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# Evaluation of Governance Structure of Farmers’ Specialized Cooperatives

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**Abstract** In this paper, from the authority, decision-making body, supervisory body and implementing body, we analyze the governance structure evaluation indicators of farmers’ specialized cooperatives, using objective and subjective combination weighting approach. And we draw the following conclusions: the rate of return of profits for membership, frequency of council convened and the number of members of board of supervisors have a great impact on the governance structure of cooperatives; the insider control phenomenon in cooperatives is more serious and the level of incentives is limited. Finally we put forward corresponding policy recommendations.

**Key words** Farmers’ specialized cooperatives, Governance structure, Combination weighting approach, Evaluation research

## 1 Introduction

In the context of national policy support, farmers’ specialized cooperatives develop by leaps and bounds, having made great contribution to increasing farmers’ income and promoting the building of a new socialist countryside. But in the process of development, issues concerning the governance of farmers’ specialized cooperatives have become increasingly prominent, such as serious insider control and free-riding behavior, which hinder scientific development of cooperatives. Therefore, effective governance structure becomes an urgent problem to be solved. Currently, scholars’ researches of cooperatives are mainly concentrated in the operational mechanism, governance mechanism and performance evaluation. There is little literature adopting the measurement method for assignment of value, and there is a shortage of researches on the importance of various factors influencing the evaluation indicator system of governance structure. and mutual causality. Therefore, using objective and subjective combination weighting approach, this study conducts a systematic analysis of the evaluation indicator

system of the governance structure of cooperatives, and sequences various influencing factors in terms of importance, in order to provide useful reference for improving the governance structure of farmers’ specialized cooperatives.

## 2 The designing and research methods of the evaluation indicator system

**2.1 The designing of the evaluation indicator system** The evaluation indicator system consists of three-level indicators. The first layer is the evaluation indicator system of governance structure ( $A$ ); based on the corporate governance structure in a narrow sense, the second layer divides the governance structure of farmers’ specialized cooperatives into the authority, decision-making body, supervisory body and implementing body, consisting of general meeting of members ( $B_1$ ), council ( $B_2$ ), the board of supervisors ( $B_3$ ) and managers ( $B_4$ ). The third layer consists of 12 indicators (Table 1).

**Table 1** The evaluation indicator system of factors influencing governance structure of farmers’ specialized cooperatives

A Target layer	B Criterion layer	C Indicator layer
The evaluation indicator system of governance structure $A$	General meeting of members $B_1$	One – person – one – vote ratio $C_1$
		Rate of return of profits for membership $C_2$
		The ratio of general meeting of members making decision on affairs $C_3$
		Frequency of holding general meeting of members $C_4$
	Council $B_2$	The number of members of the council $C_5$
		Council members’ share held $C_6$
		The ratio of council making decision on affairs $C_7$
		Frequency of convening council $C_8$
	The board of supervisors $B_3$	The number of members of board of supervisors $C_9$
		Supervisory board members’ share held $C_{10}$
	Managers $B_4$	The share of managers’ remuneration in cooperatives’ profit $C_{11}$
		Incentive level of managers $C_{12}$

ernance structure evaluation indicators of farmers' specialized cooperatives. The combination weighting method is a method integrating subjective weighting method and objective weighting method to determine the weight. Subjective weighting method is a weighting method based on the decision-makers' subjective attention to property and their own experience. Objective weighting method is a method without any information of decision-makers that various indicators are weighted by themselves according to the rules.

**2.2.1 Subjective weighting method.** In the present study, subjective weighting method uses the analytic hierarchy process. The analytic hierarchy process (AHP) is a structured technique for organizing and analyzing complex decisions. It has particular application in group decision making, and is used around the world in a wide variety of decision situations, in fields such as government, business, industry, healthcare, and education. Users of the AHP first decompose their decision problem into a hierarchy of more easily comprehended sub-problems, each of which can be analyzed independently. The elements of the hierarchy can relate to any aspect of the decision problem-tangible or intangible, carefully measured or roughly estimated, well- or poorly-understood – anything at all that applies to the decision at hand. Once the hierarchy is built, the decision makers systematically evaluate its various elements by comparing them to one another two at a time, with respect to their impact on an element above them in the hierarchy. In making the comparisons, the decision makers can use concrete data about the elements, but they typically use their judgments about the elements' relative meaning and importance. It is the essence of the AHP that human judgments, and not just the underlying information, can be used in performing the evaluations. The AHP converts these evaluations to numerical values that can be processed and compared over the entire range of the problem. A numerical weight or priority is derived for each element of the hierarchy, allowing diverse and often incommensurable elements to be compared to one another in a rational and consistent way. This capability distinguishes the AHP from other decision making techniques. In the final step of the process, numerical priorities are calculated for each of the decision alternatives. These numbers re-

present the alternatives' relative ability to achieve the decision goal, so they allow a straightforward consideration of the various courses of action. In the general decision-making problems, decision-makers are impossible to give precise pairwise comparison judgment, and this judgment inconsistency can be reflected in the changes of characteristic root of judgment matrix, so it is necessary to conduct consistency test on the characteristic root. When  $CR < 0.1$ , the matrix has satisfactory consistency, otherwise the judgment matrix needs to be adjusted.

**2.2.2 Objective weighting method.** The objective weighting method adopts the method of coefficient of variation. The coefficient of variation reflects differences in the extent of the value of various indicators. If there are great differences in the numerical values of one indicator, it means that this indicator is not balanced, and in the process of evaluation, it should be given large weight. The calculation formula is as follows:

$$Var_i = \frac{S_i}{\bar{X}_i}, (i = 1, 2, \dots, 14)$$

$$w_i = Var_i / \sum_{i=1}^{14} Var_i$$

where  $S_i$ ,  $\bar{X}_i$  are the sample standard deviation and the mean of sectional data  $i$ .

**2.2.3 Combination weighting method.** The weight of indicator  $j$  is determined as  $a_j$  using subjective weighting method, and the weight of indicator  $j$  is determined as  $w_j$  using objective weighting method, then using the combination weighting method, the weight is as follows:

$$g_i = a_j w_j / \sum a_j w_j$$

### 3 Empirical results

In this study, the data are from the survey on Yunling Huaxiang Cooperative in Chengdu, Sansu Xiangju Specialized Cooperative in Meishan, and Fengguang Cropping Specialized Cooperative in Deyang in 2011, and conducted empirical analysis of three types of cooperatives (farmers-led cooperatives, relevant organization-led cooperatives and enterprise-oriented cooperatives). The data are shown in Table 2.

**Table 2 The specific data on farmers' specialized cooperatives in Sichuan Province**

Indicator system	Yunling Huaxiang Cooperative in Chengdu	Sansu Xiangju Specialized Cooperative in Meishan	Fengguang Cropping Specialized Cooperative in Deyang
$C_1$ One – person – one – vote ratio	30	45	55
$C_2$ Rate of return of profits for membership	3	5	2
$C_3$ The ratio of general meeting of members making decision on affairs	42.9	28.6	14.3
$C_4$ Frequency of holding general meeting of members	4	5	2
$C_5$ The number of members of the council	13	9	5
$C_6$ Council members' share held	30	70	90
$C_7$ The ratio of council making decision on affairs	57.1	72.4	86.7
$C_8$ frequency of convening council	12	4	4
$C_9$ The number of members of board of supervisors	5	3	0
$C_{10}$ Supervisory board members' share held	15	20	0
$C_{11}$ The share of managers' remuneration in cooperatives' profit	2	3	1
$C_{12}$ Incentive level of managers	2	2	0

In accordance with the calculation formula of objective weighting method, we can calculate the objective weight of each indicator; based on the steps of analytic hierarchy process, we can de-

rive the subjective weight of various indicators.  $CR = 0.0847 < 0.10$ , and the judgment matrix passes the consistency test, as shown in Table 3.

**Table 3** The objective weight and subjective weight of governance structure evaluation indicators of farmers' specialized cooperatives in Sichuan Province

Indicator system	Objective weight	Subjective weight
$C_1$ One – person – one – vote ratio	0.0434	0.1131
$C_2$ Rate of return of profits for membership	0.0685	0.1521
$C_3$ The ratio of general meeting of members making decision on affairs	0.0747	0.0983
$C_4$ Frequency of holding general meeting of members	0.0623	0.1124
$C_5$ The number of members of the council	0.0664	0.0897
$C_6$ Council members' share held	0.0721	0.0860
$C_7$ The ratio of council making decision on affairs	0.0307	0.0784
$C_8$ frequency of convening council	0.1035	0.0824
$C_9$ The number of members of board of supervisors	0.1410	0.0540
$C_{10}$ Supervisory board members' share held	0.1333	0.0544
$C_{11}$ The share of managers' remuneration in cooperatives' profit	0.0747	0.0364
$C_{12}$ Incentive level of managers	0.1294	0.0427

Using the combination weighting calculation formula, we calculate the weight of various governance structure indicators of farmers' specialized cooperatives.

$$a_j w_j = 0.004\ 9, 0.010\ 4, 0.007\ 3, 0.007\ 0, 0.006\ 0, 0.006\ 2, 0.002\ 4, 0.008\ 5, 0.007\ 6, 0.007\ 3, 0.002\ 7, 0.005\ 5.$$

$$\sum a_j w_j = 0.0759$$

$$g_i = a_i w_i / \sum a_j w_j = 0.064\ 7, 0.137\ 3, 0.096\ 8, 0.092\ 2, 0.078\ 5, 0.081\ 7, 0.031\ 7, 0.112\ 4, 0.100\ 4, 0.095\ 6, 0.035\ 8, 0.072\ 9$$

The weights calculated using objective and subjective combination weighting approach are sequenced as follows:  $C_2 > C_8 > C_9 > C_3 > C_{10} > C_4 > C_6 > C_5 > C_{12} > C_1 > C_{11} > C_7$ . That is, the importance of evaluation indicators of factors influencing governance structure of farmers' specialized cooperatives is sequenced as follows: rate of return of profits for membership ( $C_2$ ) > frequency of convening council ( $C_8$ ) > the number of members of board of supervisors ( $C_9$ ) > the ratio of general meeting of members making decision on affairs ( $C_3$ ) > supervisory board members' share held ( $C_{10}$ ) > frequency of holding general meeting of members ( $C_4$ ) > council members' share held ( $C_6$ ) > the number of members of the council ( $C_5$ ) > incentive level of managers ( $C_{12}$ ) > one – person – one – vote ratio ( $C_1$ ) > the share of managers' remuneration in cooperatives' profit ( $C_{11}$ ) > the ratio of council making decision on affairs ( $C_7$ ).

According to the results of the above calculations, the analysis of four first-level indicators is as follows:

From the general meeting of members, the rate of return of profits for membership is the most important factor influencing the governance structure of cooperatives, ranking first. The return of profits for membership not only reflects the cooperative's governance performance, but also reflects the amount of patronage. When the rate of return of profits for membership is high, the cooperative's governance is more effective, and the members have high enthusiasm for participating and pay active attention to the development of cooperatives. The ratio of general meeting of members making decision on affairs, and frequency of holding general meeting of members are the two influencing factors of the governance structure of cooperatives ranking fourth and sixth, respectively,

indicating that they have great impact on the governance structure of cooperatives. One – person – one – vote ratio, ranking tenth, has little impact on the governance structure of cooperatives, indicating that one – person – one – vote in the governance of cooperatives is in a great sense a formality, and major policy decisions hinge on large shareholders.

In terms of council, frequency of holding council is a major factor influencing the governance structure of cooperatives, ranking second. The council is the decision-making body of cooperatives, and if it is often convened, it indicates that the council often studies the major problems of the cooperatives, and has a more direct influence on the governance of cooperatives. Council members' share held and the number of members of the council are the seventh and eighth factors influencing the governance structure of cooperatives; the ratio of council making decision on affairs ranks twelfth. This shows that the council members' share held and the number of members have the general effect on the governance structure of cooperatives, while the ratio of council making decision on affairs has weak impact on the governance structure of cooperatives.

From the board of supervisors, the number of members of board of supervisors has great impact on the governance structure of cooperatives, ranking third. If there are more members of the board of supervisors, more members will participate in the supervision of cooperatives. Supervisory board members' share held has great impact on the governance structure of cooperatives, ranking fifth.

From the managers, incentive level of managers and remuneration have the general effects on the governance structure, ranking ninth and eleventh. This is consistent with the current governance of cooperatives, and the level of incentives and rewards in most of the cooperatives is low.

## 4 Conclusions and recommendations

**4.1 Conclusions** In this paper, from the authority, decision-making body, supervisory body and implementing body, we analyze the governance structure evaluation indicators of farmers' specialized cooperatives, using objective and subjective combination

weighting approach. And we draw the following conclusions; the rate of return of profits for membership, frequency of council convened and the number of members of board of supervisors have a great impact on the governance structure of cooperatives; the insider control phenomenon in cooperatives is more serious and the level of incentives is limited.

## 4.2 Recommendations

**4.2.1** Improving the profit return capacity and strengthening the building of council and the board of supervisors. The development of cooperatives should rely on members, and the fruits should widely benefit ordinary members. For the membership, the most direct and most practical benefit is the profit return, so it is necessary to improve the proportion of profit return for the membership to increase membership's income. At the same time, it is necessary to focus on improving the institutional construction of council and the board of supervisors, regularly hold the council, and moderately expand the scope of members of the board of supervisors, to include more members into the supervision system, ensure orderly and effective operation of cooperatives from the level of institution, achieve efficient expected development goal of cooperatives.

**4.2.2** Implementing "one person, one vote", and promoting the democratic decision-making of cooperatives. From the current governance of the cooperatives in the province, it is more dependent on the hotshots' governance, and the decision-making power is concentrated in the hands of minority. In order to avoid losses for the majority of members, we should further promote the democratic decision-making on the basis of optimization of the governance structure of cooperatives; really implement the one – person – one – vote and increase public trust in the cooperatives.

**4.2.3** Strengthening the incentives and give play to the governance role of human capital. The core of governance is person, and human capital is the first capital. Effective incentive is the catalyst to play the role of human capital. The depth of management is incentive. A person's ability and talent can not determine his value to cooperatives, and the exertion of his ability and talent hinges in a large measure on the level of motivation. Currently, the vast majority of managers in cooperatives get rare wages from cooperatives, lacking incentive. Therefore, it is necessary to strengthen the incentives, take into account the spirit and substance at the same time, and implement comprehensive remuneration incentive,

to fully mobilize the enthusiasm and initiative of managers and play the governance role of human capital.

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