

## FARM ANIMAL WELFARE ECONOMICS

### ECONOMICITATEA BUNĂSTĂRII ANIMALELOR DE FERMĂ

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*This paper reviews the literature regarding the economics of the farm animal welfare. The following issues are addressed: productions costs and savings of the animal welfare regulations, benefits of improved animal welfare, and consumers' willingness to pay for animal-friendly products.*

**Keywords:** farm animal welfare, economics, costs, benefits, willingness to pay.

#### **Introduction**

Some animal welfare measures increase the cost of production, but this may be offset by higher product quality or fewer losses due to disease or injury. There are ways to improve animal welfare that do not compromise productivity and are not necessarily costly. It is important to explore the economic and societal impact of animal-friendly measures and production alternatives, so as to reconcile animal welfare and economic imperatives (1).

Low animal welfare standards do not impose an economic cost on society unless they result in lower productivity and efficiency or pose a threat to human health. In fact, there may be gains if the prices of animal products are low. The decision to impose higher welfare standards in farming cannot be based solely on economic criteria (Blandford, 2006).

#### **How much improvement of welfare conditions cost the farmer?**

The application of higher standards for animal welfare is likely to increase the fixed and variable costs of production at least in the short term run (Blandford et al., 2000). Evidence suggests that fixed costs increase through reduced conversion rates and that variable costs, such as energy and labour, increase.

Throughout the 20<sup>th</sup> century, farming became increasingly industrialized. Farms became larger and more specialized and production more intensive. This was achieved through the adoption of new technologies and substantial increase in

purchased inputs. On the most productive farms intensification and industrialization dominate (Blandford and Fulponi, 1999).

McInerney, 2004 presented a generalised relationship between the productivity of livestock and their perceived welfare (Figure 1), suggesting that at low levels of output equivalent to primitive or unimproved husbandry techniques, a complementarity exists, with increasing in production from better husbandry (nutrition, housing, disease control etc.) bringing better welfare. Inevitably, a point is reached where further productivity increases come at increasing welfare cost as “intensity” rises and husbandry techniques seek to exploit further the biological potential of the animal. One conclusion from the Figure 1 is that “higher welfare” livestock products come at some sacrifice in technical productivity and therefore imply a higher cost of production.

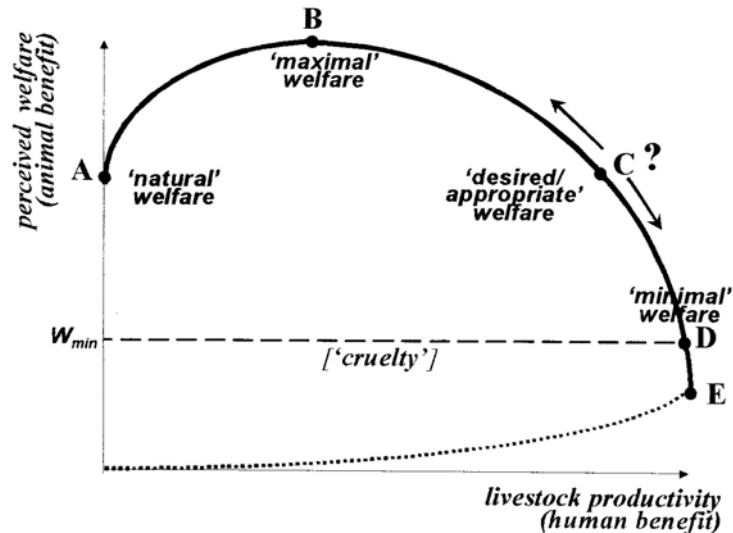


Figure 1. Conflicts between animal welfare and productivity (McInerney, 2004)

Blandford, 2006 defined the following costs for farmers for improving the welfare of their animals:

- increased space requirements may require the modification or construction of facilities.
- extensive production systems require more land.
- higher labour requirements, increased energy consumption in larger facilities, and reduced feeding efficiency increase the operating costs.
- higher standards increase the costs of transporting and processing animals.

The costs to farmers of legislation to impose higher animal welfare standards are substantial but the cost to consumers can be very small (Webster, 2001). The responsibility is therefore on the consumer to convert an expressed desire for higher welfare standards into an effective demand.

Mandating the switch in production methods usually increases costs. In some cases, the cost increase is insignificant, but in other cases, switching technology can be quite expensive (Mitchell, 2001).

Various studies show that costs could rise from 5 to 30 percent, depending on the exact animal welfare law enacted (Mitchell, 2000). Increasing the production costs could raise the consumer food price.

The UK Ministry of Agriculture has estimated that the recently agreed standards for laying hens in the Union will cost existing producers roughly £10 per bird (Blandford et al., 2000). The Ministry has also estimated that the non-recurring costs of complying with the standards for stalls and tethers and space requirements for pigs would cost between £39-£65 thousand, depending on the type of operation. Annual production costs would increase by 3-11 percent of total turnover.

It has been estimated that in Italy, the adoption of EU regulations for laying hens will increase costs of production by 12-15 percent (Unione Nazionale dell'Avicoltura, 1999 cited by Blandford et al., 2000). This includes increased feed consumption, greater losses (number of broken eggs), and increases in other variable costs and the depreciation of additional fixed costs.

In the UK, a study on animal welfare measures for pigs found out that the costs of new pig units would increase by 18 to 22 percent (Blandford et al., 2000). Where the firm decreases the number of animals to conform to the space requirements, a substantial loss of productivity is envisaged, due to the smaller number of pigs over which costs must be distributed.

Other costs associated with the EU regulations are a reduction of output of 20 percent, which may result in a loss of 6,000 jobs (Blandford et al., 2000).

#### ***Savings***

Blandford, 2006 showed that better animal welfare could lead to lower morbidity and mortality as well as reduced expenditure on disease control and treatments.

Farmers, like most other firm owners, generally use the lowest cost technology to produce their products. Some animal-friendly technologies are already low-cost. Most livestock industry representatives note that keeping animals healthy improves production quantities. Some studies indicate that better treatment means higher yields (Bjerklie, 2000 cited by Mitchell, 2001).

Dr. Grandin [11] emphasized that careful, quiet handling of livestock by trained people in good facilities will reduce bruising and helps maintain meat quality. Bruises cost the US beef industry \$1.00 per animal on feedlot beef and \$3.91 per animal on cows and bulls. In Australia, bruises cost beef industry \$36 million annually. The US pork industry loses \$0.34 per pig due PSE and \$0.08 per pig due bruises. Dr. Grandin suggests using plastic paddle for handling pigs and plastic ribbons tied on the end of stick for cattle instead of electric prods. Improving animal welfare can also improve employee safety because calm cattle are less likely to run over employees or rear up.

Housing systems that are beneficial for animal welfare do not generally increase production costs (Wyss et al., 2004). For example, loose housing of dairy

cows in cubicle systems with milking parlours is economically preferable to housing in tie-stalls, provided that herd size exceeds a minimum of 20 cows. Building costs for 48 dairy cows are estimated to be over 18,500 CHF per cow place in tie-stall and 16,000 CHF in cubicle system. Also, the labour input for the same size farm was estimated to 95 hours per cow per year in tie-stall and 80 hours/cow/year in cubicle system. Similarly, group housing of dry sows using electronic sow feeders is preferable to individual housing in crates with larger herds and housing of laying hens in aviary systems can be as profitable for farmer as housing in cages, if he can sell his eggs at a better price.

British farmers have optimistic attitudes, perceptions and views regarding the UK farm assurance schemes in animal welfare, although the pig industry in the UK faces some difficult times. Farmers, in general, are sensible to sensitive issues, such as animal welfare, and they know that consumers' awareness and public perception regarding the way farm animals are reared and treated has become very important in recent years, and thus not reacting accordingly and ignoring it will be costly (Hubbard et al., 2006).

### **What are the benefits of animal welfare improvement?**

There are two types of economic motivations for the passage of animal welfare laws: 1) when consumers feel that they individually benefit from improved animal welfare and 2) when society as a whole can benefit from improved animal welfare (Mitchell, 2001).

#### ***Individual benefits***

Many consumers have expressed their preferences for goods produced with higher level of animal welfare. Consumers care about how products are made and get more satisfaction from consuming goods that are made with methods they approve. Consumers are feeling more comfortable about the way its food-producing animals are treated.

Eighty percent of EU consumers are concerned about animal welfare when asked, but when asked to list their greatest concerns about food, only 5 percent volunteer animal welfare as a concern (Blandford and Fulponi, 2000).

Consumers cannot tell by looking at a product how it is made, so they might lack adequate information to purchase the goods they prefer (Mitchell, 2001).

Producers whose production technologies meet higher standards of animal welfare have an incentive to reveal that to the consumer with a label of advertisement, thus providing the information without any need for government involvement.

#### ***Social benefits***

In addition to the private benefit that some consumers receive by purchasing goods made with more stringent animal welfare practices, there are associated social benefits. If some consumers are concerned with the welfare of animals, they are usually concerned with the welfare of all animals, not just the ones used to make goods that they themselves purchase (Mitchell, 2001). When consumption of goods by one person affects a lot of other people, government action is sometimes

necessary. Consumers, if left to their own devices, will only take their own welfare into account when deciding what to consume. They don't think about damage that their consumption does to others in the form of pollution, noise, reductions of perceived animal welfare and other costs, so they consume more than their fellow citizens would like. The government may intervene to ensure that quantities produced and consumed more closely match the preferences of the society as a whole. An animal welfare regulation improves social welfare if the sum of all the benefits to consumers of increased animal welfare is greater than the sum of increased costs to the consumer and producer.

#### **How much consumers are willing to pay for animal-friendly products?**

Consumers may respond to concerns about animal welfare in a number of ways (Blandford et al., 2000). First, they may cease to consume some or all animal-based food products. Thus, for example, many consumers in the United Kingdom and Ireland refuse to consume veal or Foie Gras because of concerns about the welfare of the animal in the production process. They may become vegetarian. Becoming a vegetarian reflects not only concerns about animal rights and animal welfare, but also issues associated with food safety, nutrition and health and the environment. Second, consumers may choose product variants that are perceived to be associated with higher levels of animal welfare. These may include products that are explicitly labelled as being produced with higher levels of welfare or products for which the consumer perceives this to be the case, for example organic products or those having a particular geographic origin. Third, consumers may not change their food purchase behaviour, even though they may be concerned about animal welfare. There may be many reasons for this: 1) they may not perceive that their purchase decisions will not have any significant impact on how food is produced; 2) they may mistrust information provided on the manner in which food is produced; and 3) they may not be able to afford the price premium associated with products perceived to be associated with higher levels of animal welfare.

Appleby (1999) argues that buying meat produced with high welfare standards does more to improve farm animal welfare than eating a vegetarian diet.

For consumers from western countries, price is not the only determinant behind animal-food purchases as they are acquiring an increasing interest in farming practices and the related animal welfare standards (Napolitano, 2008). Consumers do not seek the cheapest food but the best value for money (i.e. the maximum benefit for what they are prepared to spend)(McInerney, 2004).

Blandford et al., 2000 argues that the use of 'willingness to pay' through product price may be an unreliable measure because non-consumers may still demand regulation of the production practices employed in the supply of such products.

The impact of improved animal welfare would have on the food price have been presented by McInerney, 2004 in Table 1.

Table 1

Estimated impacts on final food prices of selected policy changes which have an animal welfare impact (McInerney, 2004)

Welfare change	Estimated effects on livestock production costs (%)	Effect at retail level		Impact on weekly food expenditures	
		Commodity	Price change (%)	Pence per person	% of total food budget
Introduce BST	-8	Liquid milk	-2.56	-2.27	-0.17
		Cheese	-1.92	+0.27	+0.02
Ban hormones	+4	Beef	-1.44	-0.57	-0.04
Limit transport times to 8 hours	+3	All carcass meat	+1.14	-0.47	-0.04
Ban sow tethers and crates	+5	Pork	+1.9	-0.43	-0.03
		Bacon & ham	+1.3	+0.06	-
Ban broiler systems	+30	Poultry meat	+13.2	+3.6	+0.27
Ban battery cages	+28	Eggs	+17.9	+2.87	+0.22

A contingent valuation survey of college students by Bennett and Larson (1996) in the USA found an average willingness to pay of approximately \$8 each to improve the welfare of laying hens and veal calves. A UK study of the general population (Bennett, 1996) found a willingness to pay of £0.43 to eliminate battery cages for poultry.

Within the European Union, eggs are the product for which variants associated with different standards of animal welfare are presented most explicitly to consumers. In general, three variants are available according to the method of production employed: 1) conventional battery production; 2) barn production; and 3) free-range production. The market share of free-range eggs, those with the highest animal welfare standards, in selected member states is presented in Table 2.

Table 2

Market share of free-range eggs in selected EU member states  
(Leatherhead Food Research Association, 1999 cited by Blandford et al., 2000)

<i>Member state</i>	<i>Year</i>	<i>Market share (percent)</i>
Austria	1996	40
Denmark	1996	25
France	1996	8
Germany	1996	11
Italy	1997	3
Netherlands	1996	22
United Kingdom	1998	20

The willingness of UK consumers to pay for legislation to ban battery cages through higher prices for eggs is given in Table 3 (Bennett, 1998).

Table 3

Willingness of UK consumers to pay for legislation to ban battery cages through higher prices for eggs (Bennett, 1998 cited by Blandford et al., 2000)

<i>Increase in price of dozen eggs (pence)</i>	<i>% respondents</i>
0	14
0 to 20	10
20 to 40	32
40 to 60	18
60 to 80	11
80 to 100	7
100 to 120	6
More than 120	3

Some consumers in the EU are willing to pay more, even enough to cover higher production costs, for some “animal-friendly products”, like free-range eggs (Mitchell, 2000).

Danish consumers are generally willing to pay more for labels indicating animal-friendly production methods (Andersen, 2005). Comparing the willingness to pay of barn eggs, free-range eggs and organic eggs it appeared that consumers living in the urban areas are willing to pay more for animal welfare than people in rural areas and that people who perceive the level of animal welfare in organic eggs as higher are willing to pay more not only for organic eggs but also for other labels indicating increased animal welfare.

In a study for establishing the willingness to pay for yogurt products in Italy, Napolitano et al., 2007 found that within each product, consumers expressed a higher willingness to pay for products with labels indicating high welfare standards as compared with yogurts with labels reporting intermediate and low welfare standard. Their results showed that information about animal welfare, if given to the consumers, can be a major determinant of consumer willingness to pay for animal-based products. However, information about high standards of animal welfare should be paired with products presenting a good eating quality.

In a contingent valuation study on public preferences for broiler chicken welfare in the UK, McVittie et al., 2005 found that the average willingness to pay was estimated as £7.53 per household per year, which gives an aggregate value for England of 158 million. The order in preferences for different welfare attribute associated with implicit prices was:

1. Reduce stocking density from 38 to 30 kg/m<sup>2</sup>: £3.89/kg;
2. Reduce percentage of flocks failing foot pad lesion standard from 15% to 5%: £3.01/kg;

3. Change quality of ventilation from low to high: £2.68/kg;
4. Reduce stocking density from 38 to 34 kg/m<sup>2</sup>: £1.91/kg;
5. Change ventilation from low to intermediate: £1.67/kg;
6. Reduce percentage of flocks failing foot pad lesion standard from 15% to 10%: £1.38/kg;
7. Change period of darkness from 4 hours to 8 hours: £0.97/kg; and
8. Change period of darkness from 4 hours to 8 hours with at least 4 hours continuous: £0.67/kg.

A comparison of chicken price in leading UK supermarkets indicates that standard fresh whole chickens are available at cost between £1.78 and £2.99 per kg, where the price depends on the size of the finished bird. Free/range chickens are available at prices between £3.17 and £5.99 per kg (compared to prices of organic chicken between £4.24 and £6.25 per kg). This indicates a welfare related premium of between 6 and 250%. It is not clear to what extent welfare is an issue in the purchase of organic products (McVittie et al., 2005).

In a survey carried out in Chile regarding the consumer's perception of animal welfare, Schnettler et al., 2007 found out that 60% of people surveyed had some knowledge about livestock management practices, 50% considered that those practices had a negative effect on animals, but only 32.1% changed their meat consumption habits due to this. Seventy percent of the people surveyed had knowledge about animal welfare aspects. There was a strong preference and willingness to pay a higher price for meat produced under animal welfare principles, which on average would be an increase of 15.2% over the normal price. Consumers had a positive perception of the fact that the meat they consume comes from pasture-fed animals, were raised in free-range and transported and slaughtered following humane principles. The conclusion of the study was that a large part of the population perceives animal welfare as a desirable condition when purchasing beef.

For consumers in South Chile the origin of beef was the most important attribute, followed by information about animal welfare and then the price of the product in the decision to buy beef. Animal welfare was perceived as a desirable condition, but consumers were not willing to pay significantly more when buying meat in order to gain information about animal handling (Schnettler et al., 2009).

### **Economic factors that improve farm animal welfare**

The EU has submitted a proposal to the WTO on animal welfare that stresses three main points (Mitchell, 2000):

1. The EU believes that each country should have the right to its desired animal welfare standards, and it is concerned about the effects of having higher animal welfare standards on domestic producers, noting that consumers might not be informed about the "welfare standards to which imported products are produced".

2. The EU notes that it is not interested in protectionism or imposing domestic animal welfare standards on imports.

3. The EU believes that animal welfare should be addressed in the WTO through multilateral agreement, labelling, and/or minimally trade-distorting subsidies for producers who produce with humane methods.

### **Concluding remarks**

Improving farm animal welfare and the EU regulation implementation at the farm level will result in additional fixed and operational costs to the farmers. But, not all the technologies that are beneficial for animal welfare do increase the production costs. Some animal-friendly technologies are already low-cost. Implementation of animal welfare regulations has a positive impact on lowering the mortality and morbidity at the farm level which means lower costs.

From the consumers' point of view there are individual and social benefits of implementation of animal welfare at the farm level.

Consumers are willing to pay more for the food obtained in animal-friendly conditions if they are informed about these conditions on the product label, if they trust the information on the label, if they perceive that buying that product will increase the animal welfare in the farm, if they live in a urban area, and if they know the origin of the product.

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