Regional Differences in the Demand for Agricultural Socialized Service

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Abstract With the gradual deepening of China's agricultural modernization, establishing a sound agricultural socialized service system is of great significance to improving the efficiency of resource use and achieving sustainable agricultural development. On the basis of the micro survey data on China's 12 provinces, we analyze the intensity of demand for agricultural socialized service in different regions as well as the main factors influencing farmers' demand willingness. The results show that there are regional differences in farmers' demand for agricultural socialized service, and among multiple factors affecting the demand willingness of agricultural socialized service, farmers' individual characteristics, household economic characteristics and farmers' social communication behavior have varying degrees of impact on farmers' choice of service.

Key words Farmers, Agricultural social service, Demand willingness, Influencing factors

1 Introduction

Foreign experience shows that a sound agricultural socialized service system is necessary for the realization of agricultural modernization. As the socialist market economic reforms are deep into the rural areas, small farmers are difficult to adapt to market competition. With the continuous emergence of new agricultural business entities, the agricultural socialized service system has ushered in a new stage of development. The ultimate goal of agricultural socialized service system is to realize the industrialization of agriculture, so that farmers can break from the complex production processes. Gong Jihong and Zhong Zhangbao (2011) conduct a survey of farmers in the eastern, central and western regions of China, and the results show that farmers in all regions have a universal demand for agricultural socialized service. However, there is a clear mismatch between the supply of agricultural socialized service and farmers' actual demand. Farmers' demand for agricultural socialized service is expanded from the simple production processes to the information, finance and insurance, business management and other integrated services. There is instability in the supply and content of current agricultural socialized service system (Tan Cunfeng et al., 2010), and the financial services for agricultural production in some areas are even shrinking (Guan Ruijie, 2012). From the microscopic point of view, in the context of continuous improvement of the market economy, farmers' demand-oriented agricultural socialized service system has become an inevitable trend (Pang Xiaopeng, 2006). Based on rural data, Jin Ming et al. (2009) derive the innovative way of agricultural socialized service, from establishing transitional mode with industrial development as the core to establishing the target mode with farmers' demand as the core. There are many successful international experiences, such as Japan's establishment of Agricultural Association to reflect the farmers' demand-oriented service, providing a valuable reference for China (Zhu Yuanli, Li Shuangkui, 2009).

Received: April 24, 2015 Accepted: June 22, 2015
Supported by Fundamental Research Funds for Central Universities (SWU1509329).
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2 Data sources and sample information

This paper uses questionnaires and field visits to understand farmers' demand for agricultural socialized service. The sampling survey is conducted on the farmers in 12 provinces, and the object of survey involved is the farmer engaged in farming. 538 questionnaires are distributed and 477 valid questionnaires are returned, with effective rate of 89%. The survey content mainly involves farmers' basic information, production and management situation, intensity of demand for agricultural socialized service, service access channels, degree of satisfaction with current service supply, and recommendations for the improvement of services and so on. According to sample information, the agricultural labor is still male-dominated, and men are better than women in terms of physical strength, decision-making capacity and innovation capacity. As for the age structure, the main force of the agricultural labor is at middle age in three regions. This phenomenon reflects that due to the lack of agricultural labor force, the central and western regions have a more urgent demand for agricultural social services; due to open local environment and stronger ability of the younger workforce to accept new things, the dissemination efficiency of agricultural socialized service is higher in the eastern part.

3 The intensity of farmers' demand for comprehensive agricultural socialized service

As for the question "Do farmers need agricultural socialized service?", the vast majority of farmers say yes. 82.68% and 67.21% of farmers think they have the need in central and western regions, respectively, while the proportion is only 37.39% in the eastern region. The reason for strong demand in the central and western regions is that most of the income of rural households is from agriculture. The agricultural income of 55.31% of farmers in the cen-

tral region accounts for more than 60% of total family operating income, while this proportion is 33.33% in the western part. The comprehensive agricultural socialized services involved in this survey include the following seven items: financial service; agricultural product marketing service; agricultural machinery service; production material supply service; information service; technical service; infrastructure building service. Overall, the four comprehensive services most urgently needed by farmers are financial service, information service, production material supply service and technical service. In terms of the demand intensity, it is sequenced as follows: information service > financial service > technical service > production material supply service. There are some differences in the intensity of farmers' demand for various socialized services in different regions, and the specific situation is seen in Table 1.

Table 1 The four comprehensive services urgently needed by farmers in different regions Unit: %

Service items	Western region	Central region	Eastern region
Information service	50.41	47.97	30.23
Financial service	42.28	45.95	32.56
Technical service	42.28	39.86	41.86
Production material supply service	43.90	37.16	39.53

3.1 Information service Survey data show that the information service demand is highest in the central and western regions. In these two regions, farmers have limited access to information, and most of them obtain information from their friends and relatives by word. This is closely related to local level of economic development and farmers' ability to accept. Due to open market economy in the eastern region, many farmers have TV, computer and other equipments. Farmers can use networks, newspapers and other tools to timely obtain market information. Farmers' demand for information service also reflects that under the market economy, information has an increasingly important impact on farmers' production and business activities.

3.2 Financial service The demand for financial service is highest in the central region, reaching 45.95%; it is weakest in the eastern region, accounting for only 32.56%. Survey shows that the agricultural income of 80.87% of households only accounts for 40% of total income or less, indicating that farmers have other sources of income. The rural financial industry started earlier in the eastern part where there are many financial institutions which can address the shortage of funds for agricultural activities, so the demand willingness is low. In the central and western regions, the development of secondary and tertiary industries is slow, agriculture is still the main industry that most rural households are engaged in, and the source of funds is inadequate. Meanwhile, the rural financial sector has not yet formed scale in the two regions. These have made the financial problems in the central and western regions unresolved in the long run, so the demand for financial service is relatively strong.

3.3 Technical service There is little difference in the demand for technical service among the three regions. There is little arable land per capita in the western region, the agricultural production mode is backward, and agricultural output is unstable. Therefore, farmers need technical support to improve productivity. In the eastern region, the characteristic agriculture construction work has been carried out in recent years, so farmers need the corresponding technical services. In the central region, only 13.41% of farmers have received the skill training related to agricultural production and management, so there is also a need of technical service.

3.4 Production material supply service The supply service of agricultural production materials includes the supply of pesticides, fertilizers, agricultural machinery, plastic film and other production tools. In the survey, the western region has the highest demand for this service while it is weakest for the central region. Due to the impact of market economy, agricultural income is severely affected, especially for the western region which mainly practise traditional mode of agricultural production. The production material supply service is more convenient and effective, which can help farmers to control cost, so the farmers in the western region have a huge demand for this service.

4 Empirical analysis of the factors influencing farmers' demand for agricultural socialized service

4.1 Theoretical foundation and variable selection Farmers are in the rural social networks composed of a variety of complex social relationships, so farmers' decisions are subject to social environment and means and conditions. Everett M. Rogers think farmers' purchase of service is a decision-making process. In this process, farmers' communication behavior, economic status, individuality, self-values, and social conditions will affect their decision-making results. Farmers' demand decision on agricultural socialized service is a dynamic process affected by many factors. This paper selects some variables as the factors that affect farmers' agricultural socialized service demand such as individual characteristics, household economic characteristics, and social communication behavior. Farmers' individual characteristics include farmers' age, gender and education level; household economic characteristics include agricultural land area, number of farming labor, and proportion of agricultural income; farmers' social communication behaviors include whether farmers have the migrant experience, whether farmers have received skill training, and whether farmers join cooperative organizations. This study is focused on farmers' demand for agricultural information, finance, technology and production material supply service, that is, it examines whether farmers have demand for the four services. The explanatory variables are 0 – 1 variables with only two choices. When farmers have demand, the value is 1; when farmers have no demand, the value is 0. Therefore, according to the research content and variable characteristics, this paper uses binary Probit model for empirical analysis, and the specific information of variables are shown in Table 2. Model function expression is:

$$Pr(y_t = 1 | x_i) = \alpha + \sum \beta_i X_i \quad i = 1, 2, \cdots, 9 \quad t = 1, 2, 3, 4$$

where α is the constant term; β_i is the regression coefficient; X_i is the explanatory variable influencing farmers' demand.

Table 2 Variable description of empirical model

Variable name	Code	Variable definition	Mean	Standard deviation	Minimum	Maximum
Variables to be explained						
Information service	Y_1	Having demand = 1; having no demand = 0	0.31	0.46	0.0	1
Financial service	Y_2	Having demand = 1; having no demand = 0	0.28	0.45	0.0	1
Technical service	Y_3	Having demand = 1; having no demand = 0	0.27	0.45	0.0	1
Production material supply service	Y_4	Having demand = 1; having no demand = 0	0.26	0.44	0.0	1
Explanatory variables						
Farmers' individual characteristics						
Gender	X_1	Male = 1; female = 0	0.70	0.46	0.0	1
Age	X_2	Farmers' age (years)	45.50	11.56	19.0	87
Education level	X_3	Illiteracy = 1; primary school = 2; junior high school = 3; senior high school = 4; junior college and above = 5	3.01	0.93	1.0	5
Household economic characteristics						
Agricultural land area	X_4	Family's actual cultivated area (mu)	7.45	13.11	0.3	155
Number of farming labor	X_5	Actual number of farming labor in the family	2.01	0.82	0.0	5
Proportion of agricultural income	X_6	Total household agricultural income/total household income (%)	0.52	0.58	0.0	100
Farmers' social communication behaviors						
Whether farmers have the migrant experience	X_7	Yes = 1; no = 0	0.58	0.50	0.0	1
Whether farmers have received skill training	X_8	Yes = 1; no = 0	0.14	0.35	0.0	1
Whether farmers join cooperative organizations	X_9	Yes = 1; no = 0	0.07	0.25	0.0	1

4.2 Estimation results and analysis According to the above model and variables, this paper uses stata10.0 for regression estimate, and excludes the variables with parameter estimator not significant in four categories of services, including age (X_2), education level (X_3), and whether or not to join specialized cooperative organizations (X_9). The final estimation results are shown in Table 4.

(i) The influence of farmers' individual characteristics on the demand for agricultural socialized service is mainly focused on gender. The results show that male farmers prefer the choice of agricultural information and technical services. This is mainly because men are more active and innovative than women in terms of thinking and practice, and they can better select, digest and use advanced technology and market information. (ii) The influence of farmers' household economic characteristics on the demand for agricultural socialized service is mainly focused on agricultural land area, number of farming labor and proportion of agricultural income. Agricultural land area has a significant positive impact on information and production material supply service. In order to avoid losses, the farmers with greater scale of operation have strong prudence in their decisions, and farmers want to timely and accurately gain the market information about agricultural products such as prices, supply and demand, to guide the production and business activities. The number of farming labor in the family is positively correlated with the production material supply service, because higher labor costs need to be paid for more farming labor forces in the family, and production material supply service can control the total cost to some extent. The proportion of agricultural income has a positive impact on information, finance, technology, production material supply services. For the farmers with a high proportion of agricultural income, agricultural output determines income, thereby affecting the farmer's total household income. Therefore, these farmers have an intense demand for information, technology and production material services in order to stabilize their earnings. (iii) The influence of social communication behavior on the demand for agricultural socialized service is mainly focused on whether having migrant experience and whether having received skill training. Whether farmers have the migrant experience has a positive impact on four categories of services. This is because the migrant workers who return home have advantages in terms of knowledge, and skills. At the same time, these farmers want to use agricultural socialized service to increase agricultural output and reduce production costs. Whether having received skill training only passes significance test in the financial services. This is mainly because the training provides farmers with an opportunity to communicate with each other, so that they can get more information resources.

5 Conclusions and policy recommendations

5.1 Conclusions On the basis of the micro survey data on China's 12 provinces, this paper analyzes the intensity of demand for agricultural socialized service in different regions as well as the main factors influencing farmers' demand willingness. The results show that there are regional differences in farmers' demand for agricultural socialized service, and among multiple factors affecting the demand willingness of agricultural socialized service, farmers' individual characteristics, household economic characteristics and farmers' social communication behavior have varying degrees of impact on farmers' choice of service.

Table 3 Model estimation results of the factors influencing farmers' demand for agricultural socialized production services

Explanatory variables	Information service	Financial service	Technical service	Production material supply service
Gender	0.406***		0.634***	
Agricultural land area	0.008*			0.008*
Number of farming labor				0.150*
Proportion of agricultural income	0.607***	0.872***	0.273**	0.184*
Whether farmers have the migrant experience	0.301**	0.309**	0.388***	0.270**
Whether farmers have received skill training		0.291*		
Constant	-1.123***	-1.410***	-1.567***	-1.229***

Note: * indicates a significant level of 10%; ** indicates a significant level of 5%; *** indicates a significant level of 1%; the blank indicates an insignificant level.

5.2 Policy recommendations (i) It is necessary to establish a grass-roots feedback mechanism for farmers' demand, and make the village committee serve as a bridge between farmers and government. (ii) It is necessary to selectively focus on the development of agricultural socialized service supply body. In this survey, 43% and 49% of farmers are satisfied or very satisfied with government departments and village collective, respectively, indicating that the current farmers trust the two service bodies. (iii) It is necessary to strengthen the integration of agricultural socialized service resources to improve service efficiency.

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production competition, it is required to keep competitive edge of vegetable production, and provide steady vegetable supply, so as to stabilize expected income of vegetable producers. Through establishing reasonable and scientific vegetable production insurance system, it is able to effectively reduce and mitigate risks, provide stable expected income for farmers, and alleviate impact arising out of non-agricultural employment opportunities to vegetable production.

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