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Controlling Avian Flu and Protecting People's Livelihoods in the Mekong Region

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Economics of Avian Flu Policy

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Key Findings

- Policies for HPAI risk reduction should provide incentives for improving monitoring effectiveness, disease reporting, and investment in risk-reducing production and market infrastructure.
- An essential part of an HPAI pandemic prevention policy is the introduction of mechanisms that reduce human-bird interaction.
- Given the pandemic potential of HPAI, the global community should invest in HPAI control in affected countries, but part of the investment should be decoupled from the poultry sector.

'Avian Flu', particularly the highly pathogenic type (HPAI), is the cause of two major problems: loss of birds and, more important, risk to humans. An economic framework for public policy design will aim to minimize the total expected costs of lost livestock, risk to people, and prevention, control and treatment of the disease in poultry and humans. The cost of lost livestock includes both costs to farmers and welfare losses to consumers.

Policy design needs to be aware of epidemiological processes that govern the risk of disease spread both among livestock and to people, and should consider alternative approaches to manage the risks, while taking into account uncertainties about behavioural responses and biological processes.

It is important to distinguish between actions to control HPAI and the policies leading to them. Actions can target infection both in animals and humans, including: (1) disease prevention activities like on-farm and market bio-security practices, vaccination, and control of wildlife disease reservoirs, (2) monitoring and information gathering activities, and (3) disease control activities, such as culling infected and exposed flocks, ring vaccination, and quarantines, as well as medical treatment and other public policy measures for avian influenza in humans. Policy instruments include incentives like subsidies (for example in the form of compensation payments) or fines, investment in infrastructure, and direct command and control activities.

Information and Choices

The appropriate choice of action depends on the reliability and costs of alternatives, with monitoring activities being the most important category. If infected animals could be identified instantaneously they could be eliminated on the spot, preventing losses even in the remainder of the same flock. In reality there is a significant delay in detection and reporting infected animals. This 'information gap' leads to control policies where flocks are culled on grounds of potential exposure. The optimal radius for culling would be determined by equating the expected incremental benefit from risk reduction with the cost of lost livestock[1]. This suggests a significant gain from technologies and institutional capacity building that expedite detection of infection. Conversely, the value of preventive and bio-security activities increases when monitoring capacity is weak. Furthermore, as the value of livestock at risk increases, culling activities will be more selective and investments in prevention and in improving monitoring technologies will increase.

In the past, there has been heavy reliance on extensive culling of birds, and even efforts to eliminate smallholder poultry operations in some countries in the Mekong region. To some extent, these policies reflect the presumption that traditional smallholder poultry flocks are of low value and investment in monitoring capacity and prevention to preserve this facet of the poultry sector are not worthwhile. However, in the Mekong region, and elsewhere, consumers are willing to pay a significant premium for traditional poultry varieties (over industrial poultry). Furthermore, these traditional poultry varieties are in some cases luxury goods in the sense that their consumption increases with income. This is similar to the higher willingness to pay for free-range poultry in developed countries.

Recognition of the higher value of traditional poultry varieties justifies policies that will emphasize prevention and other alternatives to culling programmes. One non-standard solution, based on the empirical observation that there is significant willingness-to-pay for 'safe' chicken, is to establish supply chains for certified healthy chicken of traditional varieties that will capture the extra premium for both characteristics – safety and chicken variety. To establish such a supply chain, it is essential to implement 'best practices' at the producer level that will reduce the risk of infection for all major diseases (not just HPAI) and, through intensive monitoring, traceability, and appropriate incentives, strive to eliminate the likelihood of selling infected animals.

Carrots and Sticks

An efficient incentive for farmers to stringently monitor their poultry and report suspect infections to animal health authorities is to impose a penalty for non-reporting that is equal to the expected social cost of non-reporting. Since disease detection and traceability are imperfect, the penalty may need to be adjusted in inverse proportion to the probability of detection by authorities. Such a penalty system is likely to be difficult to implement, so

[1] Of course, valuation of the costs and benefits is another challenge for researchers and policymakers.

policymakers might instead opt to introduce a system of payments to farmers for disease control measures. Intuitively, the payment for culling an infected chicken should be equal to the resulting social benefit. However, our research suggests that such a level of payment would be counterproductive because it leads to underinvestment in disease prevention and overproduction of chickens. The difficulties in assessing the social gains from culling may lead policymakers to make compensation contingent on the market price, but this (low) level of compensation may need to be augmented by a penalty for non-reporting of possibly infected poultry.

Since much of the benefit from reducing the risk of HPAI accrues to people outside the affected region, and even other continents, which would be affected by a human pandemic, these constituencies should subsidize the costs of 'extra care' taken by affected countries. However, while some of these subsidies should be used to compensate poultry keepers and other actors in the poultry sector for revenue losses, others should be decoupled from the poultry sector and allocated to infrastructure investment, strengthening of social services, and further activities that enhance the general wellbeing of farmers but do not distort incentives for disease control.

Efficient policies to control the spread of HPAI and similar diseases will target activities with the highest payoffs first, by focusing efforts on the most vulnerable link in the supply chain. A primary determinant of disease spread are inter-flock linkages (e.g. chicks, market confluence, and shared equipment), which makes this a high priority for enhanced traceability and monitoring. Moreover, high consumer willingness to pay for traditional chicken clearly suggests that improved safety in these supply chains would have a lower downstream social cost than simply closing markets or banning trade.

Establishing effective marketing chains that will combine sustainable development for smallholder producers with improved food safety requires public/private partnerships. On the private side, willingness to pay for improved product quality can finance part of these improvements, along lines well established by agro-food producer and marketing cooperatives in OECD economies. On the public side, domestic governments and foreign donors can more effectively target their assistance by recognizing the importance of (dis-) incentives and information failures as determinants of HPAI risk.

Averting a Pandemic

Control of disease transmission among and between flocks is only part of HPAI risk reduction policy. A more serious challenge is control of transmission to, and ultimately, between, humans. Transmission of animal disease to humans is either a food safety issue or an occupational safety issue, depending on the biological transmission mechanisms. In the case of Avian Flu, transmission is dependent on contact with infected animals, making it primarily an occupational safety issue. Exposure may occur for poultry farm workers, butchers and handlers, as well as people living in poultry-rearing households. In the Greater Mekong Sub-region, close and continuous proximity between humans and livestock in smallholder production makes these people vulnerable, but workers in larger production and handling facilities may be exposed to substantially higher numbers of birds. Thus, an essential part of

an HPAI pandemic prevention policy is introducing mechanisms to reduce human-bird interaction. These may include requiring and/or subsidizing segregation of human and animal quarters, basic hygienic worker safety procedures (which can generally be implemented at low cost), and public health monitoring and rapid response mechanisms that may include hospital screening/treatment, reporting systems, and possibly quarantine. Because human immunity generally and aversion of a pandemic in particular is a public good, larger constituencies should contribute financial support for implementation. These would certainly include domestic populations (taxpayers), rural and urban, but should also include the global public health community.

Conclusion

Public policy should aim to reduce direct and indirect losses and risks from HPAI, using basic insights from biology and economics to do so in a cost-effective and equitable manner. Moreover, recognizing that inadequate information is a primary constraint on effective disease control, research and investment to enhance monitoring/surveillance efficiency is a major priority. Establishing certified supply chains that provide safe, traditional chicken varieties is an incentive based strategy for disease control. It is preferable to avoid excessive subsidies for monitoring and culling, and instead, penalize the sale of sick animals, combined with decoupled subsidies that improve infrastructure and farmers' wellbeing. Other elements of an effective HPAI control policy include investments to reduce the risk of between-flock disease transmission arising from market transactions, as well as improved mechanisms to reduce human exposure and human-to-human transmission potential.

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