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A Living from Livestock

Research Report

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Implementation of a Certified Smallholder Supply Chain and Test Marketing Traceable Free Range Chicken: I. Methodology

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ABSTRACT

This report summarizes the methodologies used in implementing a certified smallholder supply chain and testing marketing traceable free range chicken for the Pilot Project for Certified Smallholder Poultry Supply Chains in Ha Noi. Previous studies have indicated a high level of demand for smallholder chicken in Ha Noi, and this undeveloped market has the potential to both improve public health and alleviate rural poverty. Several small poultry farms with suitable feeding practices that adhered to national farm safety standards were selected to sell 3,600 chicken into a supply chain for 8 vendors in Ha Noi markets over a 1 month period. The farms were supported by local veterinary officials and sold chicken to traders who worked with slaughterhouses that cooperated with this project. Use of local institutions and existing vendor-slaughterhouses relationships has improved the sustainability of these activities, and the use of chicken tags introduced a simple but effective innovation to ensure traceability. This tag was applied at the farm level and stayed on the chicken until purchase by the consumer, as an important part of several marketing activities to convince the consumer of the traceability and safe raising conditions of the project chicken. The findings of this project and a related survey will be used to measure consumer valuation of safety-branded and traceable free range poultry, which when combined with lessons learned from supply chain can make an important contribution to future policy, private sector investment, and research.

1. Introduction

Markets are the central determinant of livelihood in modern economies. In developing countries, the success with which rural populations become formal sector market participants is critical to their sustained emergence from subsistence and poverty. This report summarizes ongoing activities for testing the marketing of safety-branded free range chicken, as part of the Pilot Project for 'Certified Smallholder Poultry Supply Chains' being conducted in Hanoi. The objective of this work, and the larger project from which it originates, is to improve understanding about how markets can act as catalysts for rural poverty alleviation. The Pro-Poor Livestock Policy Initiative (PPLPI) deals with livestock generally, but in the present case we focus on poultry, which has special economic and public health importance in the Southeast Asia region (Roland-Holst *et. al*., 2006).

One component of the Pilot Project for Certified Smallholder Poultry Supply Chains in Hanoi has been designed to assess the potential for coordinating risk management and product quality development. Private sector investment and public policy related to smallholder supply chains should be informed by (1) how a certified supply chain might operate and manage risk under local conditions and (2) consumer demand for smallholder poultry that has been branded for both quality (taste) and safety. Without adequate demand and credible supply chain risk management, smallholder poultry farmers will have increasingly limited access to formal markets, especially in a country that is battling HPAI epidemics and trying to reduce disease risks at large. The results reported here will provide evidence on the value that consumers place on safe chicken from smallholder farmers, as well as demonstrating how a certified supply chain can manage safety risks of chicken sourced from smallholders.

Previous work (Ifft *et. al*., 2007) for this Project has shown that Ha Noi consumers have a considerable revealed and stated willingness to pay for safe chicken. Demand for safe and high quality poultry has a largely untapped potential to contribute to both farm-level biosecurity and rural incomes in Viet Nam. In addition to safety, consumers have a high willingness to pay for quality, which in Viet Nam is related to the texture and flavor of meat. This desired texture and flavour comes from the following characteristics of chicken production: (1) limited use of concentrate feed which ensures slow(er) growth, (2) use of native chicken breeds, and (3) a grazing area for chicken where they can forage. These characteristics lead to a high prevalence of 'local' and 'crossbred' chicken[1] in the Hanoi diet, despite significantly higher prices than

[1] Local chicken refers to native breeds raised on a foraging diet, industrial chicken refers to exotic breeds that tend to be raised on concentrate feed alone, and crossbred chicken are various crosses between local and industrial chicken. Local chicken are allowed to scavenge freely, while industrial chicken is produced in cages in closed sheds. Crossbred chicken are usually are allowed to scavenge in a fenced area, with a small amount of a concentrate or other purchased feed used.

industrially produced chicken. Local and crossbred chicken cost about 25-50% more than 'industrial chicken'.

Local and crossbred chicken are largely raised by smaller, poorer farming households, providing a unique opportunity for poor households to both benefit from market growth and to contribute to public health improvements. The level of trust in the current certification and market inspection system in urban areas seems to be low, as the majority of households believe that the safety of chicken could be improved. The market for chicken that both has a credible safety guarantee and meets quality requirements is largely undeveloped, with most private companies limiting investment to industrial broiler production. This component of the project hence will test the marketing of chicken that meet both safety and quality demands, by taking advantage of existing supply chains and local resources.

Supply chains for local and crossbred chicken generally consist of small players that do not sell to the anonymous buyer, but have established relationship with both the buyers and sellers that they work with. This type of informal, repeated relationship does have some disadvantages in terms of lack of formal contract protection and moral hazard, but the strength of these relationships can support development of a safer, integrated supply chain. Most poultry farms in northern Viet Nam with over 50 head report having regular safety inspection, as well as wholesale traders, slaughterhouses and vendors that sell smallholder chicken. The major building blocks of a certified supply chain thus already exist, but players are not yet linked a way that can be used to credibly communicate safety and quality advantages to consumers (Ifft *et. al*., 2008). This pilot project will take advantage of these existing relationships and systems for safety inspection to develop a certified supply chain for smallholder chicken, with upgrading of standards and training as necessary.

Hanh *et. al*. (2007) suggest that agro-food quality improvement in Viet Nam requires both upgrading of public institutions with relevant responsibilities as well as well promotion of private sector involvement. Some companies do sell industrial chicken with safety branding or a safety guarantee, but take-up has been slow due to the undesirable characteristics of this type of chicken for consumers, including both poor taste and unavailability in local wet markets (Ifft *et al*, 2007). Through careful tracking of sales of safety-branded free range chicken (both local and crossbred), we hope to demonstrate that there is significant value to be created through supporting development of supply chains that can guarantee the safety of chicken produced by smallholder producers. This requires investment in several areas, including brand development, production standards, and supply chain coordination. This project will elucidate which public institutions might be strengthened to support smallholder poultry supply chains.

The following sections will be organized as follows. First we will explain how we have developed a pilot supply chain that can provide safe free range chicken to Ha Noi markets. Second we will explain how this chicken will be marketed. Third, we will explain how we will use several methods to establish the revealed safety premium for free range chicken. Finally, we will discuss how this project will have implications for future research, policy and investment related to supply chains for safe free range chicken in Viet Nam.

2. Supply Chain

Location: Dong Anh District

Dong Anh is one of the outer districts of Ha Noi, and has a large agricultural sector, with an area of 10,515 under cultivation and approximately 85,000 head pigs, 12,500 head cattle and 1.6 million head poultry[2]. HPAI outbreaks have been rare, and none have been experienced since an isolated outbreak in one commune in 2007. Other than this instance, the only other recorded HPAI outbreaks occurred in 5 communes in 2005. Dong Anh has an estimated 9,000 households raising chicken on a scale of 50 head and larger, who are generally oriented towards meat instead of egg production. Vaccination campaigns for HPAI have been carried out for a few years now, and the district veterinary office also provides various other vaccinations for all farmers.

Dong Anh also has a small wholesale market called Bac Thang Long. This market is well-established, and all slaughterhouses operating in the market are registered, meeting national standards for hygiene and safety. Registration is not easy to achieve, and so far only a few slaughterhouses for poultry in the Ha Noi area have achieved this standard. The slaughterhouses in Bac Thang Long supply chicken to several supermarkets in the Ha Noi area, as well as several wet markets. The traders serving this wholesale market and the slaughterhouses were surveyed under the same project last year. The Dong Anh district veterinary office has cooperated with several activities of the Pilot Project for Smallholder Certified Supply Chains, and has a good relationship with project staff.

Dong Anh was selected for several reasons; most important being that the desired number of chicken (3,600) could be supplied within the desired selling period. The strong relationship of the Project with the veterinary office and the high capacity of this office also makes Dong Anh an ideal choice. Limiting project activities to one district has been helpful in streamlining project

[2] Dong Anh District People's Committee First Half Report of 2008 & Dong Anh Vet Station

coordination. Dong Anh is about a 45 minute drive from the center of Ha Noi, which further facilitates project management.

Coordination with District Veterinary Office

The district veterinary office has an important role in this testing marketing activity. The key responsibilities are (1) farm selection, (2) farm monitoring, and (3) technical assistance to farms. The veterinary office has had a role in introduction to slaughterhouses and coordination with traders for delivery of birds. The senior staff of the veterinary office is overseeing implementation of these activities, and 2 commune-level veterinary technicians are working for the project full time. The district veterinary office staff has also assisted in coordinating delivery of birds to project slaughterhouses.

Two commune level veterinarians were in charge of supervising chickens at farms and putting tags on chickens. They also coordinated delivery of birds to the project slaughterhouses, in association with 2 chicken traders and 1 veterinary inspector at the wholesale market. Veterinary inspectors supervised slaughtering and also provided introductions to slaughterhouses that had capacity for delivery of project chickens to their vendor network.

The district veterinary station enforces veterinary law and regulations in several areas, including (1) prevention and preparedness for epidemics and diseases (2) control for activities of slaughtering in the area, (3): management for veterinary products in the area. Responsibilities of local veterinary stations are under directives from the district veterinary station as follows: (1) updates of the number of live stocks in the area (from1 to 3 communes); (2) update of the epidemic situation in the area; (3) implementing vaccinations, treatments, disinfection and sterilization of animal production areas; (4) enforcing veterinary regulations at the commune level; and (5) provision of animal health and nutrition advice to farmers in their area.

Farm Selection and Biosecurity Standards

The main selection criteria of farms were that they were able to provide a sufficient number (at least 50) of crossbred or local chicken with the trial selling period and that they met high standards for biosecurity. The farms had to further agree to allow the veterinary officer or an external inspector to enter their farm at any time, contingent on following a biosecurity protocol. These farms also had to commit to informing the local veterinarian of any problems that might arise, and were given phone cards for this purpose.

The farms that were selected had to follow national safety regulations for poultry farms that cover several areas. Under the supervision of local veterinarian, they had to keep production facilities,

tools and equipment regularly cleaned and disinfected with approved chemicals. The chicken waste also had to be managed under regulations related to control of epidemic disease and environmental pollution. Further, all project chicken were vaccinated against H5N1, Newcastle disease, Gumboro (infectious bursal) and Marek disease. Farmers were required to immediately report any suspected sickness to the local veterinarian for diagnosis and treatment. They also benefited from the advice of the local veterinarian on safe poultry nutrition.

In addition to the strict safety standards, the selected farms only used a small quantity of concentrate feed, as this leads to an inferior taste of the meat. The farms generally fed concentrate feed for 1o to 30 days to chicks, and after that switched to feeding byproducts. All farms have a batch size of less than 300, while the average batch size is about 100 birds. The total number of participating farms is 35, with a few farms on 'standby'. These farms on standby will follow project regulations, but will only sell their chicken to the project if the participating farms don't meet the safety or feeding requirements, or don't sell their chicken to the project.

Farm Monitoring

The farms selected will be visited at least once per week by an official from the local veterinary office. This is to ensure that chicken are continually being produced under high standards, and to spot the possibility of any disease that might arise. These visits will also allow the veterinarian to check if the farms are following the contracted safety and feeding standards. The farms are not informed of these visits in advance.

External Inspection

An external inspector who is a veterinarian in Ha Noi has been hired by the project. This external inspector will randomly visit each farm at least once to ensure that the farm biosecurity standard is being met. Having an external inspector is an extra safeguard against any problems with farm-level biosecurity, and also improves the credibility of the final product. The external inspector had over 20 years of experience in the veterinary sector in Viet Nam and was able to give useful advice for both safety and nutrition practices to farmers, local and district veterinarians and slaughterhouses.

Tagging of Chicken

All chicken have a tag put on their feet or wing within one week before they go to market. This tag is made of a tough durable plastic material, and cannot be removed without destroying it. The tag will also contain the (shortened) name of the slogan for project chicken: 'Country Chicken'. This tag is sufficiently durable to survive slaughter and will still be on the slaughtered

chicken when they are delivered to the market. For the purposes of the project, the tag ensures chicken are not switched after leaving the farm and also is a useful marketing tool as proof that the chicken has come from a farm with safe production conditions.

Registered Slaughterhouses

The project partners with 2 slaughterhouses from Bac Thang Long Wholesale Market. These slaughterhouses operate within the market and are monitored by the market inspector and veterinary officials. These slaughterhouses have agreed to accept the designated number of birds from the project and distribute the slaughtered birds to the selected vendors through their distribution network. These slaughterhouses were partially selected for participation in this project for the strength of their relationship with high volume market vendors operating in Ha Noi markets. Delivery of birds is undertaking with coordination of the local veterinarians who work directly with farmers, and traders supported by the project.

As registered slaughterhouses, the slaughterhouses involved in this project have to follow a several safety regulations. The location of slaughter itself has to be permitted and approved by relevant authorities, which applies to all slaughterhouses in Bac Thang Long Wholesale Market. Slaughterhouses must follow specific hygiene guidelines, such as ensuring the availability of cleaning water and regular use of approved disinfectants. Regulations also cover disposal of waste from the slaughterhouse, and quarantine cages must be used to keep animals before slaughtering, with separation of poultry and cattle and other species (such as pigs, but pigs are not slaughtered in Bac Thang Long).

Following national regulations, all animals entering the slaughterhouses must be certified by local authorities at the origin and also at various check points, including by veterinary inspectors stationed at or near the slaughterhouses. Animals must be healthy, as slaughter of dead animals or animals with any signs of disease is prohibited. Slaughterhouses are required to locate away from places which sell food, and the owner must have no infectious disease, as proved by regular medical examinations. After slaughter, all meat and organs are again inspected and certified by the veterinary inspector.

Vendors in Ha Noi Markets

Due to the short project period from July to September (2008), it was necessary to work with vendors that already purchased chicken from the selected slaughterhouses. These vendors were selected on the basis that they are able to sell on average 15 chickens from the project every day, as well as other non-project chicken. All vendors also only sell certified chicken that have been purchased from registered slaughterhouses. The vendors have an important

responsibility to promote the chicken and will be individually trained. Seven of the vendors sell fresh chicken, while one sells boiled chicken. Boiled chicken is more convenient, while fresh chicken is considered to have a better flavour when prepared at home. All chicken are sold on the day of slaughter, which usually occurs during the early morning. All the vendors keep refrigerators to store birds in before they are sold, and are regularly inspected by veterinary and market staff.

3. Marketing Safety-Branded Free-Range Chicken

Marketing Activities

The project has developed a logo and slogan for the chicken to be sold. The logo shows a crossbred or local chicken that is grazing surrounded by a circle, which symbolizes how the project has connected all parties involved in producing, trading, processing and selling chicken. The slogan of the project roughly translates as 'The Authentic Country Chicken'. Country chicken implies good taste and also safety, while the label for 'authentic' implies that the chicken is from a known source.

The project provides posters and leaflets for the participating vendors, and the posters will also be displayed in the market. The vendors further receive decorations for their stand and shirts and aprons with the project logo and slogan. Project vendors will package the chicken for the customer in a bag similar to bags normally used to deliver chicken from Bac Thang Long market to retail markets. These bags are produced with higher quality materials and have a special design with the logo and slogan of the project. The tag will be promoted to the consumer and proving the authenticity and source of the chicken, and can easily be identified as a distinguishing characteristic of the chicken being sold.

Vendors will have a large role in promotion of the chicken, as they have a long term relationship with most of their customers. They were individually trained to know the activities of the project and how to use the promotion materials. A key aspect to the success of this project will be based on persuading the vendors of the safety guarantee and good taste of the chicken from the project.

4. Measuring the Safety Premium

We can define the safety premium as the price difference between 'regular' and 'safety-branded' chicken that makes consumers indifferent between purchasing either type of chicken. This project has two ways to measure consumer valuation of safety-branded chicken. Vendors in the

project are recording prices and sales volume for all chicken sales, including non-project chicken, before, during and after the time that they are selling project chicken. This can be used to calculate the price differential between project and non-project chicken of different breeds and levels of quality.

The second method will involve a household survey near the markets where project chicken is being sold and an economic experiment. Households living near the market will be randomly selected to take a survey. The survey will cover food purchasing habits, household characteristics, and attitudes towards chicken, brands and food safety in general. After taking the survey, the survey respondent will be offered a choice of 2 discounts for 2 types of chicken as a gift for taking the survey. Each set of 2 discounts will be randomly assigned to each household, and 1 type of chicken will be project chicken and the other type will be either regular crossbred or local chicken. The household will be told the price of each type of chicken and given a brochure explaining project chicken before they make their choice. Through this experiment, we can use welfare economics to calculate either compensating variation or equivalent variation between regular and project chicken, which is similar to the 'safety premium' described above.

5. Implications for Future Policy, Investment and Research

Policy

The government of Viet Nam is currently applying several types of measures to decrease HPAI risk, of which vaccination is most prominent. Vaccination is considered to have had some success in decreasing the size and number of outbreaks, but might not be fiscally sustainable in the long term (RAP-ECTAD, 2008). Vaccination and regulations for farmer and intermediary practices are an important part of strategy to control HPAI, but consumer demand for safety can strengthen or extend the impact of control measures. Smallholders currently have very little incentives to improve biosecurity in terms of market access or higher prices. If there is a way to feasibly and credibly improve supply chain coordination and risk management, a significant consumer premium for safety-branded chicken might provide the extra inducement farmers need to improve biosecurity.

Given the high level of demand for smallholder poultry, improving biosecurity of smallholder farmers is an important part of the overall strategy to reduce HPAI risk. Plans for restructuring the poultry sector can take into account the development of certified smallholder supply chains, as well as providing direct support. As commune, district, provincial or regional biosecurity plans for poultry development are implemented; knowledge of the potential of certified smallholder

supply changes can make these plans more effective. Local veterinary capacity and strong oversight of slaughterhouses are important aspects of certified smallholder supply chains in this project and could be an important part of the overall biosecurity policy. The government can support the development of labels or brands for traceable poultry, or can strengthen legal enforcement of this type of brand or trademark. The government might also provide a supportive policy environment for smallholder poultry clubs, associations or cooperatives selling branded poultry through certified supply chains.

Private Sector Investment

As a pilot, this project can demonstrate the potential for a private sector firm to invest in smallholder supply chains. Private sector investment in the poultry sector has largely been limited to large scale, concentrated broiler production. Although this is a growing sector, there is still a substantial preference for chicken produced by smallholders. If the formal private sector (grocery stores, poultry production firms, agribusinesses, etc) wants to capture this premium market segment for smallholder poultry, investment in the type of supply chains developed in this project will be a necessity. This project uses a tag as a simple and effective innovation for marketing and traceability in a controlled supply chain. Local institutions have provided disease management in the pilot supply chain, improving sustainability of this approach. By testing a new concept that might initially be seen as too risky by the private sector, this project could motivate and inform private sector investment in smallholder poultry supply chains.

This project has used existing supply chains and relationships, while upgrading standards and providing training as necessary. This approach can be more easily implemented than an alternative which does not use existing institutions. Given the considerable level of government investment of veterinary staff and inspection after HPAI outbreaks, public sector resources can also be used to leverage private investment. A private sector firm need not replicate this project exactly, but certain aspects such as use of a tag or a relationship with local veterinaries as appropriate.

Poultry clubs are being supported and tested by some NGOs in Viet Nam (AED, 2008). Poultry clubs have a strong potential to partner with private firms in smallholder supply chains. Poultry clubs can provide the aggregation and higher production levels that can make private sector involvement more profitable, as well as providing training and other production support. If an entire poultry club is ‘punished’ when 1 member violates production (safety, feeding etc.) standards, then self-monitoring could be a powerful tool for biosecurity compliance.

Cost effectiveness of smallholder supply chains is an important issue. The cost of farm-level biosecurity improvement would have to be taken into account for future investment. High levels

of premium prices for all supply chain players are perhaps not necessary if long term relationships can be developed or additional market access is contingent on participation. A coordinated smallholder supply chain might also be able to manage costs through improved efficiency. An example of this is through farmer coordination. If farmers can collectively coordinate the dates that birds reach market weight, transportation costs to market could be controlled.

Research

There are several important areas of future research related to smallholder participation in poultry markets in Viet Nam. Continued demand analysis is necessary to determine the potential impact of supply side policies as well as the demand for smallholder poultry. Future research might also explore the type of contract between various players in supply chains, and how these relationships both maintain and/or decrease the quality and safety of poultry. Epidemiological models can incorporate economic relationships and farmer and trader behaviour to better judge the impact of certified smallholder supply chains. Risk assessments should elucidate the interventions or upgrading necessary to improve biosecurity on smallholder farms.

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7. Disclaimer & Contacts

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