Controlling Avian Flu and Protecting People’s Livelihoods in the Mekong Region, Africa and Indonesia

Livelihood Impacts of HPAI Outbreak

FAO-APHCA-DFID

International meeting on Pro-poor HPAI Risk Reduction:
Lessons from Southeast Asia and Africa

IFPRI Economic Impact and Livelihoods Team
Background Papers

**Disease Risk**
- Risk maps
- Probability models
- Spatial spread models

**Livelihood Impact**
- Economy-wide and Sector level analysis
- Household level analysis (Income, Asset, Gender and Nutrition)

**Institutional Mechanisms**
- Value chain analysis (incentives)
- Evaluation of mitigation measures
- Assessment of effectiveness of institutions

**Evaluation of risk management options**
**“Synthesis Analysis”**
- KAP (Knowledge Attitudes Perception)
- Contingent Valuation (Willingness to pay/to accept)
- Cost Benefit and Effectiveness Analysis
- Monte-Carlo Simulation

**Communication and Advocacy**
- a) biological efficacy of disease
- b) economic efficiency
- c) social desirability
- d) political feasibility

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Controlling Avian Flu and Protecting People’s Livelihoods | Africa, Indonesia, Mekong Region.
Characterization of shocks from HPAI

Supply Shock

- Generally localized
- Small supply shock relative to poultry population (less than 2% in most countries)
- Small increase in price

Demand Shock

- Often discrete
- Mostly non-localized
- No actual outbreak is needed
- Slows down over time
- Big decrease in price

➢ Since we obtain reduction in prices, the demand shock prevails
Livelihood effects by disease status

• High risk/ Endemic status
  – Supply shocks sporadic and demand shock restrained
  – potential for high value of supply and demand shocks

• Low risk/no previous outbreak
  – potential for high value of demand shock and possibly low supply shock
Household impact scenarios using disease spread risk map

6 Scenarios:

- Loosing all flock:
  - Country-wide
  - High-Risk areas

- Large flocks become small
  - Country-wide
  - Medium-Risk areas

- Small flock lose all

- Price Shock
## Results from Economy-wide Modeling

<table>
<thead>
<tr>
<th></th>
<th>Sporadic (Ghana)</th>
<th>High Risk/Endemic (Nigeria)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Change in...</strong></td>
<td>10% P-Shock</td>
<td>40% C-Shock</td>
</tr>
<tr>
<td><strong>Price</strong></td>
<td>10%</td>
<td>~ 0%</td>
</tr>
<tr>
<td><strong>Production</strong></td>
<td>- 10%</td>
<td>- 27%</td>
</tr>
<tr>
<td><strong>Revenue</strong></td>
<td>~ 0%</td>
<td>- 27%</td>
</tr>
<tr>
<td><strong>Household Income of Poor</strong></td>
<td>~ 0%</td>
<td>0.15%</td>
</tr>
</tbody>
</table>

- Production shock in an endemic case causes high price increase since less is captured by imports.
- Demand shock is much more damaging for poultry producers.
- Income of large poultry producers are affected much more due to higher share of income from poultry.
Structure of the poultry sector in the project countries and households' income portfolio

- Traditional mode is significant in all countries
  - No outbreak case (like Ethiopia), there is extreme concentration
  - Regardless of epidemiological status the secular trend is towards greater presence of the modern poultry sector
- In terms of size, small number of birds per farmer is the norm
- Generally, households that own poultry also engage in several other activities – crop-livestock, livestock-livestock and livestock-non farm interactions
- Livelihood effects on average are small
  - BUT there are livelihood hotspots where poor rely more on poultry
Impact of HPAI on livelihoods: low risk (no outbreak case)

<table>
<thead>
<tr>
<th>Scenarios:</th>
<th>Livestock Income</th>
<th>Livestock Wealth</th>
<th>Total Income</th>
<th>Total Wealth</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 – Lose all poultry</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>2 – Lose all small flocks</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>3 – Large flocks become small flocks</td>
<td>- 28 %</td>
<td>- 31 %</td>
<td>- 7 %</td>
<td>- 6 %</td>
</tr>
<tr>
<td>4 – Poultry Sellers: High price falls to low price</td>
<td>×</td>
<td>×</td>
<td>×</td>
<td>×</td>
</tr>
<tr>
<td>5 – High HPAI Risk: Lose all poultry</td>
<td>- 67 %</td>
<td>- 46 %</td>
<td>- 8 %</td>
<td>- 4 %</td>
</tr>
<tr>
<td>6 – Medium HPAI Risk: Large flocks become small</td>
<td>×</td>
<td>- 41 %</td>
<td>×</td>
<td>- 9 %</td>
</tr>
</tbody>
</table>

× = not significant
## Impact of HPAI on livelihoods: sporadic case

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>1 – Lose all poultry</td>
<td>-17%</td>
<td>x</td>
<td>-0.8%</td>
<td>x</td>
</tr>
<tr>
<td>2 – Lose all small flocks</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3 – Large flocks become small flocks</td>
<td>x</td>
<td>-23%</td>
<td>x</td>
<td>-12%</td>
</tr>
<tr>
<td>4 – Poultry Sellers: High price falls to low price</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>5 – High HPAI Risk: Lose all poultry</td>
<td>-22%</td>
<td>x</td>
<td>-1.6%</td>
<td>x</td>
</tr>
<tr>
<td>6 – Medium HPAI Risk: Large flocks become small</td>
<td>-30%</td>
<td>-31%</td>
<td>-0.5%</td>
<td>-16%</td>
</tr>
</tbody>
</table>

x = not significant
Impact of HPAI on livelihoods: high risk/endemic case

<table>
<thead>
<tr>
<th>Scenarios:</th>
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</thead>
<tbody>
<tr>
<td>1 – Lose all poultry</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>2 – Lose all small flocks</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>3 – Large flocks become small flocks</td>
<td>-42%</td>
<td>x</td>
<td>-0.6%</td>
<td>x</td>
</tr>
<tr>
<td>4 – Poultry Sellers: High price falls to low price</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>5 – High HPAI Risk: Lose all poultry</td>
<td>x</td>
<td>x</td>
<td>-1.6%*</td>
<td>x</td>
</tr>
<tr>
<td>6 – Medium HPAI Risk: Large flocks become small</td>
<td>-39%</td>
<td>-21%</td>
<td>-0.7%</td>
<td>-9%</td>
</tr>
</tbody>
</table>

x = not significant; *Indonesia case, poultry share of income
What about other livelihood effects: Nutrition

• Can judge *potential* effects on early childhood nutrition
  – Good degree of specialization on poultry products among ASF
  – If poultry withdrawn from the diet – can have significant effect on outcomes such as stunting, anemia
  – Fact that it has not occurred is good news-contained/restrained
    • Endemic probably adjusts the preferences!!!
Potential impact of HPAI on nutrition children under 3 (based on simulation)

- Animal source foods (ASF) provides critical micro nutrients (iron, zinc, and vitamin A) to young children
- Endemic case like Indonesia: data (IFLS3 2000) indicated 30% stunted, 17% underweight, 11% wasted, and 65% anemic
- No disease case like Kenya: data (KIHBS 2005/2006) indicated 34% stunted, 16% underweight, 8% wasted (low weight/height)

Upper bound- worst case scenario /Reduced poultry product consumption from a modeled sustained HPAI shock with no ASF substitute
- Indonesia and Kenya -significant detrimental nutritional impacts (stunting, height for age, and hemoglobin concentration)
Main findings

- **Consumer panic** foremost factor in the reduction of poultry production outbreak => **education campaigns** will be crucial;

- Most small-scale poultry producers **on average** tend to have **diversified income** portfolios and thus unlikely to be significantly affected by HPAI shocks

- **Under the assumption of no animal source food substitute**, reduced poultry consumption from a simulated sustained **HPAI shock** => **could have significant detrimental impacts** in terms of stunting, height for age, and hemoglobin concentration for children 1-3 years old
Policy implications

- Education and awareness campaigns will be crucial at limiting the reaction of consumers due to perceived risks;
- If outbreak occurs, there has to be contingency plans for livelihood strategies esp. targeted to small-scale producers – not necessarily restocking;
- Prioritize the intervention in areas where there is congruence between disease risk and livelihood risk hotspots;
- Provide an encouraging environment for small-scale poultry producers to adopt control measures such as bio-secure poultry management;
- If there is sustained HPAI shock, Governments may want to target nutritional support programs for children of 1-3 years old.