

The Principal-Agent Problem in the Villagers' Self-governance
—Based on the Common Agency Model

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Abstract: In this paper, we take as the research question the effectiveness of the implementation of villagers' self-government system and its deviation from the original purpose that the system was created to attain. And we take the system-related interest groups, namely township government, villagers and village cadres and their relationship as the research objects. We link the implementation process of the villagers' self-governance to the rural tax reform, urban and rural integration and other relevant policies. Using the Common Agency model, we analyze the relationship between the interest groups and its change through the historical process of the system implementation. And then, we revealed that the villagers' self-governance system had been deviating from its original purpose before the rural tax reform and have made some improvement but still not enough after that reform. According to the result the model derived, and also in connection with some new shocks that arise from the urban and rural integration process which China's rural areas undergoing, we put forward some suggestions on how to achieve the full sense of villagers' self-governance system effectively.

Keywords: Villagers' self-governance; Principal-Agent Theory; Common Agency; Institutional Change

1. Introduction

The basic core of villagers' self-governance system is to return the democratic power and rights to villagers that they can manage the affairs of the village really by themselves. However, the actual situation is not so. In fact, township government, villagers and village cadres are the three core subjects in the system. The relationship between them and its interaction change are closely related to the mechanism of the self-governance system and its performance. And also the relationship is the key to understand the phenomenon and problems in the development of rural areas. In the practice of villagers' self-governance, several situations can make the system become self-talk, such as township government over-intervention, village cadres do not act or act inconsistent with villagers' wishes, villagers' lack of self-consciousness about self-governance, etc... With the complete abolition of agricultural tax in China in 2006 as well as new construction projects implemented in rural areas, Political and institutional development in rural areas have also entered a new stage. Overall, the villagers' self-governance system is moving toward its goal which the system was created for. On the

other hand, there are some kinds of shocks currently, such as hollow village, commercialization in the relationship between villagers etc., may prevent the goal to be reached. How to keep the system in right way to attain its original goal once again becomes an urgent problem worthy of serious consideration. Particularly, striking a balance between the township government, villagers and village cadres is still a key task in dealing with the problem.

The system itself contains rules and also includes implementation mechanisms (North, 1990), therefore, to study the system of villagers' self-governance not only focuses on its rules, but also takes the mechanism into consideration. To understand why the system in the implementation process will deviate from the goal, we should focus on the behaviors of actors involved in the system and the incentives that make them complying with rules of the system (Greif, 2006). And then, we can disclose the implementation mechanism that makes the self-governance system more effectively by analyzing the actors' relationship and their interaction. Jian Wei and Qianlong Zhao (2008) stressed: the village cadre is in fact a common agent of the township government and villagers and receive two principals' commission: One is from the legal aspects—The Organic Law grantee the villagers' commission to the village cadre. Another commission is from the practical level—the township government is the principle.

In this paper, we want to answer the question that how the relationship of the actors changes can make the system back to its original goal gradually. In doing so, we need to take the historical process which the system was proposed and implemented so far as the main line and take the rural tax reform, urban and rural areas integration and other relevant shocks as our analytical context and based on the research results by Jian Wei and Qianlong Zhao (2008), using the Common Agency framework summarized by Avinash K. Dixit (1996) to study the relationship between the actors involved in the villagers' self-governance system under the perspective of the Institutional change theory and the Principal-Agency Theory.

The rest of the paper is organized as follows. Section 2 is a literature review about the interest groups and their interactions in villagers' self-governance. Section 3 describes the goal of villagers' self-governance system. Section 4 provide a demonstration that when the two principals, township government and village, are heterogeneity and have different substitutable goal of tasks, the common agent may let to bias to the strong principal and make the system ineffective. Section 5 discusses the condition that after rural tax reform, the deviation condition is somewhat improved but still not enough for there are some new shocks. Section 6 provides some suggestions for the self-governance to fulfill its original purpose.

2. The interest of groups and their interactions in villagers' self-governance: A Literature Review

Early research on the villagers' self-governance focus on law, political science and sociology, and areas of study from an economic point of view of villagers' self-governance system was gradually increased in recent. Xu Wang (1997) found that during the China's reform and opening up, there have been a series of changes in social and economic areas in countryside. And such changes lead to decline of the authority of the state apparatus in controlling the rural areas and cause tension between villagers and village cadres. He ascribes such changes to the reason of the emergence of rural self-governance system. Zhang Jun (2000) discussed

several aspects closely related to the villagers' self-governance, especially the economic and political foundation of self-governance, the social mobilization mechanism of self-governance, the adjustment of the relationship between the state and villagers during the implementation of self-governance and the possible problems resulted from the implementation of self-governance, etc.. He also stressed that the relationship between the state and villagers should be readjusted and put forward some suggestions on how to manage to business of rural areas by the state.

Li Weiyi (2004) took rural governance and village self-governance as a basic relationship of the process of villagers' self-governance system. He also regard the relationship as a game and analyze its root causes. He found that there are two different nature of the decision-making body arising from the relationship. The existence of the relationship is due to the power of competition and the interests' demands from both sides. Chen Weimin (2005) makes observations on villagers' self-governance as an independent subject in the framework of farmers-state relations. The dilemma of a "paradoxical dichotomy" encountered in Chinese villagers' self-governance is depicted in two dimensions: Party-village relations and the township-village relations. He also deeply analyzed the causes that produced the former one and identified the primary conflict and the basic characteristics of villagers' self-governance. Zhang Dongbo (2006) study the relationship between the township government and village based on the process of villagers' self-governance. He pointed out that the relationship contained both administration and administrative guidance. The main conflicts lies in the relationship may resulted from the illegal administrative intervention from the township government.

After the empirical study on the relation between the grassroots democratic and township government, Shuna Wang and Yang Yao (2007) found that the implementation of free elections can greatly improve the rural public goods spending and significantly reduced administrative costs, as well as revenue of local governments. These make the rural grassroots self-governance to enhance the sense of responsibility and thus weakened the constraints of local government. Luo Chunyan (2008) studied the relation of villagers' self-governance with the township government and analyzed the conflicts and specific forms of them. Liu Mingxing, et al (2008) from the perspective of empirical analysis examined the influence on the burden of peasants after the tax and fee reform in rural areas. And also they analyzed the relation between the village cadres and villagers. The results show that the rural reform effectively reduced the burden on the farmers' level, but there is no obvious improvement of the confidence in between the farmers and the township government. Wei Jian and Zhao Qianlong (2008) considered that the abolition of agricultural tax and building a new socialist countryside will make the village cadre even more dependent on the village township government for his remuneration and work resources controlled by the latter one. Thus a "non-equilibrium" community of interests has formed in the rural areas. Although the reform has some advantages to the villagers' self-governance, the emergency of the strong power of the township government squeeze the space that self-governance system could play. Pesque-Cela, et al (2009) used empirical methods to explain that because of the government officials often do not effectively serve the masses of the provision of public goods and services, as well as the interests' goal is very different between the villagers with local government, the conflicts between of them resulted in the distrust for the government and gave

rise to the social organizations that play the role of villagers' self-governance. The results of the study, to the certain extent, are the perfect reflection of China's current actual situation in the rural villagers' self-governance.

Through the literature review we found that existing literature paid less attention on the relationship and the interaction between township government, villagers and village cadres. Especially in the current background that the construction of new countryside and the integration of urban-rural areas, the villagers' self-governance were pushed forward and also faced with a variety of shocks. Accordingly, how the shocks affect the interaction of the relevant interest groups and cause it change is worthy of further study. On the other hand, based on special relationship of common agency in the villagers' self-governance concluded by Wei Jian and Zhao Qianlong (2008), the interaction between the principals and agent and its mechanism has not been explicitly stated. Therefore, this article will focus on the special common agency problem and the interaction between the interest groups when they faced with the various external shocks during the process of the implementation of villagers' self-governance. The paper attempt to reveal the relationship and its change path the various groups arose and offer some effective measures for the further development of villagers' self-governance system.

Moreover, Bernheim and Whinston (1986) has made a pioneering study on the Common Agency problem and proved that there is a Nash Equilibrium strategies combination exist between multiple principals and a common agent. In this classic literature, however, the author did not consider the heterogeneity of the multiple principals, which like township government has the strong administrative power compare to the villagers, may affects the common agent's behaviors. Bernard Sinclair-Desgagne (2001) studied the principals' incentive mechanism in the Common Agency problem and pointed out that under the condition of two principals and on agent, if the tasks offered by the principals are mutual alternative, then the principals can affect agent's behavior through the agents' cost function. In other words, the agent needs to allocate his limited time or efforts to complete two tasks. But the article did not mention that two principals have unequal strength or power. We are going to discuss how the relationship between the township government and villagers interact and change in villagers' self-governance system basing on the framework concluded by Avinash K. Dixit (1996).

3. The original goal of the villagers' self-governance system

The original goal of the villagers' self-governance is that villagers manage their own village affairs independently under the law of self-governance system. It has been an effective way for the rural governance since China's reform and opening up. Under the system, villagers directly take part in the democratic election of villager leaders and directly are involved in the democratic decision-making and management on the public affairs. The activities and behaviors of the village cadres must under the supervision of the villagers. Township government as the representatives of national administrative power in the grassroots society endowed responsibilities and obligations to help and supervision the villagers' self-governance system carried out in an effective way. Although sometimes need the village cadres to be an agents of the township government to promote and implement national policies in grassroots areas, such as family planning policy or public goods supply etc., the government would not interfere the implementation of the self-governance system. For this reason, township

government can not use the national democratic power to direct control the grassroots self-governance activities. Therefore, the ideal state that the system can be fully functioned is to make the village cadre to be a sole agent in the villagers' self-governance process and manages village affairs independently. Also the township government and villagers have a common wish that the cadre can really devote himself into the village affairs and improve the villager's welfare. For these purposes, while the township government has some public power, the government and villagers' common goal is to fully realize the grassroots democratic. The goal of these two groups is the same. Accordingly, the common agent, the cadre, will face a united incentive.

Under the framework of common agency model, we consider the case of two principals: principal A and principal B. Each principal assigns a task to a common agent. With the level of effort t , the agent produces x , which we assume is the sum of effort and an error term ε :

$$x = t + \varepsilon \quad (1)$$

Where the vector ε is drawn from a normal distribution with mean zero and variance-covariance matrix Ω .

Both of the two risk-neutral principals benefit from the total production x , and they can observe x without incurring any cost, so each of them has a linear payoff function. Let $b'_j x$ be the share of the j -th principal in the total production for $j=1, 2$, thus the total payoff of the principals is $b'x$, where $b = b'_1 + b'_2$. We assume the value of the j -th element of vector b_j is positive, whereas other elements can be smaller than or equal to zero. In other words, any difference between b_j corresponds to the interest conflict between different principals, which means that the payoff of a principal might exert negative externality on other principal. But overall, principals always benefit from the product, or $b \geq 0$. In this section we only consider the case that two principals form a union, the payoff of the principals can therefore be represented by total payoff.

We assume the utility function of the agent is

$$u(\omega) = -\exp(-r\omega) \quad (2)$$

where $r > 0$ is the risk-aversion coefficient, and ω is a function of the income and cost of the agent, and it equals to income (the compensation from principals) minus the quadratic form of effort $\frac{1}{2}t' Ct$. We assume matrix C is positive definite, which means the marginal cost of an element of effort increases with the increase of other element of effort vector. Thus, when increasing the effort to complete the task of a principal, the agent will obviously reduce the effort for the task of the other principal. In this case, although each principal does not have direct interest to the total output, he or she will still focus on the effort the agent makes for each task. Let Γ be the inverse matrix of C , so Γ is also positive definite.

As classic principal-agent model, we assume the effort made by the agent cannot be observed, so the incentive given by the principal is based on output x . According to Dixit(1996), under the constraints in Holmstrom & Milgrom (1987), when the strategy of other principals is to give linear incentive, it will be optimal for any principal to use linear strategy. There might be other nonlinear

or more complicated equilibrium strategies, but for simplicity we only consider linear strategy. When the two principals form a union, they provide an incentive mechanism to the agent as a single "united" principal, and the agent determines his or her strategy based on this incentive mechanism. Assume the linear incentive function of the "united" principal is $\alpha'x + \beta$, the effort made by the agent is t . Thus, the utility of the agent is

$$u(\alpha, \beta, t, C) = -\exp\left\{-r(\alpha'x + \beta - \frac{1}{2}t' Ct)\right\}. \quad (3)$$

According to equation (3) and exponential expectation equation of standard normal distribution, the expected utility of the agent can be written as

$$-\exp\left\{-r\alpha't + \frac{1}{2}r^2\alpha'\Omega\alpha - r\beta + \frac{1}{2}rt' Ct\right\}. \quad (4)$$

Applying the method in Billingsley(1986), we rewrite equation (4) in the form of $-\exp(-ry)$,

$$\text{where } y = \alpha't - \frac{1}{2}r\alpha'\Omega\alpha + \beta - \frac{1}{2}t' Ct. \quad (5)$$

Thus the certain income in (5) provide to the agent the same utility as the uncertain expected income in (4). We let y be the certainty equivalent of the agent, and the goal of the agent is to maximize this certainty equivalent:

$$\max_t \alpha't - \frac{1}{2}r\alpha'\Omega\alpha + \beta - \frac{1}{2}t' Ct$$

the first order conditions are

$$\begin{aligned} \alpha - Ct &= 0 \\ t &= \Gamma\alpha. \end{aligned} \quad (6)$$

Since Γ is a positive definite matrix, and all the off-diagonal elements are generally negative, the increase of any element in α leads to the increase of effort made for the element, and therefore the decrease of effort made for other elements. Equation (6) states the agent's strategy, and the certainty equivalent of the agent is

$$\begin{aligned} y &= \alpha\Gamma\alpha - \frac{1}{2}r\alpha'\Omega\alpha + \beta - \frac{1}{2}\alpha\Gamma\alpha \\ &= \frac{1}{2}\alpha\Gamma\alpha - \frac{1}{2}r\alpha'\Omega\alpha + \beta \end{aligned} \quad (7)$$

The expected utility of the "united" principal is

$$b'x - \alpha'x - \beta = (b-a)'t - \beta, \quad (8)$$

$$\text{Or } (b-a)\Gamma\alpha - \beta. \quad (9)$$

The goal of the "united" principal is to determine an optimal incentive mechanism which is represented by the choice of α to maximize the total payoff of the agent and the union itself, which is the sum of the agent's certainty equivalent and the union's expected utility:

$$\begin{aligned}
& (b-a)\Gamma\alpha + \frac{1}{2}\alpha'\Gamma\alpha - \frac{1}{2}r\alpha'\Omega\alpha \\
& = b'\Gamma\alpha - \frac{1}{2}\alpha'(\Gamma + r\Omega)\alpha
\end{aligned} \tag{10}$$

The first order condition is

$$\Gamma b - (\Gamma + r\Omega)\alpha = 0, \text{ or } b = \alpha + r\Omega\alpha. \tag{11}$$

In conclude, since the effort made by the agent cannot be observed, the "united" principal chooses the optimal incentive mechanism to maximize the union's payoff provided that the agent also receives the maximal certainty equivalent as his or her compensation. In this sense, the incentive compatibility in common agency model has been reached. The intuition behind is that when the interest of villagers is consistent with that of township government, village cadre as the agent will make effort to maximize the payoff of each interest subject.

4. Distortion of the villagers' self-governance targets in the reality

The target state of the villagers' self-governance system has been unable to realize since the implementation in 1988, for the excessive interventions from the township government. The interventions are mainly in two respects. On the one hand, duo to the restrictions of the government official assessment system that the senior government imposed on the officials in the township government, the officials will be more incentive to control the village cadres, thus leading to the intervention of the self-governance and strengthen "the guidance role" of the party and township government in the implementation of the self-governance system. On the other hand, not only the income of the township officials and village cadres subject to the performance of the rural economy, but also their jobs and promotion opportunities are also depends on that, which further encouraged the township government and village cadre to form the pattern of collusion (Susan H. Whiting, 2000). Due to the township government on behalf of the state government and has some public authority, it is in the strong position in compare with the ordinary villagers. For this reason, the village cadre and township government has incentives to collusion for capturing the collective interests of the villagers and led to the unexpected consequences of implementation of the self-governance system.

In order to prove the deviation from the original goal within the practice process of the villagers' self-governance, we need to specify that two principals have unequal strength and impose the alternative tasks respectively to the common agent. In this case, as the strength of the differences between principals result in an impact on the earnings of the agent, making the agent completely switch to the strong principal and overlook the other principal's interest. As a result, the practice of the self-governance system deviates from its target state.

Proposition 1. In common agency model with two heterogeneous principals in terms of strength and one single agent, when the tasks assigned by principals are in conflict, the agent will allocate more effort to the task delivered by the comparatively strong principal, and therefore impair the efficiency of common agency.

In this common agency model, we assume principal A is much stronger compared with principal B.

Each principal determines a linear incentive mechanism $\alpha_j'x + \beta_j$, for $j=1, 2.$, and the sum of the

two incentive is $\alpha'x + \beta$. In this case, the agent confronts with two separate incentive mechanisms, and therefore has to make separate strategies. When playing with principal B without the influence of principal A, the agent chooses effort $t = \Gamma \alpha_2$, and his or her certain income is

$$\begin{aligned} & \frac{1}{2} \alpha_2' \Gamma \alpha_2 - \frac{1}{2} r \alpha_2' \Omega \alpha_2 + \beta_2 \\ & = \frac{1}{2} \alpha_2' (\Gamma - r \Omega) \alpha_2 + \beta_2. \quad (12) \end{aligned}$$

When both A and B assign tasks and make payment to the agent, the certain income is

$$\frac{1}{2} (\alpha_1 + \alpha_2)' (\Gamma - r \Omega) (\alpha_1 + \alpha_2) + (\beta_1 + \beta_2). \quad (13)$$

Thus the agent gets additional income from the participation of principal A, which is the minus of (12) and (13):

$$\alpha_2' (\Gamma - r \Omega) \alpha_2 + \frac{1}{2} \alpha_1' (\Gamma - r \Omega) \alpha_1 + \beta_1. \quad (14)$$

When dealing with the agent, the strong principal A gets expected payoff:

$$b_1' t - \alpha_1' t - \beta_1 = (b_1 - \alpha_1)' \Gamma (\alpha_1 + \alpha_2) - \beta_1; \quad (15)$$

but if principal A doesn't participate in the common agency relationship, he or she can still get payoff $b_1' \Gamma \alpha_2$ from the output the agent made for principal B. Subtracting $b_1' \Gamma \alpha_2$ from (15), we get the additional payoff of principal A when he or she develops the common agency relationship with the agent:

$$b_1' \Gamma \alpha_1 - \alpha_1' \Gamma \alpha_1 - \alpha_2' \Gamma \alpha_1 - \beta_1. \quad (16)$$

With the combination of (14) and (16), principal A has to choose an incentive mechanism determined by α_1 to maximize the total payoff of the agent and him-or-herself:

$$\max_{\alpha_1} b_1' \Gamma \alpha_1 + r \alpha_2' \Omega \alpha_1 - \frac{1}{2} \alpha_1' (\Gamma + r \Omega) \alpha_1, \quad (17)$$

Where β_1 only transfers income between principal A and the agent. Since the two principals do not cooperate with each other, principal A chooses α_1 with α_2 chosen by principal B being regarded as given. The first order condition of the optimization problem in (17) is

$$\Gamma b_1 - r \Omega \alpha_2 - (\Gamma + r \Omega) \alpha_1 = 0. \quad (18)$$

Thus, the marginal payoff of principal A is

$$b_1 = \alpha_1 + r \Omega \alpha_2 \quad (19)$$

and similarly we get the marginal payoff of principal B:

$$b_2 = \alpha_2 + r \Omega \alpha_1. \quad (20)$$

Combining (19) and (20), we get the total incentive mechanism as the equilibrium strategies of the two principals:

$$b = \alpha + 2rC\Omega\alpha . \quad (21)$$

Obviously, since $\alpha_1 > \alpha_2$ leads to $b_1 > b_2$, heterogeneity of principal A and B in terms of strength results in the difference of marginal payoff between them. If strong principal provides more attractive incentive mechanism, the agent will put more effort to complete the agent assigned by the strong principal, or in other words, the strong principal will get more benefit from the output produced by the agent.

When the cadre collude with the strong principal—township government, the collective interests of the grassroots villagers was placed in the position of plunder. Under the situation, the agent's tasks either imposed by the township government or by the villagers would have a fundamental conflict. In order to accomplish the targets, the township government will control and push the cadre to fulfill the administrative targets, which are closely in related to performance of the township government and will be examined by the senior government. Such kinds of targets contained in the task imposed by the township government not only have specific criteria for evaluation, but also have credible threat of punishment if the task is uncompleted. On the other hand, the weak position demands the villagers only to subject to the reality and “gives up” their interests. Thus the task the villagers entrusted to the cadre becomes a nominal contract and the cadre knows that there is no credible threat to punish him for his in default. Faced with these different commissions, the cadre will give priority to the task the township government imposed and directly overlook or selective accomplish the task that the villagers entrusted. Furthermore, in parts of the rural areas, under acquiescence and connivance of the township government, the village cadre plunders the collective interests or them conspiracy together to do so and led to an increasing burden of the villagers. The villagers' self-government system carried out in such condition is under the strict control of local government, it is more about nominal self-governance, not independent or true democracy, and therefore, of low efficiency.

5. The improvement after the rural tax reform and some new challenges

The governance structure of the self-governance in the rural areas had incurred some shocks from the abolition of agriculture tax in 2006. These shocks showed mainly in two respects: first, township government no longer charges tax and fee from the grassroots village. This means that the control power that the township government exerted on the grassroots village, to some extent, has been weakened. Moreover, the negative phenomenon existed in the self-governance, such as the collusion between the township government and the cadre, the villager's collective interests plundered by those colluded groups, has been corrected to some extent. Under the certain condition, the township government wants to help to achieve the self-governance and grassroots democratic goals. On the other hand, the promotion of urban-rural integration pushes the villagers' self-governance to become community self-governance. The activity is also conducive to the independence of self-governance and make the village cadre to become a truly agent of the villagers, who would devote all himself into welfare improvement for the villagers. In this case, therefore, the efficiency and the degree of democratization are improved.

However, the wages payment of village cadre switches to the financial transfers from the government budget instead of the village collective funds. Under the circumstances, village cadre

is about to obey and depend on the township government in certainly way and leads to the common agency problem exist. In this case, the collusion status between the township government and village cadre is not as stronger as the form one, which described in part 4. The heterogeneous principals will cooperate in sometimes and sometimes competing. Furthermore, some new shocks incurred by the development of the urban-rural integration hinder the original goal of the self-governance to be realized.

5.1 Heterogeneous principals cooperating sometimes

When the two heterogeneous principals sometimes have the same goal and sometimes have inconsistent goal, they will choose whether to cooperate or compete each other. For example, when government wants to improve the income of the grassroots villagers, such as introduce a new technology for the agriculture production, the villagers would like to cooperate with the government. On the other hand, the township government wants to increase the local fiscal revenue by sale the villagers' land. Villagers will not cooperate with the government. Such conditions are the most realistic situation in the rural areas.

Proposition 2. In common agency model with two heterogeneous principals in terms of strength and one single agent, when there is a positive probability that the two principals cooperate, the total welfare of principals and agent is between the original goal and that in Proposition 1.

In this section we consider the case that the two principals are not always in conflict, which means sometimes the tasks correspond with each other and therefore the two principals choose to cooperate, sometimes the tasks substitute with each other and therefore the two principal do not cooperate. Thus, we introduce a parameter p as the cooperation probability, and $0 \leq p \leq 1$.

Based on the discussion in above sections, the analysis in this section is much more convenient. With the probability p that the two principals cooperate with each other, the certainty equivalent of the agent is

$$p \left\{ \frac{1}{2} \alpha' \Gamma \alpha - \frac{1}{2} r \alpha' \Omega \alpha + \beta \right\} + (1-p) \left\{ \frac{1}{2} (\alpha_1 + \alpha_2)' (\Gamma - r \Omega) (\alpha_1 + \alpha_2) + (\beta_1 + \beta_2) \right\}. \quad (23)$$

If principal A decides to cooperate with principal B, the deal with the agent will provide A with payoff:

$$(b_1 - a_1)' \Gamma \alpha_1 - \beta_1, \quad (24)$$

$$\text{and the agent gets } \frac{1}{2} \alpha_1' \Gamma \alpha_1 - \frac{1}{2} r \alpha_1' \Omega \alpha_1 + \beta_1. \quad (25)$$

If principal A doesn't cooperate with B, and decides to make a deal with the agent, the payoff of A

$$\text{is } b_1' \Gamma \alpha_1 - \alpha_1' \Gamma \alpha_1 - \alpha_2' \Gamma \alpha_1 - \beta_1, \quad (26)$$

$$\text{and the agent gets } \alpha_2' (\Gamma - r \Omega) \alpha_2 + \frac{1}{2} \alpha_1' (\Gamma - r \Omega) \alpha_1 + \beta_1. \quad (27)$$

In equilibrium, principal A determines an optimal incentive mechanism to maximize the total payoff of the agent and him-or-herself:

$$p \left\{ \max_{\alpha_1} b_1 \Gamma \alpha_1 - \frac{1}{2} \alpha_1' (\Gamma + r\Omega) \alpha_1 \right\} + (1-p) \left\{ \max_{\alpha_1} b_1 \Gamma \alpha_1 + r\alpha_2' \Omega \alpha_1 - \frac{1}{2} \alpha_1' (\Gamma + r\Omega) \alpha_1 \right\}. \quad (28)$$

The first order condition is:

$$p \{ \Gamma b_1 - (\Gamma + r\Omega) \alpha_1 \} + (1-p) \{ \Gamma b_1 - r\Omega \alpha_2 - (\Gamma + r\Omega) \alpha_1 \} = 0,$$

$$\text{or, } b_1 = p [\alpha_1 + rC\Omega \alpha_1] + (1-p) [\alpha_1 + rC\Omega (\alpha_1 + \alpha_2)]. \quad (29)$$

Similarly, the first order condition of principal B's optimization problem is

$$b_2 = p [\alpha_2 + rC\Omega \alpha_2] + (1-p) [\alpha_2 + rC\Omega (\alpha_1 + \alpha_2)]. \quad (30)$$

Combining above two equilibrium strategy, we get

$$b = p [\alpha + rC\Omega \alpha] + (1-p) [\alpha + 2rC\Omega \alpha]. \quad (31)$$

By comparing this condition with (11) and (21), we find that when cooperation probability $p = 1$, or the goals of the two principals are in consistent, the equilibrium strategy is equal to the strategy when the principals form a union.; when $p = 0$, or the goals of the two principals are in conflict, and principal A is stronger compared with principal B, the equilibrium condition is the same as that stated in Proposition 2. When $0 < p < 1$, the welfare level of each interest subject is lying between the original goal when principals form a union and the worst condition that the principals compete with each other. Applying above conclusion to our problem, we state that although the promotion of the taxes-and -fees reform and urban-rural integration to some extent mitigates the collusion of strong principals and agent, the common agency relationship in our country still cannot realize full self-governance of the villagers, and the implementation of this institution is unfortunately subject to inefficiency.

5.2 New challenges from some kinds of shocks

There are some new shocks that bring about some challenges and changes to the villagers' self-governance, in spite of the "magic spell" have been taken off, the "plunder position" that the villager's interests were placed in has been abolished, since the rural tax and fee reformed.

First of all, the degree of independence of the township government has decreased. The township government is more likely to rely on the support of the county government. According to the research by Rao Jing and Ye Jingzhong (2007), the right of personnel administration and finance and also the capability of public goods independently managed or supplied by the township areas has been significantly decreased, since the integration was carried out. This change result in the township government to become a "representative office" of the county government. The independence degree of the township government has been greatly decreased and also the enthusiasm that the township government helps the grassroots people to carry out the self-governance activities reduced.

Secondly, between the township government and villagers, the strong and weak pattern still exists. Because of the several things, such as cadre's income paid by the township government, the village cadre has an opportunity to be a civil service and also the option village cadres from the university students are all controlled by the township government after the abolition of agriculture tax and fee, the strong-weak pattern between the township government and villagers has been strengthened. The village cadre will still give priority to the requirements of township government and devote more time and effort to complete any government tasks, but to postpone or shuffle or even decline to serve the villager's tasks and supply the rural public goods.

Thirdly, as a common agent of the village cadre faced many shocks and impact: (1) the power has been weakened. To guard against village cadre and township government conspiracy appears, the new situation of policy arrangements deliberately weakened the authority of village cadre; (2) wakening incentives. The opportunity cost has been increased for someone to be a village cadre, since he or she can earn more income from the non-agriculture employment. Moreover, the power and incentives both weakened brings about the decline in cadre's authority and his reality interests, thus make the village cadre wants to quit the job. (3) Increasing difficulty in rural public goods supply. Constrained to the limited public resources and the commercialization of the relationship between the villagers, the provision of village public goods by the village cadre becomes a more difficult work and further discourages the cadre's enthusiasm. (4) The impact of hollow village. More and more famers left the countryside to the city for their life. When these people left their villages, especially the elites, who would pay little attention on the development of their hometowns for they have no longer relied on those places to live, it leads to lose the human resource, especially the outstanding candidates for the village cadres. Therefore, the village cadres, as the common agent, appear to be no one shows any interest. In such situation, the village cadres not only have limited capability to fulfill the tasks from the township government and villagers, but also they often choose to "avoid trouble whenever possible". Thus the efficiency of the self-governance system has not been enhanced as much as it would be after the tax and fee reformed.

Finally, one of the principals in the common agency problem, the villagers, also changed greatly. (1) Villager relation commercializes gradually. When villagers left the countryside for non-agriculture employment, they have realized the opportunity cost increasingly. Thus they would unwilling to reveal their truly demand for the public goods and hope the government assume the whole duty to offer any kinds of public goods, when the countryside faced with the public goods supply problems. Or they show little enthusiasm for that. Even if they take part in that affair, they may ask for some rewards (Ye Jingzhong and Yang Zhao, 2007). It shows that benign ethics vacancy and ethics chaos has appeared in the countryside and the relation between the villagers commercialize gradually (Liu Tao, 2007). Strange degree between the villagers is increasingly rising. (2) Factors such as going out and obtain employment and expecting to leave rural area completely lead villagers have no more anticipations or demands for the development of the countryside. They not only do not concern about the provision of rural public goods, but even to become the blockage for that. Zhang Lingxiu, et al (2005), Zhang Xiaohui, et al (2006) all found that the relationship between the farmer's go out for work and the provision of rural public goods is significant negative. Thus, one of the principals' statuses, principal of the villagers in the common agency problem, has been given up in sometimes by themselves owing to they have left the village for living. (3) Hollow village

resulted from the urban-rural integration which decreased the absolute population of villages and promoted the agglomeration of the local villagers. There are series of problems contained in the village agglomeration, such as how to deal with the land, collective properties, the structure of the village organizations. Every of them will directly affect the behaviors that the villagers, village cadre and township government to choose, especially the behavior of the cadre, since the agglomeration made cadre's job and occupation in uncertain way and then probably lower his or her work efficiency.

A series of new policies which included the abolition of agricultural tax and fee and the construction of new rural areas etc. will back feeding the rural areas. In fact, whether theorists or practitioners had anticipated that the performance of the villagers' self-governance system would significant improved, since those policies were introduced. The desired results, however, did not occur. And we thought that the unexpected consequences must be closely related to those challenges and shocks mentioned above.

6. How to return to the original goal

According to the analysis above, to solve the common agency problem and to enhance the performance efficiency of the villagers' self-governance system, it is necessary to change the governance structure in the rural areas completely via expanding the scope of grassroots democracy. Through direct public elections at the township level, we could let the township government become a single agent and the villager is the only principal. In doing so, we can not only improve the efficiency of the self-governance, but also conform to the current accelerating urbanization policy needs. And more importantly, it can result in the condition which we have discussed in the part 3—the original goal of the system. To achieve this goal, there are a lot of works to do:

First, promote the transformation of township government to become a service agent. Through the model analysis, we have found that the only to eliminate the inefficient equilibrium of the common agent problem and achieve the original of the villagers' self-governance system is to break the common agency dilemma and change the relationship between those relevant groups. The most important thing is to eliminate the strong position of the township government and to make the township government change from a single administration government to become a service government which will take the agriculture production and farmer's living condition as its service duty. In this case, we can totally remove the heterogeneity of two principals and their alternative tasks and make the township government to become a single agent in the rural governance structure. In addition to that, we have to carry out some measures to monitor and restrain the behavior of the township government for preventing against township government administrative threat the interests of the grassroots villagers.

Secondly, promote the transformation of village cadres and improve their working competence. In our analysis of the common agency model, there is a potential assumption: village cadres are not only competent enough but also would like to make their full effort to complete the assignment under proper incentive mechanism. This assumption, however, can be relaxed when coming to the reality. When village cadres as a common agent is incompetent or don't make full effort, the interest belongs to either the village government or the villagers is impossible to be guaranteed. Thus, so as to provide efficient incentive to village cadres to motivate them make enough effort to complete the tasks, a strong and efficient training system for village cadres must

be constructed. Based on our mathematical model, a feasible way is to make village cadres become the employees of township government, which in turn makes township government become the agent serving for the villagers, and the welfare of the whole group therefore achieves Pareto improvement. This solution has already been applied in the real world, like the "college-graduate village official" policy.

Thirdly, construct and complete the villagers' self-governance system and oversight mechanism against village cadres. From the analysis of our model, we find that although the villagers' self-governance is enhanced after the cancellation of agricultural tax, and village cadres are elected by all the villagers, the oversight mechanism against the cadres and their behaviors still has lots of problems, and there is dilemma of collective actions among peasants themselves, which leads to the lack of investment to tasks assigned by villagers made by slack cadres. In order to get rid of this phenomenon, a complete oversight mechanism is in need. In addition, our model assumes that the effort invested to the tasks assigned to the cadres cannot be observed by the two principals, and output is their only criterion to judge the action of the cadres, this ex-post mechanism is unlikely to avoid moral hazard and adverse selection which is common in classic principal-agent model, which is also proved in our model. Further improvement of the villagers' self-governance system and oversight mechanism against the cadres should reveal the effort made by the agent (ex-ante behavior) as precisely as possible, and in the ideal condition described in Dixit(1996), the ex-ante behavior of the agent can be completely observed by the principal, the play between township government, cadres and villagers will get to the optimal equilibrium in which the marginal is equal to the marginal cost.

7. Conclusions

In this paper we use the framework of the Common Agency Model analyzed the process of the villagers' self-governance system development from the institutional change perspective. We have found that the villagers' self-governance system was created to achieve the fully democratic in the grassroots rural areas and let villagers to manage their own economic affairs, such as the rural public goods supply or the agriculture technology promotion etc... However, the original target of the system was never being able to achieve for the village cadre collude with the township government to plunder the collective interests of the villagers. We also use the model to disclose why those two subjects could conspiracy together. The reason is that the township government is in the strong position in compare to the villagers as the principals in the common agency relations. The common agent, the village cadre, has incentive to cooperate with the strong principal for his income and job promotion is under controlled by the latter. Thus cause the system implementation inefficiency. After the rural tax and fee abolished, there were some improvements in the self-governance system but still not enough, since the strong-weak status between the principals was not changed completely and other new shocks, such as the hollow village, the commercialization of the villagers' relation etc., gave new challenges to the system implementation. According to the current reality and the interaction behaviors of those relevant groups in the village self-government system, we have given some suggestions on how to return to the original goal of the system. Only to change the common agency status existed in the currently rural governance structure can correct the deviation completely and achieve the fully grassroots democracy.

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