

The Pattern Choices of Changing Living Area-poverty Alleviation Movement based on Collaborative Gamble

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Abstract: Based on the collaborative gamble perspectives, this thesis regained the knowledge about the sustainable issues of Changing living area-poverty alleviation movement from the following perspectives: the government, the market and the mass, which has been considered as that all the policy's making and implementing of the whole movement project served as to perform the three forces totally, the government, the market and the mass(people under the poverty). It should depend on the strengthen of government's guiding, mass's positive efforts, as well as the collaborative joint efforts of the market, so that it could provide more guarantee for plenty of aspects, such as employment position, industry's bolsters and entrepreneur platform. In order to solve the sustainable issues of Changing living area-poverty alleviation movement radically, as well as provide some examples for our country's Changing living area-poverty alleviation movement, especially in the minority's regions in China.

1. Introduction

As the global difficult issues, our country has put forward the general requests to Changing living area-poverty alleviation movement in terms of the difficult issues, one is poverty alleviation, the other is immigration. The general targets are "people can move out", "people can settle down after the movement", as well as "people can make the fortune gradually".^[1] Currently, there are sustainable issues presented in the work of Changing living area-poverty alleviation movement, which has already made the negative impacts on the general work quality and the reality of the final targets.

2. Current situation and problems in the promotion of poverty alleviation and relocation

China's 13th Five-Year Plan for the promotion of poverty alleviation and relocation involve 10 million people, which is the largest policy social relocation in China's history. It is especially important to ensure that the rural poor in the country will be lifted out of poverty in 2020 and build a well-off society in an all-round way.^[2] In the ex situ poverty alleviation and relocation work, the relocation of centralized resettlement sites is related to the sustainable development of the livelihood of the people. It is not only a measure of the success of the ex situ poverty alleviation, but also related to local economic development and social stability. The new round of ex situ poverty alleviation is facing unprecedented challenges, especially in ethnic areas. The number of poverty-stricken counties in five minority autonomous regions and Yunnan, Guizhou and Qinghai provinces in China accounted for 48.5% of the poverty-stricken counties in concentrated contiguous destitute areas.^[3] The author carried out a survey on the current situation of relocation and poverty alleviation. From the research situation, the national ex situ poverty alleviation and relocation work has achieved remarkable results. By the end of 2018, about 8.7 million people had completed the relocation.^[4] However, there are many people in the area of relocation and poverty alleviation, and a large number of people need to be centralized resettled. Many problems exist in sustainable livelihoods at the resettlement sites, including: the reconstruction of immigrants' livelihood is difficult, the worries of immigrants are more serious, and the funds for subsequent livelihood development are seriously insufficient. The functional facilities of centralized resettlement sites

need to be improved, and the social problems of centralized resettlement sites are highlighted. Grassroots cadres have the phenomenon of relocation and light support, and non-poor households who move synchronously may face the risk of poverty.

It is generally acknowledged that the visible hand of the government and the invisible hand of the market are the main ways of resource allocation in the market. However, this rationale, which stems from the west's competitive market economy, does not fully apply to China.^[5] The masses are "an important hand to participate in the allocation of resources". According to the current situation of poverty alleviation and relocation in remote areas, to realize the fundamental goal of "gradually getting rich", the government, market and the masses should be mobilized to explore a practical and sustainable development path^[6].

3. The behavior analysis and the determination of the tolerable cost range in the poverty-stricken households' relocation

James C. Scott, an American scholar, listed many large projects that tried to improve the human condition but failed. The main reason for the failure of these projects is that they ignore the existence of the people and do not give the lower class enough channels to express their own wishes. In the relocation work, the government plays a key role, but the people play a decisive role.

A game is "a game in which two or more players or players choose ways in which they can collectively influence the actions or strategies of each player." Analysis based on game theory regard the masses or the poverty-stricken households as economic man. "A government agency is not an organization or individual that measure its output through the market, their promotion depend on their superiors, so their behavior targets the preferences of their superiors. That's the reason that some poverty-stricken households are not willing to move out, or move out and return to their native land without considering their interests. Migration and relocation is not only a human problem, but also a cultural problem. The hypothesis of economic man cannot be simply made on the behavior of the masses. It can be considered that farmers in these areas are "limited rational social people". They will consider many other factors besides economic interest when they make decisions, like the attachment to the homeland and the adherence to the tradition, thus seeks the relative satisfactory decision-making plan.

For a long time, in many parts of the country, especially in the poverty-stricken areas where ethnic minorities live in compact communities, there has been a vague game relationship between poor households and local governments regarding the relocation of vulnerable areas, for which the following assumptions are made:

(1) The two sides of the game are low income families (L) and local governments (G). When both parties are in the state of complete information, the strategy is selected as: the low income families strategy set $S_l = \{\text{move, don't move}\}$; the local governments strategy set $S_g = \{\text{mobilize, don't mobilize}\}$.

(2) Since the overall investment of poverty alleviation in relocation is mainly in the government, it is assumed that the time and other benefits gained by poor households are R_{lt} ; the compensation income obtained by the poor households to abandon their original place of residence is R_{lh} . At the same time, the local government actively guides the poor households to start a business and increase the wage income R_{lw} . The labor cost paid by the poor households is calculated as C_{ln} ; if the poor households are willing to relocate, The emotional cost of "the attachment to the homeland" will be paid as M_l , and $R_{lt} \geq M_l \geq 0$ in the normal case.

(3) For local governments, whether poor households take the initiative to relocate or not, they have to pay the monetization cost C_g . At the same time, if the government fails to mobilize the relocation, it will be held accountable by the superior, assuming that its monetization cost is C_m . Some of the losses of the poor households who do not want to move are kept by the local government and can be regarded as the government's gains for the time being.

When the government chooses to mobilize, the strategy of poor households depends on the comparative relationship between the benefits of relocation ($R_{lt} - M_l$) and the benefits of

non-relocation (Rlh+Rlw)-Cln. When the government chooses not to mobilize, the strategy of poor households depends on the comparative relationship between Rlt and (Rlh+Rlw)-Cln, which obviously belongs to the mixed strategy Nash equilibrium game model. Assuming that the probability of poor households choosing to move is 1, then the probability of not moving is (1-p). Similarly, if the probability that the government chooses to mobilize is q, then the probability of not mobilizing is (1-q). So see the Table below.

Tab.1. Mixed strategy game matrix about farmers and the government on poverty alleviation relocation.

		The government policy	
		Mobilize(q)	Not to mobilize(1-q)
Strategy for poor households	Relocate (p)	Rlt-Ml,Ml-Cg	Rlt,-Cm
	Not to relocate (1-p)	(Rlh+Rlw)-Cln,-Cg	(Rlh+Rlw)-Cln,-Cm

Therefore, the expected return function of poor households is:

$$E_p = p[q(Rlt - Ml) + (1-q) Rlt] + (1-p)\{q[(Rlh + Rlw) - Cln] + (1-q)[(Rlh + Rlw) - Cln]\} \quad (1)$$

Similarly, the expected revenue function of the government is:

$$E_g = q[p(Ml - Cg) + (1-p) (-Cg)] + (1-q)\{p (-Cm) + (1-p) (-Cm)\} \quad (2)$$

In (1) and (2), take partial derivatives of p and q respectively and set the derivative result to zero to obtain the optimal solution, then the mixed Nash equilibrium is:

$$D = \left(\frac{Cg - Cm}{Ml}, \frac{Rpt - (Rlh + Rlw - Cln)}{Ml} \right) \quad (3)$$

According to equation (3), in order to make $Rlt - (Rlh + Rlw - Cln) > 0$, then:

$$Cln < (Rlh + Rlw) - Rlt \quad (4)$$

That is, the acceptable cost Cln for poor households to give up their original residence must be less than the difference between the benefit (Rlh+Rlw) obtained after relocation and the time and other benefits obtained directly (Rlt), which is the upper limit of the cost that poor households can afford to give up their original residence. Meanwhile, for a single farmer, the land cost Cln he gives up can be regarded as a constant.

From the above analysis, it can be seen that the goals to be achieved by the whole society can be divided into two levels. The basic goal should be to farmers agreed to relocation (mobilization - not relocation) in the case of the governments' mobilization; and the ideal goal is in the government does not mobilize the case, poor households still choose poverty alleviation relocation (mobilization - relocation). In order to maximize the enthusiasm of poverty-stricken households in relocation, it is necessary to reasonably distribute among poverty-stricken households, the market and the government, so as to better solve the problem of poverty alleviation in relocation at a lower cost.

4. Game analysis of the cooperation among the poor households, the market and the government

Cooperative game abandons the conflict of interest analysis model in which the three go against each other from the perspective of non-cooperative game, establishes the game goal of maximizing the common benefits of the three, and increases the benefits of all three through interest distribution.

4.1 Establishment of cooperative game model

Assuming that the poor households, the market and the government form a set on the relocation of poverty alleviation $N = \{1,2,3\}$; the non-empty subset $S(S \in N)$ of N is the union, N is the total alliance (the three parties participate simultaneously), and the empty set is denoted as \varnothing .

According to the basic requirements of cooperative game, there are the following relations: 1. $V(\varphi)$, that is, no player's alliance gain is 0; 2. $V(N) \leq \sum_{i \in N} V(i)$, V is the characteristic function (cost here); 3. This game is called $G = [N, v]$. The characteristic function is as follows:

$$V(\varphi); \quad (5)$$

$$V(L) = Cl, V(B) = Cb, V(G) = Cg; \quad (6)$$

$$V(l, b) = Clb, V(l, g) = Clg, V(b, g) = Cbg \quad (7)$$

$$V(N) = Cn. \quad (8)$$

Where, $V(L)$, $V(B)$ and $V(G)$ are the costs paid by poor households, the market and the government to relocate independently; $V(l, b)$ is the cost of the cooperation between the poor households and the market, $V(l, g)$ is the cost of the cooperation between the poor households and the government, and $V(b, g)$ is the cost of the cooperation between the market and the government. $V(N)$ costs incurred for the tripartite cooperation. The quantitative relationship between the above costs meets the requirements of relation (2).

4.2 Solve the model

Obviously, the cost allocation scheme satisfying relation (2) is not unique, and for the convenience of subsequent discussion, Shapley method is adopted here to solve Shapley value of game $G = [N, v]$. The average marginal contribution of player i in each distribution scheme of the game in any game is:

$$\phi_i(v) = \sum_{s \in N} \frac{(n-|S|)! (|S|-1)!}{n!} [v(S) - v(S \setminus \{i\})] \quad i = 1, 2, \dots, n \quad (9)$$

Where $|S|$ represents the number of players in alliance S , $(n-|S|)!$ represents the number of permutations of alliance, $(|S|-1)!$ represents the number of alliances without players, $n!$ represents the number of permutations that can be formed by n players, and $v(S) - v(S \setminus \{i\})$ represents the marginal contribution of player i to alliance. The cost allocation scheme of substituting (6) (7) (8) (9) into the relocation and resettlement of the poverty-stricken households, the market and the government is as follows:

$$\phi_l(v) = \frac{2Cl + (Clb - Cb) + (Clg - Cg) + 2(Cn - Clg)}{6} \quad (10)$$

$$\phi_b(v) = \frac{2Cb + (Clb - Cl) + (Cbg - Cg) + 2(Cn - Clg)}{6} \quad (11)$$

$$\phi_g(v) = \frac{2Cg + (Clg - Cl) + (Cbg - Cb) + 2(Cn - Clb)}{6} \quad (12)$$

4.3 Discussion on the results of cooperative games

As the condition of $V(N) \leq \sum_{i \in N} V(i)$ exists, in equation (10), $(Clb - Cb)$, $(Clg - Cg)$ and $(Cn - Clg)$ are less than 0, so it can be seen that under the premise of tripartite cooperation game, the relocation cost borne by poor households will be greatly reduced or even less than the original

cost. Similarly, according to equation (11) and (12), the costs borne by the market and the government will also drop to less than the original costs, which is obviously a win-win situation. The costs paid by all parties after the cooperative game have dropped significantly. In the end, whether the above-mentioned ideal goal (non-mobilization-relocation) can be achieved, the key point is still to ensure that the cost of the poor households must be less than the income of the poor households to abandon the original housing and land. Therefore, it is necessary to analyze the cost structure of poor households in the relocation and resettlement in order to develop targeted countermeasures.

5. Recommendations and countermeasures

Based on the above game analysis, in order to effectively solve the sustainable development livelihood issues after the relocation of the land for poverty alleviation, in the further concrete promotion of the poverty alleviation work, we should pay attention to:

(1) Create a good public opinion atmosphere. In the tripartite cooperation game, the government should use a variety of media to promote the importance of the poverty alleviation and relocation of the poor and the long-term benefits. In order to take as much, typical guidance, change "move people" to "move culture, move heart, move god", to achieve the "culture and things" system relocation, so that the relocated people in the new home can not only have a sense of cultural belonging, but also into the cultural industry chain, to truly realize move out, stay stable, get rich, life happily.

(2) Strengthen support for follow-up policies of immigrants. Comprehensive reduction of poverty households' relocation costs. A certain amount of funds will be allocated each year to support the after-care work of the resettlement sites and to build a protection network for the livelihood of immigrants. Focus on supporting the industrial development and capacity building of immigrants. Increase financial poverty alleviation efforts and help immigrants use local resources to develop characteristic industries. Study and introduce flexible household registration management policies, pay attention to the social assistance of special groups in immigrants, and broaden the sources of migrants' livelihoods.

(3) Encourage the market to actively participate in the development of poverty alleviation industries. The transformation of poverty-stricken households into entrepreneurs and employment is the foundation for immigrants to "stay stable". From the previous analysis, it can be seen that without the introduction of the market, the government's subsidy to the poor households will ultimately be difficult to solve the problem. It is necessary to introduce preferential policies and encourage the support of the market mainly to actively participate in the resettlement work of the relocated households, promote the transformation of entrepreneurship and employment, and realize the livelihood upgrade of the immigrants. Introduce incentives for immigrant entrepreneurs and employment, improve the overall quality of immigrants, and stimulate the vitality of immigrants' livelihood. Explore a new model of employment poverty alleviation, and encourage economic entities such as agricultural leading enterprises to link with immigrants, cooperate and win-win, and form a community of interests.

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