



Module 31

Economics and Animal Welfare

Lecture Notes

Slide 1:

This lecture was first developed for World Animal Protection by Dr David Main (University of Bristol) in 2003. It was revised by World Animal Protection scientific advisors in 2012 using updates provided by Dr Caroline Hewson.

Slide 2:

We shall see how improving animal welfare can increase farmers' incomes in some circumstances. We shall also examine how farmers' own preferences and priorities, and the preferences and priorities of retailers, consumers and governments, can affect animal welfare.

Slide 3:

Economics is the study of our preferences and priorities. No individual or country has unlimited resources, including money. Therefore we have to decide on our financial priorities, and what we prefer to spend our money on. We have to balance or 'trade off' some preferences against others.

This reality of finite resources and how we choose to spend them affects how we treat animals:

- as farmers
- as consumers, in the broadest sense (i.e. consumers of food and other animal products; pet owners; and guardians of endangered animal species)
- as governments acting on behalf of consumers.

In recent decades, helping to safeguard the welfare of animals who provide us with food, clothing, safe drugs, companionship, draughtpower, etc. has become an important preference for many people in many countries. This has come about largely because of scientific evidence that animals can suffer.

However, despite this preference, as consumers we may not want to spend much or any of our own income on safeguarding animal welfare: we may have other equally legitimate priorities including our own welfare, especially when our income is limited.

This lecture focuses on how this affects farm animals, because they represent the largest group of animals under human care. Our willingness to pay for their welfare ultimately affects how much money a farmer receives for his/her animals and their products. This impacts on how well the farmer can care for his/her animals. In turn, the farmer's 'willingness to pay' may affect his/her relationship with you, as his/her vet, and his/her willingness to follow your advice.

Slide 4:

The global demand for food of animal origin is increasing, especially in developing countries as they become more affluent, and as their populations continue to grow. In 2011, a report commissioned by the Food and Agriculture Organisation (FAO) of the United Nations (UN) (Robinson et al., 2011) indicated that:

“For developing countries, livestock production systems will need to intensify if future demand for meat is to be met. In parts of Asia this may continue to involve the industrialization of pig and poultry production systems, while in sub-Saharan Africa the critical role of smallholders in meat and milk production is likely to continue through sustainable intensification, where this can occur.”

Intensive farming is a response to the policy of minimising the production and retail costs of food. This 'cheap food' policy enables everyone to afford to eat meat, dairy products and eggs, which have high nutritional value. Therefore, a cheap food policy can promote human health.

However, it is increasingly recognised that this policy has many hidden financial and non-financial costs which are not reflected in the price we pay when we purchase food.

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First, if we expect to pay very little for food, retailers may only pay farmers minimum prices. This results in minimal profit margins for farmers, who may then use husbandry systems with low inherent welfare potential and high stocking density with disease risks in order to balance production output against the input costs of food, labour, etc.

Firstly, this industrial approach to the care of animals can reduce our empathy for them and their quality of life, especially when their market value is low and they are kept in the tens of thousands, as in the case of laying hens.

The second hidden cost of cheap food is that being forced to operate under such tight market conditions can contribute to depression and suicide among farmers.

Third, there is growing evidence from rich and poor countries alike that cheap animal-based foods contribute to a complex culture of over-consumption which in turn causes obesity and early death from diseases such as diabetes mellitus.

A fourth hidden cost of intensive livestock production is environmental damage, which has longer-term adverse effects on wildlife, ecosystems and human quality of life. Those effects result from factors such as:

- needing to clear large areas of land in order to grow cereals, soya and other crops for animal feed
- potential increase in global warming caused by excessive methane production when ruminants are fed on grains
- water pollution when large volumes of animal waste produced in intensive farms leak into rivers.

Slide 6:

There are economic benefits to farmers who have high standards of animal welfare. This is being recognised around the world. For example, the International Finance Corporation of the World Bank Group, which supplies loans to businesses in developing countries, has publications specifically on this topic.

A report published by the International Finance Corporation of the World Bank Group in 2006 suggests three ways in which improving livestock welfare can improve a farmer's income.

1. When animals function well, feel well, and have opportunities to perform behaviours that are important to them (i.e. when their welfare is good), this increases the efficiency and profitability of a farm.
2. Better animal welfare enables the farmer to satisfy the demand of local consumers for welfare-friendly products. So, the farmer can maximise sales to the domestic market.
3. Better animal welfare enables the farmer to meet that same demand among international consumers. Therefore, good livestock welfare enables the farmer to maximise export sales.

We shall now look at each of these three ideals.

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First, when animal welfare is good, a farmer can minimise some input costs and maximise sale value and production. These are direct financial benefits and they increase profitability on a farm. For example:

- when animals function well they get fewer diseases so the farmer has less need for the vet to visit and prescribe drugs. This saves input costs
- when animals feel well their productivity increases, e.g. handling animals gently is associated with higher growth rates, increased milk letdown, etc. This increases output
- farmers can also maximise the sale value of animals by helping them to feel well up to the point of sale or slaughter (e.g. by not hitting animals during loading or unloading, this prevents bruising to the carcass, and the abattoir will not need to discard the meat, and so can pay the farmer the full price).

Indirect financial benefits include:

- the farmer having more personal income to pay for domestic needs such as schooling, mortgage repayments, etc. The farmer will also have more income to pay for the upkeep and development of the farm.

Non-financial benefits of high animal welfare include:

- the farmer's peace of mind, knowing that he or she is financially secure while giving his/her animals a good life. Also, some high-welfare systems are thought to have a lower impact on the environment because of reduced antibiotic use, less water pollution, and less impact on local biodiversity
- the farmer having more time to spend on other tasks around the farm and more time with family, because he or she does not need to spend so much time dealing with the consequences of animals being sick, or growing slowly.

Today, we will only look at the direct financial benefits of animal welfare. Note that when animal welfare is good, it can also bring indirect financial benefits and some non-financial benefits.

Slide 8:

Another way to view the value of animal welfare for the farm is to see the direct costs of poor welfare. We shall look at four examples over the next four slides, starting with the cost of lameness in dairy cows.

The exact costs vary with each farm in each country. The data here were estimated from mathematical models of the cost of lameness in dairy cows in the US and the Netherlands. Those models used existing data to estimate the financial consequences of foot disorders in those countries at that time – the papers were published in 2010. (The model in the Netherlands used values in Euros (€). The values in the article were converted into US dollars (\$) using an exchange rate of €1 to US \$1.41).

- You can see that each case of lameness may cost the farmer up to \$300, depending on whether the problem is clinical (i.e. needing veterinary treatment) or sub-clinical (i.e. pathology is present and affecting productivity, but the animal is not obviously lame yet).
- If the average ongoing prevalence of lameness in a herd is 20 per cent, a 100-cow herd may lose up to \$6,000 each year due to all the costs listed on the slide. Conversely, if a farmer invested time and some money in areas such as learning to trim the cows' feet, and providing cows with very deep bedding for several days before and after calving, this might reduce the prevalence to 10 per cent, saving the farmer up to \$3,000 each year.

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Our second example of the direct cost to the farmer when animal welfare is low concerns slaughter. In modules 16 and 25 we will look at how stress from rough handling during transport and slaughter can reduce meat quality.

- In consequence, abattoirs may lose contracts to supply meat to the retailer concerned.
- Abattoirs may therefore penalise farmers (and transporters) for problems arising from poor welfare. For example, in the USA, farmers may be charged \$20 for every fatigued pig who arrives at the abattoir.

Slide 10:

A third example is the case of draught oxen or water buffalo in Asia.

Those animals are often used for working the farmer's own land and may be rented out to other farmers. However, an important part of their financial value to the owner lies in selling the cows and calves, or selling mature animals for meat.

When animals work, this diverts energy from their growth or weight gain, or their milk production. Therefore the farmer needs to feed them more to minimise these losses, which is a cost. Moreover, if the animals do not get rest periods, and are rented out when they are not working for their owner, they use up more energy.

It is difficult to put a figure on the losses caused by overwork, as little research has been carried out on this. However, generally:

- if a farmer overworks his/her animals, or causes them pain because of poorly fitting harnesses, or does not treat and prevent health problems such as parasitism and lameness, this reduces the reproductive performance of the cows, and the milk output for their calves
- if a farmer does not supply extra feed to maximise an animal's capacity to work and to grow, he or she will not get the maximum possible price at market when selling the animals.

Slide 11:

Our fourth example of how improving livestock welfare can also increase a farm's profitability concerns mixed farms where sheep are kept outside and rotated with crops such as wheat and chickpeas. Under some systems the sheep may be allowed to become very thin, because farmers overstock the sheep and only feed them pasture and crop residues.

Farmers may operate this way because:

- they can generate cash by selling their grain rather than feeding it to the sheep
- they can keep large numbers of sheep on less pasture
- thin sheep have finer wool, which sells for more money than coarser wool.

However, research indicates that the profitability of those factors is negated by losses caused by poor animal welfare. That is:

- because the sheep are thin, they have little value at sale for meat
- very thin sheep actually produce poorer-quality wool, which can reduce the price paid by 25 per cent
- thin sheep have lower lambing rates, reduced wool yield, and higher death rates. (From a welfare point of view, they would also suffer hunger, cold, disease and malnutrition, which are non-financial costs.)

Slide 12:

This slide illustrates why farmers do not maximise their animals' welfare. Low welfare reduces farm profits and income. However, as a vet, you may find that even when you explain the economic benefits of better welfare to farmers, some may take no action to correct their animal welfare problems.

Some of the reasons for this are listed on the slide:

- First, in developing countries, animal diseases can severely affect welfare and farm profitability. Farmers may be unable to do much about this because they may have very limited income and limited access to government services that would help them to control the diseases. This problem is made worse in countries which are prone to natural disasters, or where there is recurrent human conflict, as both factors disrupt the infrastructure and resources needed to control diseases such as foot and mouth disease.
- More generally, it may be hard to quantify the cost of a particular welfare problem such as a stereotypy or even pathologies such as lameness in cows caused by solar ulcers.
- For example, the cost of lameness in a given cow depends on other factors such as whether she is already pregnant (in which case fertility is not affected and there is no cost there), and how far into her lactation she is.
- Because of those difficulties in estimating the particular costs of poor welfare, a farmer may not see much benefit in addressing the problem.
- Related to this is the fact that farmers may not recognise how much the welfare issue is affecting their animals or their finances, even though national average figures may be available. This seemed to be the case among some dairy farmers in the UK, who did not recognise the impact of lameness on milk production and their finances, and saw lameness as much less important than mastitis.
- Even when farmers do see a longer-term financial benefit to improving welfare, they may not want to make the necessary short-term investments, e.g. paying the vet for advice on biosecurity, or training staff to handle animals more gently.

- An indirect financial cost that farmers may not wish to undertake, despite the financial benefits, is time: farmers may be too busy to take time to monitor their animals for lameness, for example, even though doing so would improve the cows' welfare and increase their productivity.

Slide 13:

Here we follow on from the previous slide.

- The farmer's psychology and sense of optimism and self-belief may also affect his/her willingness to take advantage of the economic benefit of improving his/her animals' welfare. Farmers may feel too weighed down by external factors such as low market prices for milk or meat, and the state of their country's economy.
- How you communicate with your client may also play a role. For example, one Danish study found that vets thought farmers were most concerned about the economic benefits of having a dairy health plan, whereas farmers were more concerned about how that plan would fit in with their other goals for the farm and their everyday life. Consequently, although the vets' advice would help farmers to help their animals and to maximise their income, some farmers would not follow it. Talking to your client to establish his/her motivation will help you tailor your advice.
- A final financial cost that may prevent farmers from improving their animals' welfare is the capital investment required if they change their husbandry system to one that is better for animal welfare. However, research indicates that in the longer term these costs may not be significant compared to the total production cost, such as feeding animals. So, if farmers had assistance with the initial capital cost, they would soon benefit financially from increased production and, often, lower running costs than before. We shall now look at example figures.

Slide 14:

This slide shows examples from various developed countries. In countries where the cost of labour and materials might be relatively lower, the extra cost to farmers might be proportionately lower than the examples listed here.

- In the UK, changing from a traditional cage system for laying hens to free-range production outdoors was estimated in 2010 to increase the production cost per egg by 2.08 pence (~3 US¢ per egg).

This may not seem a large figure; however, it represents an approximately 33 per cent increase in production cost, which is substantial given the low profit margins of egg production.

Note more generally that with free-range systems for laying hens, there is typically increased mortality than in the cage system, and higher labour costs. Also, the market price paid to farmers and the cost of feed from month to month can vary. We can see that farmers who decide to switch systems, in any country, may run the risk of sometimes getting a reduced market price while having increased input costs.

- The next example concerns sows in the USA: there, changing from gestation stalls to group housing is estimated to add US 10¢ to every kilogram of finished pig meat. Keeping sows outdoors in the USA instead of in stalls would result in an estimated increase in production cost of ~US 17¢/kg pork.
- In Italy, supplying growing pigs with 0.35 kg of straw per pig, once a week, would increase labour costs and involve the cost of the straw. However, the total increase was estimated at only approximately 0.1 US¢ per kilogram of finished meat.

These estimates suggest that the cost to a farmer of changing to husbandry systems with better welfare potential is not always high, and may potentially be recouped through the price charged to the consumer, since many people indicate that they would prefer animals to be farmed in a way that maximises their welfare. This brings us to the second main area in which providing better welfare can increase a farmer's income; that is, the possibility of higher prices and/or more sales, because consumers feel confident that the animals' welfare was good.

Slide 15:

The first way that consumers can be assured about animal welfare is if there are relevant laws and codes of practice for farmers.

The problem here is that if the state does not support farmers in meeting these requirements, farmers may only make a minimal effort to meet them, especially if there is no inspection or enforcement. Alternatively, farmers may go out of business if the state forces them to make significant or costly changes.

A solution to this might be to use public funding to help farmers meet higher standards. For example, the Republic of Ireland launched a state-funded welfare scheme for suckler cows. You can see some of the main features of the scheme on the slide. They include:

- improving genetic traits related to welfare, e.g. bulls chosen to allow subsequent easy calving
- a minimum calving age to reduce problems with dystocia in heifers
- the weaning procedure: weaning can be very distressing for calves in the beef suckler system. The problem is largely resolved if they are weaned, e.g. by means of a humane nose clip that prevents suckling before they are finally separated from their mothers
- training farmers in animal welfare.

The scheme has resulted in improved productivity and meat quality, with a marked reduction in the occurrence of disease and the need for treatments.

Slide 16:

Another way to provide reassurance to consumers that animal welfare was good is if retailers themselves operate assurance schemes. In more and more countries consumers buy most of their food from large supermarkets. Those corporations have considerable power in the grocery market, controlling between 30–90 per cent of it in some countries.

In addition, many people eat at chain restaurants such as McDonald's. Many of these operate an audit programme to ensure welfare standards are met by farmers and slaughterhouses.

Large retailers increasingly recognise the importance of corporate ethical responsibility. Many offer assurances to customers that their food is derived from farms which protect animal welfare. However, this does not necessarily result in increased income for the farmers who meet those standards.

- Farm assurance schemes can simply be a marketing tool that retailers use in order to get customers to enter the store, where they may buy other goods. Therefore retailers may not charge customers more for welfare-friendly products, and they may not pay the farmer a premium for providing them. However, because these companies own such a large market share, supplying them may be the only way a farmer can make a living. In this way, farmers may be burdened with the substantial initial capital costs of complying with welfare requirements.
- Many farmers in low-income countries may not be able to meet the farm assurance standards of retailers such as a local McDonald's, for example because of lack of resources or knowledge of what is required, or a lack of assessors to monitor them.

You can understand from all the above why farmers may not want to invest in changing their husbandry system, even though animal welfare may be a priority for them.

Slide 17:

This slide gives examples of successful farm assurance schemes.

- The first is the Freedom Foods scheme in the UK, which was developed by the RSPCA and was one of the first such schemes.
- The second example is the Certified Humane scheme in the US, which was developed from the RSPCA scheme in the UK.
- The third example is "Ecocert Brazil". This applies the same standards as the Certified Humane programme in the United States. In Brazil, the scheme currently has over 20 million certified animals, along with distributors and restaurants. That label is coordinated by Dr. Consuelo Fernandez Pereira at the State University of Campinas (UNICAMP).
- The fourth example is Farm Assured Namibian Meat which enables beef export to EU markets, as well as farm assured supplies for the domestic market.

Slide 18:

A further point about assurances is that not all consumers are concerned about animal welfare when they are shopping for food. Clearly, if animal welfare is not a public concern, it is difficult for retailers to promote it or to pay farmers a premium for having high welfare standards.

Also, consumers in many countries expect their food to be cheap, and they may be unaware of the welfare implications of this.

This is true both in developed countries and in countries that are transitioning to 'developed' status. We saw in the FAO report earlier that intensive production is widely seen as the best way to meet the growing demand for meat and livestock products in low-income countries. If the public there are unaware or unconcerned about welfare, there may only be a small market for farmers who may wish to use more humane systems to meet the growing demand for meat, eggs, etc.

Also, international trade law means that countries cannot refuse to import products on the basis of how they are produced. That law is governed by the World Trade Organization (WTO) in Geneva. It means that local farmers who choose to follow high standards of welfare may have to compete in the domestic market with imports from farmers overseas who operate lower welfare standards.

This problem most affects local farmers whose animal products are used in processed food, e.g. dried egg and dried milk which are used to produce biscuits, cakes, ice cream, etc.

However, it also applies to any country that may import meat, egg and milk products to meet growing local demand. Module 5, on legislation, examines international trade law in more detail.

Slide 19:

You can see from all the above that there are many reasons why farmers with high welfare standards may not necessarily benefit from more sales in the domestic market, and why farmers may therefore be reluctant to adopt the higher standards.

A further problem with domestic sales is that even though some consumers may value animal welfare, they may not be willing to pay for it in the retail price. They want cheap food, but they feel that animal welfare is a public good that the state should use taxes to pay for. This view has been found in surveys carried out in several EU countries and in Chile.

To address the problems of lack of awareness and reluctance to pay, some research indicates that if advertising campaigns were launched to educate consumers about animal welfare issues, and if food was labelled accordingly in shops, more people would buy welfare-friendly products, even at a premium price.

However, research in the EU indicated that labelling can create information overload so that consumers simply ignore it. Also, some consumers mistrust labels about animal welfare that are created by farmers, supermarkets or the government.

Yet another obstacle to farmers investing money in more humane systems is that, although people may state in surveys that they value animal welfare and are willing to pay a premium for it (e.g. up to 20 per cent more), when they go shopping they may not, in fact, decide to spend their money on those more expensive foods. This gap between our reported values and our actual behaviour is well described, so we will not discuss it here.

Slide 20:

One way to overcome all these difficulties, so that better welfare standards on farms are rewarded in the domestic market, is through taxation. For example, when farmers are calculating their net profits for tax purposes, the state could give farmers a more generous capital allowance for investments related to animal welfare, e.g. the capital costs of changing from gestation stalls to group housing for sows.

Another option would be not to charge government services tax (value-added tax, or VAT) on sales of welfare-friendly foodstuffs. Therefore retailers would pay farmers a premium for higher-welfare products, and they would pass on this cost to consumers in the retail price. However, because no extra tax is being paid on those products, the total cost paid by the consumer would be unchanged.

It is harder to solve the problem of international trade law, where local farmers have to compete with cheap, low-welfare imports. Currently any possible approach, from negative labelling (e.g. 'this product is from a country that has lower animal welfare standards than we do here') to banning imports of animal products from countries with lower animal welfare standards, would infringe international trade rules.

However, it might be possible for a country to negotiate with the WTO for permission to charge a tariff on a product from a specified producer, if it was not high-welfare, rather than charging a tariff on all products from a given country that has low standards.

Note that until this legal problem has been resolved, governments may be reluctant to legislate for high welfare standards in their own countries as that would put their farmers at a disadvantage because of the cheaper, low-welfare, imports.

Before we end this lecture, we shall look briefly at how better welfare can lead to high export rates.

Slide 21:

We shall now leave domestic markets, and look at how high standards of animal welfare can increase farm income by giving access to export markets.

Those export markets arise because there is high public awareness of animal welfare in some countries, and retailers meet this demand by operating assurance schemes.

Producers from other countries may export to those markets if they meet the welfare standards required. Therefore the export market can be a good source of income for those farmers. Two examples are:

- in Namibia, Farm Assured Namibian Beef is supplied to retailers in the EU and follows strict animal welfare guidelines
- in Brazil, beef farmers sell to the European supermarket company Carrefour and follow their welfare standards.

However, that market is limited to retailers, again because international trade law prohibits countries as a whole from favouring or banning imports from other countries based on the production methods used.

For example, some countries with high welfare standards import dried egg for use in processed food. However, they cannot refuse to consider dried egg from countries with low welfare standards. So, within one of those exporting countries, an exporter would probably not pay a premium to a farmer who incurred the capital cost of producing eggs in percheries, compared to a farmer whose eggs came from hens housed in a conventional cage system.

In contrast, retailers can choose not to import products from poor welfare systems, and can ask farmers overseas to provide animal products with high welfare standards.

Slide 22:

This slide sums up what we have covered so far.

In this lecture, we have looked at the relationship between economics and animal welfare. In particular, we have examined how improving animal welfare can increase farm income, and how this 'win-win' connection is complicated by the priorities and preferences of consumers and farmers, all of whom have a finite amount of money to spend.

We first looked at how better animal welfare increases the profitability of a farm. We illustrated this with four examples of how poor welfare increases costs (slides 8–11).

We then looked at all the reasons why farmers may not take action to increase their profitability, even when they know the economic benefits that may result.

We also saw that the capital cost of improving welfare was not necessarily very high, although it a substantial initial investment could be involved.

After that, we looked at how better animal welfare can enable a farmer to meet the expectations of local consumers and so maximise sales.

We saw that farmers could meet the increased production costs associated with high standards of welfare if the state supported farmers, or if consumers paid more and bought more high-welfare products, and retailers passed on that premium to the farmer.

Again, we saw that there may be a number of obstacles, either because retailers do not pay farmers the premium, or because consumers are not concerned about animal welfare, or because consumers do not want to pay for it in the form of an increased purchase price.

We then saw that these difficulties could be overcome by adjusting the taxation system so that farmers were rewarded for the cost of higher welfare standards.

Finally, we saw that high standards of animal welfare can increase farm income by giving farmers access to export markets. However, we also saw that international trade agreements can limit that market and can create competition in the domestic market.

The positive and negative points we have discussed apply to different degrees in different countries.

- Positives: there are growing markets for foodstuffs that come from animals who have been farmed to very high standards of animal welfare, and many farmers, retailers and consumers are committed to that. We mentioned four examples of successful farm assurance schemes.
- Negatives: international trade law and a common desire for cheap processed food worldwide are creating serious impediments to the adoption of high standards of welfare. However, as policy-makers, farmers and consumers all become more aware of this we can expect that solutions will be found, even though there is a long way to go before this happens.

