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## Demand-Oriented Approaches to HPAI Risk Management

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### 1. Introduction

Because Highly Pathogenic Avian Influenza (HPAI) represents a significant public health concern, disease mitigation responses to HPAI outbreaks in affected countries have generally been represented as swift, rigorously enforced and determined government interventions. Moreover, most mitigation and control measures have been targeted to the supply side of poultry markets, which includes culling, banning live bird and sometimes meat sales, and mandating changes in husbandry practices. These measures have had varying degrees of success, in part because of uneven market participant application and also because command and control approaches do not fully take into account the roles of incentives and other private agencies in food supply chains. Beyond these deficiencies, such approaches rely on public resources and institutional capacity, and thus may be difficult to sustain for extended periods of time, especially if HPAI were to become endemic.

With these considerations in mind, we find reasonable to examine what kinds of market-oriented approaches to HPAI risk management could be developed. From that perspective, this research report examines how the demand side of poultry markets can play a supportive role in reducing disease infection risks. To the extent consumers care for their health and are willing to pay extra for certified HPAI-free poultry products, there may be options for financing and developing more bio-secure products and safer poultry supply chains.

In an effort to ascertain viability and feasibility of such systems, we are conducting selective, participant-based market surveys in HPAI epicentre Mekong countries. Encouraging early evidence from Hanoi, Viet Nam is reported, indicating that demand side approaches to reducing disease risks should be more actively investigated.

## 2. Overview of the Hanoi Consumer Survey

Market prices, as the ultimate determinants of value, contain essential information about scarcity, quality, and bargaining power. All these considerations are essential for actual and potential market participants, and a better understanding of the structure and dynamics of market prices can likewise improve their economic effectiveness. To support research on livestock value chains, consumer preferences, product quality, and price uncertainty, we conducted a poultry market consumer survey in Hanoi, Viet Nam. The survey is more extensively documented elsewhere (Roland-Holst, Chadwick, Ifft, and Reed, 2007), and we only summarize its general structure and selected findings here.

The Hanoi poultry market consumer survey had two main objectives: 1) to identify current shopping habits and preferences of Hanoi residents, related to household food consumption generally, and chicken and other livestock products particularly; 2) to gauge consumer interest in certified HPAI-free chicken. The survey provides insights into weekly spending on livestock products, how chicken is purchased, where it is purchased, and what concerns consumers mention most about the quality of chicken meat. The survey also studied willingness to pay for different types of chicken.

All interviews took place in Hanoi's nine inner districts. The survey utilized a two-stage sampling design based on districts and randomly selected blocks within each district. We planned to further stratify sampling at the sub-district level, but a map with clear sub-district boundaries was not available. Each district was assigned a number of observations for a goal of 1,000 surveys in proportion to population size, taking into account an estimated refusal rate of 25%.

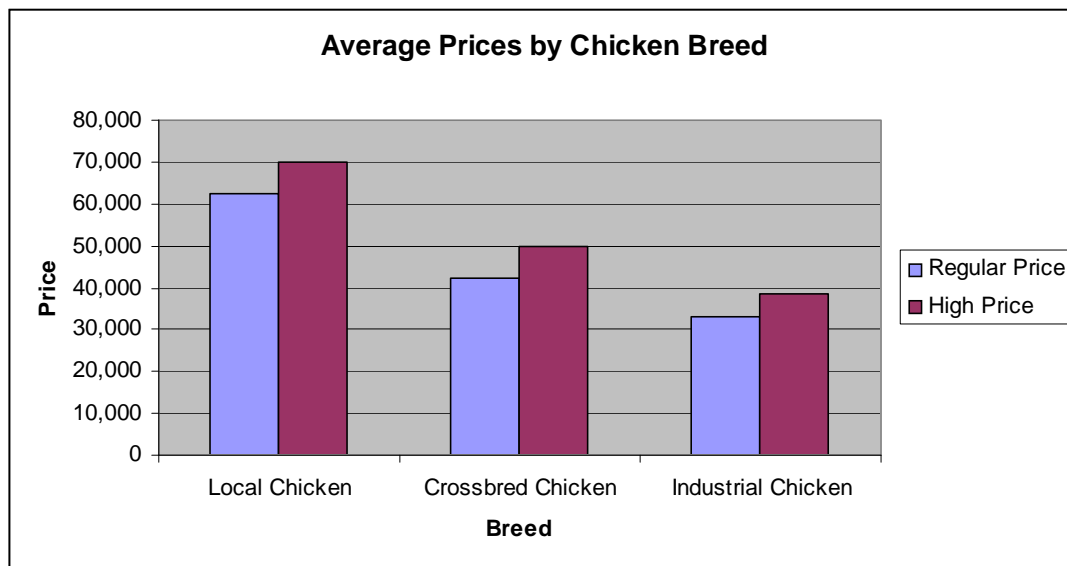
## 3. Buying Patterns

The general characteristics that emerge from this consumer group are of considerable relevance to HPAI policy, especially to the potential for effective demand side approaches to disease risk management. Our respondents are very experienced market consumers: 96% of households report shopping at least once per day and 80% of them shop in wet markets. Of special relevance to the present study are the facts that, despite them being urbanites in the capital city, over 30% of households purchase live chickens and over 40% reported buying whole finished birds. Over 30% reported buying live birds only, and just 27% reported buying chicken cuts.

Hanoi consumers are also quite discerning. In the household food budget, chicken is a luxury good which accounts for about 14% of total food expenditure. There are three varieties of chicken available: local chicken varieties, industrial chickens, and crossbred birds that combine characteristics of both, local and industrial.

Most households (66%) report buying all three varieties, but 87% buys local varieties. The main reason behind this preference seems to be quality because they pay a substantial premium for local birds. As **Figure 1** shows, local chicken prices can be twice as much that of industrially produced chickens. Thus, it suggests that the dominant product variety in this relatively low income country is the most expensive one, a fact that has important implications for demand-oriented policy interventions. Moreover, this is particularly significant to FAO's Pro-Poor Livestock Policy Initiative, because smallholders are the main producers of these animals.

**Figure 1: Average Market Prices by Chicken Breeds Offered, Hanoi, 2007.**



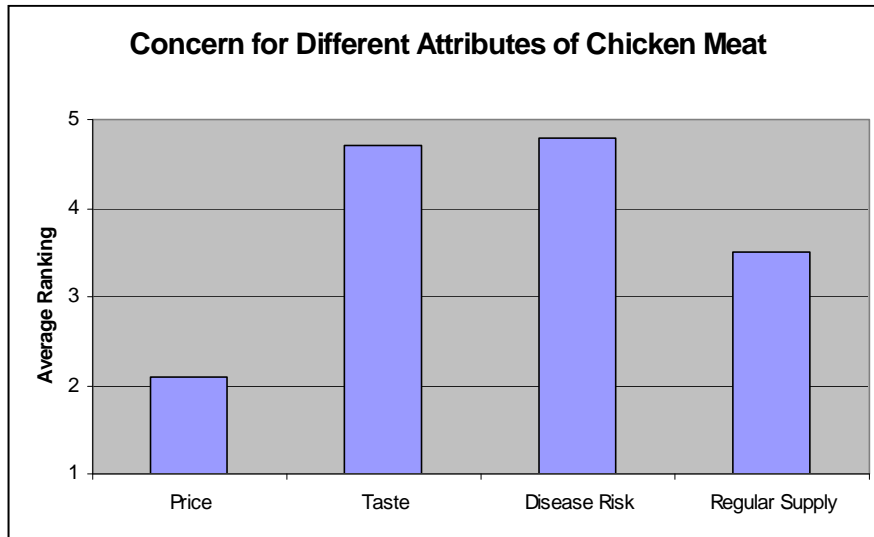
#### 4. Production, Home Consumption and Market Participation

To better understand the reasons behind these observed buying and price patterns, consumers were asked directly about their preferences with respect to chickens. **Figure 2** shows their average scorings of four product characteristics, relevant to study objectives, on a scale of 1 to 5. As previous results imply, price is not the highest determinant, despite being very experienced buyers who spend a large fraction of income on this product. On the contrary, quality characteristics were paramount determinants in their expressed preferences, including taste, health status, and regularity of availability. Scores for quality (taste and safety) were more than twice the expressed importance of price. Evidently, Hanoi buyers value local, live varieties because of superior taste, and are willing to pay nearly twice as much for these varieties.

Having said this, 75% of responding households said they believed chicken quality could be further improved. Improvements could take two primary forms: better flavour and food safety.

We did not investigate their preferences for the former characteristics, but presumably there are opportunities for safety and quality investments of this kind to increase producer revenue.

**Figure 2: Concerns for Different Attributes of Chicken Meat, Hanoi, 2007.**



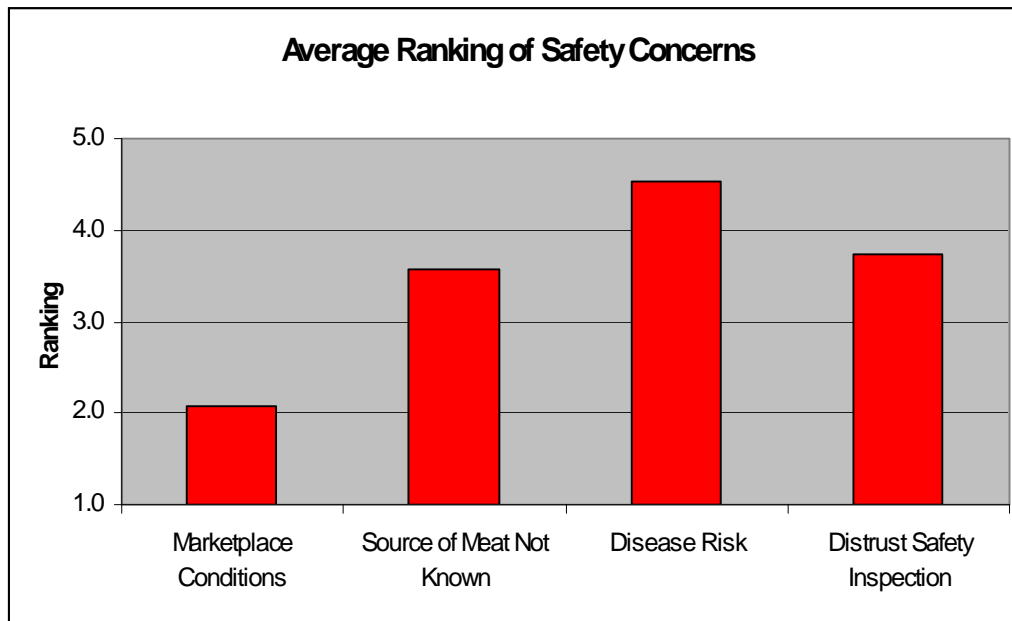
On the subject of safety, our sampling of preferences yielded interesting and suggestive results. As **Figure 3** shows (using the same 1 to 5 scoring system), marketplace conditions are low safety determinants to consumers. This finding is significant because market renovations are a common investment-intensive government approach to food safety problems. This public welfare intervention apparently has little credibility in the eyes of local buyers. Of much greater significance were three characteristics that can be targeted by product certification programs: 1) Traceability, 2) Health Screening, and 3) Credible Certification.

These results suggest that consumers take food safety very seriously, but supply chain and institutional uncertainties are an important source of perceived risk. Disease risk itself is the most important safety concern, but it is closely followed by distrust of food safety inspections. Food origin is uncertain in the markets studied, with birds passing between several intermediaries who blend and transport bird inventories. These intermediaries may provide valuable distribution services, but introduce informational biases, incentive shifts, and contagion risks that lead to significant moral hazards and adverse product selection. Despite the complex nature of some of these interactions and the uncertainties they create, consumers are acutely aware of these issues, and if a credible product traceability scheme were to be developed, it would need to improve this generalized state of doubt and mistrust.

Another important problem is credibility of public health efforts, which has complex origins of its own. While reform and public education can do much to overcome this lack of confidence, policy makers should also consider private agency as a substitute in this situation. Most OECD

economies have delegated a significant amount of practical animal health and other agricultural product quality responsibilities to producers and producer cooperatives, recognizing that, with responsible public oversight, the right market incentives can make private agency an efficient and credible approach to food safety.

**Figure 3: Average Ranking of Safety Concerns by Consumers, Hanoi, 2007.**



## 5. Willingness to Pay

Given Hanoi consumer's expressed concerns about food safety, what would be their willingness to pay for quality improvements that increase the safety of chicken? The answer to this question is essential to determining the capacity of the poultry market to support demand-oriented risk reduction measures. To ascertain willingness to pay, we presented household respondents with a sequence of hypothetical price premia, asking them if they would be willing to add this amount to their customary price if the chicken they purchased were credibly certified as safe.

Households were asked whether they wanted to pay 5000, 7500, 10000, or 12500 Vietnamese Dong (VND) extra for certified chicken of each variety. These results clearly indicate a reservoir of private purchasing power that can finance improved poultry bio-safety. For the most expensive variety, local chickens, nearly 100% of respondents said they would voluntarily pay about 8% more for a certified bird, while over three-quarters said they would tolerate a 20% safety premium. As could be expected, price tolerance was lower for less desirable varieties, a majority (52%) of those interviewed were willing to pay a safety premium equal to more than 30% of the base price (see **Table 1**).

**Table 1: Percent of Households Willing to Pay for Chicken Safety, Hanoi, 2007.**

Hypothetical Safety Premium (VN Dong)					
Variety	5,000	5,700	10,000	12,500	Ave Price
Local	99%	91%	89%	74%	62,000
Crossbred	92%	87%	70%	66%	42,000
Industrial	93%	74%	69%	52%	32,000

It is worth noting that precedence exists for this approach in Viet Nam, in the form of an industrial brand of “safety chicken.” Experience with this product has been limited, but consumer reaction to it is revealing. In our survey, we asked responding households if they tried this product, and for those who had, we asked about their experiences.

**Table 2: Responses to Reasons Not to Try Safety Chickens.**

Reasons for Only Trying Safety Chicken	Percent	Frequency
Not tasty	67%	145
Not conveniently available at regular shops	31%	66
Not important/only trying	25%	53
Didn't seem safer	7%	15
Too Expensive	5%	10
Prefer Fresh Chicken	1%	3

Nearly all households (94%) report having heard of “safety chicken”, defined as a type of chicken that has an extra safety guarantee beyond the stamp of government inspection. Of the households that have heard of it, 37% have tried this product and reported paying an average premium of 8,400 VND. Of the households who have tried safety chicken, half only tried it one or two times. As **Table 2** shows, retention with the product was limited, and the main reason was other product quality characteristics.

Evidently, the existing “safety chicken” program has limited acceptance because it trades off one important product quality characteristic, namely safety, against another essential one, namely taste. Live bird certification programs can overcome this obstacle by delivering higher quality standards along with the existing preferred product characteristics. At the same time, they can

sustain rather than undermine the long established product marketing advantage of smallholders, that is, the production of flavourful traditional local varieties.

## 6. Conclusions

The Hanoi poultry market consumer survey strongly supports the idea that demand-side, market-oriented policies can contribute significantly to sustained management of HPAI risk. In the urban markets studied, consumers shop daily in fresh markets and demonstrate strong preference for local varieties that are most likely to be produced by smallholders. They also indicate that animal health is a major concern for them, but express skepticism about public sector approaches to biosecurity and food safety measures, whether these are targeted at the food marketplace in general or at the poultry supply chain in particular.

Most importantly, a significant majority expressed willingness to pay a substantial premium for both, credible health/safety certification and local chicken varieties. Given the expressed doubts about public health initiatives, it may be desirable to complement these with private initiatives if they can be responsibly overseen and efficiently decentralized. The preference for local varieties is very important to the Pro-Poor Livestock Policy Initiative's agenda, since smallholders are the primary source for these products. Indeed, it is reassuring to see that consumers established tastes for these varieties has not been undermined by the advent of HPAI, and that policies may be available to sustain this supply chain and even improve returns to the original producer groups, mainly poor rural and peri-urban households.

These findings indicate that urban Vietnamese markets have the capacity to support demand-oriented disease risk reduction measures. If consumers are willing to pay a "safety premium" large enough to finance a bird certification scheme, it could spare significant public expense. As a market based policy, a self-financed scheme would also foster a virtuous quality cycle among producers, encouraging them to make other quality improvements to raise revenue and further the poverty reduction agenda for livestock producers. This stands in sharp contrast to the incentive problems posed by uncertain village surveillance and culling practices, which have a tendency to drive disease underground. In these ways, a demand-oriented approach can be more efficacious, as well as more sustainable.

## 7. Research Reports

Soares Magalhaes, R. (01/06). Development of the epidemiological component of SPADA (Strategic Pathogen Assessment for Domestic Animals)

Roland-Holst, D., Otte, J. and Pfeiffer D. (04/06) Initial assessment of the impact of poultry sales and production bans on household incomes in Vietnam

Soares Magalhaes, R., Pfeiffer, D., Wieland, B., Dung, D. and Otte J. (10/06) Commune-level simulation model of HPAI H5N1 poultry infection and control in Viet Nam.

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Hong Hanh P. T., S. Burgos, and D. Roland-Holst (08/07). The poultry sector in Viet Nam: prospects for smallholder producers in the aftermath of the HPAI crisis.

## 8. Contacts

For additional information, please go to: <http://www.fao.org/ag/pplpi.html> or contact:

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