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Full Length Research Paper

Factors affecting the farmer attitudes toward buying social security insurance: The case of Erzurum, Turkey

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The aim of this study is to determine the factors which affect the attitudes of the farmers to buy social security insurance and to analyze them according to the kinds of social security policies. Binomial Probit Model was used for this purpose. According to the results of the study, farmers who deal with both animal husbandry and field crops are more inclined to make arrangement for social security scheme, compared with the farmers who deal with only field crops or only with animal husbandry. A negative relationship was found between the tendency to buy social security and forage crops production area and the income from animal husbandry. A positive relationship was found between the tendency to buy social security and non-agricultural monthly income, and the availability of tractors and cattle in the farm holding.

Key words: Social security tendency, binomial probit, Erzurum, Turkey.

INTRODUCTION

Individuals living in a society cannot often tackle the problems that may arise as a result of an unexpected situation by their own savings. Therefore, a social security system is needed to distribute the social risks to the whole society instead of the individuals who may be subjected to an unexpected adverse situation. Social security institutions are intended to operate this system. The social security institutions in Turkey are The Retirement Fund for Workers (SSK), Retirement Fund for Small Businessmen (BAG-KUR) and the Retirement Fund for Officials (EMEKLI SANDIGI). It is mandatory for the workers who work for both public and private sectors to register to SSK social security system. The farmers and the workers in agricultural sector may also be registered to this system. BAG-KUR was established for artisans, craftsmen and other self employed people. Farmers including housewives may benefit from this voluntary system provided that they pay their premiums as indicated in the regulations and laws. The mandatory Retirement Fund for Officials (EMEKLI SANDIGI) was established for the civil servants (Oz, 2005). The risks which are met by the social security system through these established institutions can be divided into three categories which are professional, physiological and socio-economical risks (Kurt, 2004; Yaprak, 2006).The necessity of establishing a social security system emerged as a result of reasons, such as an increase of the workers numbers, their immigration to the urban areas, their gathering in the factories, emerging of unemployment. The basic principles of the social security in Turkey were determined first by the labor law, dated 1936. The financial model was based on premium. This model is applied in many countries throughout the world (Guzel, 2004; Yaprak, 2006). Albeit intensive work carried out on social security system in Turkey since 1936, the desired results were not reached in Eastern Anatolia region. This can be seen clearly when the data from Erzurum Province is taken into consideration. Erzurum is one of the so called attraction centers in Eastern Anatolia region. The population of Erzurum is 1.08% of that of Turkey while 1.15% of social security insurees and 2.67% of Green Card owners are living in Erzurum. Similarly, according to the comparison of SSK, BAG-KUR and Retirement Fund data, 29.674 active workers are in the Retirement Fund, 26.251 in BAG-KUR and 57.533 active workers in SSK. The rate of the beneficiaries within the total population is only 1%. Fewer workers have to maintain more beneficiaries in Erzurum (Anonymous, 2010).

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Investigating the reasons of such a situation will contribute to the studies carried out in this issue. There are several national and international studies concerning the agricultural insurance and social security issues. Jensen and Saupe (1987), Karayalcin (1984), Kuscu (1996), Chambers and Quiggin (2002), İkikat Tümer (2004), Birinci and İkikat Tümer (2006), Birinci and Akin (2008) and (Anonymous, 2009) are among them. In addition to these studies, it seems very important to determine the factors which affect the attitudes of the farmers to buy social security insurance and to analyze them according to the kinds of social security schemes.

For this purpose, Erzurum, which is one of the 15 attraction centers in Turkey and has the highest density regarding population in the Eastern Anatolia region, was considered to be the proper place for the study. The aim is to determine the factors which affect the attitudes of the farmers to buy social security insurance and to analyze them according to the kinds of social security systems.

MATERIALS AND METHODS

Materials

The data of the study was obtained by a questionnaire survey carried out with heads of farmer families in Tuzcu, Tepekoy, Borekli, Kumbet, Guzelyurt, Derebogazi, Yagmurcuk, Sogucak, Cayirtepe, Dumlu, Yolgecti, Yesilyayla, Umudum, Uzunahmet, Ciftlik and Uzunyayla villages of the central district of Erzurum Province.

Methods

The number of households in central villages which were obtained from Erzurum Provincial directorate of agriculture was considered as the basis to determine the number of villages and property assets to determine the number of surveys to be done. Numbers of villages and surveys were determined by the simple random sampling method. In accordance with this method, the following formula was used to determine the number of villages and enterprise surveys (Cicek and Erkan, 1996; Miran, 2003):

$$n = \frac{N * S^2 * z^2}{(N-1) * d^2 + S^2 * z^2}$$

The characters in the formula are:
n: Sample size
N: Number of farmers in the population (2283)
S: Standard deviation (53.44)
z: z-value in the standard normal distribution table, in accordance with the accepted error rate (1.645)
d: Acceptable error $(\overline{x} * 0.10)$
$\overline{x}$: The average of the sample (76.6)

$$n = \frac{2283 \times (53.44)^2 \times (1.645)^2}{2283 \times (7.66)^2 + (53.44)^2 \times (1.645)^2} = 125$$

Sample size of villages and enterprises for the survey were determined within 90% confidence interval (z = 1.645) and with 10% deviation from the average. Accordingly, number of villages to collect data for the survey was determined as 37. Bearing in mind the financial possibilities and time factor, 16 villages were chosen through Telic Sampling according to the land properties in the villages of Erzurum central district and survey number was found as 125. Taking into consideration that some of the surveys would not reflect the reality and would not represent the population, 20% (25 surveys) addition was done. After the evaluation of the results, it was understood that 23 surveys could represent the population and thus, these surveys were included in the study. In conclusion, 148 questionnaire surveys were held in 16 sample villages and binomial probit model was used in the relevant analyses.

Theoretical framework

In case a qualitative dependent variable is used in econometric studies, Limited Dependent Variable Regression models are used. A variable showing two situations expresses occurrence or non-occurrence of an incident. In case of occurrence the value is expressed as “1”, and in case of non-occurrence the value is “0” (Gujarati, 1995). Three methods are used in estimating this type of model, which are: Linear Probability, Logit and Probit models. The linear probability model is quite reliable concerning the risk of probability to be out of the limits 0 - 1, while Probit and Logit models are quite reliable concerning the risk of probability to be within the limits 0 - 1 (Gujarati, 1995; Sarimeseli, 2000; Yavuz, 2001).

In Probit model, it is assumed that occurrence or non-occurrence of an incident or the decision depends on an invisible benefit index. This mentioned benefit index is expressed in I_i, and depends on independent variables: So that, the higher I_i index, the higher probability of realization, that is, the occurrence of the mentioned incident. I_i is expressed by the following formula:

$$I_i = B_1 + B_2 X_i$$

The characters mean:

$B_1 =$ Constant value,
$B_2 =$ Coefficient for the variable expressed by X,
$X_i =$ Value of the independent variable

The relationship between the occurrence and non-occurrence with I_i is expressed as “1” if it occurred, and “0” if did not occur. For each dependent variable, the mentioned incident starts to occur after a certain value (critical or start value) of I_i. If the starting value is expressed as I_{i*}, the incident will occur only if I_i value exceeds I_{i*}, otherwise will not occur. The probability of I_{i*} to be lower than I_i or equal can be calculated according to the following formula. I_i expresses the occurrence probability of the incident, and the P_i the Probit model.

$$P_i = P_r(Y = 1) = P_r(I_i^* \leq I_i) = F(I_i)$$

In Probit models, R^2 value, which expresses the certainty

Table 1. The demographic features of the farmers.

	Minimum	Maximum	Average	Standard deviation
Age	22	82	42.6	13.81
Education	1	6	3.3	0.98
Population	1	16	6.7	2.69
Population working in agriculture	1	5	1.9	1.02

Source: Original calculations.

Table 2. The characteristics of the enterprises.

	Minimum	Maximum	Average	Standard deviation
Land property (da)	0	600	78.7	90.16
Land parcel number (Units)	0	25	6.4	4.68
Non-agricultural income (TL)	0	1500	155.9	309.65
Crop income (TL)	0	22500	2983.1	3863.51
Animal products income (TL)	0	15400	3552.1	3256.89
Total animal assets (Cattle)	0	71	14.8	13.83

Source: Original calculations.

Table 3. Distribution of farmers according to their preference for social security (%).

Social security	Frequency	%
SSK	21	14.19
Bag-Kur	25	16.89
Retirement Fund	5	3.38
Green Card	65	43.92
Without any social security	32	21.62
Total	148	100.00

Source: Original calculations.

Co-efficient, is not considered concerning whether the functional form of the model was chosen properly. Therefore, the co-efficients and *P* values are considered concerning the most appropriate way to prepare the model (Gujarati, 1995; Akkaya and Pazarlioglu, 1998).

STUDY FINDINGS AND DISCUSSION

The demographic features of the farmers residing in the study region are given in Table 1. Accordingly, average age of the farmers in the central district of Erzurum was determined as 42.6. Average member number of farmer families is 6.7. Number of members working in the agricultural sector was calculated as 1.9 on the average. The features of the enterprises located in the study area are given in Table 2. The average land property of these enterprises is 78.7 da, average land parcel number is 6.4. In addition, the income from the animal products is higher than the income from crop production. Total animal assets was maximum 71 cattle, and on the average 14.8 per enterprise. The distribution of the farmers according to their preference for social security kinds is given in Table 3. Accordingly, 14.19% of the farmers are insured by SSK, 16.89% by BAG-KUR, 3.38% by The Retirement Fund, and 43.92% have a Green Card, while 21.62% have no social security. Factors which affect the attitude to buy social security are given in Table 4 where education is education level (Illiterate:1, literate:2, primary:3, secondary:4, high:5, university:6); Type of enterprise is type of agricultural enterprise (vegetable:1, animal:2 and mixed:3); Forage plant is forage plant production area in agricultural enterprise (da); Monthly income is non-agricultural monthly income (TL); Tractor is availability of tractors owned by agricultural enterprise (units); Cattle is availability of cattle owned by agricultural enterprise (Cattle no.); Income obtained from animal products is income obtained from animal products by agricultural enterprise (TL); Land is availability of land owned by agricultural enterprise (da). Probit analysis was performed to determine these factors and only the variables which are

Table 4. Factors affecting the attitude to buy a social security.

Variables	Estimated parameter values of Probit model		
	Co-efficient		Standard error
Constant term	-1.0765		0.7628
Education	-0.3012		0.2874
Type of enterprise	0.5673	**	0.2398
Forage plant	-0.0060	**	0.0026
Monthly income	0.0017	**	0.0007
Tractor	1.1796	*	0.6418
Cattle	0.0227	*	0.0121
Income obtained from animal products	-0.0001	*	0.0000
Land	0.1349		0.1911

statistically important were emphasized. Accordingly, type of the enterprise, production area for the forage plant, non-agricultural monthly income, availability of tractors, availability of cattle and the income obtained from animal products are statistically important factors for the attitude to buy social security. A negative relationship was found between the attitude to buy social security forage crop production area and the income obtained animal product, and a positive relationship with type of the enterprise, non-agricultural monthly income, and the availability of tractors and cattle. The farms were divided into three groups, that is, dealing with animal, crops and mixed production. Farmers dealing with mixed production are more inclined to buy social security, in comparison with those dealing with only crops or animal production. Farmers tend to deal with both crops and animal production together in order to eliminate the risks resulting from a single produce. The farmers want to guarantee their future and the income from the enterprise, while their aim is to avoid risks in the enterprise.

A negative relationship was found between the attitude to buy social security and crop production area and the income from animal breeding. And a positive relationship with non-agricultural monthly income, and the availability of tractors and cattle. Farmers working in a non-agricultural job get insurance in their job and guarantee their future. Farmers having tractors, get traffic insurance for their vehicles, and thus think that they themselves should also be insured and their inclination to make social security increases. As the income of the farmers from animal husbandry increases, their inclination to buy social security decreases. In that case they assume that they can guarantee their future themselves without social security. Estimation results of the probit models showing factors which affect the attitude to buy insurance, in accordance with the social security types, are given in Table 5. Where education is education level (illiterate:1, literate:2, primary:3, secondary:4, high:5, university:6); Age is age of the farmer (Year); Working in a non-agricultural job is working in a non-agricultural job (Individuals); Population working in agriculture is population working in agriculture (Individuals); Disaster is facing a disaster (facing:1, other:0); Income is agricultural income (TL); Knowledge is knowledge on agricultural insurance. Accordingly, there is a statistically significant positive relationship between the age of the farmer, the issue of whether he also works in a non-agricultural job, his knowledge level in agriculture insurance and the attitude to register to SSK social security system. The will to register to SSK social security system increases with age of the farmers. As the age of the farmers increases, their desire to register to SSK system also increases. The knowledge level of the farmers in the region in agriculture insurance affects their will to guarantee their future positively. There is a positive relationship between the non-agriculture and agricultural monthly income to register to BAG-KUR social security system, and this situation is important statistically. As the income from crops and animal products of the farmers increases, their capability to pay for the insurance premiums also increases. Therefore, an increase in agricultural income leads to an increase in the will to register to BAG-KUR social security system. There is a positive relationship between the education level of the farmers and the tendency to register to Retirement Fund (EMEKLİ SANDIĞI) social security system.

This situation is important statistically. 9.5% of the farmers who work in a non-agricultural job are civil servants and members in the Retirement Fund. As the educational level of the farmers increases, the possibility for them to work as a civil servant in the non-agriculture sector also increases and they become members of the Retirement Fund. In short, an increase in the educational level leads to an increase in the will to register to Retirement Fund social security system.

There is a positive relationship between the population working in agriculture and the will to obtain Green Card social security, and a negative relationship between the age of the farmer and non-agricultural monthly income for getting Green Card social security. 43.9% of the farmers have Green Cards. The higher the age of the farmers, the lower the will to farmers, the lower the will to obtain Green

Table 5. Estimations of Probit models showing factors affecting the attitude to make insurance arrangements, according to the social security types.

Variables	SSK		BAG-KUR		Retirement fund		Green Card	
	Co-efficient	Standard error	Co-efficient	Standard error	Co-efficient	Standard error	Co-efficient	Standard error
Constant	-3.56	***1.05	-0.99	0.94	-9.00	*4.82	1.89	**0.84
Education	0.24	0.17	-0.26	0.16	1.51	**0.74	-0.25	0.16
Age	0.02	**0.01	0.01	0.10	0.02	0.04	-0.02	**0.01
Working in a non-agricultural job	0.85	***0.33	-0.41	0.36	-0.60	1.68	-0.24	0.28
Population working in agriculture	-0.26	0.18	-0.12	0.15	-0.29	0.53	0.26	**0.12
Non-agricultural monthly income	0.00	0.00	0.00	**0.00	0.00	0.01	-0.00	**0.00
Disaster	0.23	0.31	-0.42	0.29	-0.56	1.27	0.25	0.24
Income	0.11	0.19	0.33	*0.17	-0.26	0.61	-0.16	0.15
Knowledge	0.60	*0.35	0.01	0.31	-1.37	1.53	-0.24	0.28

*, **, *** show the statistical importance level of 0.10, 0.05 and 0.01, respectively.

card social security. Farmers getting monthly income from non- agricultural jobs are excluded from the scope of the law number 21273, dated 1992. Therefore, the will of these farmers to get Green Card social security decreases.

Conclusion

This study was carried out to determine the preferences of the farmers for social security programs in the villages of the central district of Erzurum province and the factors that affect these preferences. It was determined that the most effective factors were the age of the farmer, the issue of whether or not he also works in a non-agricultural job, and his level of knowledge of agricultural insurance on the tendency of the farmer to make arrangements for Retirement Fund for Workers (SSK). His non-agriculture and agricultural monthly incomes were the most important factors for making arrangements for Small Businessman Retirement Fund (BAG-KUR). The education level of the farmer was the most important factor for making arrangements for the Retirement Fund for Officials (EMEKLI SANDIGI). On the other hand the age of the farmer, the number of family member working in agriculture and non-agricultural monthly income were the most important factors for making arrangements for Green Card social security system which was established for low income families.

There is a positive relationship between the age of the farmer, the issue of whether he also works in a non-agricultural job, his knowledge level in agriculture insurance and the attitude to register to SSK social security. Similarly, there is a positive relationship between the non-agriculture and agricultural monthly income and the attitude to register to BAG-KUR social security. A positive relationship was found between the attitude to obtain Green Card social security and the population working in agriculture, and a negative relationship with the age of the farmer and the non-agricultural monthly income.

If the farmers are encouraged to be engaged more in animal breeding activities which have relative advantage in Erzurum province and Eastern Anatolia region, and if animal breeding is developed by the government in these areas, the farmer's attitudes toward buying social security will be positively affected. According to the result of this study, it is necessary to focus on regional policies and regional characteristics should be taken into consideration by policy makers and executives when the policies of social security are being implemented.

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