THE USE OF ECONOMIC ANALYSIS TO DEFINE ANIMAL HEALTH POLICIES

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Summary: Animal diseases have obvious and direct impact on production. However, there are also less obvious indirect socio-economic effects. These are not easy to measure, but it is important that they be taken into account when making decisions on animal disease control policy. A questionnaire-based survey was distributed to 162 OIE Member Countries to assess the present usage and future needs in relation to animal health economics. All of the 124 responding countries indicated a keen interest in the subject, and an overwhelming majority reported that they needed more economic analysis to support animal disease control decision-making. Most countries would find it helpful to have access to the unpublished results of economic analyses in other countries. There was also strong demand for support in using economic analysis through regional workshops and the preparation of a guide to conducting economic analysis of animal diseases.

1. INTRODUCTION

In this report, economic impact is taken to include all effects, some of which can be measured in monetary terms (e.g. production or trade losses) and others which cannot (e.g. human suffering or food security). Economic, as opposed to financial, analysis should consider all costs and benefits, whether or not market prices can be assigned to them. The objective of economic analysis is to guide decision-making on behalf of society as a whole. Nevertheless, financial analysis is an important component of economic analysis of animal diseases, as it indicates the financial motivation of animal owners in making decisions on animal disease control. Even if animal disease control is beneficial to society as a whole, animal owners will be unwilling to incur financial losses to benefit other people.

Animal diseases cause economic loss, both directly and indirectly. Direct losses include animal deaths and loss of production. Indirect losses include the costs of controlling and preventing disease. Thus, an animal disease can have economic impact even where it is not present, if preventive measures are required to exclude it.

Economic analysis can be used to determine whether it is justified to make investments in controlling animal diseases, and also to compare the cost-efficiency of alternative strategies to control a particular disease. The use of economic analysis techniques in animal disease control has become more frequent over the last thirty years, but most of the results remain in the ‘grey’ literature of unpublished government and international agency reports. In the experience of the author, most evaluations show very high economic benefit-cost ratios for investment in the control of OIE List A and B diseases where this is technically feasible. The proviso is important, because many countries lack an effective and sustainable means of implementing national disease control programmes. However, in recent years, it has become increasingly common to augment the government veterinary services with resources from non-governmental organisations and the private sector. A further constraint on the control of epidemic diseases (principally the List A diseases) is faced by countries which have long and ‘porous’ land borders. But in these cases international co-ordination has been very successful in achieving control, if not eradication. Examples include programmes against foot and mouth disease in South America, and rinderpest in Africa and Asia.
A recent review of the economics of foot and mouth disease (James and Rushton, 2003) found that all studies reviewed concluded that some degree of control would produce positive economic returns. Where eradication was feasible it was generally the most economic policy, as it saved the long-term costs of vaccination. However, where eradication was not contemplated, long-term vaccination strategies still produced positive economic returns. In the experience of the author (e.g. James and Ellis, 1978) vaccination in low-input low-output systems can also produce positive economic returns, as well as improving the protection of higher-producing stock in the same area. There is little doubt that more investment in the control of List A diseases would be economically justified, even more so when factors such as the security of livelihoods and food supplies are taken into account. It is no coincidence that the poorest countries tend to be most affected by the List A diseases, because they lack the resources to make what would be very beneficial investments in disease control.

From an international perspective, this situation represents an economic threat to the whole world. The costs of the 2001 foot-and-mouth disease outbreak in the United Kingdom were estimated at more than US$ 12 billion (Anderson, 2002). Moreover, the world-wide costs incurred in preventing introduction of exotic diseases are enormous but uncounted. In addition to the direct costs of prevention, the distortion to international markets and trade in animal products causes huge economic loss to would-be importers, as well as exporters.

Numerous unpublished economic analyses undertaken by the author have identified large cost-savings that can be made by adjustments to the strategy for on-going disease control programmes. This indicates that for many countries, more investment in economic analysis of disease control programmes would itself produce positive economic returns by improving the cost-effectiveness of investment in disease control.

The objectives of this report were to assess: the extent to which economic analysis is used to guide decision-making in animal disease policy; the level of interest in veterinary services in making more use of economic analysis; and how the wider use of economic analysis of animal disease could be facilitated.

A questionnaire was developed and sent to the 162 OIE Member Countries. There were 125 replies from: Afghanistan, Algeria, Andorra, Angola, Australia, Austria, Azerbaijan, Bahrain, Barbados, Belarus, Belgium, Benin, Bolivia, Bosnia & Herzegovina, Brazil, Bulgaria, Burkina Faso, Canada, Central African Republic, Chad, Chile, Colombia, Congo, Costa Rica, Cote d'Ivoire, Croatia, Cuba, Cyprus, Czech Republic, Denmark, Dominican Republic, Ecuador, Egypt, El Salvador, Eritrea, Estonia, Ethiopia, Finland, France, Germany, Ghana, Greece, Guatemala, Guyana, Honduras, Iceland, India, Indonesia, Israel, Italy, Japan, Jordan, Kenya, Kyrgyzstan, Kuwait, Latvia, Lebanon, Lesotho, Lithuania, Luxembourg, Macedonia, Madagascar, Malawi, Malaysia, Mali, Malta, Mauritius, Mexico, Mongolia, Morocco, Mozambique, Myanmar, Namibia, Nepal, New Caledonia, New Zealand, Nicaragua, Nigeria, Norway, Oman, Pakistan, Panama, Paraguay, Peru, Philippines, Poland, Portugal, Qatar, Romania, Russia, Sao Tome et Principe, Senegal, Singapore, Slovakia, Slovenia, Somalia, South Africa, Spain, Sri Lanka, Sudan, Surinam, Swaziland, Sweden, Switzerland, Syria, Taipei China, Tanzania, Thailand, The Netherlands, Togo, Trinidad & Tobago, Tunisia, Turkey, Ukraine, United Kingdom, United States of America, Uruguay, Uzbekistan, Vanuatu, Venezuela, Vietnam, Yemen, Zambia and Zimbabwe. One reply was incomplete and did not indicate the country of origin.

2. RESPONSES TO THE QUESTIONNAIRE

Q1. Does your country conduct economic analysis of the impact of animal diseases?

The majority of countries (59%) reported that they conduct economic analysis of the impact of animal diseases occasionally. Other responses were: routinely for all important diseases (9%), frequently (11%) and never (21%).

Q2. When economic analysis of the impact of animal diseases has been conducted, have you been satisfied with the quality of the research and the correctness of the results?

The responses were generally satisfied (41%), generally dissatisfied (2%), variable (30%) and not applicable (27%). This suggests that the veterinary services in many countries do not simply accept the results of economic analysis, and may question the basis of the work. This is understandable, as the results of economic analysis of the impact of animal disease are usually very sensitive to the underlying assumptions, especially those concerning the effect of control measures on disease incidence.
Q3. When economic analysis of the impact of animal diseases has been conducted, which, if any, of the following “difficult” issues have not been adequately covered in your opinion?

The responses to this question are taken to reflect the issues of greatest concern to veterinary services which they feel receive insufficient attention in decision-making on disease control. Of the respondents, 73% considered that sufficient analyses were available to form an opinion. The issues cited, in order of frequency, were: human impact (56%), environmental impact (56%), animal welfare (48%), potential cost of exotic and emergent diseases (41%) and impact on export trade (36%). These responses reflect a strong awareness of issues that have not traditionally been prime concerns of veterinary services.

Q4. Do you consider that adequate use is made of economic analysis in animal disease control decision-making in your country?

Economic analysis can assist animal disease control decision-making at various levels. It may be used in allocating resources to veterinary services in general, in dividing resources between different disease control priorities, and in improving the cost-effectiveness of individual disease control programmes. Countries were asked to indicate whether they considered the use of economic analysis at each level to be inadequate, adequate or over-used. No country considered economic analysis to be over-used at any level. The percentages that considered use of economic analysis to be inadequate were: allocating resources to veterinary services in general (67%); dividing resources between different disease control priorities (67%); and improving the cost-effectiveness of individual disease control programmes (68%). The overall uniformity of these responses conceals considerable variation between respondents’ assessments at each of the three levels. Only 16% of countries considered that adequate use is made of economic analysis at all three levels.

Q5. In your opinion, what economic criterion should be used in prioritising disease control programmes?

The purpose of this question was to assess the alignment of veterinary services with standard economic theory, which would give priority to disease control programmes that returned the highest economic value in relation to the economic investment, i.e. those programmes that produce the highest economic benefit-cost ratio. The alternative criteria offered were to give priority to the control of diseases which have the greatest economic impact, or those with the greatest potential economic impact. However, these diseases may be very expensive to control, to the point that the benefits of controlling them do not justify the investment. Other exotic diseases may have massive potential economic impact, but the risk of them being introduced may be slight. Benefit-cost analysis would seek to compare the costs and expected benefits of different disease control activities, and identify those programmes producing the best returns from the finite resources available for disease control. Only 21% of respondents selected the “correct” criterion, which suggests that there could exist some communications problems between veterinary services and economists, especially those not specialised in animal health economics. Several respondents commented at other points in the questionnaire on the importance of including animal health economics as a component in veterinary curricula.

Q6. With or without formal analysis, to what extent do you consider that political decisions on animal disease control in your country are based on socio-economic criteria?

The 121 responses to this question were: absolutely (4%), mainly (36%), to some extent (53%) and not at all (7%). This indicates that the overwhelming majority of veterinary services believe that economic factors play at least some part in political decisions on animal disease control. It is also clear that many of them recognise that other factors also have some bearing.

Q7. If more socio-economic analyses of animal disease impact were available in your country, do you consider that economic criteria would play a more important part in political decision-making?

Of 122 responses to this question, 93% were “yes”, suggesting that lack of information on economic factors is an important constraint to political decision-making in animal disease control.

Q8. Do you wish to see more socio-economic analysis of the impact of animal disease in your country?

Only three of 122 respondents indicated that they would not wish to see more economic analysis of the impact of animal disease in their countries. This means that some of the 20 respondents who considered the use of economic analysis to be adequate at all levels nevertheless believe that more would be beneficial. Respondents were also asked to indicate which animal diseases would be priorities for economic analysis. A remarkable
number of diseases were cited, with no discernible patterns. This suggests that respondents want guidance in decision-making, or more evidence to justify their decisions, on many animal diseases.
Q9. Would you wish to see more socio-economic analysis of the impact of animal disease in your country, even if it had to be funded from the existing budget of veterinary services?

Of 122 respondents, 101 (83%) indicated that they would be prepared to re-assign part of their existing budget from disease control operations to economic analysis. This suggests that they consider that with improved decision-making, the funds remaining for disease control would produce greater benefits. A number of those who indicated that they would not wish to divert budgetary resources to economic analysis noted that this was only because their existing budgets were so inadequate. This enthusiasm for economic analysis is surprising, but it does raise the question as to why more veterinary services have not already diverted resources to economic analysis.

Possible explanations could be external pressure to be seen implementing as many disease control programmes as possible, or a lack of available expertise to undertake economic analysis.

Q10. Are the results of economic analysis of the impact of animal diseases in your country made available to the public?

Of 94 respondents who indicated that analyses were available, 11% indicated that the results were always made available to the public, 24% usually, 57% occasionally and 7% never. Few countries appear to have a policy of keeping economic analyses of animal diseases confidential, but the reports are rarely published in a form where they could be found in literature searches. This is a problem for those designing new research into the economics of animal disease, because it is difficult for them to benefit from the results of, and experience gained in, earlier work.

Q11. Are the results of economic analysis of the impact of animal diseases in your country used to influence private veterinarians and their clients through media articles and other extension materials?

Of the 94 respondents who indicated that analyses were available, 3% indicated that the results were always used in extension, 23% usually, 59% occasionally and 15% never. These results are similar to those of the previous question. It might have been expected that some economic analyses would not have produced results suitable for extension materials, for example analysis of the epidemic diseases. However, this appears not to be the case.

Q12. Who undertakes socio-economic analysis of the impact of animal disease in your country? (More than one option may be selected).

Ninety-one respondents gave information on this question. The results were: economists within the veterinary services (54%), economists assigned from other government departments (29%), other institutions (65%) and private sector consultants (33%). A number of respondents recorded a preference for using economists with an understanding of the issues in disease control, preferably working within veterinary services. Private sector consultants were favoured by some respondents, but they are seen as more costly than government staff.

Q13. Would you find it helpful to have access to unpublished socio-economic analyses of animal disease impact in countries other than your own?

Of 123 respondents who answered this question, 117 (95%) indicated that they would find access to unpublished socio-economic analyses of animal disease impact in countries other than their own helpful. This is a problem in animal health economics because, although most reports are not confidential, they tend not to be published. Therefore economists in one country are often unaware of work that has been completed in other countries. While the results of economic analysis conducted in one country may not be directly relevant to other countries, the methodology may well be much more widely applicable.

Q14. How might the OIE encourage the more extensive and effective use of socio-economic analysis of animal disease impact?

The possible means of encouragement offered were: regional workshops (85%), producing guidelines for socio-economic analysis of animal disease impact (90%), maintaining an indexed register of analyses undertaken by member countries (49%) and providing a list of relevant experts (45%). Respondents were also asked to suggest additional means of encouragement. Several pointed out the need for training in animal health economics for all veterinarians. A number of respondents stated the need for external assistance in financing economic analysis. The relatively low support for maintaining an indexed register of analyses undertaken by member countries is
surprising, in view of the response to question 13. It seems that such a register would be the only means of informing member countries of the existence of unpublished reports.

3. DISCUSSION

The results of the questionnaire survey reveal a very strong interest in animal health economics. The veterinary services do not appear to accept the results of economic analysis of animal disease uncritically, and there is widespread concern that some aspects of the impact of animal disease are not given sufficient attention.

The majority of respondents considered that there was insufficient use of economic analysis at each of the three potential levels of application. Only a very small minority reported the use at all three levels to be adequate. No respondent felt that there was any over-use of economic analysis.

An overwhelming majority stated that they would wish to see greater use of economic analysis of animal diseases in their countries, and 83% would still hold this view, even if the costs had to be met from the existing budget of the veterinary services.

Ninety-three percent of respondents considered that economic factors played some part in political decision-making on animal disease programmes, and the same percentage considered that this would be increased if more economic analysis were available. Thus, very strong support was expressed for the wider use of economic analysis, and a belief that the results would play an important part in political decision-making.

There is a widely-held view that veterinarians should be better informed of methodologies in animal health economics, not only to conduct economic analysis themselves, but also to be more effective in ensuring that economists are properly briefed on the issues to be included in their analyses. This potential communication problem between veterinarians and economists was underlined by the low percentage of veterinary services respondents who selected the benefit-cost ratio criterion that economists would expect to use.

The proposals that the OIE might promote wider use of economic analysis of animal diseases through organising regional workshops and producing guidelines on animal health economics received almost unanimous support. The maintenance of indexed registers of published and unpublished reports and lists of relevant experts were less strongly supported.

Overall the responses show a very high level of interest in, and a wish to make greater use of, economic analysis of the impact of animal diseases.

REFERENCES

