Investigation on the Concurrent-Business Behavior of Peasant Households during the Planting Structure Adjustment in Karst Mountainous Area

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Abstract Based on the survey data of 150 peasant households in typical Karst mountainous area in the year 2009, causations, characteristics and influence factors of the concurrent-business behavior of peasant households during planting structure adjustment are analyzed. Result shows that there is significant positive correlation between the concurrent-business income and the household income of farmers. And the concurrent-business behavior has the tendency to be popular among the young farmers with the characteristics of relative concentration, strong will of farmers and the significant impact of education degree on the concurrent-business income. Information, capital, skill, and market awareness are the main factors affecting the concurrent-business behavior of peasant households. Countermeasures to optimize the concurrent-business behavior of peasant households are put forward, such as strengthening the skills training for farmers to improve the cultural quality of peasant households, establishing modern rural financial service system to offer capital support for the development of peasant households, setting up information base of rural labor force to provide more information and channels for the concurrent-business behavior of peasant households, and enhancing the cultivation of farmers' market awareness to improve their ability to adapt to market economy.

Key words Karst mountainous area, Planting structure adjustment, Concurrent-business behavior of peasant households, China

Concurrent-business behavior of peasant households refers to a behavior of economic activity that peasant households not only manage the primary industry, but also the secondary industry or the tertiary industry[1]. The significant seasonality of agricultural activity provides the space and time for concurrent-business behavior of peasant households. Development level of non-agricultural industries offers the external environment for the concurrent business of peasant households. Concurrent-business behavior of peasant households can improve the income, enhance the standard of living, ease the contradiction between people and land, and reduce the employment pressure and the population pressure on land[2]. As the typical Karst mountainous area, Bijie experimental region has fragile ecological environment, weak foundation of the national economy, low level of agricultural productivity, single agricultural structure, slow accumulation of agriculture, backward rural economic development, and large area of poverty, which restricts the development of economy and agricultural production. Based on the investigation on the concurrent-business behavior of peasant households engaged in planning industry in Karst mountainous area, the causes, characteristics, intentions, problems and decision-making mechanism of the concurrent-business behavior of peasant households are analyzed. Countermeasures for the concurrent-business behavior of peasant households are put forward, which has very important theoretical and practical significance to the policy making of economic development and income increase of peasant households, and to the adjustment of agricultural structure and the development of rural economy in Karst mountainous area.

1 Investigation method and sample status

1.1 Selection of investigation sample region After more than 20 years' development, Bijie experimental region has made great achievements in agriculture. Planting structure has been constantly adjusted; and the Karst mountainous area has formed some development modes with village characteristics. Based on analyzing the planting structure adjustment in Bijie experimental region, Baohe Village in Lishu Town and Chengmanyuan Village in Qingshuipu Town are selected as research samples, which both are at the transition from the traditional cereal cultivation to the cultivation of economic fruit forests or vegetables. The two villages have achieved remarkable results in structure adjustment of planting industry, and their regional economy and society develop rapidly.

1.2 Investigation method and data treatment Questionnaire should be designed. Field interview and questionnaire are adopted during the investigation on peasant households in Baohe Village in Lishu Town and Chengmanyuan Village in Qingshuipu Town. According to the number of peasant households in Baohe Village and Chengmanyuan Village, each natural group has 10 -20 peasant households with 150 households in all. Both stratified sampling and random sampling are adopted.

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During the research, related data are also collected from the Bijie Agricultural Investigation Team of the State Statistics Bureau, so that the data foundation is established. SPSS17.0 software is adopted to carry out quantitative analysis and evaluation of data.

1.3 Basic information of samples Table 1 reports the basic information of peasant households in Baohe Village and Chengmanyuan Village.

Table 1 Basic information of the peasant households in Baohe Village and Chengmanyuan Village

Item	Baohe Village	Chengmanyuan Village
Age structure of peasant household	12.5% below the age of 14; 85.5% between the age 15 and 64; 2.0% above the age of 65	26.8% below the age of 14; 72.0% between the age 15 and 64;1.2% above the age of 65
Educational degree of the household head	2.0% illiteracy; 30.0% primary school; 54.0% junior middle school; 14.0% senior high school; 2.0%junior college and above	2.0% illiteracy; 28.0% primary school; 55.0% junior middle school; 14.0% senior high school; 1.0% junior college and above
Family members per household	5.0	5.1
Land area per household // hm^2	0.2	0.2
Number of labors per household	2.5	2.4
Number of migrant workers per household	0.4	0.5
Annual income per household // Yuan	16 710.0	39 170.0
Annual expenditure per household // Yuan	12 230.6	21 830.0
Housing area per household // m^2	142.1	153.5
Number of telephones per household	1.9	1.7
Number of color TV per household	1.0	1.1
Number of washing machines per household	0.8	0.9
Number of refrigerators per household	0.3	0.7
Number of motorcycles per household	0.5	0.8
Number of cars per household	0.1	0.2

2 Result and analysis

2.1 Motivation analysis of the concurrent-business behavior of peasant households

2.1.1 Internal motivation. According to the questionnaire survey on 150 peasant households, motivations for the concurrent-business behavior of the peasant households are as follows (Fig.1):

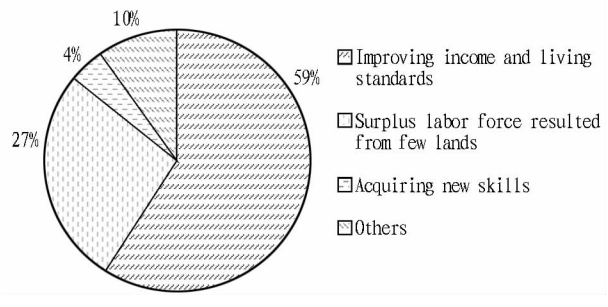

Fig. 1 Motivations for the concurrent-business behavior of peasant households

2.1.1.1 Improving income and living standards. Fig.1 illustrates that proportion of concurrent-business behavior in order to "improve living standards" is the maximum (59%). Income of peasant households investigated is mainly from the economic fruit forests. Moreover, since the production capacity of land is limited, there is little potential to improve income only by agricultural production. Therefore, farmers go out and become migrant workers in order to improve their income and living standards. In order to maintain the basic livelihood of their families, especially to send their children to school, some peasant households have to go to cities to find jobs, when agricultural production can not maintain their basic family consumption. This phenomenon occupies sizable proportion in Karst mountainous area.

2.1.1.2 Surplus labor force and few lands. Fig.1 shows that proportion of concurrent-business behavior due to surplus labor force is 27%. At present, restricted by the land transfer mechanism, more rural surplus labor forces are produced with the reduction of farmland and the increase of population. To earn their living, surplus labor forces have to transfer into non-agricultural field, which promotes the concurrent-business behavior of peasant households.

2.1.1.3 Acquiring new skills and other reasons. Some peasant households want to acquire new skills through concurrent business, especially the young labor forces. Moreover, other peasant households want to increase their knowledge, meet more people, and change their living environment through concurrent business.

2.1.2 External motivation.

2.1.2.1 Characteristics of agricultural production. Production process and labor process of agriculture has the characteristic of non-uniformity. Seasonal feature of agricultural production becomes the basis and prerequisite for the concurrent business of peasant households, and provides the time required by the concurrent-business behavior of peasant households. This kind of concurrent-business production is an attachment to business unit of family agriculture. Therefore, it mainly takes family as the production and management unit, mostly in slack seasons in local township enterprises.

2.1.2.2 Economic development level. Economic development level provides the external environment for concurrent business of peasant households, and restricts the decision-making behavior of peasant households. From the exterior, development of urbanization, secondary and tertiary industries has increased the non-agricultural employment opportunities, so that peasant households can find more job opportunities out-

side the agriculture. Economic development level indicates the opportunities of non-agricultural employment. Higher level of economic development leads to greater probability of concurrent-business behavior of peasant households. Besides, the non-agricultural income is higher than the agricultural income, which promotes the peasant households to select concurrent business, in order to increase the economic income of peasant households[3].

2.1.2.3 Other reasons. Some peasant households select the concurrent-business behavior due to the impact of other policy factors, such as the counterpart-assistance village in Shenzhen. Shenzhen implements training among farmers, organizes farmers to work outside, and promotes the development of concurrent-business behavior.

2.2 Feature analysis of concurrent-business behavior

2.2.1 Significant positive correlation between the concurrent-business behavior of peasant households and the overall income of family. Concurrent-business behavior of peasant households affects the income of family income mainly from two aspects. One is the reconfiguration of the time resources between agriculture and non-agriculture. The other is the structure change of family income brought by non-agricultural income.

Research shows that the improvement of rural income and productivity is mainly caused by the enhancement of non-agricultural income of peasant households[4]. Regional economic growth has reinforced the farmers' selection of concurrent-business behavior. Economic growth, especially the development of township enterprises, has provided a large amount of job opportunities for farmers. At the same time, the decline in agricultural contrast benefits has made many farmers participate in non-agricultural work. However, there are significant regional differences in the concurrent-business behaviors of peasant households due to the differences in resource endowment and socio-economic background in research region.

Result shows that there is significant correlation between the annual family income and the concurrent-business income at the level of 0.01, and its correlation coefficient is 0.805. There is significant correlation between concurrent-business time and concurrent-business income at the level of 0.01, with its correlation coefficient being 0.610. Therefore, the concurrent-business behavior affects the family income of peasant households; and the concurrent-business time also influences the concurrent-business income.

2.2.2 More and more young farmers with concurrent business. There are significant differences in the average age of farmers having concurrent business. Farmers engaged in agricultural production are at the average age of 37.89, those going out to work are at the average age of 26.1, and those engaged in transportation are 31.4. Therefore, it can be concluded that farmers with concurrent business are young.

2.2.3 Impact of education degree on the concurrent-business behavior of peasant households. Quality of labor forces affects the job selection of members in peasant households. Members with relatively high labor force quality have greater adaptability to the external environment. On the one hand, quality of labor force directly affects the adoption rate of new technologies, the operation and management level and the production and decision-making capacity of peasant households. On the other hand, rural labor forces with abundant scientific knowledge and skills will get non-agricultural jobs more easily[5]. Investigation shows that the household head graduated from junior middle school or above has higher probability of getting concurrent business and the proportion of people with concurrent business is as high as 67%. Farmers with education degree of senior high school and above have a concurrent-business proportion of 89%. And the farmers graduated from primary school have a concurrent-business proportion of 17%. According to the income of peasant households with concurrent business, annual average income of households with a education degree of senior high school is 17 366.07 yuan, those with education degree of junior middle school and primary school are 12 337.02 and 7 306.06 yuan, respectively. Therefore, it can be concluded that the education degree of peasant households has significant impact on the concurrent-business behavior.

2.2.4 Relative centralization of concurrent-business behavior. According to the industry of concurrent business (Table 2), concurrent-business behavior of peasant households are mainly concentrated in the construction industry, transportation industry and working outside, which account for 6%, 11% and 39% of the overall peasant households, respectively. Some households with more labor forces even work in several industries, indicating the relative centralization of concurrent-business behavior.

Table 2 Main industrial distribution of the concurrent business of peasant households (several concurrent industries are available) %

	Transportation industry	Working outside	Construction industry	Running shops
Chengmanyuan Village	11	39	6	3
Baohe Village	7	20	8	0

2.2.5 Strong willingness of peasant households towards the concurrent-business behavior. Table 3 reports the willingness of peasant households towards the concurrent-business behavior in the future. Result shows that a total of 95% of the peasant households have the willingness. As for the mode of concurrent business, 73% peasant households take agricultural as the main business, 23% households take concurrent business as the main business or even abandon agriculture. This indicates that peasant households have strong willingness of concurrent-business behavior. Most peasant households select agricultural as the main business, because the structure adjust-

Table 3 Willingness of peasant households towards the concurrent-business behavior

	Pure agricultural management	Agriculture-based concurrent business	Mainly the concurrent business	Complete abandonment of agriculture
Chengmanyuan Village	5	78	14	3
Baohe Village	2	31	13	4

ment of planting industry has promoted the income level of peasant households at present. Moreover, affected by the future uncertainty, the safety preference, the risk aversion and the traditional concept, most farmers still select agriculture as their main business.

2.3 Influencing factors of concurrent-business behavior of the peasant households Investigation shows that peasant households believe that the concurrent-business behavior is mainly affected by the poor information, insufficient funds and low skills (Fig. 2).

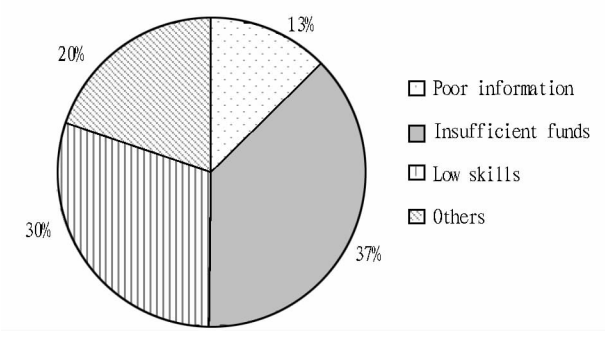

Fig. 2 Influencing factors of concurrent-business behavior of the peasant households

2.3.1 Poor information of concurrent business. Fig. 3 shows that peasant households obtain the concurrent-business information mainly through friend introduction, government publicity and others. Most farmers get concurrent business by learning new skills; and no one gets information from the TV, newspaper or broadcast, reflecting that peasant households have less information access to get concurrent business and the concurrent-business behavior of peasant households is affected.

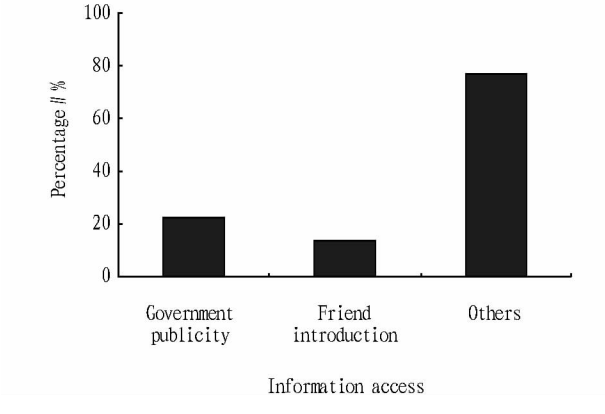

Fig. 3 Information accesses of the concurrent business of peasant households (more than one access can be selected at a time)

2.3.2 Low education degree and poor skills. Education degree is an important index to evaluate the quality of labor force, belonging to a typical human capital variable[5]. On the one hand, quality of labor force directly affects the adoption rate of new technologies, the operation and management level and the production and decision-making capacity of peasant households. On the other hand, rural labor forces with abundant scientific knowledge and skills will get non-agricultural jobs more easily[6]. Although having accepted certain skill training, farmers still think that the biggest problem they faced with is the lack of skills. Some peasant households get low income during working outside due to their low education degree and poor skills. Among the peasant households with concurrent business, people engaged in transportation industry, in construction industry and working outside are 11%, 6% and 39%, respectively. And farmers working outside are mainly engaged in the most low-end industries in the industry chain, because they can hardly handle the job with highly technical command due to their low education degree and poor skills.

2.3.3 Insufficient funds. As for the peasant households who want to start an enterprise or to enlarge their management scale, lack of funds becomes a bottleneck. Most of the income of peasant households is from the agricultural production, which is relatively low. Thus, they do not have more money to invest in other non-agricultural production. And the only channel for peasant households to get funds is to borrow money. However, according to the investigation, the borrowing ratio of peasant households is only 45%, which is relatively low. This is mainly because of the high loan interest rate, the short term of loan, and the complex procedure. The main purposes of borrowing money are to send their children to school, to build houses, and to plant economic fruit forest. Peasant households rarely invest money in non-agricultural field. Thus, it is unlikely for peasant households to engage in the industries with relatively high investment income.

2.3.4 Weak market awareness of peasant households. Living in the Karst mountainous area, peasant households are greatly affected by the long-term natural economy, mountain environments, self-sufficiency thoughts, and small peasant economy during selecting the concurrent business. Most of the peasant households are unwilling to work outside. At the same time, due to the backward economy in Karst mountainous area and the limited scientific knowledge of peasant households, peasant households have weak market awareness. Although some farmers want to go out and get concurrent business, they still worry about the complexity and instability of the market economy. Therefore, most of the peasant households want to return to agricultural production.

3 Countermeasures and suggestions

3.1 Strengthening the skill training for farmers; improving the cultural quality of rural households According to the investigation, cultural quality of rural labor forces in Baohe Village and Chengmanyuan Village are relatively low. There are few people accepting the vocational skill training. Therefore, government should play a leading role in training, create new training mode, constructing a platform for farmer training, establish a long-term mechanism for the training of new farmers, enhance the scientific and cultural quality of farmers, promote the vocational skills of peasant households, cultivate new farmers having skills and knowledge, and lay a solid foundation for the concurrent business of peasant households.

3.2 Constructing modern rural financial service system; offering financial support for the development of peasant households During the economic activities, rural households need a large amount of money. Because of the high loan inter-

est rate, the short term of loan, the complex procedure, the limited payment ability of peasant households and the lack of loan knowledge, peasant households only get limited financial support, which has restricted the concurrent-business behavior of peasant households and its sustainable development. Therefore, government should establish a financial system suitable for the development of rural areas, improve the service quality and level of agriculture-related financial institutions, and provide more financial support for the concurrent business of peasant households.

3.3 Establishing information base for rural labor force; providing more information and channel for the concurrent business of peasant households There are few channels and little information for the peasant households to get concurrent business. Therefore, government should provide more information and channels for concurrent business, and encourage peasant household to run concurrent business. At the same time, government should establish information base for rural labor force, find out the status of the rural labor force, enhance the dynamic management of labor resources, and solve the problem of asymmetric information in the concurrent business of peasant households.

3.4 Enhancing the cultivation of farmers' market awareness; improving their ability to adapt to market economy In Karst mountainous area, farmers' market awareness is lacked due to the backward economic development and the traditional agricultural production mode. Therefore, government should propagate the knowledge of market economy through newspaper, magazine, brochure and other means, promote the cultivation of farmers' market awareness, enhance the enthusiasm of peasant households in participating in concurrent business, and improve the ability of peasant households to adapt to market economy.

References

[1] ZHONG TY, HUANG XJ, MA QF. Behaviors and decision-making model of regional part-time farmers on soil and water conservation [J]. Bulletin of Soil and Water Conservation, 2005, 25(6): 97-100. (in Chinese).

[2] GAO MH, ZHANG ZH. Study on the factors that influence the time of concurrent business of peasant—based on an empirical study of rural household survey in Henan Province[J]. Journal of Agrotechnical Economics, 2008(1): 40-44. (in Chinese).

[3] FU YZ, ZHU L. Sideline business for farm households: an economic analysis[J]. Journal of Guizhou College of Finance and Economics, 2008(1): 68-72. (in Chinese).

[4] LIANG LT, QU FT. Analysis of land use behavior and efficiency of different farm household types[J]. Resources Science, 2008, 30(10): 1525-1532. (in Chinese).

[5] LI LQ, HU MW. Additional management action of farmers' families hinder process of agricultural modernization[J]. Rural Economy, 2004(4): 9-28. (in Chinese).

[6] GAO R, XING AG. Behavior patterns of rural government in product structure adjustment of planting industry——A case of Cangshan County in Shandong Province, China[J]. Asian Agricultural Research, 2009, 1(3): 5-9, 13.

[7] GUI LD. Adjustment of the small watershed planting structure in Northwest Semiarid regions based on the analysis of the precipitation resource characteristics[J]. Journal of Anhui Agricultural Sciences, 2009, 37(31): 15502-15503, 15505. (in Chinese).

[8] WU JC, ZHANG XB, ZHENG HL. Discussion on basic soil categories and farming structure adjustment relation[J]. Ecology and Environment, 2003, 12(1): 122-124. (in Chinese).

[9] ZHU CJ, TANG DS. Study on structure optimization of agriculture plantation based on linear programming model[J]. Journal of Anhui Agricultural Sciences, 2006, 34(12): 2623-2624. (in Chinese).

[10] WANG XY. Three relations should be well coordinated in the adjustment of plantinhg structure[J]. Theory Observe, 2000(4): 9-10. (in Chinese).

[11] ZHENG F, SHAO ML. Study on the problems in structure adjustment of agricultural plant production[J]. Journal of Anhui Agricultural Sciences, 2007, 35(2): 574-576. (in Chinese).

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The rapid development of forestry tertiary industry will accelerate the development of forestry industry in future, which should be paid attention to during the industrial structure adjustment of forestry industry.

3 Conclusion and suggestion

3.1 Conclusion Forecast analysis on the forestry industrial structure in China by grey correlation degree shows that during the development of forestry over the past decade, industrial structure is improved; but the secondary industry, which will play a leading role in the future industrial development, now still relies on the traditional manufacture, not the growth of new industries. Forestry tertiary industry will exceed the primary industry and become the second largest power for the development of forestry industry in future.

3.2 Suggestion In the development of forestry industry in future, it is necessary to develop forest foods, forest tourism, wildlife breeding and utilization and other new industries based on the sustainable development of traditional industries. Thus, a new development pattern can be established to accelerate the development of forestry industry by commercial forest, to promote the development of resources cultivation industry by forest product industry, to speed up the forest service industry by forest tourism, to solve the problem of single wood operation of forestry industry in China and to realize the rationalization of forest industry structure.

References

[1] LIN Y. Big changes of forest over the past 30 years since reform & opening up[J]. Forestry of China, 2008(19): 1. (in Chinese).

[2] FU L. Grey system theory and its application[M]. Beijing: Science and Technology Literature Press, 1992. (in Chinese).

[3] TANG QY, FENG MG. Practical statistics and DPS data processing system[M]. Beijing: Science Press, 2002: 625-627. (in Chinese).

[4] LIU SF, GUO DB, DANG YG. Grey system theory and its application[M]. Beijing: China Science and Technology Press, 1999: 116-120. (in Chinese).

[5] State Forestry Administration of the People's Republic of China. China forestry statistical yearbook 1996-2009[M]. Beijing: China Forestry Publishing House, 1996-2009. (in Chinese).