

Ensuring food safety in Asian domestic markets: through proximity or standards?

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Abstract

The growing distrust of consumers in the safety of food is widely documented in both developed and transitional economies. This is related to the growing intensification or even industrialisation of food production and processing as well as to the growing distances between food production and food consumption sites. Additionally, farmers commonly complain of the increasing marketing power of modern distribution, which sometimes imposes unfavourable terms of exchange and discourages efforts in terms of quality assurance.

In the literature, proximity between producers and consumers—be it geographical or relational (the two being partially related)—is said to be advantageous to transactions and food safety assurance in various respects. Geographical proximity is economically efficient in a perishable commodity supply chain compared to more distant supplying areas. Regular interaction between producers and consumers and between sellers and buyers in general promotes trust, the sharing of information, as well as joint investment and risk-taking, with a sense of responsibility on both sides. An alternative to proximity is standardisation and certification, but these processes generate costs that are difficult for small-scale farmers to bear.

On the other hand, literature is increasingly challenging the so-called superiority of proximity over distance as regards food chain sustainability and food safety. When distant supplying areas are characterised by specialisation and large-scale production, this may result in economies of scale and lower costs in terms of production and transport. Trust cannot circumvent all risks of moral hazards; regular interaction combined with some form of control and certification is desirable, even if based only on some minimal documentation process.

We illustrate the advantages and drawbacks of proximity versus standards, or proximity combined with standards, by some cases of vegetable safety control in Vietnam. The comparison relates to the nature of trust, the cost, and the farmers' interest in the different mechanisms of control. The data is drawn from the author's work in Vietnam in various research and development projects, including surveys of consumers, traders and farmers involved in the development of vegetable quality.

The paper concludes with recommendations in terms of research. These include a more rigorous impact assessment of alternative marketing strategies to determine how trust and food safety can be strengthened. Identifying conditions for further enhancement of success stories in terms of quality development involving small-scale farmers is also crucial, which implies a more thorough investigation of the links between mass and niche markets for horticultural products.

Introduction

Paper outline

The paper deals with the comparison of two major ways to increase consumers' reassurance about the safety of food: interpersonal trust combined in the food chains and expert systems of quality control based on standards. We will first present the growing concern of consumers for food safety in general and in Southeast Asia more particularly. We will then review the literature on interpersonal trust and expert systems as quality assurance devices with their

respective strengths of weaknesses. Illustrations taken from the author's work in Vietnam, and also on some secondary sources, will then be presented. My experience is based on the study of domestic rather than export markets, and on vegetables rather than other commodities. The paper concludes with a summary of the main issues and some recommendations in terms of research.

Growing concern for food safety

Globally

The growing distrust of consumers in the safety of food is widely documented in both developed and transitional economies. This is related to the growing intensification (in terms of use of chemical inputs) or even industrialisation of food production and processing, as well as to the growing distances between food production and food consumption sites.

As stated by Ménard and Valceschini (2005), "recent developments have encouraged consumers to adopt a "suspicious approach." Technological innovations, combined with the diversity of product origins and the internationalisation of trade, stimulate consumers' risk aversion, which has been exacerbated by recent events such as "mad cow" disease, the poultry flu pandemic, etc. (p. 427). "The costs and efficiency of alternative organisational and institutional answers in establishing credible commitments are at stake" (p. 428).

In Europe, food crises have been especially acute in the meat sector since the 1990s. Bovine spongiform encephalopathy (BSE) struck in 1996, followed by the dioxin crisis in Belgium in 1999. Avian influenza started in Hong Kong and then moved to inland China and Vietnam in 2005. The response to food scares is a drop in food consumption, and recovery is always incomplete (Böcker and Hanf, 2000). After the second crisis of BSE in 1999, three years were necessary for consumption to reach its previous level, despite very low real risk. Industrial production, as well as information brought to light by scientific experts, was made invalid by BSE (Allaire, 2005). Organic agriculture is not spared from stigmatisation. In 2011, *E. coli* that developed from germinated seeds produced in an organic farm caused the death of 38 people in Germany. The origin of the bacteria had been wrongly attributed to Spanish cucumbers by German food safety authorities, which led to more than 500 million euros in losses due to the drop in consumption (Wollman and Briat, 2011). In 2003, Korea banned beef imports from the USA because of BSE. In early 2006, Korea and the USA resumed an import protocol. This resulted in what was considered as one of the biggest anti-government demonstrations in two decades.

Food safety refers to credence attributes not directly observable by the user, which create the most uncertainty concerning quality (Nelson, 1970; Darby and Karni, 1973). What is especially affected by food crises is consumer trust in the reliability of suppliers (Böcker and Hanf, 2000). Food crises are commonly followed by strategies of differentiation through quality for all actors in food chains (Ménard and Valceschini, 2005).

Although it is less characterised by "de-territorialisation" than other sectors, agriculture is being increasingly driven by international food chains. Internationalisation and concentration is observed in the sector of agricultural inputs as well as retailing. These processes started to be documented in the 1990s (Goodman and Watts, 1997; Morgan *et al.*, 2006). According to Friedmann (1994:272), the dominant tendency in agriculture as well as diets is "the suppression of particularities of time and place" and the disconnection of production and consumption.

The massive protests following beef imports suspected of BSE in Korea in 2008 are partly due to distrust in the behaviour of retailers, some of whom were selling American beef as

domestic beef. Due to the growing gap between producers and consumers, it becomes increasingly difficult for consumers to understand the way food has been produced. “Both the physical distance and the mental distance between producers and consumers have grown” (Brom, 2000, p. 129). In the UK, publication in 2002 of the Curry Report demanding to reconnect production and consumption of food indicates a milestone in policy development (Wiskerke, 2003).

The increasing marketing power of modern distribution is having mixed effects on these food safety problems. On the one hand, promotion of food safety is a key communication strategy of supermarkets; thus, consumers associate purchases in supermarkets with enhanced quality assurance. On the other hand, these perceptions are not necessarily paralleled with genuine efforts on the part of modern distribution. Besides, consumers are made increasingly dependent on the information provided by a small number of retailers (Ménard and Valceschini, 2005).

In Asia

In Asia, some authors consider that concern for food safety has emerged since food availability is no longer a concern (Changchui, 2006). Sources of food contamination have also increased. This is because of the increase in industrial and domestic sources of pollution close to agricultural production areas, and also because of the rise in the use of chemical inputs by farmers. In China, consumers’ concerns include pesticides, heavy metals and growth hormones contained in produce, as well as contamination from water and soil (Wei, 2006). This is close to the concerns of Vietnamese consumers, who worry first about pesticide contamination in fruits and vegetables followed by antibiotics in meat (Figuié *et al.*, 2004). In the Philippines, consumers are concerned first about the physical appearance of fruits and vegetables, followed by pesticide residues (Conception, 2006).

With increased facility for regional trade, there are also new worries about food safety. As highlighted by a meeting of consumer protection associations in 2005, the benefits of economic integration are mostly discussed from the point of view of businesses rather than that of consumers (Consumers International, 2005).

The rapid development of supermarkets in both developed and developing countries has been covered extensively in reports in the last decade, particularly by Reardon *et al.* (2003). In Asia, the first supermarkets emerged in the 1990s after their rapid development in Latin America. The westernisation of Asian diets, the development of supermarkets, fast-food chains and exports in Asian countries are described by Pingali (2006) as the main drivers for change in the food systems. Private standards are developed by supermarkets as substitutes for non-existent or inadequate public standards (Reardon *et al.*, 2008).

In the literature, two major ways to assure quality in general and food safety in particular are put to the fore: proximity between stakeholders of the food chains, and standards, which are a particular kind of expert systems. The next section presents what is stated to be the advantages and limits of these two mechanisms of quality assurance.

Literature insights on proximity and expert systems

The advantages of proximity

Definitions

In the literature, proximity between producers and consumers—be it geographical or relational (the two being partially related)—is said to be advantageous to transactions in various respects. Geographical or spatial proximity relates to the “kilometric distance that

separates two units” (Torre and Rallett, 2005, p. 49). Relational proximity - equivalent to organised proximity according to (Torre, 2000)- relates to the interactions between stakeholders. It has also been defined as a mutual alignment of interests based on combinations of power relations, trust and management of social factors (Murphy, 2012). It is said to rest on common representations and values (termed as cognitive proximity by Bouba-Olga and Grossetti (2008), a capital of trust and interpersonal relations.

The advantages of geographical proximity

The role of geographical proximity in the supply of perishable crops was modelled by Von Thünen in the first analysis of agricultural land use according to location done in 1826 (Huriot, 1994). According to Von Thünen’s model, land is allocated according to the use which brings the highest land rent, and can be sketched as concentric circles relative to the city centre. Land rent is defined as the share of the output by area after deduction of production and transport costs. The most profitable and intensive land use by unit area, and commodities with high value relative to transport costs, are found near the city centre. This is typically the case for perishable fruits and vegetables. The validity of von Thünen’s model is being brought back into question in industrial societies where the share of transport cost in the total cost decreases, and dominant factors in the locating of production are soil quality, regional specialisation and competition between agriculture and urban development (Huriot, 1994).

The advantages of relational proximity

Geographical proximity goes hand in hand with relational proximity, as it may favour more direct links between producers and consumers. Such direct links are efficient in the development of trust and loyalty, as well as some sense of responsibility on the part of farmers as regards food safety (Prigent-Simonin and Hérault-Fournier, 2005). According to Ellis and Sumberg (1998), the advantages in terms of quality gained by proximity between suppliers and customers—in particular trust—may be a transient consequence of quality regulations not being adequately enforced. But they may also be considered as an efficient substitute for costly and difficult public control of food safety in the context of small-scale agriculture.

Personalised relationships in market transactions play the role of minimising transaction costs (Porath, 1980). The role of vertical integration in reducing transaction costs was brought to the fore by Williamson (1987). Transaction costs means all indirect costs incurred in setting up, conducting and monitoring the transaction, i.e. the cost of searching out, selecting, agreeing to, implementing and enforcing contracts (North, 1990). Measurement costs of quality characteristics are specific types of transaction costs. The safety of food produce is a quality attribute that is especially difficult to observe and measure. The consequences of quality measurement constraints on the supply of low-quality produce (as good quality produce does not get a quality premium) and even disappearance of market transactions have been demonstrated by Akerlov (1970). Increased vertical integration is a response to a greater number of quality measurement errors (Barzel, 1982).

These costs relate to establishing mutual views about honesty, reliability and skill, as well as rules and norms concerning contingencies. On the other hand, drawing from the game theory, the expectation of continuing exchange may provide a disincentive to cheat: the infinite repetition of a transaction can induce the parties to give up short-term benefits in order to realise future gains (Platteau, 1994). Personalised relationships, which can also be termed as relational governance, are an intermediary mode between the two polar extremes of governance (Claro *et al.*, 2003), market and hierarchy (Williamson, 1991). Trust reflects the

extent to which negotiations are fair and commitments are sustained (Anderson and Narus, 1984). Trust counterbalances the need for a costly safeguard mechanism against opportunism. Trust (inter-personal as well as inter-organisational) favours two aspects of relational governance, joint planning and joint problem solving (Claro *et al.*, 2003). Trust refers to the credibility (or reliability) of the partner, as well as to his/her benevolence. It is based on familiarity “developed either from previous interactions or derived from membership in similar social groups” (Batt *et al.*, 2006:94). Personal relationships are at the same time an antecedent and a consequence of transactions as they are “continually assessed and reassessed with each subsequent exchange transaction” (*ibid.*, p. 96) – see Figure 1.

Direct sales from farmers to consumers take various forms in terms of location and method of transaction, including farmers’ markets, home-to-home delivery and at-farm purchases (Cadilhon, 2007). Community-supported agriculture (CSA) emerged in the mid-1960s, approximately at the same time in Japan and Germany, mostly in reaction to food industry scandals (Roos *et al.*, 2007). In CSA, consumers agree to prepay a certain amount of money to the producers, or to invest in the production system directly, in exchange for receiving fresh produce at their door or at a designated delivery station during the harvest season.

Direct sales reduce marketing risks for both sides: risks for farmers of not finding buyers, and risks for customers of not finding the suppliers they are looking for. These risks are especially important in the case of perishable produce. Consumers may also expect quality characteristics that are difficult to visibly observe, such as non-use of pesticides and cleanliness during processing and packaging. The building of regular, personal relationships, based on the seller’s reputation and buyer’s trust, can be termed as a “domestic convention”, enabling consumers to feel more reassured - in contrast with standards which refer to industrial conventions (Eymard-Duvernay 1989). The farmer-producer relationship is an opportunity to exchange knowledge on production methods, which fulfils the consumer’s needs for reassurance, because producers are perceived as the most competent persons to give this information. In return, direct farmer-consumer exchanges enable farmers to have a better appreciation of consumer demands (Prigent-Simonin and Hérault-Fournier 2005).

Direct sales have also been described as a way to develop solidarity between farmers and consumers. Numerous advocates of “alternative distribution food chains” claim that citizens should be able to access local neighbourhood small-scale retail points—if possible, run directly by farmers—rather than mass-scale, monopolistic and production-centred distribution, which disconnects agricultural output from its natural conditions of production (Morgan, Marsden and Murdoch 2006; Friedmann 1994). Kirwan (2004) refers to social connectivity, reciprocity and trust as dominant drivers of British consumers buying from farmers’ markets. “Forums where producers and consumers can come together to solidify bonds of community” (Lyson, 2000) define civic agriculture, where producers are not only responding to wants expressed by consumers, but also share the sense of inhabiting the same place with resulting joint opportunities as well as constraints and responsibilities (DeLind, 2002). According to Hinrichs (2000), it is not necessarily easy to disaggregate the market interests gained by farmers and consumers through direct transactions, from more social and civic interests, as all are embedded.

In France, it is noted that producers in short chains choose practices that are meaningful with regard to the environment, allowing them to communicate more easily and that they can turn to greater advantage in their direct relationship with the consumer, such as diversification of fruit and vegetable varieties. In Brittany, the proportion of organic farmers among producers selling to consumers is reportedly 30% compared to 15% for at-farm sales (Redlingshöfer, 2008).

Finally, when the place of food production is close to where the food is consumed, farmers face more directly the recipients of the shaded health and environmental costs (i.e. externalities) of their actions. The consequences of unsustainable production will be more “visible” and easy to sanction by local institutions (Princen, 1997).

The limits of proximity and the advantages of standards

Mostly by definition, there is a geographical limit to the efficiency of face-to-face interactions, even when it is supplemented by organised proximity, modern technologies of communication and temporary geographical proximity at crucial stages of the transaction or innovation processes (Torre and Rallett, 2005). Direct sales are commonly associated with niche markets, i.e. for organic markets. Achieving success stories in terms of quality management, farmer and intra-chain co-ordination for local produce (i.e., with geographical indications), without damaging the interpersonal relationships and commitments which guarantee long-term efforts in terms of quality, remains a challenge for many. In the European-funded project SUSCHAIN which worked in seven European countries (two cases per country) (Wiskerke, 2003), it is stated that a small ‘sustainability’ gain within the 95% (normalised and concentrated markets) may have a larger overall impact than a larger ‘sustainability’ gain within the 5% (typified by producer co-operation and more direct interactions).

Even though studies comparing the cost disaggregation in short versus long food chains are scarce, the available ones show that specialisation according to comparative advantage and economies of scale as regards production, processing and logistics may actually lower the costs of food produced at a distance, even in terms of energy (Schlich and Fleissner, 2005).

Besides, centring on geographical proximity and advocating short food miles (i.e. kilometric distance between producer and final consumer—see Weber and Scott, 2008) has been criticised for the risk of defensive localism that it may entail (Allen, 1999), which may come at the expense of developing economies (Grolleau *et al.*, 2010; Kemp *et al.*, 2010).

The first initiatives in the areas of organic agriculture and fair trade in the 1960s “were characterised by a high level of vertical integration that went all the way from marginalised producers and their organisations to dedicated retail shops,” involved regular interactions between producers and consumers, and were based on informal norms (Daviron and Vagneron, 2011:97). But in the 1980s for fair trade and the 1990s for organic agriculture, intermediaries between producers and consumers turned increasingly professional, formal standards emerged, as well as third-party certification, enabling these initiatives to spread into modern distribution. This shift also corresponded to growing consumer concerns for food scares and decreasing public support for agriculture. In Europe, responsibility for food quality control has shifted from government authorities to industry actors (Wiskerke, 2003). Trust in persons is shifting increasingly into trust in abstract systems, which is “the condition of time-space distanciation and of the large areas of security in day-to-day life which modern institutions offer” (Giddens, 1990:113).

The limits of standards

Standards are “rules of measurement established by regulation or authority” (quotation from Jones and Hill, 1994 by Reardon *et al.*, (1999). They have been also defined as “norms selected as a model by which people, objects and actions . . . can be judged and compared, and which provide a common language to evaluators, the evaluated and their audiences” (Ponte *et al.*, 2011, p.1). Standards can be classified between performance (e.g. Maximum Residue Limits) versus process standards (e.g., fair trade and GlobalGAP); private versus public; and mandatory versus voluntary (Reardon *et al.*, 1999). There are hundreds of organic

private standards. Standards set by the government include 60 organic standards, pollution-free or green vegetables for China, etc.

Labels and standards have something to do with trust, but of a different kind than interpersonal trust. While interpersonal trust is dialogical, i.e., it enables a bilateral communication and exchange, trust created through conformity assessment is monological and cannot replace the richness of dialogue and experience; standards are characterised by opacity (Busch, 2011). “Trust in persons, as Enrikson emphasises, is built upon mutuality of response and involvement: faith in the integrity of another is a prime source of a feeling of integrity and authenticity of the self. Trust in abstract systems provides for the security of day-to-day reliability, but by its very nature cannot supply either the mutuality or intimacy which personal trust relations offer” (Giddens, 1990:114). Formal standardisation comes together with the substitutability of suppliers (Daviron and Vagneron, 2011), which inevitably handicaps small-scale farmers with low assets in terms of capital and human skills.

Besides, standardisation and certification generate costs that are difficult for small-scale farmers to bear. Even though the empirical evidence is mixed, it suggests that small-scale farmers benefit from formal processes of certification only when there is government support (or the support of a benevolent private trading company with genuine concern for local development), in particular in terms of training and infrastructure, as well as fair contractual arrangements (Van der Meer, 2006; Swinnen, 2007; Blackmore and Keeley, 2012).

Standardisation and labelling is a partial answer to distrust about food safety because it gives consumers the responsibility for choices, although it does not take their political concerns seriously enough (Brom, 2000). Concerns for food safety are mostly of an individualistic nature, but it is difficult to disentangle them from more collective or societal concerns, such as the environmental impact of chemicals or GMOs used in food production.

Hence, the literature suggests the following hypotheses: (i) proximity in food chains comes together with enhanced customers’ trust in food safety in the form of mutual, dialogical trust, low farmers’ cost for quality assurance, but also limited scope of operation; (ii) “abstract” expertise systems that form the basis of standardisation imply high costs at the expense of inclusion of small-scale farmers, but enable large scope of operation. The rest of the paper is a preliminary attempt to test these hypotheses on the situation of vegetable safety assurance in Northern Vietnam. We consider here quality assurance systems as mechanisms of coordination in the chain which ensure that quality is delivered according to the purchasers’ expectations (Holleran et al., 1999; Renard, 2005).

A preliminary comparative analysis of vegetable safety assurance systems in Vietnam

Source of data

The data is drawn from the author and her colleague's work in Vietnam in research and development projects. We focused on the following dimensions of vegetable safety assurance systems: their costs, the degree of interest or commitment of farmers (measured by the number of farmers involved, the trends in these numbers), and consumers' reliance on these systems. We used the results of various consumer surveys, in particular one conducted in 2006 on 707 consumers on the factors determining the perceived safety of purchased vegetables, including the place of purchase and the nature of labelling (Mayer, 2007). We also conducted focus groups with members of the Women's consumer club. As regards the origin of produce in the wholesale and retail markets, surveys were made at seven times of supply variation, in 2002 and 2003. A total of 1369 traders were interviewed in 2002, and 1877 in 2003 with 180 to 350 traders surveyed each time. Besides we identified all the points of sale where vegetables have some indication of their safety, e.g., in the form of a label on the product, or a certificate. Then we carried out cascade interviews to trace back the suppliers and the organisation of chains up to the farmers. We made interviews of around 40 leaders of farmer groups and 30 traders to assess their strategies and constraints in terms of vegetable safety. Besides, I was involved in development projects where I supported vegetable quality control and by this means I had first-hand access to information on conditions to get quality control in Vietnam. This type of data is difficult to get for researchers not involved in direct actions of quality control. The data presented is nevertheless still patchy and need to be confirmed by a more systematic protocol of data collection.

The importance of geographical proximity

Geographical proximity is still important in the supply of perishable food commodities in Southeast Asia, especially for leafy vegetables, which play a strong role in the livelihoods of the poor, be they farmers or consumers. This is due to the high perishability of these vegetables, the quality of which diminishes after one day. From surveys conducted between 2002 and 2005, it was determined that leafy vegetables originated from less than 50 kilometres from the city centres in the capitals of Vietnam, Laos and Cambodia (Moustier, 2007). This is in line with the findings of Von Thünen (Huriot, 1994). Naturally, the situation may change with the development of transportation, cold chains and packaging, but these innovations may also inflate vegetable prices. The geographical proximity between producers and consumers facilitates short chains, with generally zero or one intermediary, between these two types of agents. For the mass distribution of fruits and vegetables, marketing chains are characterised by relatively competitive transactions combined with personalised relationships. Oligopolies of wholesalers-collectors and information asymmetries are more frequently observed in long-distance than in short-distance trade. Short-distance trade facilitates face-to-face interactions, but these were little used for information exchange on quality until the ten last years.

A variety of quality assurance systems

Vietnamese consumers, especially urban ones, express growing concern for food safety, particularly as regards vegetables and fruits (for pesticides) and meat (Moustier and Nguyen, 2010a). Tests on 144 samples of vegetables revealed that 12% exceeded the authorised limits for pesticide residues (Vietnam Ministry of Agriculture et al., 2009). In response to this problem, the government as well as farmers and retailers have been active in the development

of quality assurance systems, with varying success. The characteristics of quality assurance of fruits and vegetables in Vietnam as regards costs, nature of trust and farmers' interests are summarised in Table 1. The fieldwork brings to the fore a variety of standards and quality assurance systems. They have been put in place since 1995 by a combination of farmers' initiatives and the support of public administrations and international NGOs: safe vegetable (SV) certification by the Plant Protection Department, based on –quite lax- public standards and control; it is in some cases supplemented by internal control systems; VietGap and AseanGaps based on good agricultural practices and HACCP; and participatory guarantee systems for organic vegetables (PGS). When these three types of systems are applied, vegetables are always labelled with an indication of the place of production and type of certification. As regards quality assurance based on relational proximity, it is observed that direct sales (DS) between farmers and farmers develop quickly and are combined with certification and labelling relating to safe or organic vegetable production. We give some details below on the operation of the different systems.

Safe vegetable certification by PPD

In 1995, public interest in the safety of vegetable produce led the Vietnamese Ministry of Agriculture and Rural Development (MARD) to implement an ambitious program called “safe vegetables,” which entailed training sessions about IPM, support to vegetable marketing by co-operative leaders in shops and market stalls, as well as subsidised public certification of safe vegetables based on analyses of soil, water and produce. NGOs (predominantly ADDA) also trained farmers as regards IPM and later organic vegetable production.

The certification of the safe vegetable groups by PPD (Plant Protection Department) is based on the Ministry of health and MARD regulations –the possibility to term these regulations as “standards” is subject to debate. The regulations indicate the authorised and prohibited pesticides, maximum residue limits of pesticides and fertilisers, content of heavy metal and infection of bacterial pathogens. The list of permitted, restricted and banned chemicals in Vietnam is updated every year by PPD. The control is based on various documents to be issued by cooperatives, including a letter of commitment to implement rigorously the technical procedures and the good use of chemicals according to the law, training certificates on IPM, list of chemicals used in the local area, map of production area, indicating in particular the location relative to the sources of water. Besides, some samples are collected for chemical and heavy metal residue analysis along the following mode: (i) control of Nitrates, pathogenic microorganism (Ecoli, Salmonella, Coliform), chemical residues (five types decided by experts); a minimum of three vegetable samples, the timing of which is decided without any prior notice to farmers. Unexpected inspections are planned by the PPD. The certificate is effective for one year. After one year, cooperatives have to renew the certificate by applying a new request. If the cooperatives are found to violate the regulations about safe vegetable production at the time of inspections, they are planned to be treated as follows: warning (if first and not serious violation); withdrawing certificate (if serious and repeated violation). This is in the text, but whether it is applied or not is unsure. From our discussions with cooperative leaders, it seems that certificates are renewed in many cases without new samples being collected.

In May 2009, in Hanoi province, 40 units (33 farmers cooperatives and 7 individual firms) held the certificate. It had increased by 25% relative to three years before. The total certified area amounted to 243 ha (out of a total of 12,000 ha of vegetable production) (information given by Nguyen Thi tan Loc, Favri).

A survey of 121 consumers of conventional vegetables show that they don't buy vegetables sold as “safe,” because they have little trust in their safety as the inspections by the Plant Protection Department are suspected (quite rightly) of being quite lax. As regards the 104 consumers of safe

vegetables interviewed in the same study, 75% have moderate trust in the safety of these vegetables (using a scale from 1 to 10). There is an indication that the number of such consumers will grow as 73% started buying safe vegetables in the last five years (Pham *et al.*, 2009). It was estimated that vegetables which can be identified with PPD certification represented less than 5% of the Hanoi market (Moustier and Nguyen, 2010a). But farmers selling through “safe” vegetable chains get higher incomes than farmers selling through ordinary chains, which explain a development of the former (Moustier and Nguyen, 2010b).

In summary, PPD certification combined with the labelling as “safe vegetables” is an expert system which is of intermediate cost for farmers, and moderately trusted by consumers.

GAP (Good Agricultural Practices) Systems

The more rigorous the procedures, the more costly it gets for producers or the community group that supports them. The current VietGAP system of certification for vegetables is based on HACCP procedures. It has been issued by the Vietnamese ministry of agriculture in 2008, based on Aseangaps, which have been developed by Australian researchers to improve regional trade. It requires producers to record their practices and to inspect production and post-harvest activities (internal inspections) according to several food safety criteria (the pesticides used, the time between treatment and harvesting, the place where pesticides are stored, the organisation of traceability, etc.). An external auditor checks these internal records using the producers’ registers and information from the field. The government aims to ensure that VietGAP is respected in half of all vegetable- and tea-producing areas by 2015. A total of 65 criteria have to be checked in the VIETGAP control, which costs between 500 to 800 USD per hectare, i.e. around 10 times more than the “safe vegetable” certification system, which it is due to replace. It is also found to be very constraining by farmers to record all their practices in terms of chemical use. Country wide, VietGAP covers 75,000 hectares for all crops, i.e., 60,000 hectares for coffee and cocoa, 15,000 hectares for fruits, tea and vegetables (including 5,000 hectares for dragon fruit) (information given by Nguyen Thi Tan Loc, Favri). In Northern Vietnam, for vegetables, VietGAP is only used by five state-subsidised enterprises and three safe vegetable cooperatives. This is particularly so because the documentation procedures involved in VietGAP are rewarded by a low price premium (less than 10%) relative to vegetables sold as safe (certified or not).

Globalgap is mostly used by private exporters for fish and dragon fruit. The problem of incentives for farmers to adopt VietGAP or GlobalGAP for dragon fruit in southern Vietnam, in a context of lax control by importers of what is labelled as GlobalGAP, and irregular export channels, has also generated heavy losses for farmers who have decided not to renew their certification. GlobalGAP has 300 criteria to be checked and costs more than 3,000 USD/hectare (Vietnam News, 2012). The standards set by the Chinese (organic, green and pollution-free), Thai (Q-Mark) and Malaysian authorities (Malaysia Best) are reported to have only limited adoption (Shepherd and Tam, 2008). In Thailand, the Royal Project introduced GAP and certification for more than 2,600 mountain horticultural producers, but it is still heavily dependent on Royal funding, e.g. in terms of packaging, control and marketing (Jayamangkala, 2008). As regards GAP certification for pineapple in Thailand, it is adopted quite widely, the main factors of adoption being the price premium, contracts with buying companies and farmers’ age. The Department of Agriculture monitors farmers’ practices on a regular basis and awards GAP certificates (Sriwichailamphan *et al.*, 2008).

In summary, Vietgaps and Globalgaps are costly systems for farmers with little development so far. It was not possible to evaluate consumers’ trust in these systems are vegetables certified as Vietgaps are little available in the market.

ICS combined with PPD certification

In the Superchain project, we worked with four groups of vegetable farmers in the district of Hoai Duc, located in Hanoi Province, which represented a total of 140 households. We identified as critical points determining excesses in pesticide residues the type of pesticides used and the delay between spraying and harvest. These were monitored by farmers themselves in a notebook and by a monitoring committee made of a group of farmers in the co-operative, who checked monthly the validity of the records and filled out a five-page questionnaire. Non-compliance results first in a warning then a sanction in the form of excluding the farmer from using the group label. This, combined with external inspections by a research institute accredited by the Plant Protection Department, enabled a 18-member group to obtain VietGAP certification in 2005, which was not renewed subsequently due to its cost. The Internal Control System (ICS) is now used as a communication strategy for the group in its marketing and it helps them to obtain “safe vegetable” certification from the Plant Protection Department. It was interesting to note that the effectiveness of recording was unequal among producers: from 30 to 80% of 140 farmers. Adoption was higher the younger and the more educated the members, and the smaller the group (Nguyen, 2009). At any rate, the internal control system is fragile, because it requires a lot of time, but farmers do not yet feel the pressure or receive incentives from the government or the market to sustain this internal control system.

Organic vegetables control

Depuis 1999, à l’initiative d’une ONG belge, puis d’une ONG danoise, l’agriculture biologique se développe aussi autour de Hanoi, même si elle ne concerne en 2009 que 69 producteurs dans le district de Soc Son.

Since 1999, organic vegetable production is developing around Hanoi, following training programmes by a Belgium, then a Danish NGO. In 2009, 69 farmers of Soc Son district were following organic production specifications (which have been the subject of a public standard in 2008). Twenty-four conditions for organic production are included in the specifications. An internal control system is established and operated by the group leaders. The conditions are verified in order for PGS (Participatory Guarantee System) certification to be issued. The certification process is carried out by inter-groups on a monthly basis. Inter-groups are comprised of the farmer association, a panel of farmers, a panel of consumers and a technician from ADDA (Agricultural Development Denmark Asia). The monthly meeting is an opportunity to take stock of quantities available, PGS certificates issued, disease outbreaks and means of dealing with them. It is difficult to determine the frequency of inspections upstream from getting the PGS certification and the makeup of the group of inspectors. In practice, consumers do not inspect the fields. They declare themselves as lacking the competence required to evaluate the degree of rigour present in the development of safety standards and their control. But when the fields are visited at different times during the year, they can get an idea of the production conditions. ADDA does perform a number of incidental sample analyses. The group leaders pay 6 USD a year for PGS certification. Once a year, random samples are taken from four families for two types of vegetables. These are analysed using a quick test. However, it is difficult to tell whether consumers trust the PGS system or the NGO, since both are mentioned on the label, and that no survey has been conducted to investigate the matter.

The development of direct sales

A final observation relates to the recent development of direct sales (or at least short, with only one intermediary) between producers and consumers, especially to promote specific

attributes of quality, be it in terms of safety or a specific geographical location. Nine of the 27 co-operatives certified as “safe” have developed an efficient marketing strategy (Moustier and Nguyen, 2010b). Of these nine co-operatives, six are regular suppliers of supermarkets, and six (including three selling to supermarkets) have market stalls or shops where they sell directly to consumers. An approximate total of 500 farmers are involved in these co-operatives. All of the nine co-operatives are regular suppliers of canteens. Compared with the supply of traditional markets—which is characterised by a chain of collectors, wholesalers and retailers—the distribution of vegetables labelled as “safe” generally involves zero or one intermediary. While direct sales represent 60% of the sales of co-operatives of safe vegetables, it is less than 10% for conventional ones (Moustier and Nguyen, 2010a).

Direct sales are increasing quickly: in 2002, there were 22 points of sale for “safe vegetables,” including 20% managed by co-operatives. In 2008, there were 54 points of sale, 70% of which were managed by co-operatives. This development is also observed for organic vegetables, for which direct sales look more sustainable arrangements than contract farming as shown by the history of the development of the sector. The production of organic vegetables began in 1999 at the initiative of an NGO (CIDSE). In 2002, Hanoi Organics private company was distributing organic vegetables via its own shop, as well as delivering directly to the consumers and to schools. The company signed two-year contracts with 6 families of producers in the Tu Liem district (Hanoi province) and 32 farmers in Chuong My district (Ha Tay province), specifying the production regulations and frequency of controls, while quantities and prices were renegotiated every three months (they amounted to two to three times the prices of ordinary vegetables at producer and consumer levels). In 2005, the company stopped operating because it faced various management and logistics problems.

Since 2008, the NGO “Action for the City” has supported a group of 70 organic vegetable growers (organised into eight sub-groups) in Soc Son district to provide home deliveries in Hanoi. To date, 400 consumers have subscribed, and the number is regularly increasing. They pay for packs of vegetables delivered weekly at stable prices (1 USD per kilo for all types of vegetables all year round). This NGO is also trying to develop participatory certification of organic production, based on inspections by consumer groups and extension workers.

Buying “safe vegetables” from producer groups in shops give consumers more reassurance because of face-to-face interactions. Buying vegetables from supermarkets also partially reassures consumers because they link supermarkets with expert systems (which is debatable, as supermarkets source “safe vegetables” from the same sources as shops and the declared system of additional sample analysis that they perform is quite opaque). A survey of 707 consumers in 2006 showed that the perceived “safeness” of vegetables increased depending on the location at which consumers purchased their vegetables. The least “safe” was a spontaneous purchase at an unknown market. Trust in “safeness” increased, moving from official markets, safe vegetable stalls and shops, and finally, to supermarkets (Mayer, 2007). Another survey conducted on 801 consumers in Hanoi and Haiphong showed that for 60% consumers, buying from familiar retailers is the best way to ensure vegetable safety, while only 16% rely on certified products (Luu, 2006).

At the moment, the greatest impediment to direct sales in Vietnam is a lack of credit to get access to market shops and stalls, all the more so because available land is very limited in the city. This is less the case in Laos, where the authorities have set aside some land for a weekly organic farmers’ market in Vientiane.

Results in terms of vegetable safety

It is difficult to appraise the results in terms of vegetable safety of different systems of guarantee of vegetable safety. First, it is difficult to disentangle the effect of the system of

quality control from the effect of production practices. Second, high costs are involved in collecting vegetable samples and carrying out analyses of pesticides, nitrate and heavy metal residues, among others. We conducted a study to compare the excess pesticide residues in different points of sale in 2005. Even though the sample is relatively small (250 samples, between 25 and 70 for each type of points of sales), we don't know of other similar studies, which makes the results valuable. The sale points chosen include 3 supermarkets, 2 safe vegetable market stalls; one organic vegetable shop, 2 wholesale markets, and two retail market spots. The sampling was conducted three times during the summer of 2005. To detect if maximum residue limits were exceeded we used quick tests based on Rapid Bioassay of Pesticide Residue (RBPR), as developed by Taiwan Agricultural Research Institute. The quick test is used to screen samples with excess residues of carbamate and organophosphorus (Ops) pesticides which are the most dangerous neurotoxin pesticides. Then chromatography (which is more reliable but twenty times more expensive) was used to confirm and deepen the evaluation.

The results of the study are as follows (see Table 2). No pesticide residue was detected in the organic shop. Very limited contamination was identified in vegetables sold as safe vegetables in supermarkets (1%) and in shops (2%). The highest residues were found in conventional markets, be they formal or informal (8% in wholesale markets, 12% in retail markets). Hence the results suggest a growing vegetable safety when ones moves from conventional to “safe” and organic vegetables.

Conclusions

The paper highlights strategies by Asian farmers to have their quality efforts rewarded and better recognised by consumers for the benefit of both. The hypotheses drawn from the literature are partly confirmed by the fieldwork. The strategy of farmers' getting nearer from the consumer stage by integrating marketing stages is efficient to reduce uncertainties related to food safety and get higher prices. The farmer-consumer or farmer-retailer relationship is an opportunity to exchange knowledge on production methods, and this fulfils the purchaser's need for reassurance, as producers are perceived as the most competent persons to give this information. In turn, direct farmer-consumer exchanges enable farmers to better ascertain consumer demands.

On the other hand, trust cannot circumvent all risks of moral hazards. On the whole, consumers show little trust in the safety of vegetables supplied to them. The vegetable safety analyses show that there are indeed excess pesticide residues in all types of marketing chains, except for organic vegetables. Some form of control and certification, based on verifiable documentation processes, appears desirable to limit opportunistic behaviour and increase the outreach of quality chains beyond local communities. The problem with verifiable documentation processes is that they add costs and constraints to local farmers, and the latter are not immediately rewarded by consumer premium prices. Table 3 summarises the basic characteristics of personal interactions and expert systems in relation to their ability to assure food safety. The illustrations in the paper show some success of initiatives based on personal interactions in Southeast Asia, whereas expert systems are more difficult to set up. Some intermediary systems combining internal control systems with verifiable procedures and external inspections—made by consumer groups, trading companies or public bodies—have been documented as promising options. These systems are based on relational proximity, expert systems and labelling on the origin of vegetables as ways to enhance consumers' trust and farmers' commitments. One interesting outcome relates to the combination of systems based on relational proximity, expert systems and labelling on the origin of vegetables as

enhancing consumers' trust and farmers' commitments. Hence relational proximity, standards and labels are complementary rather than substitutes.

Some recommendations in terms of research are now given.

First, a more rigorous impact assessment of alternative marketing and quality control strategies is necessary to determine how trust and food safety can be strengthened in the chain and at what costs and risks for farmers. It implies being able to compare, for the same type of crops and farmers, different methods of controlling food safety: for instance, direct sales without ICSs, direct sales with ICSs, contracts between farmer groups and a consolidator supporting certification costs, etc. It also involves panel data, treatment and control samples, which is not easy in situations where direct sales or certification may represent a small share of farms.

Second, more action-research as well as research in economics, management and agricultural sciences are also needed to determine how the role of farmer organisations involved in Internal Control Systems, that of public authorities and that private buyers involved in external certification can be combined in a such a way that the characteristics of food safety as a public good are efficiently tackled at a reasonable cost.

Third, identifying conditions for up-scaling of success stories in terms of quality development involving small-scale farmers is also crucial. This implies a more thorough investigation of the links between mass and niche markets for horticultural products. Assessing how temporal interactions between stakeholders located at key entry points of the chains can compensate for low geographical proximity is a promising avenue of research.

Note

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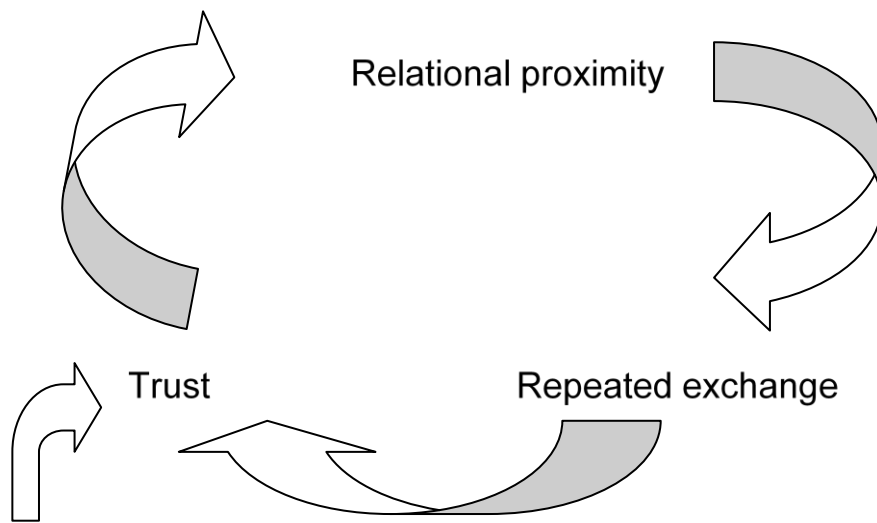
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Starters of trust:

Neighborhood

Kinship

Facilitator

From Batt et al (2006)

Figure 1 – The cycle of trust building

Table 1 - Systems of quality assurance for fruits and vegetables in Vietnam

	Trust	Nr of criteria	Cost	Farmers' interest
Direct sales (safe vegetables)	Mutual		+	+
PPD certification (safe vegetables)	Expert		+ (100 USD/ha)	+
Vietgap	Expert	65	++ (500 to 800 USD/ha)	-
Globalgap	Expert	300	+++	-
PGS (organic vegetables)	Mutual +expert	24	+ (<6USD/ha)	+
Direct sales + ICS (safe vegetables in Tien Le)	Mutual+ expert		+	+

Table 2-Summary of pesticide residues found in various points of sale in 2005

	Supermarkets	Wholesale markets	Retail markets	Organic shop	Safe vegetable stalls
Total number of samples	75	75	25	25	50
Nr of positive samples	1	6	3	0	1
% of positive samples	1	8	12	0	2

Source: FAVRI analyses, see Nguyen (2006)

	Personal interactions	Expert systems
Basis	Kinship, neighbourhood, encounters	Verifiable procedures
		Systems of penalties and rewards
	Mutuality	Enforceable commitments
Scope	-	+
Cost for farmers	-	+
Vulnerability	Limited sanctions against opportunism	Lack of skills and rigour
		Rigidity
		Complexity
Strength	Limited sources of opportunism	Replicability
	Simplicity	
	Adaptability	
Supplier substitutability	-	+
Role of public sector	Favouring farmer access to training (on production protocols) and market place	Favouring farmer access to training (on production protocols, ICS, contracts)
	Inspecting farmers and retailers practices and product safety	Favouring retailer access to marketing space
		Inspecting traders' ICS
Examples in SE Asia	Vietnam: Direct sales in shops of safe vegetables; direct home deliveries of organic vegetables	SE Asia: VietGAP, GlobalGAP, retailer certification schemes
	Laos: Direct farmers' markets	
	SE Asia: contractual arrangements between farmer groups and consolidators with quality and inspection specifications	
	Vietnam: Safe vegetable certification; ICS for safe vegetables in Tien Le and organic vegetables in Thanh Xuan	

Table 3 – Characteristics of personal interactions versus expert systems as regards food safety assurance

(based on framework set by Giddens (1990) and Daviron and Vagneron (2012))