

## Article

# Land System Reform in Rural China: Path and Mechanism

Xinjie Shi <sup>1</sup>, Xuwen Gao <sup>2,\*</sup> and Shile Fang <sup>3</sup>

<sup>1</sup> China Academy for Rural Development, School of Public Affairs, Zhejiang University, Hangzhou 310058, China

<sup>2</sup> Peking University HSBC Business School, Shenzhen 510632, China

<sup>3</sup> School of Economics, Zhejiang Gongshang University, Hangzhou 310018, China

\* Correspondence: gaoxw@phbs.pku.edu.cn

**Abstract:** Changes in land policy not only determine agricultural growth, but also have bearing on issues, such as peasants' rights and interests, industrial development, and urbanization. On account of China's singular history and culture, its land systems are somewhat unique. This paper analyzes the institutional changes that took place before and after 1978 to show the journey of land system reform in rural China in the 20th century. We look closely at the policy performance and drawbacks of the reform that occurred after 1978, and analyze a series of "Central First Documents" that concern rural issues. Based on this analysis, some prospective land policy reforms are predicated. We conclude that at present, rural land ownership is unlikely to be completely privatized in the short-term. Creating a new agricultural management system with special functions or a land shareholding system, could be suitable measures to overcome the disorder of the existing land policy system in China.

**Keywords:** land system; reform; performance; drawbacks



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## 1. Introduction

Distinguished from other countries, the land system in China can be traced back to ancient time-honored cultures. To analyze this land system it is imperative to comprehend this background. Historically, the various systems can be categorized as follows: Square-Fields System in Xia, Shang and Zhou Periods [1,2]; Ming-Tian System during Qin and Han Dynasties [3]; Station Farm System and Land-Occupation System during the period of Wei, Jin and Southern and Northern Dynasties [4]; Equal-Field System in Tang Dynasty [4,5]; Tenancy System in Song Dynasty [6], and Permanent Rent System during Ming and Qing Dynasties [3]. Throughout its history, although private land ownership existed during certain periods, the predominant system was with the characteristic of land-nationalization. This, beyond all doubt, is the historic foundation for modern land system changes. In fact, the Permanent Land System during Ming and Qing Dynasties is similar to the modern land system, which divides property rights into two spheres, namely, land ownership and use right. As these two property rights are independent of each other, some of the lands can be transferred, transacted, bequeathed, and mortgaged, which gives rise to two independent trading markets [7].

In China, the land policy reforms continued throughout the 20th century with most occurring after 1949 when the People's Republic of China was formed. There are two reasons to focus on the land system in rural China. First is its significant impact on agricultural growth, while the second is the reality of China's demographic which is described as "more people with less land". Moreover, these factors apply in the west and even in some socialist states. The "great reform" and "opening" beginning in 1978, is regarded as the rural land system reform breakthrough that promoted economic development for more than 30 years. There is abundant discussion from different perspectives in academic circles, such as the economic performance resulting from the land policy [8–10]; rural land policy and the construction of the system of political democracy [11]; land system and

urbanization [12–14]; and land ownership and conversion [15–19]. The studies on the integrated reform path and the mechanism of institutional changes are fewer than those focused on the whole reform period [18,20,21] or the urban land policy [22,23]. Therefore, the analysis of this issue has practical significance as well as an academic value.

Our paper aims to address the following research questions: What are the path and dynamics of the institutional changes? What performances are obtained from the land system reform? To address these questions, the paper is organized as follows: (i) Discuss the theoretical mechanisms of land policy and economic performance; (ii) Examine the path of institutional changes in rural land system; (iii) Estimate the policy performance; (iv) Discuss the future potential land policy reform.

## 2. Approach and Methodology

### 2.1. The Theoretical Mechanism about Land System and Economic Performance

The definition of institution has been heatedly discussed [24–26]. The one raised by [24]: “Institution is the game rule of the society and also the restriction to determine the relationship among individuals”, provokes debate. For the sake of further demonstrating the changes of institution, [24] defined the notion of institutional change as a process of institution-making, modification, and breaking. Economic performance can be a factor binding institutions and the change process [26–28]. Abundant research has focused on the cause-and-effect relationship between institutional reform and economic development [26,29–31]. Apart from the traditional views from [26] on these two factors, [29] analysis is pivotal. It addressed the previously neglected influences of institutional arrangements on development policy and more meaningfully, examined the contextual influences of institutions, rather than only direct effects. Furthermore, [31] proposed a new view from economic history to expound the paths of institutional development and its consequences for growth.

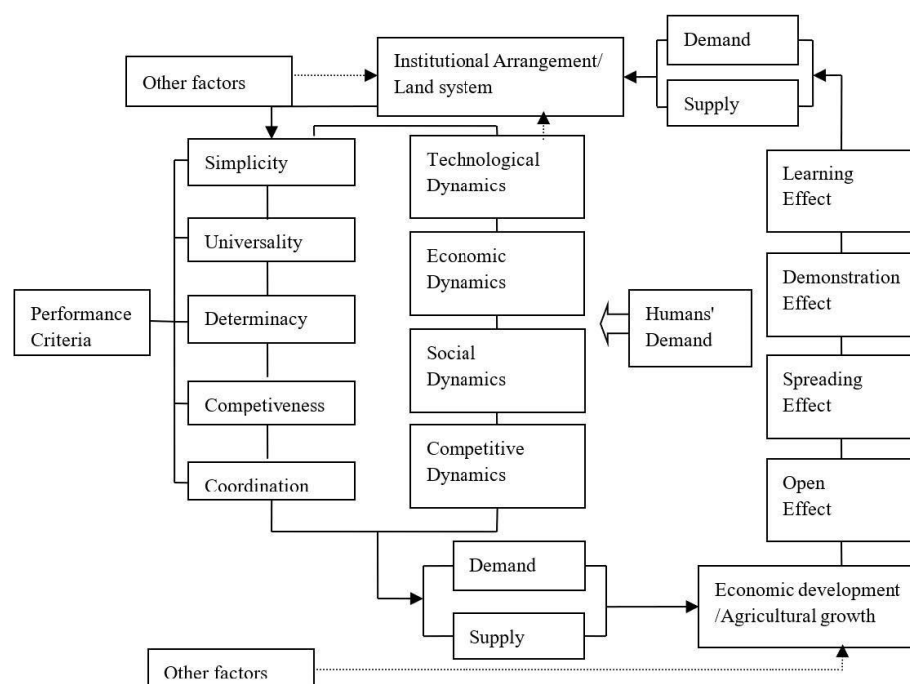
Many studies have shown that agriculture plays an important role in economic development [14]. A well-designed agricultural institution could lead to a huge increase in agricultural output, which, in turn increases the local economy. When narrowing down the sphere of “agricultural institution” to “land system” in rural China, which is significantly one of the most momentous institutions under the agricultural policy framework, the analysis method and research perspective of institution can be used for reference. A large amount of research exists, such as [32–35]. Ref. [32] has underlined the significance of the institutional framework in agricultural output while analyzing centrally planned economies. Therefore, it seems that the institutional dimension in agricultural development, focusing on land system, is a valid avenue of research. This is due to the fact that in rural China the land system used to be a type of collective farming system. The connection between land systems and economic performance is significant, and thus relevant to analyze with its logical structure and unique policy context.

The mechanism of this study is illustrated in Figure 1, which indicates the complex correlation between the concrete institutional arrangement and economic performance, namely, land system and agricultural growth.

The performance of the land system can be estimated by certain criteria, which are interrelated with the dynamics of the institution’s manifesto. In the light of the demand-supply approach applied in neoclassical economics, the economic development or more specifically, agricultural growth, can be verified from the changes in demand and supply. These provide the criteria when analyzing institutional changes and how they affect economic development. In short, changes in institutional arrangements affect the institutional demand and supply.

Specifically, the performance criteria are generalized in five ways (see the left part in Figure 1): Simplicity, universality, determinacy, competitiveness, and coordination [36]. On the basis of the research from epistemology and jurisprudence [37,38], it is concluded that complicated sophisticated rules do not yield expected results and institution failure can be averted by their simplification. Ref. [39] associated universality with unknown individuals,

as well as situations with indeterminate numbers, which guaranteed equity to relevant actors. Furthermore, determinacy makes the rules identifiable and stable, which reduces execution cost. Moreover, it may result in institutional rigidity, thus the competitiveness is regarded as indispensable to the adjustment of the regime. Furthermore, the demands of efficiency emphasize the coordination of the institution as there are different types of mutual interdependence existing among them [40].



**Figure 1.** Institutional change and economic development.

Five criteria reflect four dynamics, namely, technological, economic, social, and competitive dynamics (see the middle part in Figure 1) [41]. The institutional change affects the market demand and supply, which further generates an impact on economic development. From the land policy perspective, this presents the effect of certain land systems on agricultural growth. Economic growth will influence the institutional change as well, which is derived from four effects: Learning, demonstration, spreading, and open effect (see the right part in Figure 1) [36]. Specifically, the increase in agricultural productivity in one village has spillover effect on the neighboring villages (demonstration and spreading effect). This prompts policy-makers to learn and re-examine existing institutions, which leads to their modification (learning and open effect). Similarly, this can also be considered from the dimension of changes in institutional demand and supply. When the institutional market retains highly asymmetric information, the negative effects of internal feedback systems may lead to a recession or even famine or war. This is often regarded as the mandatory mechanism to correct institutional imbalance.

Therefore, demand, supply, equilibrium, and disequilibrium can be drawn into institution-analysis using the neoclassical economic “demand-supply” method and can be employed when analyzing the rural land policy with its stated logical framework.

## 2.2. Data and Empirical Strategy

### 2.2.1. Data

The data in our study are obtained from the “Compilation of Statistics for 60 Years in China: 1949–2008”. They were compiled by the National Bureau of Comprehensive Statistics and relevant “China Statistic Yearbook” and published by China Statistics Press. The data used in the model include 31 provinces, municipalities, and autonomous regions in mainland China and the data of Sichuan Province and Chongqing are also consolidated.

While the data of cultivated land, chemical fertilizer, and total power of agricultural machinery can be directly obtained from the sources stated above, the agricultural labor force is the approximate value derived from the following formula:

$$\text{Agricultural Labor Force} = \text{Employees of Farming, Forestry, Animal Husbandry and Fishery} \times \text{Agricultural Output/The Gross Output of Farming, Forestry, Animal Husbandry and Fishery}$$

In addition, the exponential smoothing method is used to calculate individual missing data as the estimated values.

### 2.2.2. Empirical Strategy

To estimate the performance of land reform in China, this research constructs the production function based on the methods proposed by [42], and the resulting specification is as follows:

$$\ln Y = \text{constant} + \alpha_1 \times \ln \text{land} + \alpha_2 \times \ln \text{labor} + \alpha_3 \times \ln \text{fert} + \alpha_4 \times \ln \text{power} + \alpha_5 \times \text{Ti} + \varepsilon \quad (1)$$

where the dependent variable  $Y$  denotes total agricultural output, and the independent variables land, labor, fert, and power represent the cultivated land, the agricultural labor force, chemical fertilizer, and the total power of agricultural machinery, respectively. In addition,  $\text{Ti}$  represents the time trend, constant denotes the intercept which is also the Solow residual of technology advance, and  $\varepsilon$  is the random disturbance term. There are no institution variables in this model since the land policy system and its impact on the agricultural growth are difficult to measure. Although some scholars [43] denoted it by the percentage of the production teams which accepted HRS, this measurement was limited from 1978 to 1984 as 99% of the teams adopted HRS since 1994 and it barely experienced changes after that. Moreover, a multi-input–multi-output model was used in the analysis of agricultural policies [35], but the land system variable was not really operational. In consequence of this disadvantage, the method used by [44,45], which is similar to counterfactual measurement, is applied in this paper. The specific steps are as follows: After the construction of the five regression equations corresponding with the five periods, the data of independent variables are placed into these equations, respectively. This is to acquire the estimated value of the dependent variable. Afterwards, we contrast these estimated values and assign 5, 4, 3, 2, 1 as the weights from largest to smallest. The policy performance in different periods can be viewed from the aggregation of the weights as the rule is “the greater the weights, the better the allocation performance”.

## 3. Land Policy System

### 3.1. Land Policy System in Northeast Asia

The land system in northeast Asia is entirely different from the dynamics in America or Europe. After World War II, countries in northeast Asia initially started the land reform. Japan was the first to improve rental terms for tenant farmers. The land reform insisted that non-cultivating land owners have to sell their farmland to the government. The Japanese government then reassigned arable land from renters to actual operators. Thirty three percent of arable land was redistributed to 61% of rural households [46]. After the reform, the landless households dropped from 27 to almost none [47]. In 1952, the Agricultural Land Law was carried out to govern the future of arable land. This law carefully regulated the ownership of arable land. Only farm households could own farmland. Private corporations or non-farmers were not allowed to own arable land. Leasing of farmland was permitted within each village. Selling farmland was permitted only if the buyer was a local farmer.

Land reform in South Korea began immediately after Japan. Before the land reform, a small number of landlords had private ownership of vast farmlands. In 1930, only 3.6% of total households were landlords [48]. On 22 March 1948, the government began to redistribute farmland. Until the year 1950, 27% of arable land was redistributed to 46% of rural households [46]. In 1950, the Land Reform Act was carried out. The Act allowed the

transfer of ownership of redistributed lands to the cultivators. Moreover, the Act prohibited any type of new tenancy. By this measure, the land tenancy was permanently abolished in South Korea.

Socialist countries, such as China, took rather different land systems from the capitalist countries. In the following subsection, we will analyze the unique path of land institutional changes in rural China.

### 3.2. Land Policy System in Rural China

#### 3.2.1. Land System Reform in Rural China before 1978

The theoretical framework of the change of land system and agricultural development stated above, provides subject matter for research into the land policy in China. The following questions can be considered: What is the path of institutional change when the land system in rural China is analyzed? What positive influences can be deduced in the agricultural development from this change process? Is the aforesaid theoretical framework applicable in the unique context in China? In this light, this paper divides the land system in China from the turn of the 20th century into two time nodes: Preceding 1978, and after the 1978 reform initiated a completely new development process.

Before 1949, private land ownership existed and land transaction was frequent, namely, the wealth you attained was virtually linked with the amount of land you owned [49]. However, a majority of the land was mastered by the landlords and the peasants had to rent the lands to work on farms. The first stage of the land reform in China was in reality triggered in this background. Ref. [50] differentiated the reform in this period into two territories, namely, liberated areas and Kuomintang-ruled areas. “Land to the tiller” in liberated areas went through five phases, namely, Formative Years (1921–1926), Deviation Period (1927–1931), Practice Course (1931–1935), The Temporary Halt Stage (1935–1945), and Completion Stage (1945–1949). Furthermore, the land system in the Kuomintang-ruled area seemed to be a multivariate mixed system embracing the landlords, the rich and poor peasants, and the state. The goal “land to the tiller” was the foundation of the first rural land system reform from 1948, which first focused on changing land ownership, from landlordism<sup>1</sup> to peasant proprietorship<sup>2</sup>. Confiscating the lands of landlords and dispensing them to the farmers ignited their initiation and incentive, which resulted in an increase in agricultural growth. Based on the statistics, agricultural production per hectare in 1947 was 1500 jin<sup>3</sup> and the counterpart was 1920 jin in 1948 [51]. The grain output increased by 44.79% from 1949 to 1952, with the annual growth rate of approximately 13%; the cotton yields increased by 193.69%, with the annual growth rate of 43.1%; the agricultural production rose by 49%, with the annual growth rate of 14.2% [52]. From the analysis framework of institutional economics, it is the farmers’ demand that promoted the land reform. This simpler, more reliable, and coordinated system increased the agricultural outputs and boosted the economic development.

The second focus of this land reform was the government’s suggestion that they assemble together in a collective path, which became the basis of collectivism. The stage covered two periods: Cooperative Period from 1949 to 1958 and the People’s Commune Period from 1958 to 1978.

During the elementary cooperative period, the emphasis was to build mutual aid groups and cooperatives, which focused on the sharing of land, unified management, and allotting the profits according to the dividend distributions and the work performance [53]. Although peasants were frustrated since the incentives were not mobilized, they agreed as individual operations were more costly than collectives. This gave rise to institutional performance. According to figures from the 12 main paddy production districts, the yields of paddy per mu<sup>4</sup> increased by 10%, while the outputs of wheat and soybean climbed by 7% and 19%, based on the data from the nine main wheat production areas and the eight main soybean production areas, respectively [54]. Nevertheless, the drawbacks of this type of institutional arrangement began to be revealed during the advanced cooperative period. Institutional performance seemed to weaken in accordance with the grain production,



agricultural growth, and peasants' income. Specifically, the changes were clear in view of the grain production, the average annual increase was 13.1% from 1950 to 1952, whereas it decreased to only 8.5% in 1955, 4.8% in 1956, and 1.2% in 1957 [53]. Total agricultural output increased in value to 510 billion yuan in 1953, 535 billion yuan in 1954, 575 billion yuan in 1955, and 610 billion yuan in 1956. However, this was followed by a decrease in 1957 to the value of 537 billion yuan [54]. Furthermore, [55] discovered that 28.09% of the farmers attained a lower income. The research aimed at 183,489 peasant households in 564 communities located in 20 provinces.

This disadvantage did not take a turn for the better during the People's Commune Period (1958–1978), when the agricultural growth was further restricted. The net national farm products per capita decreased by 37% from 806.8 yuan in 1957 to 508.2 yuan in 1978, and farmers' income allocated from the collective was merely 50 yuan in 1978 [56]. It follows that the first land system reform facilitated agricultural development, while the second one experienced some shortcomings despite some initial growth. On the basis of institutional economics, the explanation should be considered as follows.

Private property rights are, in fact, a system of rules constraining competition [57]. In planned economics, the value of land, namely, economic rent, was not the predominant factor during the production process. Although the plan was set up to address the disputes in the process of land distribution, what actually transpired was that price allocation, based on voluntary contract, was replaced by non-price allocation. As the "invariance" version of the Coase Theorem had stated, on the condition that the transaction costs were zero and rights were clearly defined, the efficiency acquired by planned economics when allocating the resources would be the same as those for the free-market capitalism [58]. Based on the reality in this period, the unified purchase and marketing system (UPMS) was adopted to depress agricultural prices, to monopolize grain purchase, and to earn foreign exchange, which notably was favorable for the urban consumers and the industrial development [59]. In terms of the institutional theoretical framework, this type of inefficiency hindered agricultural development, which further prepared the following reforms.

### 3.2.2. Land System Reform in Rural China after 1978

Apart from the two land reforms before 1978, the third one, seemed to be more significant. It established the Household Responsibility System (HRS), which was carried out from the Third Plenary Session of the 11th CPC Central Committee in 1978. In summary, these three reforms can be depicted by Table 1, which shows that the third reform divided land rights into ownership and land use right—a change from collective proprietorship to individual proprietorship.

**Table 1.** Land system reform in China since the 20th century.

	Period	Period
The first reform	In the late 1940s (early 1950s)	Changing from landlordism (owned by landlord but rented by farmers) to private ownership by farmers (owned and cultivated by farmers)
The second reform	In the mid-1950s	Changing from private ownership by farmers to collective ownership (owned and cultivated by the collective communities)
The third reform	In the early 1980s	Changing from collective ownership to two-tier land system (owned by the collective but cultivated by individuals)

After the Third Plenary Session, two documents published in 1979 pushed forward the whole reform process, namely, "Regulations on the Work in Rural People's Communes"

and the “Decision of the Central Committee of the CCP on Some Questions Concerning the Acceleration of Agricultural Development”. The HRS enacted in 1979 was widely adopted in 1983 [59], and 99% of the production teams were engaged [33]. It was based on “contracting to the household” and it was completely distinguished from “egalitarianism” as it underlined individual ability and performance. Actually, 16% of the production teams in Anhui provinces had adopted the practice [60], especially Xiaogang Village, Fengyang County, which became the birthplace of this reform.

Surprisingly, the HRS triggered a dramatic increase in agricultural outputs, due to the incentives to peasants and the “competitiveness” of institutional arrangements. Pointing to the institutional effectiveness, [61] confirmed that HRS was more efficient than the system based on production teams due to supervision requirements. Ref. [62] endorsed this opinion by highlighting the importance of HRS to the agricultural development in China. Furthermore, [43] undertook a more concrete research by analyzing the correlation between China’s rural economic reforms and agricultural growth. Based on data from 1978 to 2004, they concluded that the influences from institutional change, including HRS, were notable. In reality, the annual growth rate of the yields of grain, cotton, and oil plants increased from 2.4%, 1.0%, and 0.8% between 1952 and 1978 to 4.8%, 7.7%, and 13.8% between 1978 and 1984 (National Statistics Yearbook, 1985). The HRS accounted for 48.69% of the increase in agricultural production from 1978 to 1984 [33]. In 1984, the grain yields peaked at 407 million ton, increasing by more than 100 million ton during 6 years. However, the growth began to fall back in 1985 and the stagnation was sustained until the early 1990s [63], which could be verified by the research from [43]. In light of institutional economics, it was the popularization of HRS that slowed the growth. The fluctuations of the whole reform process appeared inseparable from institutional factors.

These three main reforms since the 1950s focused on land use rights reform [63]. Evolving to HRS, the collective community could then own the land and peasants attained use rights. After the Land Law of 1986, peasants’ non-agricultural land use rights were controlled by the local government and land developers. Superficially, it was to the peasants’ benefit, but they had no advantages in land market transactions. This resulted in a pattern characterized by “powerful government, strong markets and peak farmers” [64]. To safeguard farmers’ primary welfare, the following two agricultural policies were introduced—the price reform in the late 1990s, and the tax and fee reform beginning from 2002. Notwithstanding that these two reforms were not directly linked to the land system, they aimed to benefit farmers. These reforms were not the only focus of central government. There were reforms from the “Central First Document” from 1982 to 1986 and from 2004 to 2014. The “Central First Document” in 2004 again raised land system reform and put forward a suggestion for new agricultural management.

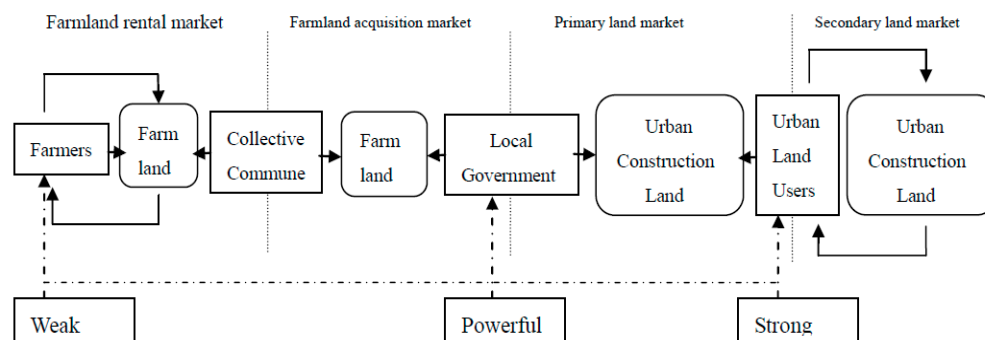
### 3.2.3. The Shortcomings of Current Land Policy System

As previously stated, the land system reform in rural China mainly consisted of changes to land ownership. Nevertheless, this issue has not been the focus of prior research [65–73]. There were three standpoints in these studies, one was the land system in China being regarded as an impediment to economic development [74], while others affirmed the feasibility of this two-tier land tenure system and deemed it the best choice for China despite the criticism [74,75]. Compared with these two viewpoints, the third argument was that China’s reform was not consistent with a general model of ownership [66].

The property rights of land were ambiguous regardless of the different viewpoints. In light of the 1986 Law of Land, proprietorship belonged to the rural collectives. The law did not further define who comprised this rural collective, which could encompass the administration, the small group (xiao zu), and even the local government [76]. In addition, peasants’ right of proposal was limited, which led to the dilemma of land conversion. Only via informal leasing activities could some peasants expand agricultural production, while some engaged in urban employment [77]. The tiny and fragmented farming units further raised transactions costs [58], which blocked the implementation of land conversion. Given

the circumstances, the land fragmentation remained unchanged and the farmland also differed in terms of soil fertility, irrigation conditions, and location, making the usage of advanced mechanical equipment and agricultural infrastructures difficult [63].

For the peasants, this phase of obstruction of land conversion seemed to be one of “powerful government, strong market, and weak farmers”. It seems that the more land rights farmers attained, the more benefits they would lose if the strong market was also distorted [64]. Seen from the government’s angle, land acquisition became the primary means to meet increasing land demand, driven by economic growth and urbanization. It provided the possibilities of converting land ownership from collective communes to the state [49]. In addition, property developers played a vital role in the land transaction market and became the medium between farmland and urban construction land. The farmland rent market, farmland acquisition market, and land transaction market can be seen in Figure 2. The farmland rental market is the market where farmers rent out/in farmland within the village. The farmland acquisition market is the market where the local government acquires the ownership from local villages. The third market is the urban primary land market. This market is where local government allocates the land use right of newly converted farmland to urban land users. The last market is the urban secondary land market. This market is for urban land users to sell, rent or mortgage their land use right. Ref. [72] described the logic of Figure 2 as “powerful government, strong market, and weak farmers”. In short “weak farmers” were the focus of reform despite the support of private ownership or collectivism.



**Figure 2.** Land market structure in China. Sources based on: [72].

#### 4. Performance and Prospects of Land Reform

It can be seen from the above diagram that the land system reform in rural China since 1978 was also closely linked with the land ownership. The Household Responsibility System in this period was universally accepted as a milestone in Chinese history. Although there existed small changes pointing to the concrete rules, HRS has remained the main rural land system.

However, drawbacks of this system gradually became visible and were widely discussed. This paper will further discuss the performance and drawbacks of the land system in this period through the data from 1978 to 2008, based on the actual and theoretical backgrounds. This is to confirm the above theoretical framework. The concept of residual rights of control and residual claims will be introduced as the analysis basis. These are associated with land use rights and ownership from the perspective of the land policy system. The distinctions among land contract, land lease, and land ownership are evident as the former two allow the temporary residual rights of control, but miss the residual claim. In addition, the analysis periods are divided into five sections: 1978–1984, 1985–1995, 1996–2002, 2003–2005, 2006–2008. This type of division is based on several pivotal historical events: In 1994, 99% of the production team (xiao zu) accepted the HRS; in the late 1990s, the price reform began; since 2000, the tax reform in rural China began and agricultural tax was exempted nationwide in 2006. Our analysis is based on the fact that peasants possessed land use rights since the execution of HRS following the reform and opening. Over time,



the peasants have been given a longer contract period, more residual claims, and residual rights of control. This has resulted in the gradual optimization of the performance of the land policy system, while revealing some defects.

#### 4.1. Model Estimation and Results

The estimated results of Equation (1) are presented in Table 2. From the estimated parameters and test results in Table 2, the overall imitative effect of the regression models is ideal as the adjusted- $R^2$  in both models is great, which indicates that the selected independent variables can represent the agricultural development in China. Wald statistics for each regression model are significant and the majority of variables are also significant by different levels of significance tests.

**Table 2.** Accounting for agricultural output: Production function.

Variable	1978–1984	1985–1995	1996–2002	2003–2005	2006–2008
	Model (1)	Model (1)	Model (1)	Model (1)	Model (1)
Constant	−3.4277 *** (0.3889)	−3.3086 *** (0.4857)	0.3009 (0.4831)	−0.6024 (0.5459)	0.2004 (0.5248)
LN (land)	0.1942 ** (0.0942)	0.9579 *** (0.1175)	0.2042 (0.1289)	0.5732 *** (0.1595)	0.3287 ** (0.1324)
LN (labor)	0.6231 *** (0.0644)	−0.0765 (0.0803)	0.4172 *** (0.0956)	0.1132 (0.1329)	0.1602 (0.1146)
LN (power)	0.2032 *** (0.0582)	−0.0549 (0.0664)	0.0972 (0.0766)	0.0439 (0.0855)	0.0905 (0.0686)
LN (fert)	−0.0002 (0.0240)	0.0374 (0.3226)	0.1195 *** (0.0397)	0.1551 *** (0.0492)	0.3318 *** (0.1010)
T	0.0996 *** (0.0061)	0.1446 *** (0.0041)	0.0165 *** (0.0059)	0.1069 *** (0.0097)	0.1196 *** (0.0095)
Obs numbers	210	330	210	90	90
Wald $\chi^2$ (5)	1956.95	4549.83	287.17	547.24	895.00
Adj- $R^2$	0.9424	0.8988	0.8643	0.8811	0.8973

Data source: Compilation of Statistics for 60 Years in China: 1949–2008 and China Statistic Yearbook. \*\*\* significant at 1%; \*\* significant at 5%.

In addition, to measure the impact of the different factors on agricultural output, the average annual growth rate of the input of different factors and the gross agricultural output in each period are calculated, and the results are shown in Table 3.

**Table 3.** Average annual growth rate of different factors input and gross agricultural output in each period.

Periods	Average Annual Growth Rate of Different Factors Input (%)				Gross Agricultural Output
	Land	Labor	Power	Fertilizer	
1978–1984	−0.257	0.150	10.990	16.135	18.843
1985–1995	−0.194	−0.370	7.271	10.237	37.426
1996–2002	0	−0.784	8.381	2.227	1.713
2003–2005	0	−3.864	6.633	4.020	15.848
2006–2008	0 (similar to 0)	−6.844	6.666	3.159	15.152

Data source: Compilation of Statistics for 60 Years in China: 1949–2008 and China Statistic Yearbook.

Synthesizing both the data in Table 2; Table 3, it can be found that as the Household Responsibility System was launched in the first period beginning in 1978, it was adopted by 99% of the production teams by 1984. At this stage, all the input factors had increased except for the cultivated land, among which, the input of machinery and fertilizer experienced the most drastic increase with the average value of 10.990% and 16.135%, respectively. In this historical context, the average annual growth rate of gross agricultural output was quite notable, reaching 18.843%, which indicated that this institutional arrangement stimulated

the input and further promoted the agricultural development. In the second stage from 1985 to 1995, the annual average growth rate of agricultural output further rose, reaching 37.426%. Nevertheless, by the period from 1996 to 2002, the growth rate slowed down significantly at an average percentage of 1.713%, which was associated with a significant reduction in the number of rural labor force as the majority of peasants, especially the young migrated to cities and became the so-called “rural migrant workers”. Furthermore, although rice reform began to blossom, it was still not perfect. In the fourth stage from 2002 to 2005, although the number of the agricultural labor force further decreased, the input of fertilizer generated significant influence on the agricultural output, and the land investment showed a slight increase. Simultaneously, the price reform had been effective which indirectly influenced the agricultural output. By the period from 2006 to 2008, the annual average rate of agricultural output growth basically flattened. The previous influences from land and fertilizer were quite significant although the agricultural labor force still experienced a falling rate. It is worth noting that the abolition of agricultural tax after 2006, to some extent, also stimulated agricultural development.

From another angle, to analyze the output in different stages with the same or comparable factor inputs, the counterfactual measurement method is introduced above, and the results can be viewed from Table 4. Consistent with the hypothesis, the outcome showed that the weights gradually increased over time, which implied that the allocation performance of the land policy was optimized. It can be predicted that the reform in rural areas endowed the farmers with more residual claims and residual control of rights, which greatly promoted the agricultural growth in China.

**Table 4.** Weight aggregation in different periods.

Periods (Models)	Weight Aggregation
1978–1984	31
1985–1995	62
1996–2002	93
2003–2005	125
2006–2008	155

Data source: Compilation of statistics for 60 years in China: 1949–2008 and China Statistic Yearbook.

It seems that although the allocation performance of the land policy was improved step by step since 1978, looking at the regression model, the level of this type of optimization seemed to abate. In fact, the reform since 1978 focused more on farmers’ residual claim to the land, while the residual right of control remained restricted. Specifically, although the farmers’ land use rights were improved with the contract obstacles gradually reduced, the land ownership was still ambiguous. Regardless of the dispute on land privatization, this type of ambiguous ownership would not aid agricultural growth. This result is consistent with the previous analysis. Therefore, to further release residual rights of control and residual claims by cooperating with each other would be a crucial factor in subsequent reforms focusing on land ownership.

#### 4.2. Prospects of Land Policy Reform

Given the rapid development of rural sector, new challenges were presented, including the dilemma of land conversion which indicates the choice of the farmland property right system. In this historical background, great importance can be attached to the trend of land system reform in rural China. Some indications can be discovered from the yearly “Central First Documents (zhong yang yi hao wen jian)”. From 1982 to 1986, the CPC Central Committee announced five consecutive documents, which were linked to rural issues. Another 10 consecutive agriculture-related documents were again published from 2004 to 2014. Table 5 indicated that the documents from 1982 to 1984 were all linked to the land system, with an objective evaluation on the previous 1982 system, and to formation of the HRS and improvements in provisions of land contracts. In 2013, the document put

forward the idea of constructing a new agricultural management system to cope with fragmentation. It presented a feasible way to overcome the drawbacks of the existing system. The mechanism of the integration of urban and rural development proposed in the 2004 documents was also a momentous part of the land issues.

**Table 5.** Rural issues-related central first documents.

Time	Document	Core Contents
1982	The first “Central First Document”	Break through the rigid system (three-level ownership by the commune, the production brigade, and production teams)
1983	Several issues on the current rural economic policies	HRS is a great innovation
1984	Notice for rural work in 1984	Land contracting lasts for 15 years
1985	Ten policies to further stimulate the rural economy	Expand the level of market regulation
1986	The deployment of rural issues in 1986	Agriculture is the foundation of national economy
2004	Policy advice on increasing farmers’ income	To increase farmers’ income
2005	Policy advice on further strengthening rural work and improving agricultural comprehensive production capacity	To improve the capacity of agricultural comprehensive production
2006	Policy advice on further constructing a new socialist countryside	To construct a new socialist countryside
2007	Policy advice on modern agriculture and construction of a new socialist countryside	Modern agriculture is the primary task of the construction of a new socialist countryside
2008	Policy advice on improving the agricultural infrastructure and further promoting the development of agriculture and increase in farmers’ income	To further consolidate the foundation of agriculture
2009	Policy advice on promoting the stable development of agriculture and continuous increase in farmers’ income	Maintaining steady and rapid development of agricultural economy
2010	Policy advice on integration of urban and rural development and consolidation of agricultural development	Integrating urban and rural development
2011	The decision of accelerating the development of water conservancy reform	Accelerating the development of water conservancy reform
2012	Policy advice on accelerating agricultural technology innovation and ensuring adequate supply of agricultural productions	Promoting agricultural technology innovation
2013	Policy advice on accelerating the development of modern agriculture and enhancing the vitality of rural development	Strive to construct a new type of agricultural management system
2014	Policy advice on comprehensively deepening rural reform and accelerating the process of agricultural modernization	Improving the system of the integration of urban and rural development

Privatization of land ownership in rural China is widely discussed. Earlier scholars, such as Meng [78], held that the best choice of land system should be nationalization, while the competitive mechanism could be introduced subsequently, in contracting operations. The ideas of later scholars became more inclusive and began to reflect a type of complete nationalization [79,80]. They pointed to the importance of conversion and trading of collective construction land under the two-tier land system. In recent years, the vast majority of scholars have reached a consensus that the reform should be on the basis of collective land

ownership, rather than the completely private or state-owned land system [81–83]. There are also some scholars, such as [84], who explored the land shareholding system, which overcame the drawbacks of vague land ownership and mitigated the problems brought on by full privatization [85].

If the interests of farmers are taken into account, we conclude that complete privatization of land ownership may not be available as a complete solution to the precarious position of peasants. On the contrary, the influx of external capital may tempt farmers to accept short-term benefits at the expense of long-term planning. From the analyses of the measures of the last two Central First Documents and the CPC Central Committee, we conclude that the two-tier management system should be re-emphasized. The indications for a construction of a new type of agricultural management system are based partly on the recognition of the rationality of economic cooperation. Theoretically, farmers, leading specialized households, family farms, and agricultural-related enterprises can be the body of agricultural operations. However, the requirements for this to succeed are not clear. On the basis of current trends, the integrated cooperatives are likely to be a new subject with special features [64]. Meanwhile, some areas in China have started the practice on land tenure issues. In Wenzhou, Hainan, a pilot project of land conversion was built and a system of rural property rights exchange was established. Land use right could be used as collateral for loans. It is predicted that the market orientation will be the general direction of future farmland reform.

## 5. Discussion and Conclusions

China's land policy reforms in rural areas began in the 1950s and underwent three significant changes. For the first time, by “shattering the landlords' privileges and re-allocating the landlords' lands (da tu hao, fen tu di)”, private peasants' ownership was established and greatly stimulated the agricultural output. The second stage was formed in the wave of collectivization, when collective ownership appeared and hindered agricultural development. The third revolution was signed by the Household Responsibility System, which again boosted the extractive industry. Given the rapid development of rural sector, new challenges were presented, including the dilemma of land conversion, which indicates the choice of the farmland property right system.

The implication of our study is that land system reform in rural China should be regarded as a top priority, due to its impact on the urbanization process. These reforms should not only involve the spatial reallocation of resources, but also planning to again combine residual claims and residual rights of control. The negative effects resulting from incomplete land rights will only increase without this measure.

Our study speaks to various strands of the literature, including economic performance resulting from the land policy [8–10]; rural land policy and the construction of the system of political democracy [11]; land system and urbanization [12–14]; and land ownership and conversion [15–19]. The studies on the integrated reform path and the mechanism of institutional changes are fewer than those focused on the whole reform period [18,20,21] or the urban land policy [22,23]. Our research complements these studies. In addition, we investigated the integrated reform path and mechanism of institutional changes.

Our study fails to examine the effect of a specific reform, such as land property rights reform. The current lack of well-defined property rights in rural China, and elsewhere, places serious limits on the ability of shifting the Chinese economy toward a more efficient status. Improved property rights could be one of the central tasks for the Chinese government to tackle the issues related to labor and land misallocation. A deeper analysis of the effect of improved property rights on agricultural transformation is a worthwhile avenue for future research.

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## Notes

- <sup>1</sup> The land is owned by landlords, but cultivated by tenant peasants
- <sup>2</sup> The land is owned by rural households, and cultivated by the households
- <sup>3</sup> A unit of weight, which is equal to 1/2 kilogram
- <sup>4</sup> A unit of area, which is equal to 0.0667 hectares

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