.061)	0.049 (0.055)	−0.205 *** (0.074)	−0.070 (0.047)	0.075 (0.051)

Table 4. Cont.

Final Consumption Rate	(1) Eastern Region	(2) Central and Western Regions	(3) Low Catch-Up	(4) High Catch-Up	(5) Weak Intervention	(6) Strong Intervention
Export dependence	−0.005 (0.037)	−0.110 (0.091)	0.008 (0.040)	−0.185 * (0.107)	0.040 * (0.024)	0.093 * (0.053)
Constant	0.395 *** (0.059)	0.587 *** (0.077)	0.222 *** (0.061)	0.645 *** (0.096)	0.491 *** (0.067)	0.444 *** (0.073)
F-statistic	27.36	28.03	15.99	20.99	41.24	34.49
R ²	0.707	0.670	0.661	0.400	0.537	0.491
Observations	198	360	279	279	279	279

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively, and the brackets contain the standard errors of the coefficients.

- (1) Regional heterogeneity: there are large disparities in regional development levels in China, with the central and western regions lagging behind the eastern regions. Generally speaking, at higher stages of development, urban areas will increase their feedback to rural areas, and much of the land wealth transferred to urban areas will be invested back into rural areas such as rural public infrastructure, thus reducing the urban–rural income gap. In other words, when entering a higher development stage, the return of land income can mitigate the impact of monopolistic land transfer on the mediating variable (the urban/rural income ratio). Based on the statistics from 2000 to 2017, the mean value of the urban/rural income ratio in the eastern provinces was lower than that in the central and western provinces. In 2017, the average value of urban/rural income ratio was 2.34 in the eastern provinces and 2.71 in the central and western provinces. Accordingly, it is reasonable to speculate that the harm of the land monopoly on consumption will decrease in the eastern regions.

To evaluate this view, the total sample was divided into two subsamples (the eastern region vs. the central and western regions) for the regional regression ⁴. As shown in columns (1) and (2) of Table 4, the marginal effect of the land monopoly on the consumption rate was −0.02 in the eastern region and −0.05 in the central and western regions, indicating that land monopoly's negative effect on consumption was greater in the central and western regions.

- (2) The heterogeneity of economic catch-up and government intervention: due to the motivation of political promotion, there is a desire among local governments in China to compete for growth, resulting in a situation of economic catch-up. The motivation to pursue economic catch-up often drives local governments to expand fiscal investment to enhance intervention in economic growth. However, because local governments seek economic growth, government intervention exhibits a distinct structural bias in fiscal investment. In a high-catch-up scenario, local governments prefer to invest (much of which is financed by land revenue) in fields that are more conducive to economic growth [18]. Following this motive, it is clearly more beneficial to invest in more economically efficient urban areas than in rural areas. However, such urban-biased investment policies often incidentally exacerbate urban–rural inequality [25]. Our data indicate the mean government intervention intensity is stronger in the high-economic-catch-up group, while a larger urban–rural income ratio is coupled with strong government intervention. Therefore, we argue that higher levels of economic catch-up may enhance government intervention and thus widen the rural–urban income gap.

Additionally, with high-catch-up situations, local governments are also more likely to invest in sectors that contribute to increased fiscal revenues. This move helps the government to generate sustainable revenues in the future, which is also an important aspect of performance assessment, but may result in a bias toward increasing the public

sector's share of revenue. Our data indicate the public sector revenue share is larger in the high-government-intervention group. We therefore argue that higher levels of economic catch-up may increase the public sector's share of revenue through stronger government intervention.

In view of the above results, we argue that high catch-up levels and strong government intervention may contribute to the effect of monopolistic land transfers on two mediating variables (the public sector's income share and the rural/urban income ratio), thereby exacerbating low consumption. To examine this speculation, we implemented a heterogeneity study to assess economic catch-up and government intervention. As in the work of Miu et al. [26], we measured the interprovincial economic catch-up level. As in the work of Chen [8], government intervention intensity is expressed as the ratio of the fiscal expenditure to the GDP. We then conducted grouped regressions based on the subsamples split by the median. As shown in columns (3)–(6) of Table 4, the negative effect of the land monopoly on the final consumption rate is greater at high levels of economic catch-up and strong government intervention scenarios, thus supporting the above argument.

4.4. Influence Mechanism

Our theoretical analysis suggests that the land monopoly may affect consumption through two channels: the national income distribution effect and the urban–rural income distribution effect. We empirically tested these mechanisms. Specifically, the influence of the land monopoly on the mediator variable (hereafter, the first-stage regression) was first tested based on Equation (2). Then, the influence of the land monopoly and the mediator variable on the final consumption rate (hereafter, the second-stage regression) was tested based on Equation (3). Table 5 shows the regression results.

Table 5. Regression results for influence mechanisms.

	(1)	(2)	(3)	(4)
First stage	Dependent variable: sthe share of public revenues in the GDP		Dependent variable: urban/rural income ratio	
Land transfer area	0.031 *** (0.003)		0.238 *** (0.035)	
Land expropriation area		0.009 *** (0.002)		0.069 *** (0.022)
F-statistic	44.69	36.95	62.64	57.84
R ²	0.749	0.710	0.808	0.795
Second stage	Dependent variable: final consumption rate		Dependent variable: final consumption rate	
Share of public revenues in GDP	−0.420 *** (0.092)	−0.422 *** (0.084)		
Urban/rural income ratio			−0.028 *** (0.008)	−0.030 *** (0.007)
Land transfer area	−0.015 ** (0.007)		−0.021 *** (0.007)	
Land expropriation area		−0.017 *** (0.004)		−0.019 *** (0.004)
Per capita GDP	−0.022 *** (0.007)	−0.024 *** (0.007)	−0.030 *** (0.007)	−0.032 *** (0.007)
Squared items of per capita GDP	0.002 *** (0.001)	0.002 *** (0.001)	0.003 *** (0.001)	0.002 *** (0.001)
Urbanization rate	0.075 ** (0.036)	0.093 *** (0.036)	0.109 *** (0.036)	0.128 *** (0.036)
Share of fiscal expenditures for people's livelihoods	0.404 *** (0.077)	0.410 *** (0.076)	0.459 *** (0.078)	0.475 *** (0.076)
Population dependency ratio	0.295 *** (0.071)	0.265 *** (0.070)	0.338 *** (0.070)	0.307 *** (0.070)

Table 5. Cont.

	(1)	(2)	(3)	(4)
Employment share of SOEs	0.032 (0.039)	0.031 (0.039)	0.100 ** (0.039)	0.104 *** (0.038)
Export dependence	−0.044 (0.041)	−0.085 ** (0.041)	−0.055 (0.042)	−0.105 ** (0.042)
Constant	0.419 *** (0.061)	0.463 *** (0.060)	0.345 *** (0.057)	0.396 *** (0.057)
F-statistic	37.38	40.24	36.60	38.07
R ²	0.718	0.733	0.714	0.722
Sobel tests <i>p</i>	0.000 ***	0.000 ***	0.002 ***	0.014 **
Mediating effect	46%	19%	25%	10%
Observations	558	558	558	558

Note: ***and ** indicate significance at the 1% and 5% levels, respectively, and the brackets contain the standard errors of the coefficients.

The first-stage regression results in column (1) of Table 5 show that the effect of the land monopoly on the share of public revenues in the GDP was significantly positive, indicating that the land monopoly increases the income share of the public sector and reduces the income share of the private sector in the national income structure. The second-stage regression results show that the share of public revenues in the GDP had a significantly negative effect on the final consumption rate. The above results indicate that monopolistic land transfers actually divert land income from the private sector to the public sector, which promotes a higher public sector income share but hurts the private sector at the same time. Such land income transfers must be detrimental to total consumption once the public sector's rate of consumption fails to follow the growth of its income.

As shown in column (1), the Sobel test *p*-value is less than 0.01, indicating the presence of a significant mediating effect. The calculation based on the coefficients shows that this mediating effect is about $-0.013 (=0.031 \times -0.420)$. The results of the second stage show that the direct effect of the land monopoly on the final consumption rate is -0.015 . Thus, the total effect is about -0.028 , and the mediating effect is 46% of the total effect. These findings strongly support the national income distribution effect.

The first-stage regression results in column (3) of Table 5 show that the effect of land monopoly on the urban/rural income ratio is significantly positive, indicating that the land monopoly expands the income gap between urban and rural areas. The second-stage regression results show that the urban/rural income ratio has a significantly negative effect on the final consumption rate, indicating that the widening urban/rural income ratio harms consumption.

As shown in column (3), the Sobel test *p*-value is less than 0.01, indicating that the mediating effect holds. The first stage result shows that the mediating effect of the land monopoly on the final consumption rate is $-0.007 (=0.238 \times -0.028)$; the second stage result shows that the direct effect of the land monopoly on the final consumption rate is -0.021 . Therefore, the total effect of the land monopoly on the final consumption rate is -0.028 , and the mediating effect accounts for 25% in the total effect. Why does the land monopoly cause urban–rural income differentiation? On one hand, land income monopolized by the government is invested in urban areas; on the other hand, the monopoly of the agricultural land conversion market deprives rural areas of industrial development opportunities. Thus, the gap between urban and rural areas has been expanding since the implementation of the land monopoly system. The absolute income gap expanded from CNY 4000 in 2000 to CNY 26,300 in 2019, a more than sixfold increase. This huge urban–rural gap means that rural areas are generally at low income levels; thus, it is not difficult to understand the downturn in rural consumption.

To further verify the robustness of the above results, the land transfer area (*land_1*) was replaced by the land expropriation area (*land_2*) to measure the level of the land monopoly;

then, the regression was carried out again. The results in columns (2) and (4) of Table 5 show that the conclusion is robust and supports the theoretical hypothesis.

Comparing the mediating effect of the two channels, the national income distribution effect (46%) is significantly stronger than the urban–rural income distribution effect (25%), indicating that the former plays a dominant role in explaining the effect of the land monopoly on the low consumption rate. One possible reason for the different effects is that the national income distribution effect is exerted directly through a reduction in the private sector’s income, while the negative effect of the urban and rural income distribution on consumption is due to a reduction in the MPC. Of course, consumption includes both public and private consumption, not just private consumption. However, the public sector’s consumption rate only changed minimally in the time period we examined.

5. Discussion

Our results confirm that the puzzle of the low rate of Chinese consumption can be explained by specific land supply policies, thus providing a fresh insight into the issue of low consumption rates. Paralleling the investigation of the relationship between the household registration system and consumption from Chen et al. [9,27], we both emphasize the importance of explaining China’s low consumption rate from a production factor allocation perspective and suggest the importance of the market-oriented allocation of production factors for the rebalancing of China’s economy. In addition, a large portion of the literature has developed a land-based development hypothesis which argues that the land supply contributes to aggregate economic growth in a developing country [19,28]. Nonetheless, the results of this paper remind us that land supply patterns with strong government intervention can easily lead to an unhealthy economic structure. In the context of China’s economic transformation, it is worth further research to examine the land policies in terms of economic structure and development quality.

Analyses of low consumption through the lens of income inequality have received increasing attention [10], with analyses of urban–rural income inequality dominating [8]. The income inequality between the public and private sectors has received much less attention than the large amount of research on the urban–rural income gap. In general, land is a very strong instrument of wealth distribution and largely determines the pattern of income distribution. Through the mechanism test, we proved that land monopoly not only widens the income gap between urban and rural areas but also distorts the income distribution between the public and private sectors, and the latter is even much more harmful to consumption than the former. Thus, we expand the dimension of analyzing the low-consumption problem from the perspective of income inequality. Boosting consumption is fundamentally dependent on the private sector, so breaking up land monopolies to raise incomes in the private sector is necessary.

We also noted some studies in the literature that explored land policy and consumption. For example, Chen and Yang [29] investigated the interplay among land supply, housing prices, and household saving ratios. Only they used land supply as an instrumental variable for housing prices, and hence the analysis focused on housing prices rather than land supply policies. Additionally, Dai et al. [16] found that land supply structural distortions also hurt consumption. Unlike its focus on the structure of land supply, this paper is concerned with the nature of the land supply, i.e., the monopoly. Imbalances in the structure of the land supply inhibit consumption by distorting the industrial structure, while a land monopoly inhibits consumption by distorting the pattern of income distribution. Synthesizing these two aspects contributes to a fuller understanding of the relationship between land policy and consumption.

Although this paper is based on the case of China, the findings are also relevant for other developing and transition countries (e.g., Vietnam, Thailand, India, Paraguay, Honduras, Nicaragua, Peru, etc.) [30–36]. Although these countries have witnessed massive shifts in land control from state and collective ownership to private ownership [37], many still maintain strong state intervention in the land market. These interventions have weak-

ened the land rights of vulnerable groups so that income levels and consumption capacities are less than optimal. For these countries, the results suggest that reducing monopolies in land transactions may yield significant payoffs in terms of economic rebalancing.

Of course, it should be noted that the provincial panel data we used cannot directly portray the consumption behavior of microsubjects due to data availability limitations, which limits the scope of this analysis. Future research could provide a more nuanced investigation using microdata that contain both land use and consumption information.

6. Conclusions and Implications

Land systems are the foundation of the social fabric and are an influential issue on the development agenda. There are few scholars who do not recognize the significant role of land systems in economic and social development, but there is little straightforward evidence that provides a detailed picture of how land systems affect the functioning of national economies. This paper proposes a new explanation of the Chinese low-consumption puzzle from the perspective of land supply policy, aiming to highlight the close link between land policy and macroeconomics.

Firstly, China's specific low consumption rate is an explainable consequence of its monopolistic land supply policy. Notably, the explanatory power provided by the land monopoly is also substantial, as it explains almost 23.41% of the decline in the consumption rate, which is more than many classical theories. China's recent economic strategies have placed more emphasis on boosting consumption, with the proposed "dual circulation" development pattern and the Strategic Plan for Expanding Domestic Demand (2022–2035). Our results suggest that building a long-term mechanism to kick-start consumer demand warrants attention to land supply-side reform. As highly monopolistic land supply policies are corrected, growth potential will be released.

Secondly, a monopolistic land supply system suppresses aggregate consumption by widening the public sector's income share and the urban–rural income gap. This finding deepens the existing analysis of the relationship between income distribution and low consumption to the institutional level. Income inequality is only a direct cause of low consumption; land monopolization is the underlying institutional cause. In order to balance the income shares of the public and private sectors and reduce the urban–rural income gap, we propose to introduce market-oriented land factor reforms. Land marketization reforms should focus on reducing the scope of land expropriation and establishing a unified urban and rural land market for construction so that rural land has more direct access to the market and generates more income for both the rural and private sectors. Of course, the reform of land marketization is a long-term project; more urgently, local governments need to invest more land transfer revenues in rural areas and people's livelihoods so as to increase their income and consumption capacity. Although the current policy has stipulated the proportion of land transfer revenue to be invested in the rural and livelihood sectors, it has not been well observed.

Thirdly, the effect of the land monopoly on consumption is heterogeneous, and the inhibitory effect is stronger in the central and western regions; it is also stronger under the implementation of economic catch-up strategies and government intervention. This suggests that the relationship between land monopoly policy and consumption can be influenced by other relevant institutions. It may be more likely to be successful to provide relevant complementary reforms when implementing reforms of the land system. China's GDP-focused performance appraisal has been significantly criticized because it tends to provoke excessive economic competition among local governments. Against the background of land being the main development tool, excessive economic competition certainly distorts land supply even more. We therefore recommend that the performance appraisal mechanism be reformed to provide a favorable institutional environment for land system reform.

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Notes

- ¹ “Land transfer area” refers to the area of land sold by the government to land users through bidding, auction, and listing. These lands are exclusively supplied by the government and are therefore monopolistic in nature.
- ² In order to have enough cultivated land to ensure food security, China has implemented a cultivated land requisition–compensation balance policy. The more local governments sell land for construction, the more cultivated land is expropriated, and the more cultivated land needs to be replenished accordingly. Land reclamation is an important way to replenish cultivated land. Therefore, the area of land reclamation is related to the core explanatory variable (land transfer area). However, the land reclamation area has no direct relationship with the final consumption rate. Therefore, the land reclamation area as an instrumental variable is desirable and passes the tests. The data on land reclamation area were obtained from the *China Land Resources Statistical Yearbook*.
- ³ For time series and panel data, using the lagged item of the independent variable as an instrumental variable is a common method for selecting the instrumental variable. In a continuous economic process, the first-order lag term of the land transfer area is strongly related to the current value but is not related to the current error term because it has occurred.
- ⁴ According to the regional division method of the National Bureau of Statistics, the eastern region includes Beijing, Tianjin, Hebei, Liaoning, Shandong, Shanghai, Jiangsu, Zhejiang, Fujian, Guangdong, and Hainan, and the central and western regions include Heilongjiang, Jilin, Shanxi, Henan, Anhui, Jiangxi, Hubei, Hunan, Sichuan, Chongqing, Guangxi, Yunnan, Guizhou, Tibet, Inner Mongolia, Shanxi, Gansu, Qinghai, Ningxia, and Xinjiang.

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