Do Consumers Want Public or Private Bodies to Monitor Animal Friendly Production and Marketing Schemes? And does Trust Matter?

Andreas Böcker*, Giuseppe Nocella** and Riccardo Scarpa***

*** Department of Agricultural Economics & Business, University of Guelph,
aboecker@uoguelph.ca (+1-519-8244120)**

**** University of Bologna, Faculty of Agriculture, Food Economics Research Unit,
giuseppe.nocella@unibo.it (+39-0547-338141)**

***** Economics Department, University of Waikato,
rscarpa@waikato.ac.nz (+64 (0)7-838-4848)**

Paper prepared for presentation at the 99th EAAE Seminar 'Trust and Risk in Business Networks', Bonn, Germany, February 8-10, 2006

Do Consumers Want Public or Private Bodies to Monitor Animal Friendly Production and Marketing Schemes? And Does Trust Matter?

Andreas Boecker[1], Giuseppe Nocella[2], Riccardo Scarpa[3]

[1]*Department of Agricultural Economics and Business, University of Guelph, Canada,*
[2]*Faculty of Agriculture, Alma Mater Studiorum, University of Bologna, Italy,*
[3]*Department of Economics, The University of Waikato, Hamilton, New Zealand,*
aboecker@uoguelph.ca, giuseppe.nocella@unibo.it , rscarpa@mngt.waikato.ac.nz

Abstract

Producing according to enhanced farm animal welfare (FAW) standards increases costs along the livestock value chain, especially for monitoring certified animal friendly products. In the choice between public or private bodies for carrying out and monitoring certification, consumer preferences and trust play a role. We explore this issue by applying logit analysis involving socio-economic and psychometric variables to survey data from Italy. Results identify marked consumer preferences for public bodies and trust in stakeholders a key determinant.

Keywords: *animal welfare standards, certification, consumer trust, monitoring, stated choice*

1. Introduction

In the past decade, politicians, consumers and the scientific community have focused their attention on farm animal welfare (FAW) in the various stages of the value chain. Animal welfare regulations within the European Union aim at guaranteeing minimum levels of animal well-being during breeding, fattening, transport and slaughtering. Furthermore, voluntary assurance schemes founded on private sector initiatives, as e.g. 'Freedom Foods' in the UK, guarantee levels of well being above regulatory standards. Similarly, retailers are beginning to market FAW-certified products. However, public or regulatory FAW standards affect all stages of the livestock value chain.

Most experts agree that in production systems with enhanced FAW standards breeders will face higher costs. In fact, the few studies conducted comparing the turnover of farms with different levels of animal welfare guidelines confirm the hypothesis of higher costs. In general higher costs are determined by adoption of new housing systems and techniques, reduction in stocking density and increased costs of manpower (Scientific Veterinary Committee, 1997, SCAHAW, 2000, Gourmelen et al. 2000, Bornett et al. 2003 and Theuvsen et al. 2005). However, what exactly are the difficulties a monitoring system has to tackle in order to guarantee that these standards will be respected? Why should consumer trust be taken into account in this context? Which organizations or institutions would consumers like to monitor farm animal welfare? And does trust in the certification process matter in this context? In order to answer these questions this paper is organized as follows: the first section will focus on monitoring issues and consumer trust; the second section will present methods and data to

answer the last two questions which represent the objective of our research. The paper concludes with a discussion of the results.

2.   Consumer trust and FAW monitoring systems

The development of an effective monitoring system that guarantees adherence to FAW standards appears to be a challenging task. This is due to the fact that 'animal friendly' is a credence attribute, for which the production process has to be certified according to animal welfare indicators. Certifying and monitoring this process according to these indicators imposes additional costs. Fearne (1998), e.g., found that British producers had to bear annual inspection costs of about £ 90 without any indication of a price premium. prices. In fact, McInerney (2004) states that guaranteeing consumers certified animal friendly products requires verification by independent organizations that are recognized for their ability to check compliance; while farmers and people involved in transportation and slaughtering have the responsibility of providing animal welfare, signaling such a guarantee in a trustworthy way to consumers is another matter.

However, the main challenge in establishing an effective monitoring system is to find simple, reliable and low-cost indicators (Bond et al., 2001; Sørensen et al., 2001). For example, Bartussek (2001) underscores the difficulty faced in Austria in the compilation of an 'animal needs index' ANI-35L used to determine whether or not animals received minimum standards of well being. Moreover, complying with these indicators becomes more complicated and costly as schemes for the various species increase both in number and variation, as e.g. reported by Gready (1997), Main (1997) and Sibley (1999) for the UK. Such standards might regard the farm level alone or include subsequent stages of production such as transport and slaughtering. However, these standards need to be clearly defined, comprehensible, unambiguous (Main et al. 2001) and evaluated to ensure that all economic agents involved in the production chain respect the rules.

Hobbs (1996) reports that British retailers prefer vertical coordination because it lowers monitoring costs. Lindgreen et al. (2003) confirm this in discussing the solution adopted by Tesco, the biggest British food retailer, in tackling animal welfare issues along the value chain. Tesco is oriented towards an integrated supply business-to-business chain approach where communication to stakeholders is paramount. Brake et al. (2005) also highlight the importance of communication in making monitoring systems work. Particular emphasis has to be given to all activities aimed at disclosing relevant welfare information on marketable products, e.g. through labels or images.Monitoring systems thus should aim at communicating the reasons for higher costs of FAW respecting products. Northen (2000) underscores the necessity of distinguishing between intrinsic and extrinsic cues in effective communication, because FAW can only be signaled through extrinsic cues due to its credence nature. This is a very important aspect because the products' physical characteristics may not be altered by animal friendly treatments. Since this is not always clear to consumers, strategies for extrinsic cues have to differ from those for intrinsic cues. Their transparency and credibility need to be adequately communicated through labeling whose standards and inspections must be trusted.

Overall, only a small part of additional costs are spent on actual welfare improvement while most is for organizing the monitoring system and for communication. Northen (2000) argues that transaction costs of assessing the presence of credence attributes tend to increase as one

moves downstream the value chain. In this context, the organizational design of the monitoring system is an important decision. Menard and Valceschini (2005) argue that this decision should be based on transaction costs considerations. Comparing the possible alternatives, e.g. public, private or mixed mode, to monitor and transmit information about FAW "from the farm to the fork" should lead to the choice of an organizational mode which minimizes transaction costs. Although these solutions can be considered efficient from an economic point of view, the role of consumer trust in different organizations is not incorporated. This issue is highlighted in research carried out by Tesco (Lindgreen et al., 2003) suggesting that some consumers do not trust the information they receive from certain monitoring organizations. To fill this gap we explore whether consumer trust in agents at specific stages of the value chain affects preferences for organizations involved in monitoring farm animal welfare.

3.   Data and Methods

The empirical analysis is based on a survey conducted in Italy between the end of 2004 and April 2005. Data were gathered both via Internet questionnaires and telephone interviews, yielding a usable sample size of 800. Respondents on the web were recruited advertising the research both by a banner published for three weeks on the portal of one of the biggest Italian retailers and through two newsletters, one of which was sent to subscribers of an Italian gateway and the other to the members of the association of Italian Vegetarians. People interviewed via phone were selected randomly from the Italian telephone directory. The questionnaire was divided in the following three sections:

- **Knowledge:** respondents were asked to state their familiarity with breeding systems.
- **Attitudes**: respondents were asked to judge farming techniques and people engaged in the application of animal welfare standards (AWS). The section ended asking respondents about their preference for institution or organization involved in monitoring (public, private or both) certified animal friendly products;
- **Socio-economics and demographics:** respondents were asked to state their gender, age, household size, education, income, geographic area, an affiliation to animal welfare associations, and whether they are vegetarians.

At the beginning of each interview respondents were informed that farmers and other stakeholders can improve FAW in several ways and that certification ensures compliance with FAW standards. After this brief introduction respondents rated on a 5- point scale how important a set of measures for improving farm animal welfare was to them. For each measure they were then asked to express their confidence that people producing under a certified scheme actually comply with the standards, also on a 5-point scale ranging from extremely unlikely (1) to extremely likely (5). The set of measures employed in the questionnaire were: freedom of movement in stalls (FREE), daily inspection (INSP), avoiding unbalanced diet (DIET), banning mutilations (MUTI), reducing exploitation of productivity trough selection (SELE), providing sufficient space during transportation (TRAN), employing qualified personnel for transportation to abattoirs (PERS), use of vehicles with special mechanical and technical characteristics for transportation (VEIC), allowing animals to rest adequately after transportation and before slaughtering (SLAU). The last three items were not presented to vegetarians. The overall attitude of respondents was measured using the Fishbein model

$$A_k = \sum_{i=1}^{n} T_{ik} I_{ik}$$

where:
- i = applied animal welfare standard (attribute);
- k = consumer;
- I = the importance weight given attribute i by consumer k;
- T = k's trust (belief) that the certified product possesses attribute i;
- A_k = k's attitude score towards the application of animal welfare standards.

To explore if A and socio-demographic characteristics play a role in the preference for a type of organization monitoring certified products a logit regression is performed to identify the determinants of the probability of preferring private bodies being involved.

4. Results

We obtained 678 complete questionnaires from the web survey and 122 from the phone survey. Vegetarians were well represented in the Internet sample, accounting for 32.7%, while only for 6.6% in the other sample. 90% of respondents stated they were familiar with conventional and low-intensity breeding systems and 78% with alternative breeding systems. As shown in table 1 the two samples differ considerably in their socio-economic and demographic characteristics. In fact the values of χ^2 test, obtained crossing the type of survey with socio-demographic variables, are statistically significant at .0001 for age, education presence of children, shopping place and geographic area. Moreover, pet ownership was significant at .05, being a male/ female at .09. Income was the only variable which was not significant at all. Because of the inherent differences in the underlying populations the data analysis was conducted on the two samples separately.

Table 1. Socio-demographic characteristics of respondents

Type of survey (TS)	Internet (N=678)		Telephone interviews (N=122)		χ^2 test (TS vs SD)		
Socio-demographic (SD)	Count	%	Count	%	χ^2	d. f.	p
Gender: Females	386	58.4	82	67.2	3.334	1	.068
Age: Below 40	405	59.7	48	39.3	17.502	1	.000
Education: Degree or higher	401	50.1	41	33.6	27.274	1	.000
Children: Yes	190	28.0	80	65.6	65.202	1	.000
Shopping place:					36.189	2	.000
- Supermarket	483	71.2	60	49.2			
- Butcher	135	19.9	55	45.1			
- Both	60	8.9	7	5.7			
Pets: Yes	405	59.7	60	49.2	4.346	1	.037
Geographic area: North	434	64.0	44	36.1	33.577	1	.000

Table 2 shows that the two samples do not differ much in their scores on the items used for measuring the importance (I) of FAW standards, while they differ in those regarding trust (T).

Table 2. Attitude scores for FAW standards for certified products

TS	Internet			Telephone interview			T-test for A		
AWS	I	T	A	I	T	A	t	d. f.	p
FREE	4.75	2.49	11.85	4.57	2.27	10.29	2.913	798	.004
	(0.60)	(1.10)	(5.46)	(0.63)	(1.15)	(5.40)			
INSP	4.58	2.72	12.52	4.70	2.57	12.23	0.496	798	.620
	(0.69)	(1.17)	(5.91)	(0.64)	(1.18)	(6.07)			
DIET	4.83	2.69	13.04	4.51	2.27	10.06	5.319	797	.000
	(0.45)	(1.14)	(5.73)	(0.78)	(1.15)	(5.31)			
MUTI	4.41	2.48	10.87	4.29	2.25	9.50	2.415	798	.016
	(0.98)	(1.21)	(5.91)	(0.80)	(1.09)	(4.86)			
SELE	4.38	2.03	8.91	4.04	2.12	8.37	1.087	797	.277
	(0.89)	(1.05)	(5.14)	(1.10)	(1.07)	(4.62)			
TRAN	4.77	2.14	10.18	4.73	2.02	9.60	1.081	797	.280
	(0.57)	(1.08)	(5.30)	(0.62)	(1.20)	(6.00)			
PERS	4.57	2.44	11.21	4.44	2.05	9.14	3.543	568	.000
	(0.74)	(1.13)	(5.66)	(0.85)	(1.05)	(5.26)			
VEIC	4.35	2.37	10.31	4.31	2.27	9.69	1.157	566	.248
	(0.87)	(1.05)	(5.10)	(0.92)	(1.04)	(5.08)			
SLAU	3.84	1.99	7.84	3.34	1.76	5.98	3.468	568	.001
	(1.20)	(1.09)	(5.35)	(1.02)	(0.96)	(4.08)			

For the items measuring importance the mean is always above 4 and the standard deviation is quite low (other than SLAU). However, ranking these items according to mean scores, the order of importance is slightly different because DIET plays a major role in the online sample, while INSP appears to do the same in the telephone sample. Scores on trust items are not so homogeneous as those observed for importance. In this case the mean of most trust items is below the central point of the proposed likelihood scale and standard deviations indicate a wider dispersion around the mean than for other scores. Moreover, in general, farmers are more trusted than stakeholders involved in transportation and slaughtering; and subjects on the Internet expressed higher levels of confidence. Thus, trust seems to be a mediator in the formation of people's attitudes. In fact, trust items introduce a stochastic variation in the Fishbein products (A) which show larger dispersions and marked differences in their average values among them and between the two samples. A t-test for independent samples under the assumption for equal variances shows that these differences are statistically significant for FREE, DIET, MUTI and PERS. In both samples, respondents have more positive attitudes for DIET, INSP and FREE and lower for SELE and SLAU.

Finally, before applying the Fishbein model we tested the internal consistency of the scale by performing a reliability test on both samples and only for the six items common to omnivores and vegetarians. Inspection of 'alpha if items are deleted' reveals that any removal would not improve the values of Cronbach's alpha coefficients. These coefficients are very good (0.8426 for the Internet sample and 0.8412 for the telephone interviews) and so all 6 items can be used in the Fishbein model. A comparison of the Fishbein constructs show that the overall score is higher for web respondents (x= 67.38; s = 25.06) than for people interviewed on the telephone (x = 59.91; s = 24.04) and this difference is statistically different performing a t-test for independent samples (t = 3.026; d. f. = 795; p = .003).

4.1 Determinants of monitoring preferences

In both samples respondents showed a clear preference regarding the type of organizations which should be involved in monitoring certified animal friendly products. Public bodies are the most preferred (web 71.2% and telephone 73%), followed by a mixed private/public control mode (web 20.1% and telephone 20.4%) while lowest preference is assigned to private bodies (web 8.7% and telephone 6.6%). We modeled the determinants of the probability that an individual preferred some private involvement in the monitoring process. To do so we constructed a dependent variable that took the value of 1 if some private involvement was preferred (alone or mixed with public agency) and zero otherwise.

The variables that were expected to be determinants of this probability included the following four dummy variables: being of age 40 or above (AGE40=1), education of at least a university degree (DEGREE=1), shopping at the butcher shop (BUTCH=1) or at the supermarket (SUPER=1). Moreover, income (INCOME) was treated as an ordinal variable with seven levels, while the Fishbein (FISH) score captures trust.

Table 3. Logit models for predicting preference for private involvement in monitoring

Variables:	Internet			Telephone interview		
	Betas	Marginal effects	Elasticities	Betas	Marginal effects	Elasticities
- Constant	-.99**	-.20**		-1.72	-.32	
	(.40)	(.08)		(1.26)	(.22)	
- AGE_40	-.46**	-.09**	-.13	.82	.14*	.36
	(.19)	(.04)		(.52)	(.08)	
- BUTCH	-.70**	-.13**	-.09	-1.6*	-.28*	-.51
	(.34)	(.05)		(.96)	(.16)	
- DEGREE	-.32*	-.07*	-.14	-.93*	-.16*	-.23
	(.18)	(.04)		(.55)	(.08)	
- SUPER	-.55*	-.12*	-.29	-2.6**	-.37**	-.75
	(.29)	(.06)		(.97)	(.17)	
- INCOME	.14***	.03***	.36	.10	.02	.30
	(.05)	(.01)		(.13)	(.02)	
- FISH	.007**	.001**	.33	.03***	.005***	1.32
	(.003)	(.0007)		(.01)	(.001)	
Log likelihood at max		-395.41			-56.72	
Correctly predicted y_i		71.20%			78.76%	
Hosmer-Lemeshow test	^{2}=.9.510; d. f. = 8; p= <.3010			^{2}=4.478; d. f. = 8; p= <.8117		

The logit regression estimates in table 3 show that all predictors are significant for the web sample with INCOME showing the highest *p*-value (.005). However, in the telephone sample the INCOME and AGE_40 are not very good predictors, while FISH (.004) appears to be the most significant explanatory variable. While the signs of the independent variables are concordant, FISH and INCOME are the only explanatory variables with a positive effect on the preference for private body involvement.

The marginal effects (computed at the sample means of **x**) show how much the probability of favoring the inclusion of private bodies changes when one of the variables increases the value by one (for dummy variables these are computed as the difference between Pr(y=1|x=1)-Pr(y=1|x=0).

Limiting the comparison of socio-economic characteristics to those that are significant in both models we notice that all the effects for the phone survey are stronger than those for the web-survey. For example, the effect of one unit increase in the Fishbein score (FISH) in the telephone sample has an effect on the probability 5 times larger than that of the web sample. This is probably due to the much wider heterogeneity in the latter sample. The results are consistent with the hypothesis that the Fishbein score is a good proxy for consumer confidence towards stakeholders involved in farm animal welfare. We can say that when consumer trust rises the support for involvement of private bodies in the certification process increases as well. An increase of one unit in income (equivalent to €500/month) increase $Pr(y=1)$ by 2.8% for online participants and by 1.9% for telephone interviewees. Finally in both models we observe that $Pr(y=1)$ is predicted quite well and since ^{2} for the Hosmer and Lemeshow's test is not significant, the observed data appear not statistically different from the predicted values from the models.

5. Concluding remarks

The exploratory data analyses conducted here indicate that the Fishbein score as a measure of trust is a complement to socio-economic and demographic characteristics in explaining the support for the involvement of private agencies in the certification process. If it is argued that monitoring systems are perceived to be more effective when they rely at least partially on private organizations, our results point out that consumers attitudes and especially trust should be considered in organizational choice. This can be interpreted as an opportunity for private agencies to gain consumer confidence through clear and trustworthy communication. This is clearly not a matter of releasing more information, but to gague the information flow according to personality, attitudes, degree of involvement and socio-economic and demographic characteristic of consumers, as pointed out by Werbeke (2005). Our results seem point to the opportunity of stimulating demand for animal welfare products, if private certification and monitoring bodies manage to increase acceptance among Italian consumers.

References

Bartussek, H. (2001) An Historical Account of the Development of the Animal Need Index ANI-35L as Part of the Attempt to Promote and Regulate Farm Animal Welfare in Austria : An Example of the Interaction Between Animal Welfare Science and Society. *Acta Agriculturae Scandinavica*, **30**: 34-41.

Bonde, M., Rousing, T. and Sørensen, J. T. (2001) Structure of the Welfare Assessment Report for Communication with Farmers. *Acta Agriculturae Scandinavica*, 30: 58-61.

Bornett, H. L. I., Guy, J. H. and Cain, P. J. (2003) Impact of animal welfare on costs and viability of pig production in the UK. *Journal of Agricultural and Environmental Ethics*, 16: 163-186

Bracke, M.B.M., De Greef, K.H. and Hopster, H. (2005) Qualitative stakeholder analysis for the development of sustainable monitoring systems for farm animal welfare *Journal of Agricultural and Environmental Ethics*, 18: 27–56.

FAWC (2001) Interim Report on the Animal Welfare Implications of Farm Assurance Schemes. Farm Animal Welfare Council, London.

Fearne, A. (1998) The evolution of partnerships in the meat supply chain: insights from the British beef industry. *Supply Chain Management*, 3(4): 214-231.

Gourmelen, C., Y. Salaun, and P. Rousseau (2000) Economic Incidence of Possible Future Regulations Regarding the Welfare of Intensively Kept Pigs on Pig Meat Cost in France 51st Annual Meeting of the European Association for Animal Production, The Hague.

Gready, R. (1997) A whole industry approach to farm and quality assurance. *The Pig Journal*, 38: 90-96.

Hobbs, J. E. (1996) A transaction cost analysis of quality, traceability and animal welfare issues in UK beef retailing. *British Food Journal*, 98(6): 16-26.

Lindgreen, A., Hingley, M. (2003) The impact of food safety and animal welfare policies on supply chain management: The case of the Tesco meat supply chain. British Food Journal, 105(6): 328-349.

McInerney J. P. (2004) Animal welfare, economics and policy. Defra, London,UK. (http://statistics.defra.gov.uk/esg/reports/animalwelfare.pdf)

Main, D.C.J. (1997) Welfare-friendly lamb and the supermarkets. Proceedings of the Sheep Veterinary Society, 21:83-86.

Ménard, C., Valceschini, E. (2005) New institution for governing the agri-food industry. *European Review of Agricultural economics*, 32(3): 421-440.

Northen, J. R. (2000) Quality attributes and quality cues: Effective communication in the UK meat supply chain. *British Food Journal*, 102(3): 230-245.

Scientific Committee on Animal Health and Animal Welfare (SCAHAW) (2000) The Welfare of Chickens Kept for Meat Production (Broilers). (SCAHAW Report No. SANCO.B3/AH/R15/200).

Scientific Veterinary Committee (SVC). (1997). The welfare of intensively kept pigs. Brussels: European Commission.

Sibley, R.J. (1999) A national farm assurance scheme for dairy farms. *Cattle Practice*, 7: 365-369.

Sørensen, J. T., Sandøe, P., Halberg, N. (2001) Animal Welfare as One among Several Values to be Considerde at Farm Level: The Idea of an Ethical Acoount for Livestock farming. *Acta Agriculturae Scandinavica*, 30: 11-16.

Theuvsen, L., Essmann, S., Brand-Sassen, H. (2005) Livestock Husbandry between Ethics and Economics: Finding a Feasible Way Out by Target Costing? XIth International Congress of the European Association of Agricultural Economists, The Future of Rural Europe in the Global Agri-Food System Copenhagen, Denmark, August 24-27.

Verbeke, W. (2005) Agriculture and the food industry in the information age. *European Review of Agricultural Economics*, 32(3): 347-368.