

**ASSESSING PUBLIC PROGRAMMES FOR CONTROL OF ANIMAL DISEASES
IN DEVELOPING COUNTRIES: GENERAL ECONOMIC ISSUES WITH THAI
EXAMPLES**

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While animal diseases give rise to considerable economic losses and risks in most countries, the relative economic loss seems to be most serious in developing countries. This raises the question of whether an economic improvement can be brought about in developing countries by their governments, either on their own or with foreign aid, intervening in the control of such diseases. Assessing this question requires account to be taken of the rationale for government intervention, the nature of public and private decision-making about the control of animal diseases, and the role for cost-benefit analysis. A new research project to be funded by the Australian Centre for International Agricultural Research (ACIAR) will help to address such issues concentrating on six animal diseases in Thailand. Let us consider some of the general economic issues concerned in this project.

ECONOMIC RATIONALE FOR GOVERNMENT INTERVENTION IN CONTROL OF ANIMAL DISEASES

Only if the net economic benefit from government intervention in the control of animal diseases is positive can this intervention be justified from an economic viewpoint. In estimating these benefits, all relevant costs must be deducted from gross benefits. Relevant costs not only include the direct costs of the control measures, such as vaccination, drenching or other dosing costs, but also the costs of the government agency or agencies in managing the intervention, plus both explicit and implicit costs imposed on owners of livestock or others dealing with them. Implicit costs may involve the costs of mandatory mustering of livestock, restrictions on livestock movements, time lost by carriers due to required certification and health checks on livestock in transit.

In western countries, economists usually regard government intervention in the economy as a last recourse to be considered only when there is some form of market failure, for example if markets fail to promote economic efficiency (that is to maximise production and economic benefits from the resources employed in the economy) or to ensure a desirable distribution of income. Both of these factors can provide grounds for government intervention in the control of animal diseases. This is actually true in market economies as well as in subsistence or semi-subsistence economies, the latter being relatively common in most developing countries.

Economic efficiency (in the sense mentioned above) may be impeded in a country by the presence of favourable or unfavourable externalities or spillovers. These are very important in relation to the control of many animal diseases. For example, the adoption of measures to prevent disease in livestock by one livestock-holder or a group (e.g. vaccination of their cattle against foot-and-mouth disease) reduces the risks of the spread and occurrence of disease in the livestock of other holders. Consequently, a favourable externality exists in relation to such preventative measures, and the social benefits obtained by their adoption exceeds the benefits obtained privately. As a rule, individuals and small groups will not take into account spillover benefits in making their decisions about control of animal diseases, and so preventative measures will be undersupplied from a social or national point of view. Furthermore, action to prevent spread of contagious diseases is likely to be undersupplied, e.g., owners may dispose of cattle in early stages of a disease, so spreading the disease to the livestock of an unsuspecting purchaser, sometimes far distant from

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the original outbreak of an animal disease. Such circumstances can also justify government intervention, e.g., controls on movement of livestock from high risk areas for the presence of a disease to a low risk one.

Government intervention may also be justified on economic grounds when there is information failure. This can arise in relation to some forms of research and development (R & D), dissemination of information about preventative measures, diagnosis and treatment, as well as the ability to diagnose diseases when they are present. Up to a point, such factors can support government intervention in the control of animal diseases from an economic viewpoint, e.g. to support R & D, to provide extension services, and to supply veterinarians and specialist facilities to identify animal diseases.

It should also be noted that income distribution grounds may provide a rationale for government measures to improve animal health. In many developing countries, it is often the poorest rural communities which show a relatively high degree of dependence on livestock for their livelihood, e.g., the northwest region of Thailand.

OPTIMALITY, COST-BENEFIT ANALYSIS AND CONTROL OF ANIMAL DISEASES

Any system for government intervention in animal disease control must take into account the motivation and behaviour of livestock-holders in husbanding their livestock, because this will influence the effect of government intervention. Motivations and behaviour in village-based societies may differ from that in essentially market-based economies. Furthermore, account must be taken of the nature of the organisation of the public body (ies) responsible for the intervention and limits to the perfectibility of this organisation. Limits to this perfectibility are likely to vary from society to society, and may vary with the stage of economic development achieved by a country and with its cultural background. Consequently, methods of government intervention that may be very successful in 'advanced' market economies may not be capable of successful application in developing countries or may only be applicable with a great deal of modification. So the type of optimising models often used for modelling economic behaviour may require considerable modification in the context of developing countries. Nevertheless, there may still be a role for cost-benefit analysis (CBA), that is both private cost-benefit analysis and social cost-benefit analysis.

In this context, private cost-benefit analysis is concerned with net economic benefits obtained by livestock holders of adopting alternative strategies to control different animal diseases. Often these are not well known and so information failure occurs. Even if stockholders wish to maximise their private net benefit, they may be ignorant about how to do it. The government may undertake research and disseminate information to assist in this respect.

Social cost-benefit analysis takes account not only of net private benefits but also externality benefits, so it does as a rule exceed private net benefits as far as disease control is concerned.

While farm or village based evidence can be used to estimate the net economic benefits of controlling and eliminating an animal disease, mere aggregation or summation of the results may underestimate the benefits as far as the nation is concerned, because favourable externalities may not be fully accounted for. Furthermore, the elimination or containment of an animal disease may open up new export markets for a country, thereby increasing the economic value of a country's livestock. Thailand, for example, by eliminating foot-and-mouth disease (FMD) or containing it in restricted zones, could increase its meat exports. The economic value of this is unlikely to be picked up by farm-level or village surveys. A further aspect that one must be aware of is that most CBA is historical in character - it depicts the situation as it is or was recently. However, the actual situation is dynamic. Not only does the economic benefit of controlling a disease vary with 'natural' changes in its prevalence, but also with changing socio-economic conditions and the structure of the livestock industry. Government policy therefore must be designed to take such trends into account. In Thailand, for example, the size of the commercial livestock sector compared to the semi-subsistence sector is increasing, and so is off-farm employment. This which can have consequences for the net benefit of controlling different types of animal diseases.

AN ACIAR THAI-AUSTRALIAN PROJECT

Some of the above issues will be studied in the economics component of an ACIAR-funded research project, 'Animal Health in Thailand and Australia - Improved Methods in Diagnosis, Epidemiology, Economics and Information Management'. Dr. F.C. Baldock, Queensland Department of Primary Industries is the project leader in Australia for the overall project and Dr. P. Chamnanpood, Department of Livestock Development is the project leader in Thailand. Professor C. Tisdell and Dr. S. Harrison of Queensland University will be responsible for the economics component. The following diseases in relation to the livestock indicated will be given particular attention: FMD, gastrointestinal parasitism (cattle/buffalo); hog cholera, Aujeszky's disease (pigs); Newcastle disease and infectious bursal disease (poultry). Some effort will be made to assess the comparative economic benefits of controlling these diseases, and within reason, how these compare with the benefits of control of other animal diseases.