An Economic Analysis of Compensation for Rural Land Expropriation

XU Ming-zhi[1]* , **DAI Jia-cheng**[2], **CAO Lu-xi**[3]

1. School of Economics of Shanghai University of Finance and Economics, Shanghai 200433, China; 2. School of Computer Science and Technology of Beijing Institute of Technology, Beijing 100081, China; 3. School of Business of Nanjing University, Nanjing 210046, China

Abstract   To study which method is more effective in complete compensation and zero compensation for rural land expropriation, we use economic models to analyze whether the government is benevolent and which compensation method can achieve the social optimal level. The results show that both complete compensation and zero compensation will lead to over-investment of land owners, and consequently result in loss of social welfare.

Key words   Rural land, Eminent domain, Compensation, China

The State has the authority to expropriate property right of land owners, for instance the eminent domain[1]. Government can obtain lands from land owners through the eminent domain, and make lands for public use. For construction of some public interest projects and infrastructure, such as railway, airport, and national defense, the State will adopt the right of eminent domain to expropriate lands. However, in the real economy, there are many problems during the land expropriation, and there are many relevant documents and materials in academic circles[2−3]. Wang Hui contends that many defects exist in China's current land expropriation system, such as excessive expropriation of arable lands resulted from abuse of eminent domain, and low efficiency of land use. He also studied how to determine public interests and reasonable range of fair compensation[4]. These documents and materials take analysis from the point of a certain subject, while we mainly focus on land compensation standard. As a manner of obtaining the private property right, the land expropriation is one of the most frequently methods used by government in actual economy. Under China's special property right structure and economic environment, the expropriation is more suitable for national conditions than purchase[5]. During the land expropriation, farmers whose lands are expropriated mostly care about the amount of land compensation. For the whole society, which method is more effective, complete compensation or zero compensation? To research this question, we compare and analyze both methods using economic principles.

1   Basic assumptions of models

Assumption 1: We assume that there are two periods. In the first period, many risk neutral land owners invest in lands (expressed in I), and the amount of investment is only known to these land owners.

Assumption 2: If lands are not expropriated by government, land owners will obtain an amount of return b ($b \in [0, B]$) from investment in the first period. If the probability that land owners' private value is smaller than or equal to b is $G(b; I)$, the corresponding density function $g(b; I)$, and at the same time, $\partial G/\partial I \leqslant 0$.

Assumption 3: If lands are expropriated, land owners will not obtain any private value. However, from the angle of whole society, there will be a social income s ($s \in [0, S]$). If the probability that social value received by the society is smaller than or equal to s is $F(s)$, the corresponding density function is $f(s)$. When $s \in [0, S]$, $f(s) > 0°$.

Assumption 4: We analyze by assuming the government is benevolent or not benevolent.

2   Model analysis

2.1   Basic analysis   After investment in lands, land owners will maximize their expected investment return:

$$E_b\{b|I\} - I = \int_0^B bg(b; I)db - I \qquad (1)$$

Where, $E_b\{b|I\}$ is the expected private benefit under the given investment condition (I).

From the point of society, only when the local social value is greater than private value, namely $s > b$, the social welfare is:

$$E_{b,s}\{SW|I\} - I = \int_0^B (bF(0) + \int_0^B (b-s)f(s)ds)g(b; I)db - I \qquad (2)$$

Where, $E_{b,s}\{SW|I\}$ is the expected social welfare level under the condition of given land investment (I).

2.2   Extensive analysis of models   Mainly three entities are involved in the course of land expropriation: government, developer, and land owner[6]. In this course, the government plays the most key role. Thus, we analyze by two cases. One case is the government is benevolent, the other is the government is not benevolent. We mainly discuss two extreme conditions: complete compensation and zero compensation.

2.2.1   The government is benevolent.

Consider the first case: complete compensation standard. In this standard, no matter the land is expropriated or not, they will obtain the compensation *b*. From the point of view of land owners, they will maximize equation (1). Also, in this case, the land investment level will exceed the social optimal level of investment, this complete compensation method will result in over-investment[7].

Consider the second case: zero compensation standard. This case is different from the complete compensation. If lands are expropriated, land owners will not obtain any compensation. If lands are not expropriated, land owners can obtain a return of b. Thus, the expected benefits are:

$$E_b\{b\mid b \geqslant s, I\} - I = \int_0^B bF(b)g(b; I)db - I \qquad (3)$$

Where, $E_b\{b\mid b \geqslant s, I\}$ is the expected private benefit under the condition that both investment level *I* and private benefits are greater than social benefits. From this equation, it is indicated that the investment level of residents is higher than the social optimal level of investment under the condition of zero compensation. Visually, the investment level of land owners in their lands depends on two factors. One is the expected effectiveness of land owners. And the other is how to reduce the probability of land expropriation.

Efficient compensation rules should satisfy certain conditions: the benefit target of agent is consistent with social target. Therefore, we can find out many compensation rules to achieve this purpose. For the purpose of analyzing problems, we assume that the amount of compensation for land owners is equal to social benefit *s*. In this rule, the expected benefit of land owners will be:

$$\int_0^B (bF(0) + \int_0^B (b-s)f(s)ds)g(b; I)db - I + Es\{s\} \qquad (4)$$

Where, $Es\{s\}$ is the expected social benefit. The equation (4) is the result of equation (2) plus an extra constant. Thus, the investment level of maximizing two expressions is the same. Visually, since land owners can obtain the higher one between *b* and *s*, they can reach the social optimal level.

From these analyses, we can sum up two propositions.

Proposition 1: In the course of land expropriation, if the government is benevolent, the minimum value of compensation $\{s, L\}$ for land owners can reach the social optimal level. *L* is the highest compensation level land owners may obtain, and $L > B$.

This rule can be realized by two methods. First, the government makes an offer $\{s, L\}$ for land owners, who have the right to refuse. Second, land owners make an offer of their lands. If their prices are higher than minimum value of $\{s, L\}$, the government has the right to refuse.

Proposition 2: If the government is benevolent, land owners may regain the ownership of land through paying compensation s to government. This rule can reach the social optimal level.

2.2.2   The government is not benevolent. In the above paragraphs, we analyzed the efficiency of compensation standard in the course of land expropriation when the government is benevolent. Nevertheless, in the actual economic operation, the government is always not benevolent. The government may abuse the right of eminent domain for its own benefits.

The analysis is based on the precondition that social benefits exceed the compensation paid to land owners. To have an in-depth analysis, we assume $s > p$. Where, *p* is the amount of compensation paid to land owners.

From the point of view of efficiency, we assume that the government may also be restrained from social efficiency when it cares about its benefits. Then we obtain following proposition.

Proposition 3: If the government pursues social benefit *s*, the social optimal level may be realized through propositions 2 and 3.

Social benefit is private information of government. Since the information is asymmetric, we assume that land owners firstly set the amount of compensation, the government then determines to accept or refuse demands of land owners. Because land owners do not know the amount of social benefit, they are in the position of monopolist and faced with a downward-sloping demand curve. If we assume β is the amount of compensation put forward by land owners, the probability of the government and land owners concluding the "transaction" is $1 - F(\beta)$. Then, the price of monopolist will rise. The price provided by land owners will be higher than their private value, so it is impossible to achieve an efficient expropriation of land. In other words, such monopoly price will certainly lead to loss of social welfare. No matter the complete compensation or zero compensation, it will lead to loss of social welfare[8].

3   Conclusions

We analyzed two cases of the benevolent and not benevolent government. Through the study on complete compensation and zero compensation, we find that both methods will lead to over-investment of land owners and consequently result in loss of social welfare.

References

[1] CHEN LG, CHEN HG. Land requisition system reform and innovation: an economic analysis framework[J]. China Rural Survey, 2003 (6): 40–47. (in Chinese).

[2] SONG ZB. Land expropriation price is not reasonable and correction performance [J]. Economic Theory and Business Management, 2003(9): 35–37. (in Chinese).

[3] JIN HT, SHI QH, YUN. Negotiation power, the process fair and the land requisition system reform[J]. Chinese Rural Economy, 2010 (12): 4–16. (in Chinese).

[4] WANG H. The urban and rural land requisition: eminent domain and land compensation[J]. Chinese Rural Economy, 2002(2): 40–46. (in Chinese).

[5] LI YQ, JIA RM. Rational reflection on land acquisition and administration if the process of urbanization—investigation and analysis of 1538 rural land–loss households in China's east, middle and west areas[J]. Economist, 2006(5): 84–90. (in Chinese).

[6] ZHAO DY. The interactive relationship between farmers, local governments and the state during the course of land acquisition[J]. Sociological Studies, 2009(2): 93–129. (in Chinese).

[7] QIAN ZH. Land requisition: balanced and non–steady–on the current China land requisition system of economic analysis[J]. Management World, 2004(12): 50–59. (in Chinese).

[8] MA K, QIAN ZH. Land expropriation, agricultural land entering into the market directly and optimal allocation of land resources[J]. Issues in Agricultural Economy, 2009(4): 69–75.(in Chinese).