POTENCIAL ECONOMIC IMPACTS OF AVIAN INFLUENZA IN LAC

The Mass Media and the Threat of Avian Influenza in Latin America
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Interamerican Development Bank
Two different but related cases

1. AI is an animal disease that could affect the Poultry Sector.

2. AI could cause a Human Pandemic.
1. POULTRY SECTOR
At risk: Poultry Sector

- Total number of animals: 2,552 mill., 14% of total world stock.
- Total annual meat production: 16.1 mill. tons, 25% of total world production.
- Total egg production: 5.4 mill. tons.
- Total exports: 2.05 mill. tons, US$2,048 mill., 3.5% total agricultural exports.
- Employment in poultry production chain, 4.0 mill.
- Nutritional level: chicken inexpensive source of protein.
At risk: Poultry Production

- 16 million tons of poultry (25% of world production)
Main Impacts of an AI Outbreak: Poultry Sector

Main Impacts

- Animal death and culled resulting in production losses.
- Loss of markets (international and national markets).
- Prices in the domestic market will be affected.
- Fiscal expenditures: compensation to producers.
## Costs of each Scenario

<table>
<thead>
<tr>
<th></th>
<th>Scenario 1</th>
<th>Scenario 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Total Cost</strong> (US$ mill.)</td>
<td>6.840</td>
<td>742</td>
</tr>
<tr>
<td><strong>Total Cost / Total GDP</strong></td>
<td>0.39%</td>
<td>0.04%</td>
</tr>
<tr>
<td><strong>Total Cost / Agric. GDP</strong></td>
<td>5.8%</td>
<td>0.63%</td>
</tr>
<tr>
<td><strong>Compensation</strong> (US$ mill.)</td>
<td>600</td>
<td>64</td>
</tr>
</tbody>
</table>
Risks and Probabilities AI

- Pandemic Risk Indicator
- Country’s Distance from Pacific Route Indicator
- Prevention and Contingency Status of AI Indicator

- Probability of AI outbreak
- Distance from Pacific route migratory birds
- No AI
- AI outbreak
- Probability of Scenario 1 or 2
- Situation Prevention and Contingency programs

Scenario 1
Scenario 2
Expected Cost AI

Expected Cost =
(Scenario Cost 1)* (Scenario Probability 1) +
(Scenario Cost 2)* (Scenario Probability 2)
### Expected Costs AI Outbreak: Results

<table>
<thead>
<tr>
<th>Category</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Cost (US$ mill.)</td>
<td>1.632</td>
</tr>
<tr>
<td>Total Cost / Total GDP</td>
<td>0.09%</td>
</tr>
<tr>
<td>Total Cost / Agric. GDP</td>
<td>1.42%</td>
</tr>
<tr>
<td>Compensation (US$ mill.)</td>
<td>250</td>
</tr>
</tbody>
</table>
Prevention AI Benefits / Costs: Poultry Sector

Expected Costs
- Coordination, prevention and preparation
- Surveillance and Early Alert System
- Control and eradication (vaccination & compensation)

Based on Vietnam information adjusted to LAC and IDB Technical Study.

Expected benefits
- Losses avoided for investments to improve prevention, control and surveillance of a potential outbreak.
<table>
<thead>
<tr>
<th></th>
<th>Costos (Inversiones)</th>
<th>Pérdidas esperadas sin inversión</th>
<th>Pérdidas esperadas con inversión</th>
<th>Beneficio</th>
<th>B/C</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Brasil</strong></td>
<td>54</td>
<td>882</td>
<td>253</td>
<td>629</td>
<td>11.75</td>
</tr>
<tr>
<td><strong>Cono Sur</strong></td>
<td>16</td>
<td>83</td>
<td>38</td>
<td>45</td>
<td>2.82</td>
</tr>
<tr>
<td><strong>Argentina</strong></td>
<td>7</td>
<td>62</td>
<td>28</td>
<td>34</td>
<td>5.12</td>
</tr>
<tr>
<td><strong>Pacto Andino</strong></td>
<td>95</td>
<td>343</td>
<td>88</td>
<td>255</td>
<td>2.7</td>
</tr>
<tr>
<td><strong>Colombia</strong></td>
<td>18</td>
<td>104</td>
<td>10</td>
<td>94</td>
<td>5.35</td>
</tr>
<tr>
<td><strong>América Central</strong></td>
<td>19</td>
<td>74</td>
<td>18</td>
<td>55</td>
<td>2.9</td>
</tr>
<tr>
<td><strong>El Salvador</strong></td>
<td>2</td>
<td>18</td>
<td>5</td>
<td>13</td>
<td>6.98</td>
</tr>
<tr>
<td><strong>Caribe</strong></td>
<td>18</td>
<td>51</td>
<td>14</td>
<td>37</td>
<td>2.11</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>247</td>
<td>1632</td>
<td>525</td>
<td>1108</td>
<td>4.5</td>
</tr>
</tbody>
</table>
Prevention AI  Benefits / Costs: Poultry Sector

Benefits / Costs Results

Costs (Investments) (US $ mill.) 247
Expected Losses without investments (US $ mill.) 1632
Expected losses with investments (US $ mill.) 525
Benefit (US $ mill.) 1108
Benefit / Cost 4.5

Conclusion: High return on the investment of prevention and preparation of AI control.
2. HUMAN PANDEMIC
Risks of Human Pandemic Influenza

- Public Health
  - 540 million people in LAC.
  - 124 million people living in rural areas.
  - 222 million Labor Force.
Main Impacts of Human Pandemic
Influenza: Economy

- A fall in the labor force due to a rise in mortality and illness.
- A reduction in consumption by households.
- An increase in the cost of doing business: workplaces temporarily closed, reduced demand for products.
- Reduction in investments.
- A shift in consumer preferences away from exposed sectors.
- Substantial pressure on provision of public services: health system and health goods.
Estimate of the cost of a Human Pandemic Influenza: Assumptions

Assumptions

- Focus only on labor force impact.
- Follow McKibbin and Sidorenko (2006) study:
  - Three pandemic scenarios: mild (1968), moderate (1957), severe (1918).
  - An index of health attainment (WHO 2000).
  - Mortality rates are determined relative to USA, using two above indexes.
Estimate of the cost of a Human Pandemic Influenza: Assumptions

Assumptions

- Follow McKibbin and Sidorenko (2006) study:
  - Losses due to sick workers, 1.15% of labor force.
  - Absenteeism of workers to take care of sick family members: 20% of women workers absent to take care of their children.
## Estimate of the cost of a Human Pandemic Influenza: Results

### Results:

<table>
<thead>
<tr>
<th>Type</th>
<th>Expected Deaths in LAC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>45,000</td>
</tr>
<tr>
<td>Moderate</td>
<td>450,000</td>
</tr>
<tr>
<td>Severe</td>
<td>2,250,000</td>
</tr>
</tbody>
</table>
**Estimate of the cost of a Human Pandemic Influenza: Results**

**Results:**

Impact of an influenza pandemic affecting labor force in LAC (mill. of US$)

<table>
<thead>
<tr>
<th></th>
<th>Deaths</th>
<th>Absenteeism</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>1,499</td>
<td>10,506</td>
<td>12,005</td>
</tr>
<tr>
<td>Moderate</td>
<td>14,986</td>
<td>10,506</td>
<td>25,493</td>
</tr>
<tr>
<td>Severe</td>
<td>74,931</td>
<td>10,506</td>
<td>85,437</td>
</tr>
</tbody>
</table>
Estimate of the cost of a Human Pandemic Influenza: Results

Results:

Impact of an influenza pandemic affecting labor force as % of Regional GDP

<table>
<thead>
<tr>
<th>Severity</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mild</td>
<td>0.71</td>
</tr>
<tr>
<td>Moderate</td>
<td>1.50</td>
</tr>
<tr>
<td>Severe</td>
<td>5.00</td>
</tr>
</tbody>
</table>
Conclusions

- Y2K - very low impact because of preparedness.
- Timely investment could save more than **US$ 1.200 millions** in the short term to the poultry sector.
- This investment could also reduce significantly the chances of a human pandemic, which could have severe consequences to the Region.
Resources (financial and institucional) are required to prevent an outbreak of avian flu.

Short term priority: preparedness and prevention, in particular to animal health systems.