







<p>1. Official abbatoir stamp present</p>	<p>Clean premises</p> 	<p>Low/marbled fat</p> 	<p>Fresh red meat</p> 	<p>Price ETB/kg 38</p>
<p>2. Official abbatoir stamp present</p>	<p>Unclean premises</p> 	<p>High fat meat</p> 	<p>Non-fresh pale meat</p> 	<p>Price ETB/kg 34</p>

Demand for livestock products in developing countries with a focus on quality and safety attributes: Evidence from Asia and Africa

# Demand for livestock products in developing countries with a focus on quality and safety attributes: Evidence from Asia and Africa

*Mohammad A. Jabbar, Derek Baker and Mohamadou L. Fadiga*  
*Editors*

## Editors' affiliations

Mohammad A. Jabbar, formerly with ILRI (International Livestock Research Institute), Addis Ababa, Ethiopia and is currently a consultant agricultural economist in Dhaka, Bangladesh

Derek Baker, ILRI, Nairobi, Kenya

Mohamadou L. Fadiga, ILRI, Addis Ababa, Ethiopia

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# Chapter 10 Familiarity with consumer expectations to support smallholders: Demand for quality pork in Vietnam

*Virginie Diaz Pedregal,<sup>1</sup> Nguyen Ngoc Luan,<sup>2</sup> Muriel Figuié<sup>3</sup> and Paule Moustier<sup>4</sup>*

1. diaz@gret.org; was a postdoctoral scientist at Centre de coopération Internationale en Recherche Agronomique pour le Développement (CIRAD), Montpellier, France and is currently a sociologist at GRET, Nogent sur Marne, France

2. nguyennngocluan@gmail.com; researcher at the Rural Development Centre, Institute of Policy and Strategy for Agricultural and Rural Development, Hanoi, Vietnam

3. muriel.figuié@cirad.fr; researcher in sociology at CIRAD, Montpellier, France

4. moustier@cirad.fr; agricultural economist at CIRAD, Montpellier, France

## Abstract

Economic growth in Vietnam and recurring food scandal incidents are prompting the demand for quality products. This report explores consumer expectations with regard to pork, a very popular food item in Vietnam. The findings are based on a quantitative survey of 600 urban and rural households in Vietnam. The study focuses on consumer practices and assertions in the area of purchasing fresh and processed pork. The objective is to assist disadvantaged producers to better fit the supply with the new trends in consumption.

**Key words:** consumer preference, pork, quality, Vietnam

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## Regional context and focus of the research

Over the past 20 years, Vietnam has moved from authoritarian political management to a free market economy. This change has led to unprecedented national economic growth. Economic development has been accompanied by increased demand for quality food and manufactured products (Cadilhon et al. 2006). These new markets present opportunities for local producers to earn more money. However, the status of the economy remains vulnerable, particularly for rural communities. Many producers in Vietnam eke a living from crops grown on smallholdings or from a few head of animals. Poverty in Vietnam remains a tangible reality. The Gross Domestic Product per capita is still low (USD 2600 in 2007), with limited access to health services, transportation and education (CIA World Factbook 2008).

The pork commodity chain in Hai Duong province (northern Vietnam) is representative of this overall economic context. Pork accounts for three-quarters of the meat consumed countrywide. However, small family-scale producers operate with precarious farm facilities and run the risk of being excluded from the growing demand as well as from input supply channels (Binh et al. 2007). According to the General Statistics Office, in 2006 the poverty rate in Hai Duong province was 17% and 24% for the whole country. With the increased cost of animal feed, small-scale farms in peri-urban zones are being replaced by large-scale industrial farms. The emerging demand for quality products can exacerbate this exclusion, as is the case in other countries where animal husbandry is undergoing integration and capitalization processes (Hayenga et al. 2000; Reardon and Berdégúé 2002).

Meat consumption has increased sharply in recent years in Vietnam because of the rapid improvement in household living standards (le Danh et al. 2004). Of the meat products, pork has the highest annual per capita consumption rate (22 kg), ahead of poultry (5.6 kg) and beef (2.5 kg) (FAOSTAT 2003). In 2000, a survey of a representative sample of 181 households in Hanoi and 80 in Hai Phong showed that the most important pork quality attributes for consumers were colour, evidence of freshness, low fat and tenderness (Ginhoux 2001). In addition, 68% of interviewees said that the safety of pork was important. These findings were confirmed in 2002 by a survey of 200 households in Hanoi which found that pork ranked second on the list of food products about which consumers feel there are public health concerns (Figuíé et al. 2004). For pork, these concerns are related to the likely presence of chemical residues such as growth hormones and antibiotics. Currently, consumers have little choice on the quality of pork available to them and their purchase decisions are governed essentially by fat content and packaging. With regard to food safety, the place of sale is viewed as a means of gauging quality, with greater trust in the safety of food products sold in supermarkets (Mayer 2006). The authors surveyed 20 points of sale and found that the price difference between lean and fatty pork was about 30%, and that

between cellophane-wrapped pork sold in supermarkets and pork sold in regular markets was 50–100%.

Despite being quite definitive, these studies do not show how purchasing practices, as well as perceptions of quality and especially food safety, vary from one type of consumer to another. However, such data are valuable in assessing market opportunities now available to producers who are in a position to take advantage of them, which is the thrust of this study.

## Methodology

A questionnaire survey of 600 persons was conducted in April and May 2006. The questionnaire had four main sections: (1) pork consumption habits and level of consumer satisfaction, (2) willingness to pay for better quality pork, (3) comparison of former and current practices and assertions of pork consumers and (4) economic characteristics of the respondents. The objective of the research was to compare consumption practices among individuals from various localities and with different standards of living. The sample was therefore stratified by region and by market outlet. The survey covered three regions of northern Vietnam—Hanoi, Hai Duong and Nam Sach—representing three levels of urbanization; Hanoi is the capital of Vietnam, Hai Duong is an average-sized secondary city and Nam Sach is a rural commune. Interview respondents were chosen at random.

Out of the 200 consumers sampled in Hanoi, 120 were interviewed in supermarkets and 80 in regular markets. The 200 consumers sampled in Hai Duong and Nam Sach were interviewed in regular markets because supermarkets had not yet been set up in these zones. Only those persons in charge of making household food purchases were interviewed; as this task is often handled by women in Vietnam, it explains why 92% of the interviewees were female. Due to the small sample size in relation to the country as a whole, the findings of this survey can hardly be extended to the population of Vietnam at large. Nevertheless, they provide interesting insights because they enable comparisons among social groups regarding consumer behaviour patterns and expectations regarding purchased food products.

The assessment of consumers' willingness to pay for better quality fresh or processed pork used a series of attributes that were selected following discussions with hog raisers in the Nam Sach cooperative. The choice of these attributes was based on perceptions of Vietnamese consumer demand as well as on measures the hog raisers were prepared to take to improve the quality of fresh and processed pork. The attributes were as follows:

Fresh pork (pork fillet)

- Low intra- and extra-muscular fat
- Good colour

- Hygienic pig production and slaughter
- Pigs raised without use of industrially manufactured feed

Processed pork sausage (*gio*)

- No borax or monosodium glutamate (MSG) preservatives
- Wrapped in banana leaves only
- Wrapped in cellophane only
- Wrapped in banana leaves and cellophane

To determine the maximum amount that individuals were prepared to pay for all of these attributes, we used a pay card in incremental units of Vietnam dong (VND)<sup>1</sup> 500, corresponding to a price increase of 1% per kg. Interviewees were asked to use this scale to show the maximum additional price they were prepared to pay for 1 kg of fresh or processed pork that possessed a given attribute. Some authors have pointed out numerous biases induced when using various approaches to measure willingness to pay (Buzby et al. 1995; Golan and Kuchler 1999; Venkatachalam 2004). Such biases would often be due to the fact that interviewees are put in situations that are too hypothetical. Although using these approaches to measure willingness to pay has limits when attempting to assign a value to attributes, we nevertheless feel that such use in our study makes it possible to highlight preferences and to compare how such preferences line up for different groups of individuals.

## Results

### Demographic characteristics of the surveyed consumers

The family income of Hanoian consumers who bought fresh or processed pork at supermarkets was found to be higher than that of the other categories of consumers. A proportionately higher number of Hanoian consumers had university degrees, 75% were civil servants or company employees and most were aged between 25 and 40 years. Conversely, surveyed consumers in Nam Sach commune had low incomes (61% earned less than VND 2 million a month), low education levels (66% had secondary school education or lower), high dependence on farming (53%) and were relatively older than the national average (51% were aged between 41 and 55 years).

### Consumers' purchasing practices for fresh and processed pork

The survey results confirmed the strong popularity of pork among Vietnamese consumers; 58% of those interviewed reportedly ate pork daily while 33% said they ate pork at least once a week. All those interviewed stated that they had eaten pork at least once in the previous three months. Reasons given for the widespread consumption of pork included low cost, ready availability and good flavour.

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1. Vietnam dong (VND). In 2007, USD 1 = VND 16,119.

However, it is necessary to qualify consumer consumption of pork depending on the socio-economic features of the population. For instance, 79% of consumers in Nam Sach (a rural province) consumed pork daily compared to only 27% of consumers in Hanoi. Twenty-two percent of consumers who bought pork at supermarkets said they ate pork daily compared to 35% of consumers who bought pork in the regular markets. Similarly, 72% of low income households (earning less than VND 2 million/month) said that they ate pork daily, contrasted with 32% of those with high family incomes (over VND 5 million a month). Thus, pork consumption must be fitted into overall consumption patterns; where little pork is consumed, families may be very poor and have low animal protein intake or they may be wealthy with a diversified meat diet that may also include beef, poultry etc.

At the current prices, pork was the preferred meat product of 55% of surveyed consumers. There was a somewhat stronger preference among rural dwellers and households with average (VND 2–5 million) or low (less than VND 2 million) monthly incomes. For the same price, pork was ranked second in preference after beef although the latter was consumed less often.

On average, the consumers interviewed bought fresh pork at VND 41,500/kg and processed pork at VND 52,500/kg. Hanoians who bought pork at supermarkets and high income consumers paid more than the average price for fresh pork (VND 44,000 and 46,500/kg, respectively). Consumers in Nam Sach and lower income consumers, respectively, bought pork at VND 39,000 and 38,000/kg. A similar trend was noted for processed pork, which was sold in supermarkets in Hanoi for VND 60,000/kg compared to VND 48,000/kg in villages in Nam Sach.

## Perceptions of safety of fresh and processed pork

The perception of pork quality must be viewed against the wider backdrop of how consumers gauge the safety of commercially sold food. The respondents felt rather pessimistic about the food safety situation in Vietnam: 43% of interviewees felt that food safety had worsened in the previous 10 years, while only 22% felt otherwise.

In general, 81% of respondents said that they were quite concerned (46%) or very concerned (35%) that they might be buying meat sourced from sick animals. Consumers were also afraid of bacterial contamination of food (76% of respondents), antibiotic and hormone residues in meat (67%), traces of artificial colouring and preservatives (68%) and pesticide residues on fruit and vegetables (75%). City dwellers, high income earners and young people were much more frequently concerned about food safety than rural dwellers and low income earners. For instance, 72% of Hanoians, 68% of high income earners and 58% of people aged between 16 and 24 years said they were very concerned about buying meat sourced from



sick animals, compared to only 21% of consumers in Nam Sach, 31% of low income earners and 44% of people aged over 55 years.

Moreover, the feeling of being able to deal with food safety issues varied with the location of the interviewees, with city dwellers having a greater feeling of helplessness; 49% of rural dwellers felt that they had some degree of control over food quality compared to only 29% of Hanoians. The feeling of control was also found to decrease with increasing level of income and increase with age. Sixty-seven percent of high income consumers felt that food quality was beyond their control compared to 49% of low income consumers. In addition, 69% of consumers aged 16–24 years felt that they had no control over the quality of the food they bought compared to 40% of people aged over 55 years. Therefore, urban, high income and young consumers were found to be more concerned overall and to feel more powerless in the face of health risks than other consumers.

Focussing specifically on pork, the interviewees trusted the hygiene of this product more than that of food in general. Thirty-five percent of consumers felt that pork hygiene had improved over the past decade, while 25% felt the opposite. Again, statistically significant differences were noted, depending on place of residence, source of pork and consumer income level. Forty-eight percent of Hanoians who bought pork in supermarkets felt that food safety had worsened over the past 10 years, compared to 40% of people living in Nam Sach; 42% of Hanoians who bought pork in supermarkets and 35% of high income consumers felt that pork hygiene had improved, compared to 28% of Nam Sach residents and 30% of low income consumers.

Consumers took a rather dim view of farmers who used industrially manufactured feed in pork production, for both health and flavour reasons. The majority (57%) of consumers felt that pork from pigs reared on industrial farms had less fat than that from traditionally reared pigs, but the risk of finding chemical residues in the meat was greater (51% of responses) and the flavour of the meat was affected (52%). Hanoian consumers expressed the greatest concern on these points: 65% of them were afraid that raising hogs on manufactured feed would lead to high levels of chemical residues in the meat compared to 23% of people in Nam Sach. Fifty-eight percent of high income consumers expressed a similar opinion compared to 40% of the low income consumers.

Consumers stated that the most important factors influencing decisions when buying pork were food safety (34% of respondents), price (22%) and habit (19%). Altogether, 63% of respondents stated that hygiene was a major concern when buying fresh pork, with 70% of Hanoians and 55% of Nam Sach residents expressing their concern about this. Higher income consumers (73% of respondents) were also found to be more sensitive to matters of

pork hygiene than lower income consumers (60%), as were younger consumers aged 16–24 years (73%) than those aged over 55 years (58%).

Although, in the main, most consumers (62%) felt quite satisfied with the quality of purchased fresh pork, a different picture emerged for consumers of processed pork, 51% of whom said that they were quite unsatisfied and 12% very unsatisfied. The greatest concern was over the presence of residues of borax (a chemical antiseptic) in processed pork; 44% of consumers were totally unsatisfied and 16% quite unsatisfied with this quality aspect. Hanoians and high income earners were more frequently bothered by the problem of borax (75% and 70% of respondents, respectively) than consumers in Nam Sach and low income families (36% and 51%, respectively).

## Willingness to pay for quality pork

To ascertain the willingness to pay for better quality pork, consumers were asked if they were prepared to pay a higher price for fresh pork with less extra-muscular fat, some intra-muscular fat, good colour and better hygiene that was sourced from pigs of a local race and raised on manufactured feed. They were also asked if they were willing to pay more for processed pork (sausages) with no borax or MSG, wrapped in banana leaves and/or cellophane. Those who were willing to pay more were asked how much more they would be prepared to pay for each quality attribute.

Over half of the surveyed consumers were willing to pay more for fresh pork with guaranteed improved hygiene (Table 10.1). Over a third (36%) of respondents were willing to pay more for pork with a good colour, 30% for pork with less extra-muscular fat, 26% for pork from pigs not raised on manufactured feed and 25% for pork with less intra-muscular fat. Furthermore, 80% of consumers said that they were willing to pay more than what they were used to for fresh pork that had the top three preferred features: guaranteed improved hygiene, good colour and less extra-muscular fat.

Consumers who were willing to pay a premium were prepared to spend, on average, up to VND 2000 more per kg for fresh pork with better hygiene (5% above the average price) and up to VND 1800 more per kg for pork with good colour or less extra-muscular fat. Willingness to pay for pork from pigs not raised on manufactured feed and pork with less intramuscular fat was, respectively, VND 1700 and VND 1600. Consumers were willing to pay twice that amount for pork with improved hygiene, nicer colour and less extramuscular fat.

Consumers' willingness to pay for quality was even greater for processed pork. Over 60% of the consumers interviewed were prepared to pay more for pork sausages that did not contain

residues of borax or chemical preservatives; 44% were willing to pay more if they had a guarantee that the processed pork they were buying was free of MSG or if it was packaged in banana leaves or cellophane. Seventy-eight percent of respondents said that they would be willing to pay more for sausages guaranteed to have no borax/chemical preservative residues and MSG (Table 10.2).

**Table 10.1.** *Willingness to pay more for fresh pork based on socio-economic characteristics of respondents and characteristics of the product to be purchased*

		Improved hygiene (1)		Nicer colour (2)		Less extra-muscular fat (3)		Not raised on manufactured feed		Less intra-muscular fat		Fresh pork with (1), (2) and (3)	
		%	Premium (VND)	%	Premium (VND)	%	Premium (VND)	%	Premium (VND)	%	Premium (VND)	%	Premium (VND)
Monthly family income (million VND)	< 1	8	(500)	0	(0)	0	(0)	0	(0)	0	(0)	8	(700)
	1–2	39	1300	18	1300	11	1200	8	1000	6	1000	59	2300
	3–4	46	1800	29	1600	27	1300	21	1200	22	1300	85	3100
	5–6	71	2500	62	1900	49	2000	47	1700	44	1800	98	4000
	7–8	62	3100	66	2200	62	2200	53	2400	40	1700	100	5000
	> 8	86	3800	68	3100	59	2600	59	3200	59	2400	100	7300
Place of residence and where pork is purchased	Hanoi super-market	66	3000	65	2300	52	2500	39	2400	46	2300	100	5200
	Hanoi regular market	73	2300	67	1900	44	1900	48	1500	48	1500	93	3900
	Hai Duong	51	2000	31	1500	27	1400	27	1500	18	1100	90	3400
	Nam Sach	33	1000	13	1000	15	900	9	1100	9	700	51	1600
Overall average	51	2100	36	1800	30	1800	26	1700	25	1600	79%	3500	

Data in parentheses are not statistically valid because of the low number of respondents interviewed.

Consumers who were willing to pay a premium for quality processed pork were prepared to pay, on average, up to VND 2500 more per kg for borax- and preservative-free pork (5% above the average price), VND 2000 more per kg for MSG-free pork and VND 1500 more per kg for sausages packaged in either banana leaves or cellophane wrap. However, these figures are to be considered in the light of the financial status (measured by household monthly income), place of residence, level of education, occupation and, to a lesser extent, age of the respondents. Tables 10.1 and 10.2 detail all of the data on the preferred quality criteria.

It is noteworthy that 86% of respondents with a monthly family income of VND 8 million or higher were prepared to pay a premium price for fresh pork with guaranteed hygiene

compared to 8% of persons earning less than VND 1 million. The same trend was observed for the other quality attributes of fresh and processed pork.

**Table 10.2.** *Willingness to pay more for processed pork based on socio-economic characteristics of respondents and characteristics of the product to be purchased*

		No borax or chemical preservative (1)		No MSG (2)		Packaged in banana leaves and cello-wrap		Processed pork with (1) and (2)	
		% respondents	Premium (VND)	% respondents	Premium (VND)	% respondents	Premium (VND)	% respondents	Premium (VND)
Monthly family income (million VND)	< 1	4	(500)	0	(0)	16	(500)	20	(700)
	1–2	36	1600	25	1600	31	1200	64	2300
	3–4	60	2200	40	1700	35	1500	77	3100
	5–6	86	2700	68	2000	62	1600	96	4000
	7–8	94	3500	68	2400	74	1700	100	5100
	> 8	100	4500	82	3000	86	2500	100	7300
Place of residence and where pork is purchased	Hanoi super-market	92	3500	64	2600	59	1800	95	5200
	Hanoi regular market	83	2400	71	2000	44	2000	88	3900
	Hai Duong	60	2400	52	1700	49	1600	87	3400
	Nam Sach	35	1400	15	1100	30	900	54	1600
Overall average		61	2600	44	2000	44	1500	78	3500

Data in parentheses are not statistically valid because of the low number of respondents interviewed.

Similarly, 66% of Hanoians who bought pork from supermarkets were reportedly prepared to pay more for fresh pork of guaranteed hygiene compared to 51% of consumers in Hai Duong and 33% of those in Nam Sach. The proportion was identical for the other characteristics of quality fresh and processed pork. Premiums for quality pork showed a similar pattern; overall, Hanoians who bought their pork at supermarkets were more inclined to pay more for quality fresh and processed pork than those who shopped at regular markets, and even more so than consumers in Hai Duong and Nam Sach. While willingness to pay for quality pork depends greatly on the socio-economic characteristics of the respondents, consumption practices also have an effect on patterns observed.

When frequency of pork consumption was crossed with willingness to pay more for quality pork, it was noted that Vietnamese consumers who ate pork daily were least willing to pay more. Thus, 63% of people who ate pork a few times a year were prepared to pay more for their meat if it had a safety guarantee compared to only 43% of persons who ate pork daily. This can be explained in part by the fact that regular consumers of pork are in the lowest income bracket. Indeed, 77% of regular pork consumers had a monthly family income of VND 3 million or lower. The wealthiest respondents preferred to eat beef or fish more often.

Thus, the poorest of the poor were unwilling to pay more for pork, even if it had a guarantee of better quality.

It is also noteworthy that consumers whose preferred meat product, at equal price, was pork were not particularly consumers who would agree to pay more to get a quality product. Thus, 43% of pork eaters said they were willing to pay more for fresh pork with better hygiene, while 57% of beef eaters and 58% of fish eaters were of the same opinion. The taste for meat is therefore of secondary consideration in explaining willingness to pay for quality pork. On average, individuals were more prepared to pay for pork with no residues of borax or chemical preservative than for MSG-free pork or pork packaged in banana leaves or cellophane wrapping; this trend was more prevalent for financially well-off urban consumers than their rural counterparts.

## Discussion and conclusion

It can be taken for granted that consumers want to purchase quality products. All consumers interviewed said that they were aware of the importance of food safety for themselves, their children and the environment in general. Most consumers interviewed in this survey felt that safe fresh or processed pork was directly linked to hygiene and the absence of antibiotic or hormone residues in the meat. They also linked it to colour as an indicator of freshness, the amount of fat and whether or not the animals were raised on manufactured food. Concern for safety was seen in the higher income consumers' willingness to pay for better quality products.

Although consumers were quite sensitive to intrinsic quality criteria in the purchased products (no preservative/pesticide residues; nice colour, low fat content etc.), the extrinsic criteria of the products were not totally left out when consumers made their purchasing decisions. Indeed, the willingness to pay for the external characteristics of the product, such as packaging, was also high when considering a combination of various types of packaging for pork, such as cellophane wrap and banana leaves. Of course, these external trappings (packaging or place of purchase) are assumed to give evidence of the internal characteristics of the product; cellophane wrap is associated with hygiene, banana leaves with tradition, a supermarket with food safety etc.

Today, although hog raisers must be made aware of what they can gain from quality commodity chains, a number of questions are left unanswered. For instance: Are the most disadvantaged producers technically able to build quality commodity chains to meet the stringent demands of urban consumers? To what extent will the extra price paid by the consumer reach the pocket of the producer? What distribution modes linking food safety and economic efficiency should receive priority?

One possibility for rural producers to improve their standards of living is to join producer co-operatives or associations. The latter have a number of advantages, for instance, they ensure collective advocacy of interests in dealing with domestic purchasers, promote access to relevant information on pork sold in regular markets and consumer expectations, enable a reduction of the costs of accessing feed and veterinary services and facilitate issuance of certificates of quality that build purchaser trust. In Vietnam, such associations are already operating, as is the case in Nam Sach commune, Hai Duong province (Binh et al. 2007).

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