

# Malica

Markets and agriculture linkages  
for cities in Asia



## Working Paper



**Some insights on the  
organization and efficiency  
of vegetable markets  
supplying Hanoi (Vietnam)**

Paule Moustier, Isabelle Vagneron, Bui Thi Thai



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## **Some insights on the organization and efficiency of domestic vegetable markets in Vietnam**

### **Abstract**

With the state withdrawing from controlling the food markets in Vietnam, the decision-makers and researchers in social sciences are faced with the question of the performance of private markets, and of the role of the public authorities in regulating them. Economic literature has given traditional treatment to the question of market performance through the paradigm of pure and perfect competition which provides the basis for structure-conduct-performance analyses. Institutional economics has recently provided tools for understanding the internal market organization mechanisms. The results of quantitative and qualitative surveys on the vegetable chains supplying Hanoi challenge the common descriptions of the disorganization of private markets. The organization of commodity chains is in line with some of the predictions of transaction cost economics as contractual arrangements are more frequently observed in the channels where the demand for information on quality and timeliness of supply is higher. In addition to transaction costs, the small scale of production and transport is a major cause for the identified organizational patterns including the integration of peri-urban production and assembling stages. The paper concludes by suggesting some areas for public involvement e.g. credit for production and transport means, technical and market information dissemination aimed at the development of off-season supply, promotion of producers' assembling associations.

Keywords : Vietnam, agricultural markets, transaction cost economics, vegetables

## 1. Introduction

Fifteen years ago, the Vietnamese government had a strong involvement in the country's food supply and distribution. Agricultural production was organized by co-operatives of producers, while marketing and distribution were in the hands of state-owned companies (Jesus, 2001). Many regions experienced food shortages. In rural areas, cultivated plots left to farmers' individual management produced more than collective ones, allowing farmers to feed themselves. In urban areas, food supply remained dependent on rural areas. The distribution of food coupons according to family size led to an important development of an informal parallel market (Fforde and De Vylder, 1996). Through the liberalization process (*doi moi*) farmers have been allocated individual plots of land, while trade, processing, transportation and retailing have been left to private agents. Contrary to what happened in Eastern Europe, the rapid liberalization of the economy went quite efficiently and led to a fast growth of production as the informal economy was already well developed (Trần Thi, 1996). Today, production, distribution and retailing are mainly managed by private traders, with the exception of the import-export sector, where the state still plays a major role.

With the state withdrawing from the control of food markets in Vietnam, decision-makers and researchers in social sciences are faced with the question of the performance of private markets. Feeding the country's growing cities and ensuring the farmers fair incomes are major concerns for the government of Vietnam (FAO,1999). It is now recognized that priorities for public support need to be established as a function of private market deficiencies, based on a prior understanding of organizational patterns and effectiveness within the private sector, from where the nature and type of the provision of various public goods – market information, quality control systems, credit, education, infrastructures – can be investigated (Stiglitz, 1999).

In this paper, we will first present how the economic literature has given traditional treatment to the question of market performance, then the recent contributions of institutional economics. We will illustrate these contributions by elements concerning the organization and performance of vegetable markets in Vietnam.

## **2. The contributions of the economic literature**

The theoretical structure-conduct-performance framework resulting from industrial economics (Bain, 1959) is most frequently cited by economics seeking to link the organization and performance of markets (Jones, 1972 ; Tollens, 1997 ; Mohtar, 2000). Market structure includes the level of concentration of buyers and sellers, the level of product differentiation, the conditions of entry to the market. Market conduct refers to possible practices of collusion or exclusion, in addition to price-fixing methods. Finally, performance is evaluated by means of price analyses – price correlation between markets, seasonal price variations, deconstruction of prices, costs and margins between players. The closer the structure, conduct and performance are to a situation of pure and perfect competition (no barriers to entry, price-taker agents, no excess profits), the better the market is seen to perform. According to these analyses, markets of developing countries are generally characterized by imperfect competition and poor circulation of information, which calls for a better match between supply and demand through the establishment of “modern” wholesale markets and market information systems (see for instance Goosens, Minten and Tollens, 1994 for Kinshasa, or for Malaysia, Mohtar, 2000).

The structure-conduct-performance framework and its applications have been criticized by various authors, notably Harriss (1979). Indeed, the relationship between the level of competition and market performance in terms of production and allocation efficiency has not been demonstrated in economics. In these analyses, the minimization of traders’ profits is often considered as an objective to be achieved whereas, for the producers, it is the increase in

income which is desired. This reflects a negative bias against traders, who are rarely considered as providers of essential economic services. As Harrison *et al.* (1987) recommend, market performance should include several dimensions: consumer satisfaction, jobs and income creation, competitiveness, innovation and flexibility. Finally, existing evaluations of “modern” wholesale markets and market information systems demonstrate very mitigated results (Egg and Galtier, 1998 ; Shepherd, 1997). However, despite these criticisms, the analysis of competition, information distribution, and its translation into price correlation and deconstruction, are still considered as useful tools to understand the adjustments between supply and demand, and the distribution of incomes in the commodity chains.

An important contribution of institutional economics is to explain the efficiency of the different forms of organization in the markets of developing countries other than by means of the traditional reference to the criteria of pure and perfect competition. According to transaction costs economics, the main objective of economic organization is to economize on transaction costs, which comprise *ex ante* costs of selecting a partner and bargaining with him, and *ex post* costs of running the contract, controlling its enforcement, and eventually renegotiating it. Economic agents choose a governance structure for a transaction, based on both transaction and production costs. Markets, firms and hybrid forms are traditionally considered as alternative modes of coordinating economic activities, with different mechanisms of coordination, respectively prices, authority and a combination of the latter (Williamson, 1987). Transactions may be characterized by their frequency, and the degree of uncertainty and asset specificity involved. Frequency indicates how often a given transaction is repeated. Uncertainty refers to the exogenous shocks which may disturb the environment. Specific assets may not be redeployed (when the contract ends or is breached) for alternative uses without sacrifice of productive value. Asset specificity is important when selecting a partner, making the contract, and monitoring its enforcement.

According to transaction cost economics, the market is the best place to organize standardized transactions involving low levels of asset specificity and uncertainty, and for which neither the identity of the partners nor the continuity of the relationship really matter. Conversely, the market offers a poor response to recurring transactions involving a high level of uncertainty and asset specificity. Special governance structures – bilateral contracts, vertical integration – are then needed to facilitate the creation of routines, prevent opportunism and ensure that the relationship continues. (Williamson, 1987). Originally developed in the context of Western industrial firms, transaction cost economics has been applied to some commodity chains of developing countries, in particular to explain the prevalence of informal contractual arrangements (see for instance Lyon, 2000, on tomato trade in Ghana, or Legoulven, 2000, on pig markets in Vietnam).

### **3. Application to the vegetable markets in Vietnam**

Numerous researchers and decision-makers have a rather negative view on the functioning of food markets in Vietnam and characterize them as “spontaneous”, “disorganized”, and “underdeveloped” (Nam Ngo, 2002; Gia, 1999). The People’s Committee has planned to design by 2020 seven modern wholesale markets in Hanoi in order to “organize” the transactions of food products. It is surprising that the “spontaneous” nature of the transactions be considered as negative, while liberalization policies aim at encouraging private initiative and at limiting state intervention. Labeling the markets as “disorganized” is not based on a thorough evaluation of internal methods of coordination in terms of circulation of information or decision-making. In fact, these negative viewpoints are similar to those generated by a narrow structure-conduct-performance approach, where concentration of supply in wholesale markets with public intervention on information dissemination is assimilated to market efficiency.



Recent research provides elements on this internal organization, based on quantitative data collection and in-depth case studies<sup>1</sup>. To assess the geographical and functional organization of marketing chains, a representative sample of sellers and purchasers were interviewed on wholesale and retail markets about the origin of the products, the types of suppliers and customers, the quantities sold, for selected vegetables. The surveys took place at three different periods of the year to take into account seasonal variations. The case studies focused on five stakeholders for each type of function (producer, wholesaler, retailer), in five networks corresponding to vegetables from different origins.

### *General features of vegetables*

In Northern Vietnam, vegetables represent an important share of the diet (one fourth of total consumed quantities). Their low price, especially for leafy vegetables, makes them affordable to all income categories: they account for 7% of food expenses only (after cereals, meat and fish), while average food expenses per capita represent less than half a dollar per day (Nguyen, Mei-Huey and Lai, 2002).

Vegetables are highly perishable products. Tropical temperatures strengthen the perishability vegetables through their impact on the production process and on post-harvest evolution. Once harvested, the length of conservation at the open air without degradation is less than two days for leafy vegetables, less than four days for mature tomatoes. Sometimes processing and drying can bring a solution to the storage issue, but most vegetables are consumed fresh. Moreover, vegetable production is highly seasonal, with large variations in the supply within a given season. Temperate vegetables being sensitive to humid conditions, their availability drops in and just after the hot and humid season (from July to September), with prices rising up by 100%. Conversely, local leafy vegetables are grown more easily in the humid season

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<sup>1</sup> This research was conducted in the context of AVDRC/CIRAD regional project SUSPER (sustainable development of peri-urban agriculture in South-East Asia), and involved the department of economics of RIFAV (Research Institute on Fruits and Vegetables in Vietnam) as well as ASD-VASI (Agarian System Department of Vietnam Agricultural Science Institute) in addition to CIRAD economists.

and their availability decreases from November to March. Uncertainty about the state of supply and demand caused by product instability is aggravated by the small scale of production: the average size of agricultural plots is 600 m<sup>2</sup> in the red river delta. The high perishability of vegetables, combined to the fragmented nature of supply contribute to weaken the producers' position on the market. As such, perishability may be understood as a form of asset specificity, that places the producers in a difficult position when bargaining with their customers. Vegetables may also be viewed as bundles of characteristics, that can be ranked according to the difficulty with which consumers experience them (Foss, 1996). While the vegetables' size, shape and color are easily asserted by the customers, other features such as the presence of pesticide residuals are impossible to infer by observation or experience. As a consequence, the unobservable and valued information concerning the vegetables may be quite difficult and costly to obtain. Quality uncertainty may eventually lead to the eviction of higher quality products, following Akerlof's prediction (1984).

#### *Spatial organization of Hanoi supply*

In Hanoi, vegetables are transported at night by the producers or traders to wholesale markets located at the main "gates" of the city, where retailers buy their supplies markets (Long Bien, Mo, Cau Giay, Bac Qua, Denlu, Dich Vong – the latter two having been planned by the People's Committee). The main means of transportation are two-wheeled vehicles, quoted by 94 % of the traders. The means of transportation being basic, the relationship between the geographic origin of the vegetables and their fragility, in addition to their adaptation to the climatic constraints, is quite straightforward. Almost all leafy vegetables sold in Hanoi are grown close to the city: 95-100% of the lettuce comes from less than 20 km away, and 100% of morning glory is grown within 10 km of the city. Temperate vegetables have more diverse origins: while 75% of tomato is produced less than 30 km from Hanoi in the cold season, 80% of tomato sold in August (hot season) originates from China and 15% from Dalat, the latter

being located more than 1000 km from Hanoi in the South of Vietnam.

#### *Producers' involvement in marketing*

For vegetables originating from peri-urban areas, vegetable commodity systems are short, with the typical involvement of producers in the assembling and sale to retailers. Highly perishable vegetables like morning glory are sold directly by producers to retailers for more than half the transactions, with producers selling their own vegetables, and, in more than one-third of transactions, the supply of other farmers. As for less perishable vegetables, the situation changes according to the season and the origin of the product. During the cool season, producers are dominant on the tomato wholesale markets. Yet, as the tomato season draws to a close, the tomatoes come from further away and the share of tomatoes sold directly by the producers drops, replaced by a growing number of wholesalers (100% in August, compared with none in March). Producers' involvement in marketing upstream the market stage can be termed as vertical integration. Its importance in Hanoi vegetable markets can be put in relationship with the transaction costs associated with marketing of perishable vegetables. But it has also to be explained by the ease of peri-urban producers access to Hanoi markets, and by excess agricultural labour force enabling the spending of more than five hours a day on marketing: it is estimated that farmers' labour force is only employed at 80% of its capacity in the red river delta (Pham, 2001).

#### *The dominance of spot transactions in wholesale markets*

Although transaction costs economics predicts bilateral contracting for frequent, highly uncertain transactions involving asset specificity – here represented by perishability – spot arrangements seem to prevail on Hanoi's wholesale markets. A large number of small price taking traders (1,000-1,500 per night on all markets) sell fairly low volumes of vegetables – 188 kg (resp. 270 kg) of tomato per week during the cool (resp. hot and humid) season, 45 kg (resp. 55 kg) of morning glory per week during the cool (resp. hot and humid) season. The

large number of producers on the markets seems to confirm the absence of barriers to entry: traders usually sell directly from their vehicle or on the ground, and entrance fees to the markets are low (13 cents per night at Den Lu market). In the case of peri-urban vegetables relations between sellers and buyers are both anonymous and limited – there are no buying or selling promises – and prices play a major role in the actors' decision-making process. As far as vegetable prices are concerned, retail markets seem quite integrated. The study of retail<sup>2</sup> price series between 1996-2001 shows a high degree of integration between several retail markets located within Hanoi province (in Hanoi, Gia Lam and Dong Anh districts). Indeed, correlations of prices may be quite high (resp. 94% for headed cabbage and 60% for morning glory). Besides, the short nature of the commodity chains favors low final prices: the commercial margin represents less than 30% of the final price for leafy vegetables and cucumbers (Gia, 1999).

#### *Networks of long-distance trade and quality products*

For distant flows, long-standing networks exist which link wholesaler/receivers to wholesaler/distributors and retailers with regular information exchanges, sometimes by telephone. Wholesalers can commercialize several dozen tons per day. Their income is more than ten times higher than that of the producers, retailers or collectors, but the risks of bankruptcy are also much higher, due to the irregularity of production and the lack of arbitration structures in case of conflict within the network (Thai, 2000).

The necessity for regular relationships in long distance trade can be traced back to higher transaction costs : transporting vegetables over more than 500 kilometers involves higher risks of product losses and delays in the transfer of information on market conditions than in the case of peri-urban vegetables that can be transported daily to the markets. Contractual

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<sup>2</sup> In the absence of wholesale prices, retail prices were kept, as a proxy for information flows in general.

arrangements are also observed in the case of vegetable channels with quality specifications: the latter may relate to production processes, like in the case of organic vegetables; or to the origin of the product and its being associated with specific quality characteristics. A private company marketing organic vegetables has written contracts with ten families of producers in Tu Liem district, Hanoi province, which set the quantities, prices, production regulations and frequency of inspections for a six-month period. In the case of Dalat vegetables, which have a reputation of enhanced organoleptic quality due to favorable climatic and physical environment, one female wholesaler has three regular producers supplying her with vegetables, some agents organizing transport to Hanoi by bus daily of three to four tons of vegetables. In Hanoi, the vegetables are sold to a network of few regular customers who target a more demanding clientele including two sellers in retail markets, plus several hotels and restaurants.

The observation that contractual arrangements are more developed for vegetable channels where the information on product quality, or on timeliness of delivery, is more crucial, is in line with the insights of transaction cost economics. However, apart from the unique example of the organic vegetable company, contractual arrangements remain in an informal and verbal form. Besides they involve commitments on buying or purchasing from established suppliers or purchasers, with which a long term knowledge and confidence has developed, rather than on price, quantities or quality. Indeed the ability to invest in contractual relationships, with requisite organizational costs involved, is not determined by technical factors only. It is influenced by the overall expectations for gain, which are low in the Vietnamese domestic markets, in contrast with export markets like the ones analyzed by Jaffee (1995) containing various types of contracts. The absence of judicial arbitrages in the case of contract default is another limitation to contract development.

#### **4. Conclusion**

The investigation of Hanoi vegetable markets enables to call into question the images of its apparent disorganization. Hanoi is provisioned from genuine wholesale markets operating at night, even though most of them are not planned. These markets are supplied by production basins, the location of which is influenced by the distance to the city, product perishability, in addition to physical and climatic characteristics. In line with some of the predictions of transaction cost economics, contractual arrangements, be they formal or informal, are more developed in the case of long-distance trade and products of specified quality, an observation which can be put in relation with higher transaction costs. Upstream the commodity chains from peri-urban areas, the integration of production and assembling stages by farmers selling directly to retailers in night markets enables to minimize the risks of unsold commodities. Yet the nature and size of transaction costs are not the sole explanatory factors for observed organizational forms. The small scale of production, transportation by bicycle or motorbike, excess agricultural labor force – the three factors being related – are major causes for the integration of production and assembling in the case of peri-urban areas. The present patterns of organization have heterogeneous effects on the different dimensions of the efficiency of Hanoi provisioning. The vertical integration observed for close-at-hand flows has negative consequences in terms of transaction size. However, it comes together with low final prices. The wholesaler networks have negative consequences on the distribution of income within the networks while having positive consequences on the scale of transactions. Public authorities can intervene to increase competition and diminish transaction costs through the provisioning of public goods enabling the increase and regularization of the level of supply. This implies credit provisioning for the acquisition of larger plots and new transport means for producer groups, an adapted supply of technical support a for a more regular and safe production

throughout the year, and finally producer information on market state of demand and supply. The development of “modern” wholesale markets should take into account the existing wholesale markets, either by improving them (for example protection against bad weather) or, if it is necessary by moving them to anticipate transport problems, after consulting the operators present. Finally, the state has a role in the fostering of institutional innovation. Producers’ associations for marketing with one producer being assigned to assemble and wholesale the product, and negotiate prices with purchasers, would enable the increase in the scale of transactions, more favorable income and prices for producers without adverse effects on final prices. These types of associations have been promoted with success by development in others contexts (Vergriette, 1998). Farmers’ collective actions can also improve communication as regards production protocols and quality, as illustrated by the development of quality pig commodity chains in Hai Duong province in Vietnam (Vu Trong Binh and Casabianca, 2002).

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## MALICA (markets and agriculture linkages for cities in Asia)

Le consortium MALICA associe des instituts de recherche français et vietnamiens : le CIRAD (le centre de coopération internationale en recherche agronomique pour le développement), l'IOS (l'institut de sociologie de l'académie vietnamienne de sciences sociales), le RIFAV (l'institut de recherche sur les fruits et légumes), le VASI (l'institut des sciences agronomiques du Vietnam), l'université agricole de Hanoi, et l'université agricole et forestière de Ho Chi Minh Ville. L'objectif principal est de renforcer la capacité d'analyse des marchés alimentaires et des relations entre villes et campagnes des chercheurs, étudiants, cadres de l'administration, responsables de groupes privés. MALICA met au point des méthodes qui sont appliquées à des projets visant à adapter la production alimentaire locale et la demande du marché intérieur, en quantité et qualité (ex : projet régional sur l'agriculture périurbaine, SUSPER ; projet sur les comportements alimentaires et la perception des risques). Les mécanismes d'information et de concertation des acteurs de l'offre et de la demande sont considérés, en complément aux analyses classiques de l'efficacité technique et économique des filières à leurs différents stades.

Les méthodes d'analyse de la consommation et des filières sont appliquées à deux domaines de recherche prioritaires : l'élaboration de la qualité dans le secteur alimentaire ; la régulation des flux d'origine périurbaine, rurale et extérieure. Les principales activités réalisées concernent l'application de ces thématiques aux filières légumes, porc et maïs ainsi que l'analyse des marchés de gros.

The MALICA consortium brings French and Vietnamese research institutes together. These include the CIRAD – centre de coopération internationale en recherche agronomique pour le développement, the IOS – the Institute of Sociology of the Vietnamese Academy of Social Sciences, the RIFAV – the Research Institute on Fruits and Vegetables, the VASI – the Vietnam Agricultural Science Institute, as well as the Hanoi Agricultural and Forestry University of Ho Chi Minh City. Its main objective is to reinforce the capacity of researchers, students, administrations as well as private groups in analysing food markets and city/country relations. These methods are applied to projects which aim at a correlation between local production and local market demand, in terms of both quantity and quality, such as the regional periurban agricultural project, SUSPER, or the project about food behaviour and risk perception. Stakeholders' information and cooperation mechanisms are taken into consideration as a complement to classical technical and economic efficiency analysis for different stages in the commodity chains. Methods of consumption and commodity chain analysis are applied to two priority research fields: increasing quality in the food sector; and the comparative advantages of periurban and rural flows. The main activities over the past year have focused on the application of these methods to the vegetable, pork and maize commodity chains and the analysis of the wholesale markets.

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