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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

- 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.
- Policies should improve monitoring effectiveness, incentives for reporting and safety, and investment in disease risk-reducing market and production infrastructure.

'Avian Flu' (AI), particularly the highly pathogenic types (HPAI), is the cause of two major problems: loss of birds and risk to people. An economic framework for public policy design will aim to minimize the combined 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 lost by consumers. The policy design should account for the epidemiological processes that govern the risk of disease spread both among livestock and to people, and considers alternative approaches to manage the risks, given uncertainty about behavioral 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, like culling infected and exposed flocks, ring vaccination, and quarantines, as well as medical treatment and other public policy measures for AI in humans. Policies include incentives like subsidies (e.g. 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 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. The reality today is there is a significant delay in detection and reporting infected animals. This "information gap" leads to policies where potentially exposed flocks are culled. An optimal radius for culling would be determined by equating the expected incremental gain from risk reduction with the cost of lost livestock[1]. This suggests a significant gain from technologies and institutional capacity building that can expedite detection. Conversely, when monitoring capacity is weaker the value of preventive and bio-security activities increases. Furthermore, as the value of livestock at risk increases, the emphasis on culling activities will be more selective and there will be higher investments in prevention and in improved monitoring technologies.

In the past, there has been heavy reliance on extensive culling of birds, and even efforts to eliminate smallholder poultry operations in Viet Nam and other countries in the Mekong region. To some extent, these policies reflect the presumption that traditional smallholder poultry were of low value and investment in monitoring capacity and prevention to preserve this sector were not worthwhile. However, our research has identified willingness to pay a significant premium for traditional poultry varieties (over industrial substitutes) in the marketplace. Furthermore, these 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. Thus, recognizing the higher value of traditional varieties justifies policies that will emphasize prevention and other alternatives to culling programmes. One non-standard solution, based on an empirical realization that there is significant willingness-to-pay for 'safe' chicken, is to establish a supply chain for certified healthy chicken of traditional varieties that will capture the extra premium for both characteristics. 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 monitor and cull their own infected chickens is to impose a penalty for an infected chicken that is equal to its expected incremental social cost. 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 may be difficult to implement, so policymakers might instead introduce a system of payments to farmers for disease control measures. Intuitively, the payment for culling an

[1] Of course, valuation of the costs and benefits is another challenge for researchers and policymakers. Our technical papers present more detailed procedures and formulas for valuation.

infected chicken should be equal to the resulting incremental social benefit. However, our research suggests that this level of payment is excessive because it leads to underinvestment in prevention and overproduction of chickens. Difficulty in assessing the social gains from culling may lead policymakers to make compensation contingent on the market price. This compensation may need to be augmented by a penalty for non-reporting of infected animals.

Since much of the benefit from reducing disease risk accrues to people outside the affected region, even in faraway countries concerned about a human pandemic, these constituencies should subsidize the costs of extra care. However, while some of these subsidies should be used to compensate for revenue losses, other resources should be allocated to decoupled policies like infrastructure investment, strengthening of social services, and other 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 their efforts on the most vulnerable link in the supply chain. A primary driver of disease spread is inter-flock linkage (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 may require a public/private partnership. On the private side, willingness to pay and 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 pro-active recognition of incentive properties and information failures.

Containing Pandemics

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 mechanism. 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 GMS, 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 are generally implementable at low cost), and public health monitoring and quick response mechanisms that may include hospital

screening/treatment, reporting systems, and possibly quarantine. Because human immunity generally and pandemic aversion 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 probably 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 another creative, 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 animal transmission risk across markets, as well as improved mechanisms to reduce human exposure and transmission potential.

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