Econometric Analysis of Farm Household Behaviour during the Farmland-Use Adjustment Process

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1. Objective

While the deterioration of farmlands progresses in hilly and mountainous areas, communities which suffer from the weakening of leadership depend more on farmland-use adjustment organizations such as agricultural committees, which play a vital role in coordinating the use of farmlands. However, there are only a few studies to investigate that farm household behaviour was analyzed econometrically in the interest of utilizing such organizations as above, while engaging in farmland-use adjustment activities.

The objective of this research was to clarify factors which affect the farm household behaviour in decision-making on farmland-use adjustment, by focusing on farmland-use adjustment activities that are implemented largely by agricultural committees.

2. Method

Micro data concerning farmland-use adjustment was collected and sorted to be used as identifying factors that influence the decision-making by farm households on the utilization of farmland-use adjustment organizations. The minimizing effect on transaction cost incurred by farmland trades in utilizing farmland-use adjustment organizations was also studied. The econometric analysis involved the use of probit model in order to formulate a probability function of the utilization of farmland-use adjustment organizations by farm households.

3. Outline of the results

(1) The strata of farm households collected from the micro data was divided into groups of farmland supply-sides and demand-sides. Their attitudes foward farmland trades and future aspect as well as on farmland-use adjustment were clarified, and the relationship between those elements and their own private attributes was also examined (Table is omitted). The farmland demand-sides who promote farmland-use adjustment have smaller sales turnovers and fewer professional persons compared to those who do not utilize farmland-use adjustment. In addition, they wish to have improved farmland with shorter commuting distance, and have more preference for the farmland quality than the non-users of farmland-use adjustment. Meanwhile, the farmland supply-sides who are in favour of farmland-use adjustment, have need for demand-sides within the same community, and compared to the supply-sides who do not utilize farmland-use adjustment, they have interest in location of farmland rented from demand-sides. The above results suggest that farm households which utilize farmland-use adjustment organizations tend to have more particular preference for the farmland quality than those that do not utilize farmland-use adjustment organizations.

(2) In order to clarify factors that determine the probability of the utilization of farmland-use adjustment organizations by farm households, probit model was used to formulate a probability function of the utilization of farmland-use adjustment organizations by each of the farmland supply-sides and demand-sides (Tables 1 and 2). And we identified simple model to evaluate the minimizing effect of the utilization of farmland-use adjustment organizations on transaction cost incurred by farmland trades. For the farmland demand-sides, the degree of their sales turnovers and the level of farm machinery hold affects their use of farmland-use adjustment organizations significantly. This implies further promotion of utilizing farmland-use adjustment organizations intensify the minimizing effect on transaction cost incurred by farmland trades.

Table 1. Identification of Variables Used in Model

Variable name	Description	Demand-side		Supply-side	
		Mean	Std.dev	Mean	Std.dev
NOUKA1	1 if professional farmer in household	0.138	0.365	0.172	0.412
NOUKA2	1 if part–time farmer (type II) in household	0.538	0.493	0.557	0.463
AGE	age (squared)	56.877	10.872	63.929	12.831
SELL	Agricultural Income (squared median of answered range)	188.077	304.206	37.500	51.897
MAN1	1 if have only female professional in household	0.062	0.242	0.178	0.384
MAN2	1 if have no professional farmer in household	0.123	0.331	0.322	0.469
FAMILY1	Generation Groups of Household (live alone= 1, one=2, two=3, three=4)	3.047	0.881	2.509	0.981
FAMILY2	1 if live alone	0.031	0.175	0.167	0.380
FAMILY3	1 if three generations in household	0.369	0.488	0.172	0.385
KOUKE1	1 if have agricultural successor in household	0.600	0.492	0.362	0.486
MACH1	1 if have combine harvester	0.815	0.391	0.557	0.498
MACH2	1 if have drier machine	0.523	0.503	0.253	0.436
AREA1	1 if need farmland located on community	0.369	0.486	0.023	0.150
AREA2	1 if need farmland located on neighborhood community	0.354	0.482	0.086	0.298
AREA3	1 if need farmland located on study area	0.062	0.211	0.155	0.352
BUY	1 if use cooridation organization for buying (selling) farmland	0.246	0.444	0.172	0.395
RENT	1 if use cooridation organization for renting (lending) farmland	0.446	0.504	0.316	0.479

Table 2. Probit Model of Cordination Organization Use

	Demand-side		Supply-side
Variables	Coefficient	Variables	Coefficient
CONST	-4.318 ***	CONST	-2.546 ***
	(-2.761)		(-5.480)
NOUKA1	1.821 +	MAN1	1.909 ***
	(1.481)		(4.042)
NOUKA2	0.917 +	MAN2	1.226 ***
	(1.531)		(3.143)
SELL	-1.442E-06 *	FAMILY2	-0.753 *
	(-1.651)		(-1.791)
FAMILY1	0.325	FAMILY3	-0.698 +
	(1.185)		(-1.554)
AREA1	2.206 ***	KOUKEI	-0.515 *
	(2.889)		(-1.676)
AREA2	1.859 ***	AREA2	0.951 **
	(2.693)		(2.364)
MACH1	1.276 *	AREA3	1.893 ***
	(1.878)		(4.318)
MACH2	-0.757	MACH1	0.583 *
	(-1.335)		(1.763)
BUY	1.182 *	BUY	1.831 ***
	(1.691)		(4.341)
RENT	1.354 **	RENT	1.530 ***
	(2.205)		(4.432)
Sample size	54		147
Log likelihood	-20.945		-54.233
Likelihood ratio	25.384 ***		82.556 ***
Count-R^2	0.833		0.844
Pseudo-R^2	0.560		0.555

Note: The numbers in parentheses are t-values. +Significant at 15% level; *significant at 10% level; **significant at 5% level; ***significant at 1% level.

(3) Communities in the hilly and mountainous areas are confronted by the predicament of the number of aging farm households, increased by a rapidly aging agricultural workforce. Our estimates suggest that such a trend will lead to increase demand for farmland-use adjustment in these areas. Hence, in order to prevent rapid changes in farmland supply and demand and to ensure the smooth operation of farmland trades, it is necessary to consider introducing residential measures to secure the agricultural labour force and its successors as part of regional policies.

4. Related publications

Fujie, T. (2001) The Behaviour of Agricultural Households under Farmland Use Adjustment, *Proceedings of the Japanese Farm Management Conference on December 19-21, 2001*, at Kyoto University, Kyoto, Japan.
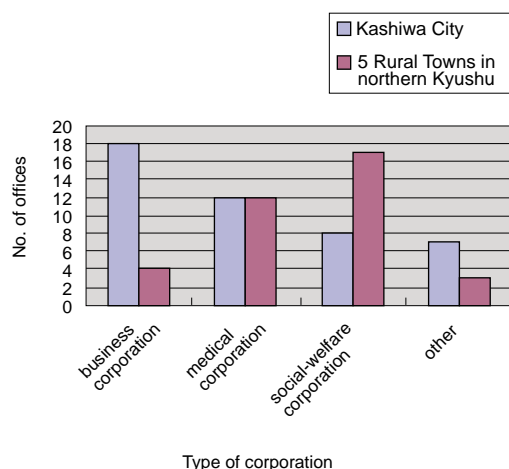
Fujie, T. (2002) The Behaviour of Agricultural Households under Farmland Use Adjustment, *Japanese Journal of Farm Management* 40(1): 73-78.

Analysis of the Revitalization Mechanism for Long-term Nursing Care Services in Rural Areas

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1. Objective and method

The objective of this study was to clarify the nature and the situation of the new involvement of managing agencies, and the degree of job creation in the nursing-care industry, with a comparison between urban areas and rural area. The survey was used to identify the actual status of nursing care activities within the scope of nursing-care insurance. The research focused on Kashiwa City, an urban community in Chiba Prefecture, and five towns, the rural communities in Fukuoka and Nagasaki Prefectures (in this paper, those are called northern Kyushu for short). The population of senior citizens (age over 65) in Kashiwa is 22,260 and in northern Kyushu, it is 13,958. The population of the former, is 1.6 times that of the latter.

2. Outline of the results

Fig.1 shows the number of managing agencies of nursing-care services in both Kashiwa and northern Kyushu, classified by corporation type. The total number of services in both Kashiwa and northern Kyushu is more or less the same, however Fig.1 clearly shows that business corporations are dominant in Kashiwa, whereas the number of social-wel-

Fig. 1. The Numbers of Nursing-care Service by Corporation Type in Urban (Kashiwa city) and Rural Areas (5 towns in northern Kyushu)