Economic and social consequences of animal diseases

The consequences of animal diseases in domesticated birds and livestock can be complex and generally go well beyond the immediate effects on affected producers. World Bank livestock specialist François Le Gall discusses the economic and social effects of animal diseases.

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The most direct economic impact of animal diseases is loss of production and/or productivity, and ensuing income losses for farmers. If the farm economy is diversified or if there are other opportunities to generate income, the impacts can be mitigated. However, if the economy depends on one or some of the vulnerable products, the impacts can be serious, and local food security can be threatened. The economic impact also depends on response strategies adopted by farmers and possible market adjustments. The loss of the farmer's 'well-being' will generally be lower than the value of the lost product, except where the farmer has few alternatives or is wholly dependent on the affected product, which is quite often the case in developing countries. Direct losses are therefore the result of the disease itself (they may be very high when mortality rates are between 50 and 100%), or from animal health measures (stamping-out policies).

In Vietnam, the country most seriously affected by the avian flu, almost 44 million birds—17% of the country's poultry population—had to be destroyed at an estimated cost of US$120 million (0.3 percent of GNP). The smaller scale producers lost the least in absolute terms, but the most in relative terms, as the outbreak resulted in losses equivalent to upwards of

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50 times their daily income (from US$2 a day or less). Case studies have shown that early detection and the implementation of appropriate measures in the event of an outbreak are essential to help minimise direct losses as much as possible.

Ripple effects

The production of meat and other animal-based food items generates market access, income, jobs, and foreign exchange for all stakeholders in the animal industries. Consequently, an epizootic can affect the industry's upstream (inputs, genetic resources) and downstream activities (slaughterhouses, butchering operations, processing, marketing).

A survey by the Food and Agriculture Organisation of the United Nations (FAO) on avian flu revealed that in the most seriously affected regions of Indonesia, 20% of permanent workers at industrial or commercial farms lost their jobs.

Similarly, an outbreak of contagious bovine pleuropneumonia in Botswana led to the destruction of more than 300,000 animals in the most seriously affected province, and the immediate closure of the export slaughterhouse, which employed 200 people. Owing to the catalyst role of livestock raising in the rural economy as a whole, the costs of the indirect effects of these measures were later estimated to be seven times higher than the costs caused by direct losses.

In Vietnam, 60% of the poorest segment of the population, for which poultry farming accounts for 6-7% of household income, is particularly vulnerable to income losses caused by avian flu.

The FAO and World Organisation for Animal Health (OIE) estimate that between one-third and one-half of the populations living in the most seriously affected areas of Southeast Asia depend on poultry farming for at least a part of their income. In France, the leading European poultry producer, it is estimated that farmers affected by the crisis lost 40% of their income in three months (between January and March 2006).

Price variations

The effects of the production losses are also linked to price variations, which are caused by supply and demand (im)balances. Depending on the market, prices can rise sharply (consumer product on the domestic market) or plummet (product banned for export but cleared for consumption on the domestic market, product deemed too dangerous for human consumption or perceived as such). In Brazil, where 30% of products are exported, the price of a day-old chick, an early indicator of a possible change in production, reportedly fell by 50% due to bird flu problems in other coutnries. And even in cases where the country is not infected, market uncertainties and the fall in prices prompted the largest producers to cut back production by 15% this year.

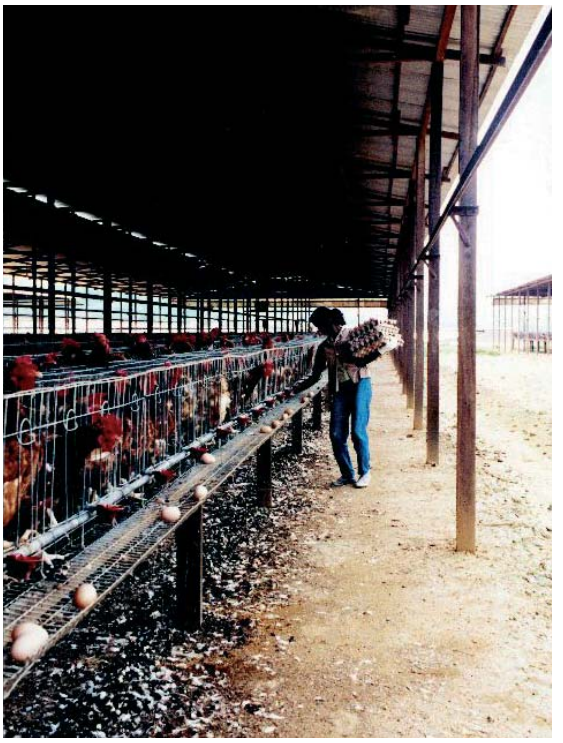
Loss of access to, or the opportunity to access, regional and international markets generally have more significant economic implications than just production losses. In 1997/1998, the Rift Valley fever outbreaks in East Africa seriously affected pastoral economies in Somalia, with a decline of more than 75% in exports (which generate more than 90% of foreign exchange in 'Somali land'), following an embargo declared by Saudi Arabia on all animal products from the Horn of Africa.

Conversely, the eradication of certain major diseases to facilitate access to 'high value' export markets can provide considerable benefits. Uruguay is a good example of a country that gained access to a lucrative market after eradicating foot and mouth disease. Beef exports more than doubled in volume and increased in value by 52% after the OIE declared Uruguay to be officially FMD-free without vaccination in 1996. Access to the US market (where prices are double those of the domestic market) provides Uruguay with additional revenue to the tune of $20 million each year. A medium-term analysis showed that access to 'Pacific Rim' markets would generate additional revenue of $90 million each year, and yet, before the disease was eradicated, Uruguay had been spending (only) $8 to $9 million each year on vaccines to combat foot and mouth disease. In this case, control costs would account for less than 10% of the revenue generated by exports alone.

The poultry feed sector in Europe, which has a turnover of $42 billion, has been affected by the avian flu crisis, with a 40% reduction in demand for poultry products in a number of European Union countries.

Spillover effects

Animal diseases can have major effects on food availability and quality for poor communities. For pastoral societies, animal husbandry contributes directly and indirectly to food security and to nutrition as a source of quality proteins, vitamins and trace elements, traction, and commercially tradable products. Certain diseases could have significant repercussions on food supply and the nutrition of poor communities that do not have readily available substitute products,



Animal diseases can have major effects on food availability and quality for poor communities. (Photo: World Poultry)

which could therefore lead to famine (e.g. rinderpest).

Poultry meat is the primary animal protein in Africa (which has little to begin with) and the indispensable source of discretionary income for the survival of millions of small farmers. The high mortality rates as a result of avian flu, which is extremely pathogenic, and the sanitary slaughter of poultry would therefore have a negative impact on the food available to the entire population, as well as on rural revenue.

But zoonoses also affect industrialised countries with high health standards as was the case with the BSE crisis in Europe. Food borne diseases (over 200 have been classified) are a major source of acute gastroenteritis (which costs the Netherlands annually $27 million) and the cause of major morbidity with fatalities among children in the Third World.

Individual strategies

Another category of economic impact is linked to individual strategies to avoid contamination—or to survive possible contamination. The example of the severe acute respiratory syndrome (SARS) clearly shows the sharp drop in demand in the services sector (tourism, public transport, retail trade, hospitality and food services) resulting from the combined efforts of individuals to avoid any close contact. Based on the experience with SARS in South-East Asia, the World Bank thinks that an avian flu pandemic could result in a 2% loss of the world's gross domestic product and cost the world economy $800 billion in the space of one year.

The impact of animal diseases on the tourism and leisure sectors could also be quite significant. The negative effect of FMD in the United Kingdom on these two sectors amounted to $49 billion because of restrictions on access to rural areas and represented more than half of the total cost of the disease.

The effects on the environment must also be taken into account when wildlife is threatened, or in cases where the combating measures themselves have negative effects on the environment (such as, use of pesticides in the fight against vectors and in case of contaminated waste).

Long term effects

It is difficult to calculate the cost of the public's loss of confidence in animal industries in their countries, or of an importer country towards the Veterinary Services of the exporter country. Consumers' obsessive fear of BSE – fed by the media and which a good communication strategy could have prevented – would have tremendous social repercussions on a Europe still reeling from long term economic repercussions. In Italy, the baseless perception of a food risk related to avian flu coupled with low confidence in public health services eventually resulted in a 70% reduction in the consumption of poultry and eggs.

The loss of confidence by an importer country can trigger a lasting embargo and major economic and social repercussions (Arabian Peninsula embargo on the Horn of Africa, affected by the Rift Valley fever virus). Loss of access to, or the opportunity to access, regional and international markets generally have more significant economic implications than just production losses.

Animal diseases might also have indirect long term impacts, affecting deferred productivity. This is the case for example of the reduction in the fertility rate of long-cycle species, the effects of which span periods of 10 to 20 years.

Short term thinking

In short, the long term costs of a slow response are rarely taken into account. Economic analyses focus primarily on the effects of the outbreaks and rarely

take into account the long term effects of an endemic situation (characterised by less virulent outbreaks which recur for several years). This is the case of classic swine fever in Haiti where recurrent outbreaks reduced the usage rate by 10%, which for pig farmers meant a loss of revenue of $2.7 million per year.

With major crisis, long-term impacts would make themselves felt, since the additional costs of financing prevention and control measures would lead to an equivalent reduction in savings and investments.

Remote effects

Assessing the global impact of an animal disease on international markets would warrant a framework of analysis which would connect markets in spatial terms as well as by products. For example, the analysis of the global impact of the avian flu crisis in Europe is complicated by recent outbreaks of FMD in Brazil, the largest global exporter of beef and poultry. It is therefore easy to imagine what the combination of these two events would mean in terms of the upward push of prices of all meats, similar to what occurred in 2004 with North American beef and BSE. The EU, a net importer of beef, especially from Brazil, would see an increase in the price of beef in its internal markets stemming from the embargo imposed on Brazilian beef because of FMD.

It must be pointed out that the crises could have a cumulative impact, particularly since they are amplified by the effects of globalisation The following example therefore illustrates the ripple, spillover and remote effects: in the United States, where 62% of oilseed and cereal production is geared towards animal production. An epizootic which reduces animal production by 10% would have the immediate consequence of the loss of 418,000 jobs, a surplus of 18.4 million tonnes in cereals and oilseed products, a 10% reduction in world trade and, crises in other producing countries. The highly pathogenic avian influenza is the perfect example of an animal disease with the capacity to generate all the aforementioned impacts. ●