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## Key Findings

- Although poultry are virtually ubiquitous, most farmers can cope with a one-time loss of their poultry stock by increasing other agricultural activities by 5 percent or less.
- ‘Diversification’ assistance therefore appears more promising to HPAI risk reduction than support payments (compensation) for stock losses.



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

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## Adjustment of Smallholder Livestock Producers to External Shocks: The Case of HPAI in Viet Nam

*D. Roland-Holst, M. Epprecht and J. Otte*

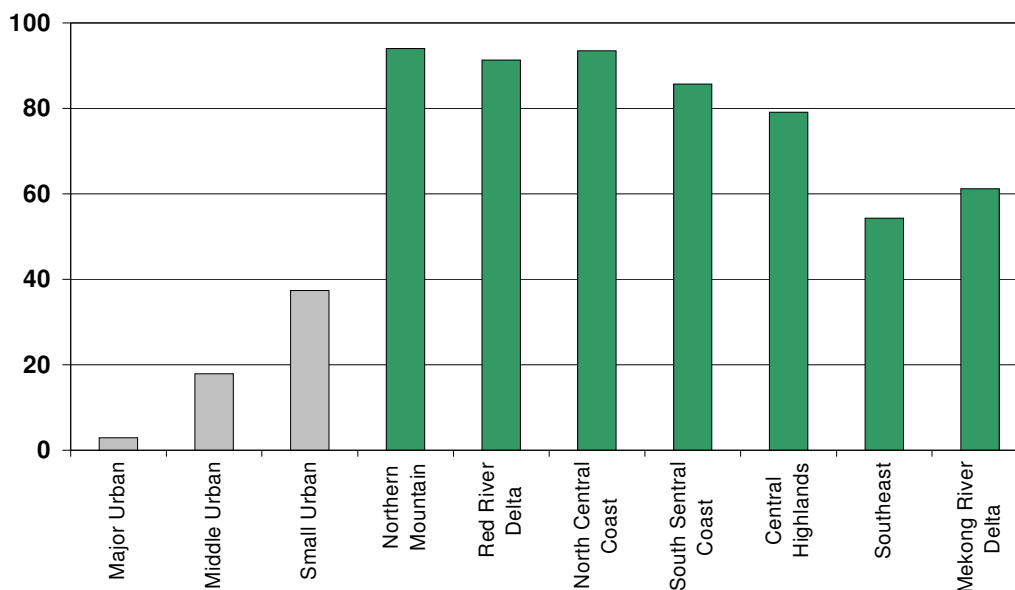
The poor in rural areas face economic risks that differ substantially from groups with other economic, demographic, and environmental characteristics. Even though some urbanites may be as poor individually as their rural cousins, infrastructure and other public goods provide them with insurance against exogenous shocks of all kinds, including adverse weather, other national disasters, disease, as well as against certain kinds of political and economic exploitation.

In response to their vulnerability, smallholders have developed strategies for (*ex ante*) risk management and (*ex post*) risk coping. Policies that seek to assist smallholders to cope with shocks can be more effective if they build on their own capacity for adjustment and facilitate this constructively rather than attempting to re-establish initial conditions.

In this research brief we evaluate the risk of stock losses to Viet Nam poultry producers arising from HPAI outbreaks and control measures.

## The Importance of Poultry to Rural Households

Livestock production in Viet Nam remains nearly ubiquitous (Figure 1), with poultry keeping still widespread even in peri-urban areas. The overwhelming majority of producers are households and, despite emergence of more intensive production systems serving urban markets, their total production still dominates national poultry output.

**Figure 1:** Proportion (%) of Viet Nam households owning livestock by region.

Source: VHLSS 1998

When Viet Nam farmers were asked directly about primary drivers of improvements in their living standards, majorities identified increased crop productivity and enhanced returns to livestock.

## Producer Risk and Adjustment to External Shocks

Because uncertainty is endemic to agriculture, farmers exhibit a variety of strategies for dealing with the risk of adverse shocks to their livelihoods. For smallholders, these are associated first with food security and second with income, and take two generic forms, *ex ante* risk management and *ex post* risk coping. Risk management is generally incorporated into long term production practices, while risk coping is a short term response to adversity. The two are linked, however, since risk management can offset the need for risk coping and coping strategies can induce adoption of new management practices. HPAI provides examples of both kinds of linkage. Lack of (private as well as public) risk management experience has led to unprecedented culling operations and complex risk coping reactions among farmers, which include non-reporting, stock concealment, illicit marketing.

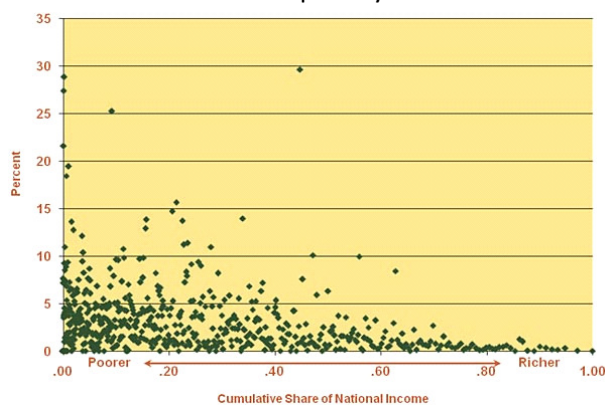
In the smallholder context, the food security and income objectives interact because risk strategies for the two are highly correlated. To secure their own food supply, farmers diversify across agricultural products in terms of variety and seasonality. This can reduce risks to income if diversification also occurs between marketable commodities, but can increase risk, as in the case of cash crop monoculture, when farmers reduce product diversity to increase potential income.

In the HPAI context, expected income can be thought to arise from three sources: poultry, other agricultural products, and non-farm income (e.g. labour), the components of which we assume are known to the farmer. Finally, income could be affected by some external shock, such as HPAI, which can affect farm income in two major ways:

1. stock loss from mortality, voluntary liquidation, or control measures;
2. price reductions resulting from the need to liquidate inventory (infected animals, animals associated with an outbreak and even animals at a distance from outbreaks)

If we now visualize risk management and coping as an insurance problem, farmers' behavioural objectives become to minimize the variability of expected income. In practical terms, two decision variables are of special importance to the poultry farmer's insurance problem, *Exposure*, which measures the share of poultry revenue in total farm income, and *Coverage*, which measures the multiple of poultry income coming from other sources.

**Figure 2:** *Exposure*, ie proportion (%) of total household income from poultry.



**Figure 3:** *Coverage*, ( $\log_{10}$ ) of poultry-income shocks by income level.

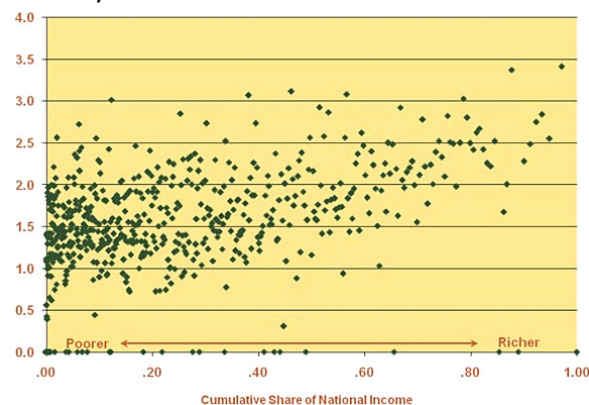


Figure 2, derived from the analysis of 300 representative households, selected from a nationally representative sample of 65,000 households included in the Viet Nam Living Standards Measurement Survey, shows that exposure through poultry keeping is significantly skewed toward lower income households.

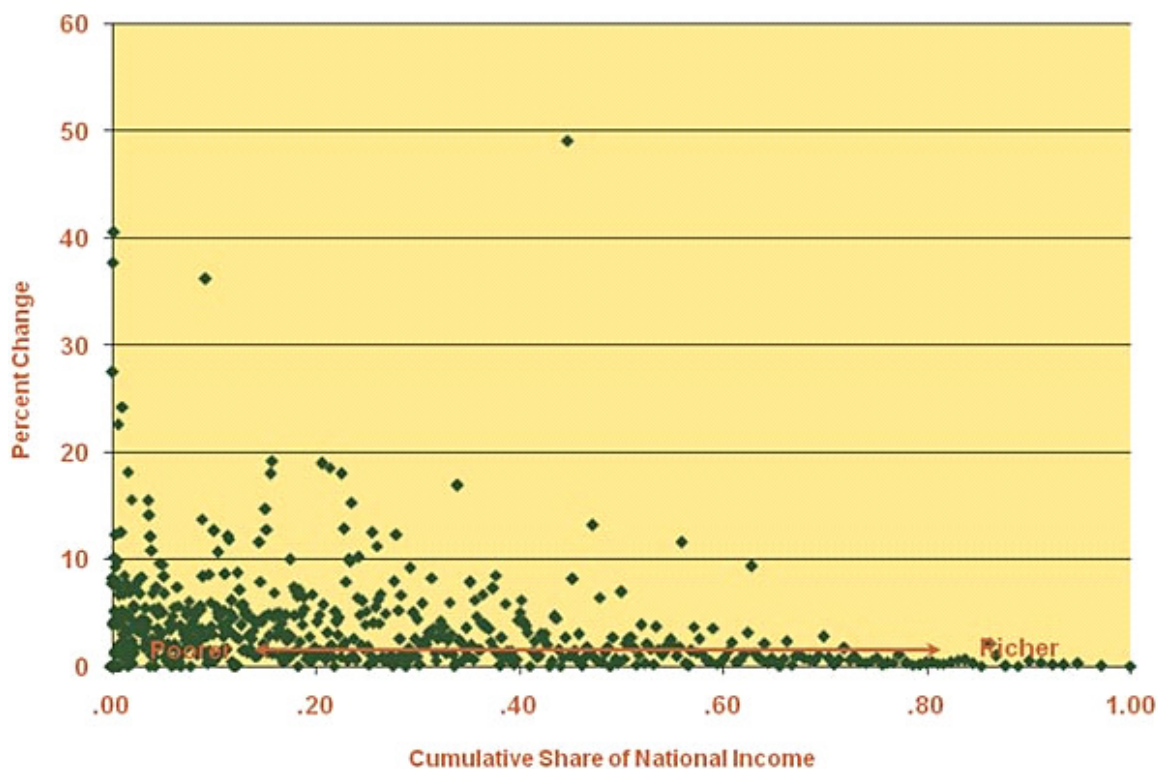
However, although exposure is higher for low income groups, coverage rates are relatively high across income groups and coverage rates exceed 10 ( $\log=1$ ) for most of the population. Coverage rates vary significantly (two orders of magnitude are required to encompass 90 percent of this distribution), and as expected, coverage generally rises with income, but most poor households have coverage rates between 10 and 100 (1 and 2 on the scale). This implies that a total stock loss would represent less than a 10 percent income shock for most households.

## Investing in Alternatives to Poultry Keeping

'Coverage' implies the ability to offset poultry production risks/losses by expanding other income opportunities. On an average basis, Figure 3 implies that significant scope exists for this in Viet Nam, but individual adjustment capacity is varied. To assess the latter, we

simulated an income-neutral loss of poultry stock, assuming individual households expanded other agricultural activities to make up the income shortfall, thereby 'diversifying away' from poultry in response to the increased economic risk of poultry keeping with the advent of HPAI. Assuming that prices remain constant, the results obtained indicate that most farmers could cope with a one-time poultry stock loss by increasing other agricultural production/marketing activities by 5 percent or less, although a significant minority would need increases in the 5 to 10 percent range.

**Figure 4:** Percent increase of other agricultural income required to offset forgone income from poultry keeping.



This is a relatively modest increase, indicating that 'diversification' with respect to poultry production should be a high priority for adjustment assistance programs. Such policies are generally more transparent than direct compensation schemes. Rather than creating potentially adverse coping incentives (e.g. disease concealment, illicit trading, etc.), they sustain the farmer's long term risk management capacity.

Analogous simulation with non-farm income as a source of coverage yields unsatisfactory results because a large proportion of rural households are in a 'corner solution' with zero initial non-farm income. Certainly development of non-farm income is an important component of the risk management agenda, but policy resources in this context are better targeted at urban and peri-urban populations with ready access to urban labour markets. For the rural poor majority, agricultural 'diversification', promoting a broader array of and increases in farm income sources, is a higher priority and a more appropriate focus of livestock policy.

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