

VALUE OF A FARM ANIMAL WELFARE PROGRAM IN BURSA-TURKEY

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Abstract

The paper aimed to present the value of a farm animal welfare (FAW) program that is not compulsory in South Marmara Region of Turkey. It is based on the face-to-face survey results administered in rural areas of Bursa City. The study measures the willingness to accept of producers for changing FAW levels in regards to sheep and goat husbandry. Contingent valuation technique is employed in the statistical analysis. Three different FAW levels were identified for valuation as "base" level, "better" level, and the "best" level. The best level was the most stringent FAW program. The current study suggests a protocol with WTA(P) nomenclature to resolve complexity issues in FAW studies by investigating producers rather than consumers. FAW programs' value were calculated as 130.3 million United States Dollars (USD) for base scenario. The figures were 166.2 million USD/Year and 175 million USD/Year for "better" and "best" FAW conditions, respectively. The results show that FAW programs have strong public opinion and non-market value.

Key words: contingent valuation, farm animal welfare, non-market valuation

INTRODUCTION

Farm animal welfare (FAW) is an important phenomenon in Turkey in the way of membership of the European Union (EU). In 1997, it was agreed that animal welfare considerations become annexed to the Treaty of Rome through a Protocol on Animal Welfare. A year later, EU Council Directive 98/58 was enacted for the protection of animals for farming purposes, and set minimum common standards. From that date, weak FAW sensitivity in the Europe has begun to rise. In 2003, an EU Regulation established a principle that "*farmers who do not comply with certain requirements in the areas of public, animal and plant health, environment and animal welfare are subject to reductions of or exclusion from direct support. This cross compliance system forms an integral part of Community support under direct payments*". This legislation concerned both of farmers and processors at the food industry as well as consumers. The farmers who think that the industry can be damaged by strict legislations while the processors and distributors on the other side are worried

about economic loss. In 2009, a regulation concluded the debates on FAW by suggesting that the Member States should be allowed to use up to 10 % of their national ceilings for the single payment scheme for granting specific support in clearly defined cases. Such support should allow Member States to address environmental and animal welfare issues.

Turkey is not a member state, but it tries to follow EU regulations. Consequently, it is not compulsory to provide FAW in Turkey. In this study, an approach of producers to prospective FAW programs by using non-market valuation method was employed. Results are candidate to support FAW programs in Turkey although some critiques were possible.

MATERIALS AND METHODS

The negative externality issue occurs in poor animal welfare conditions as well, and they must be internalized appropriately (Gürlük and Rehber, 2008) [6]. Several surveys support this phenomenon. In fact, there has been increasing demand for higher animal

welfare standards beyond the minimum standards set by regulations such as the EU's (Barcellos et al. 2013; Bennett and Blaney, 2003) [1, 3].

The research area is the Bursa province of Turkey. Even though the Bursa Province has a 11.4 percent share of the sheep and goat numbers in Turkey. Regional statistics were used in order to determine development levels, and then 294 farmers were interviewed by using the face-to-face survey method. The face-to-face survey format has an advantage in developing countries where such work is not widespread. Yet, valuable researches are more and more increasing (Soltani, et al. 2012) [8]. The survey for this study consists of three sections. Socio-economic questions in the first section put forward the demographic structure of respondents. Farm structure and knowledge of FAW programs were investigated in the second section. In the last section, respondents answered the willingness to accept question according to changing FAW levels. EU criteria and scientific criteria for ovine animal welfare were simultaneously considered in the FAW scenarios. (Bartussek et al., 2000; Sorensen et al., 2001) [2, 9]. Three different FAW levels were identified for valuation: "Base" level, "better" level and the "best" level. The base level indicates current farm level in terms of animal welfare conditions. Better and best scenarios were created by making more stringent the FAW levels. Respondents were asked to state their WTA payments for shifting FAW levels.

The current paper contributes to existing literature by combining environmental attitudes/behaviors and FAW level preferences through certain components of the New Ecological Paradigm (NEP) scale. The NEP scale consists of several items previously developed by Dunlap and Van Liere (1978) [5]. Liu et al. (2010) [7] measured the environmental attitudes of stakeholders on protected areas in China while Bonaiuto et al. (2002) [4] emphasized the importance of 'values' within the NEP scale. In the NEP scale, the question format is a typical five-level Likert scale starting from *Strongly disagree* to *Strongly agree* answers.

RESULTS AND DISCUSSIONS

Statistical model was tested using various test methods, and the results are as following table 1. The likelihood ratio chi-squared of -1219.86 with a *p-value* of 0.000 indicates that the model as a whole is statistically significant. *Hosmer-Lemeshow (H-M)* is a statistical test for goodness of fit for logistic regression models. *H-M value of current Research* is 19.15, and lower than critique χ^2 value. *Kendall's Tau coefficient (τ)* is a statistic, which have values between -1 and +1, used to measure the association between two measured quantities. τ -value of current research is 0.30 indicates that there is a relationship between dependent and explanatory variables. *Goodman and Kruskal's gamma coefficient (γ)*, which have values between -1 and +1, is a measure of rank correlation, but it measures the strength of association of the cross tabulated data when both variables are measured at the ordinal level. γ -value of current research is 0.60 indicates existence of association.

To find out the effects of statistically significant model parameters on the FAW levels, the median value of other variables was multiplied by their coefficients and then a constant was added to total value. The reason for using median value is to reduce the impact of greater and lower values above central tendency. Related model's expected value was calculated in this fashion, and presented as following Table 2. Thus, 1,204.5 USD/year, 1,142 USD/Year and 894.5 USD/Year was estimated for FAW-I, FAWII and FAW-III, respectively. The number of goats and sheep in the survey area, Bursa, was calculated to be an average of 132 head per farm. If this number is associated with FAW values it is calculated per head as 9TL/Year, 8.6 USD/year, and 6.7 USD/Year.

The values lead us to remarkable results. It is known that the number of sheep and goats is 38.5 million head in Turkey. If half of this figure is assumed to be in bad animal welfare conditions, which is worse than the base level investigated in the current paper, non-use benefits of bringing them to at least the base level would be approximately 130.3 million

USD/Year with a possible FAW program that can be implemented. Figures would be 166.2 million USD/Year and 175 million USD/Year for “better” and the “best” FAW conditions, respectively.

Table 1. Statistical model results

Variable	Parameter estimate	Standard error	Pr>chi
Intercept	0.4340	1.7178	0.8026
Bid ¹	-4.4e-5	4.7e-6	0.0000
Income ²	-0.6e-5	2.1e-6	0.0004
Age ³	0.0034	9.12e-4	0.0000
Coop_member ⁴	0.0335	0.30549	0.2758
Hholder_gender ⁵	-0.1408	0.0269	0.0000
Sacrifice ⁶	-0.0389	7.75e-3	0.0000
Education ⁷	0.0510	2.11e-2	0.0160
Development ⁸	-0.0270	0.191	0.1586
NEP_scale ⁹	-0.0014	3.29e-2	0.8886
FAW-II ¹⁰	-0.0060	1.793e-3	0.0000
FAW-III	-0.0130	1.797e-3	0.0000

Log-Likelihood= -1219.86

Hosmer-Lemeshow=19.15

Kendall's Tau= 0.30

Goodman-Kruskal Gamma= 0.60

¹ Bid is the presented bid amount through payment card

² Income is the monetary income of producer. It is expected to be more sensitive for high FAW levels.

³ Age is the respondent's age and expected to be positive. Older producers' WTA(P) for shifting FAW levels may higher than that of younger producers.

⁴ Coop_member is membership situation to a cooperative apart from existence membership to Union of Cattle and Sheep Husbandry of Bursa. 1: yes 0: No

⁵ Hholder_gender is gender of householder 1:Male 0:Female

⁶ Sacrifice is a question that it investigates if respondent is ready to endure any sacrifice so that farm animals experience better welfare circumstances 1: Yes 0: No

⁷ Education is the levels which are primary school graduation:1 secondary graduation:2 and higher:3

⁸ Development is development level of location that survey administered. 1: Developed region 0: Less developed region

⁹ Nep_scale is a scale measuring environmental sensitivity of related individual. The expected sign is puzzle because it was not tested in former farm animal welfare valuation studies.

¹⁰ FAW is farm animal welfare program introduced to respondent. Of three FAW levels, FAW-I is the most stringent level

Table 2. FAW program's non-use benefits in Turkey

FAW levels	Percentage of total number of goats and sheep which are under worse conditions than base level investigated in current study	
	50%	80%
Base level	130.3*	208.5
Better level	166.2	266
The best level	175.0	280

*Aggregate WTA(P) in million USD /Year

If 80 percent of goat and sheep numbers in Turkey is assumed to be in bad conditions, that accounts for 30.8 million heads.

If so, the non-use benefits of bringing them to at least the base level would be approximately 208.5 million USD/Year while it would be 266 million USD/Year and 280 million USD/Year for “better” level and the “best”

level, respectively (Table 2).

CONCLUSIONS

FAW programs are not considered to be luxury issues for developing countries such as Turkey. However, it is also one of great complexity, and if changes in the regulations

governing animal production methods are to be made, those changes should take full account of the implications for producers, consumers, and society in general. The farming industry should not interpret the interest in animal welfare as a threat to its livelihood. The appropriate animal welfare policy for society will be identified only when all the interested parties become fully aware of the consequences of their actions. In the near future, foreign trade will be depending on good animal welfare conditions in the world. Hence firms have some advantages in advance if they provide good animal welfare conditions. The analysis tests ‘panel estimators’ in stated preference data in a FAW pricing study by using the payment card question format. Probit panels are employed to measure individual effects on FAW levels by considering producers’ willingness to accept a scenario FAW program during a year. The results supply important insights to policy makers. For instance, farm revenue is a significant parameter. The farms that approach medium-sized enterprises and have the advantage of economies of scale result in differences among FAW levels. However, the FAW concept is able to be treated as a valuable input for larger enterprises who want to create their own brands. In addition, the phenomenon of experienced farmers who spend many years in their profession are more sensitive on FAW issues points out that agricultural extension programs should be for younger farmers.

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