

See discussions, stats, and author profiles for this publication at: <https://www.researchgate.net/publication/284250574>

# FACILITATING MARKET ACCESS THROUGH PRIVATE QUALITY ASSURANCE PROGRAMS IN THE VIETNAMESE HORTICULTURAL SECTOR

Article in *Acta Horticulturae* · August 2008

DOI: 10.17660/ActaHortic.2008.794.27

CITATION

1

READS

36

3 authors:



**Marcus Mergenthaler**

Fachhochschule Südwestfalen

264 PUBLICATIONS 541 CITATIONS

[SEE PROFILE](#)



**Martin Qaim**

University of Bonn

382 PUBLICATIONS 15,243 CITATIONS

[SEE PROFILE](#)



**Katinka Weinberger**

United Nations Organization

81 PUBLICATIONS 1,798 CITATIONS

[SEE PROFILE](#)

Some of the authors of this publication are also working on these related projects:



Digitale Kuh 3.0 - Entwicklung nutzerspezifischer Managementhilfen zur Verbesserung der Gesundheit sowie zur Optimierung tiergerechter Haltungssysteme von Milchkühen [View project](#)



Umsetzung von Maßnahmen zur Verbesserung der Tierhygiene und zur Prävention von Tierseuchen in schweinehaltenden Betrieben in NRW [View project](#)

## **Facilitation of international market access through private quality assurance programs in the Vietnamese horticultural sector**

Marcus Mergenthaler and Matin Qaim  
University of Hohenheim  
Germany

Katinka Weinberger  
World Vegetable Center (AVRDC)  
Taiwan

Paper presented at the International Society of Horticultural Science Conference 'Improving the performance of supply chains in transitional economies', 23-27 September 2007, Hanoi, Vietnam

**Keywords:** food safety, food quality, export, private quality standards, quality management program

### **ABSTRACT**

**Food quality and safety are receiving increasing attention in the food sector nationally and internationally. Emerging private sector regulations are increasingly perceived as market entrance barriers within this development. In this paper, we analyze quality assurance programs (QAPs) in the horticultural sector in Vietnam and their effect on access to international markets. A representative sample of registered fruit and vegetable processing firms provide the basis for our analyses. Results of different logistic regression models show that QAPs are market specific. Processors with already implemented international private QAPs have a higher probability of accessing OECD markets. For exports to non-OECD countries, national QAPs facilitate international market participation. Small firms particularly profit from the adoption of private international QAPs. For this reason, firms have to be encouraged to implement such programs if they want to become internationally competitive. As substantial numbers of laborers in the processing enterprises and the primary producers are closely linked to the success of processors in international markets, our findings have implications for employment and the farm sector within rural development strategies.**

### **INTRODUCTION**

Food scares have triggered a higher awareness of food safety issues among consumers in high-income countries, but also among more affluent buyers in urban centers of developing and transitional countries (Grunert, 2005). In international trade for fresh fruit and vegetables there is a growing number of private regulations emerging as regulatory approaches from the public sector have not kept pace with growing requirements from a market increasingly characterized by food safety and quality (Henson and Reardon, 2005). Since these private regulations and requirements may impede international market access, the term 'commercial barriers to trade' has been coined (Martinez and Poole, 2004). At the firm level, the implementation of quality assurance programs (QAPs) is considered as a strategic management decision to cope with more stringent private regulations (Jaffee and Masakure, 2005).

Models developed within the framework of supply chain analysis have shown the importance of organizational and institutional aspects in entering export markets (Martinez and Poole, 2004). In specialized supply chains of value-added products with quality and safety attributes, private QAPs can be a key component. However, as these

organizational and institutional innovations are more strategic in nature, short term financial gains can not necessarily be expected (Tsekouras et al., 2002).

In recent times, some research has been dedicated to the impact of public quality and safety standards (e.g. Wilson and Otsuki, 2004). There is, however, a dearth of empirical studies addressing the issue of ‘commercial barriers to trade’ at the firm level and their role as international market entrance barriers for developing countries (Henson, 2006). Therefore, the objective in this paper is to find if there are linkages between the implementation of QAPs and participation in international trade.

## **METHODOLOGY**

A dataset of 50 fruit and vegetable processing companies in Vietnam was employed for our analysis. The dataset was built from an interview-based survey, which was conducted with the help of a standardized questionnaire. The questionnaire provided information about the firms’ characteristics and about upstream and downstream relationships in their supply chains. The focus was on quality and safety related issues, but general information about the enterprises was collected, too. The basis for selection was a list of registered fruit and vegetable processing firms in Vietnam from which our sample was randomly selected. Half of the firms were located in the two major cities of Vietnam, Hanoi (12%) and Ho Chi Minh City (38%). The other half was from the major vegetable growing area in the central highlands (14%), important fruit growing areas in the Mekong River Delta (8%) and other provinces throughout Vietnam. The survey was administered in face-to-face interviews to enterprise managers between August and October 2005.

## **RESULTS**

### **Processors, exports, and quality assurance**

Because of liberalized national policies in Vietnam, there are an increasing number of horticultural processing firms starting up to exploit opportunities in international markets (Figure 2a). Two thirds of the fruit and vegetable processing firms are exporters. More than half of the exporting enterprises mainly exports to countries of the Organization for Economic Co-operation and Development (OECD). The other half of exporters sells mainly to other – non-OECD – export destinations. Japan, Germany and the United States (US) are the most important OECD markets, whereas Taiwan and Russia are the main non-OECD trading partners. Main export fruits include pineapple, rambutan, guava and litchi. Vegetables are less important. Average annual sales per firm are estimated to be VND37.3 billion, which is equivalent to USD2.35 million. Turnover is higher in exporting enterprises. On average, most processing firms have a workforce of around 194, which is also higher among both types of exporters.

Exports are a means of diversifying a firm’s markets and thereby potentially increasing its revenues. Lucrative export markets can function as pull factors while the limited size of domestic markets can be a push factor for companies’ decision to internationalize. For OECD-exporters, a higher share of export sales and lower share of domestic sales gives an indication of the OECD-export market pull forces and the limited domestic market as a push factor. A limited domestic market for OECD-exporters is further indicated by the fewer domestic customers they have. The difference in the number of domestic customers is less pronounced between non-OECD exporters and non-exporters. This might give an indication for market-segmentation between domestic and non-OECD markets and the one side and OECD markets with

high quality and safety requirements on the other side. This is highlighted by a considerably higher share of OECD-exporters naming a lack of harmonization between domestic and import country regulations as a problem in the export business.

Most of Vietnam's trade competitors in Southeast Asia are already more integrated in international markets. Countries such as Thailand and Malaysia are considerably more experienced and efficient in adhering to quality and safety requirements in fruit and vegetable processing. In order to catch up, Vietnamese firms are increasingly confronted with new challenges to maintain their export markets. These observations are reflected in our sample, as 79% of exporters name quality related conditions, including technology upgrades and changes in supplier base, as pre-conditions for initial access to high-value export markets. If quality requirements cannot be met, it may result in exclusion from international markets. In one third of the cases, this was linked to quality problems, like for instance spoiled produce due to a non-continuous cold-chain.

Food processing firms have to develop appropriate strategies to deal with rising quality and safety requirements. An important question is how to provide downstream actors with the relevant information. QAPs can provide a communication vehicle to downstream actors. Such programs have been implemented by 66% of fruit and vegetable processing firms in Vietnam. Exporters are more likely to have QAPs. Further disaggregation reveals that OECD-exporters have implemented more private, internationally known QAPs than non-OECD exporters. Exporters selling to these less demanding markets have often implemented other quality management systems, which refer mainly to national guidelines for safe food production (Figure 1). The higher incidence of compliance among exporting firms gives the first indication that QAPs are important in communicating adherence to quality and safety standards and thereby ensuring international market access.

The implementation of quality management schemes is an ongoing strategic process in the Vietnamese horticultural industry. All firms with private, internationally recognized QAPs have implemented them since the year 2000. National programs were established earlier and they continue to be the central quality assurance strategy in many firms. The realization that QAPs facilitate fruit and vegetable exports at the national level is illustrated in Figure 2b.

### **Model of export market access**

We model export market participation as a function of QAPs while controlling for other variables, which possibly have an effect. In a first model (Model 1), we do not distinguish between different export markets and the different QAPs. The treatment variable therefore indicates whether any certified QAP facilitates international market access. The model is estimated by a logistic regression model in which the dependent variable is one for access to international markets and zero otherwise.

In a second model (Model 2), different QAPs are considered as treatment variables represented by two dummies. One dummy represents national programs and the other dummy represents international QAPs. 'No certified QAP' serves as the reference. A multinomial logistic regression is estimated with no exports as the base category. Non-OECD exporters and OECD exporters are the two additional categories of the independent variable.

We use capital and human resources, firm size, access to credit markets, and domestic market size as covariates. As a proxy for capital endowment, a quality

indicator for the processing technology used in the enterprise is employed. A dummy variable takes the value of one if the company uses processing equipment imported from non-neighboring countries. The size of workforce is used to capture the effect of firm size. As an indicator of human resource endowment, we use workforce's training. If university education of staff is considered among the three most important sources of skills, a dummy takes the value of one for the respective enterprise. Access to credit markets is proxied by firms' most common source of credit. If they have access to credits from commercial banks, a dummy indicates this by a value of one. Domestic market size is measured by the number of national customers of a processing enterprise.

### **Impact of QAPs on market access**

Estimation results for the basic export model (Model 1) show that there are significant impacts of QAPs (Table 1). The probability of being an exporter is much higher for a processing company that has a QAP compared to a company without such a program. In larger companies and in companies where the workforce acquired their skills through a university education, the probability of becoming an exporter were also higher. Conversely, domestic market size has a detrimental effect on the probability of becoming an exporter.

Model 2 distinguishes QAPs and export markets. The results show that the type of QAP differentiates between markets. The predicted probability of exporting to a non-OECD country compared to not having access to international markets is 28% greater for companies with national QAPs than for companies without any certified program. With respect to exports to OECD countries, internationally recognized QAPs have a significant effect. For these companies the predicted probability of having access to OECD markets compared to having no exports are 48% higher than for companies without any program. The distinction between QAPs and international market access indicates market-specificity of the QAPs. Together with domestic market size, it also indicates that domestic sales and non-OECD exports are complementary to each other while domestic markets and OECD-markets are segmented.

### **Firm size and QAPs**

Based on the multinomial export model, predicted probabilities for export market access are displayed by firm size and QAPs (Figure 3). When firms do not have a QAP, the probability of being an exporter increases sharply with firm size. Increasing export probability with firm size is more pronounced for non-OECD exporters, but the effects seem to be less obvious for OECD exporters.

QAPs increase the probability of exports regardless of firm sizes. While national programs increase the probability of export to non-OECD countries, particularly for smaller firms, they do not bring any advantage for exports to OECD countries. With an international QAP, the probability of accessing OECD markets is considerably higher for all firm sizes as compared with national or no programs. Small firms particularly profit from international QAPs that provide access to OECD markets.

Economies of scale are an important driver for exports to non-OECD countries, giving larger firms a competitive advantage. Market power and reputation play a role too, as larger firms tend to be older and have more export experience. Since quality and safety is crucial in accessing OECD markets, economies of scale do not play such a prominent role. On the contrary, diseconomies of scale occur due to increasing control and co-ordination costs in larger firms. This is indicated by the fact that larger

processing firms tend to have a more diversified product range – including other food and non-food products apart from fruit and vegetables. For that reason, smaller firms have an equal comparative advantage in accessing international markets compared to their larger counterparts, providing that they have implemented an international QAP. Firm size and QAPs therefore appear to be substitutes for facilitating international market access.

## **CONCLUSIONS**

Rising consumer concerns about food safety and quality issues have led to the growing importance of private food regulations at the national and international level. Consequently, developing country exporters may face market entrance barriers into international trade. Processing enterprises can respond through the implementation of QAPs. We used a sample of fruit and vegetable processing enterprises in Vietnam in order to analyze if QAPs facilitate international market access. Our results show that the programs facilitate participation. However, the effect is market specific. Different programs play a role for different markets: while exports to OECD countries require international QAPs, national programs also facilitate access to non-OECD countries. Particularly small- and medium sized enterprises benefit from the implementation of international QAPs, qualifying these programs as substitutes for firm size and market power.

From a rural development perspective, our results demonstrate that a substantial numbers of wage laborers in the processing companies and small primary producers depend on the success in international markets. However, it is often difficult for exporters to find suitable primary producers who can supply the desired qualities. A challenge therefore exists how to increase farmer capability and knowledge. Awareness rising campaigns and training programs within private-public partnerships can potentially facilitate primary producers' participation in export supply chains.

## **ACKNOWLEDGEMENTS**

The authors thank Olivier Ecker for constructive comments on earlier versions of this paper, and Le Van To (Post-Harvest Technology Center, Ho Chi Minh City), Vu Manh Hai, Hoang Bang An, and Nguyen Thi Tan Loc (Research Institute for Fruit and Vegetables, Hanoi) for cooperation and assistance during survey activities. The financial support of the German Ministry for Economic Cooperation and Development (BMZ) and the German Agency for Technical Cooperation (GTZ) under Project No: 04.7860.2 – 001.00 “Food Safety in Fruits and Vegetables in Viet Nam – Consumer Demand and Firms Compliance” is gratefully acknowledged.

## **Literature Cited**

- FAOSTAT, 2007. Trade. Food and Agricultural Organization of the United States (FAO), Rome.
- Grunert, K.G., 2005. Food Quality and Safety: Consumer Perception and Demand. *Eur Rev Agric Econ* 32: 369-391.
- Henson, S., 2006. The Role of Public and Private Standards in Regulating International Food Markets. Summer Symposium of International Agricultural Trade Research Consortium, University of Bonn, 28-30 May 2006.

- Henson, S., Reardon, T., 2005. Private Agri-Food Standards: Implications for Food Policy and the Agri-Food System. *Food Policy* 30: 241-253.
- Jaffee, S.M., Masakure, O., 2005. Strategic Use of Private Standards to Enhance International Competitiveness: Vegetable Exports From Kenya and Elsewhere. *Food Policy* 30 : 316-333.
- Martinez, M.G., Poole, N.D., 2004. The Development of Private Fresh Produce Safety Standards: Implications for Developing Mediterranean Exporting Countries. *Food Policy* 29: 229-255.
- Tsekouras, K., Dimara, E., Skuras, D., 2002. Adoption of a Quality Assurance Scheme and Its Effect on Firm Performance: a Study of Greek Firms Implementing ISO 9000. *Total Quality Management* 13: 827-841.
- Wilson, J.S., Otsuki, T., 2004. To Spray or Not to Spray: Pesticides, Banana Exports, and Food Safety. *Food Policy* 29: 131-146.

## Tables

Table 1: Sample means of independent variables and international market access models

		Sample mean	Model 1 Export		Model 2			
			Coef	S.E.	non-OECD		OECD	
					Coef	S.E.	Coef	S.E.
<b>Treatment:</b>	All QAPs	0.66	0.44**	[0.15]				
	National QAPs	0.38			0.28**	[0.08]	-0.01	[0.16]
	International QAPs	0.28			-0.05	[0.21]	0.48**	[0.20]
<b>Covariates:</b>	Workforce (hundreds)	1.93	0.07*	[0.03]	0.06**	[0.02]	0.02	[0.03]
	Univ. trained workforce	0.48	0.38***	[0.12]	0.20	[0.17]	0.18	[0.16]
	Access to com. credit	0.62	-0.12	[0.16]	-0.03	[0.16]	-0.12	[0.21]
	Imported technology	0.72	0.26	[0.18]	0.09	[0.13]	0.17	[0.25]
	Nat. customers (tens)	1.92	-0.06**	[0.03]	0.06**	[0.03]	-0.16***	[0.05]
<b>Sum. stat.:</b>	Observations		50				50	
	Log likelihood :		-22.65				-38.3	
	Chi <sup>2</sup> :		13.13				175.68	
	Pseudo R <sup>2</sup> :		0.29				0.30	

Notes: Table reports marginal effects at sample means and standard errors in brackets.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Figures**

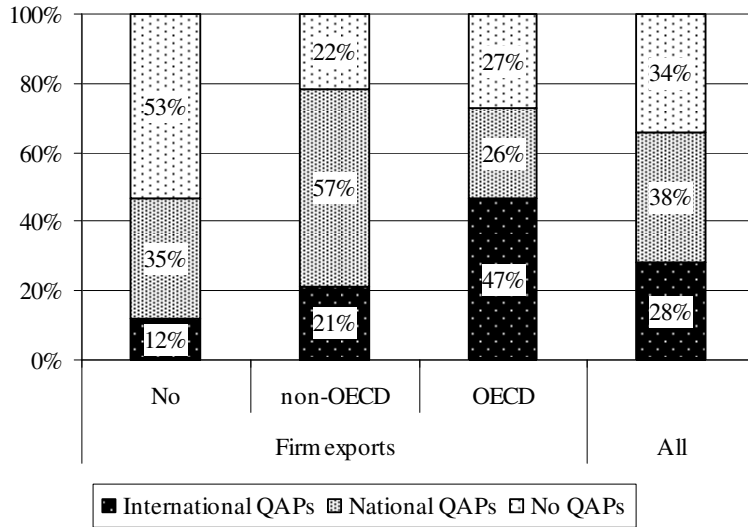
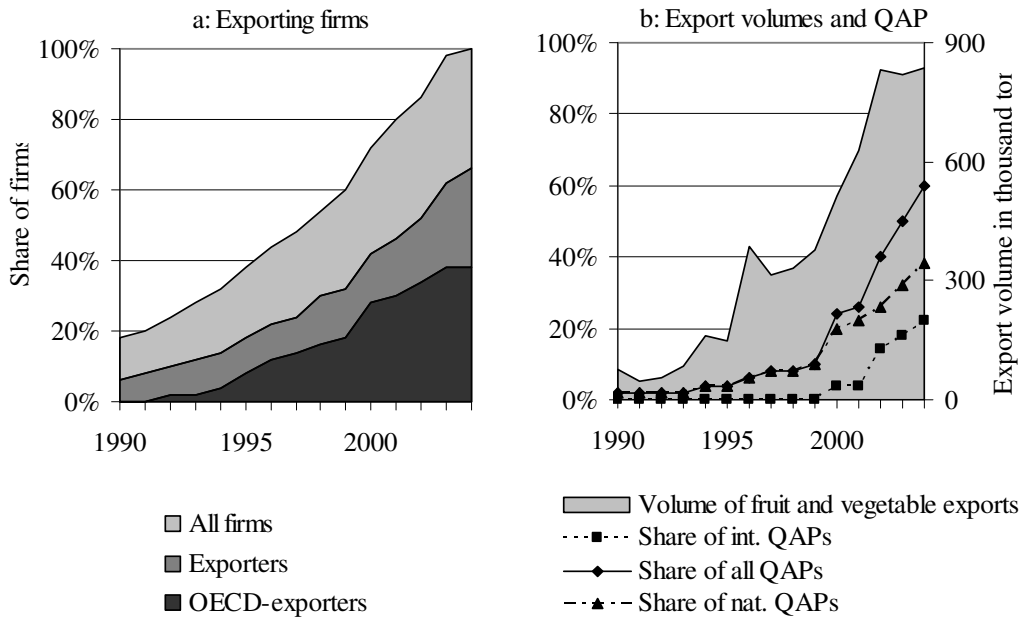


Figure 1: Share of fruit and vegetable processing firms in Vietnam having implemented different QAPs by export status



Source: Export volumes from FAOSTAT (2007).

Figure 2: Share of firms exporting to different markets (a) and national fruit and vegetable exports and share of firms' implementation of QAPs (b)



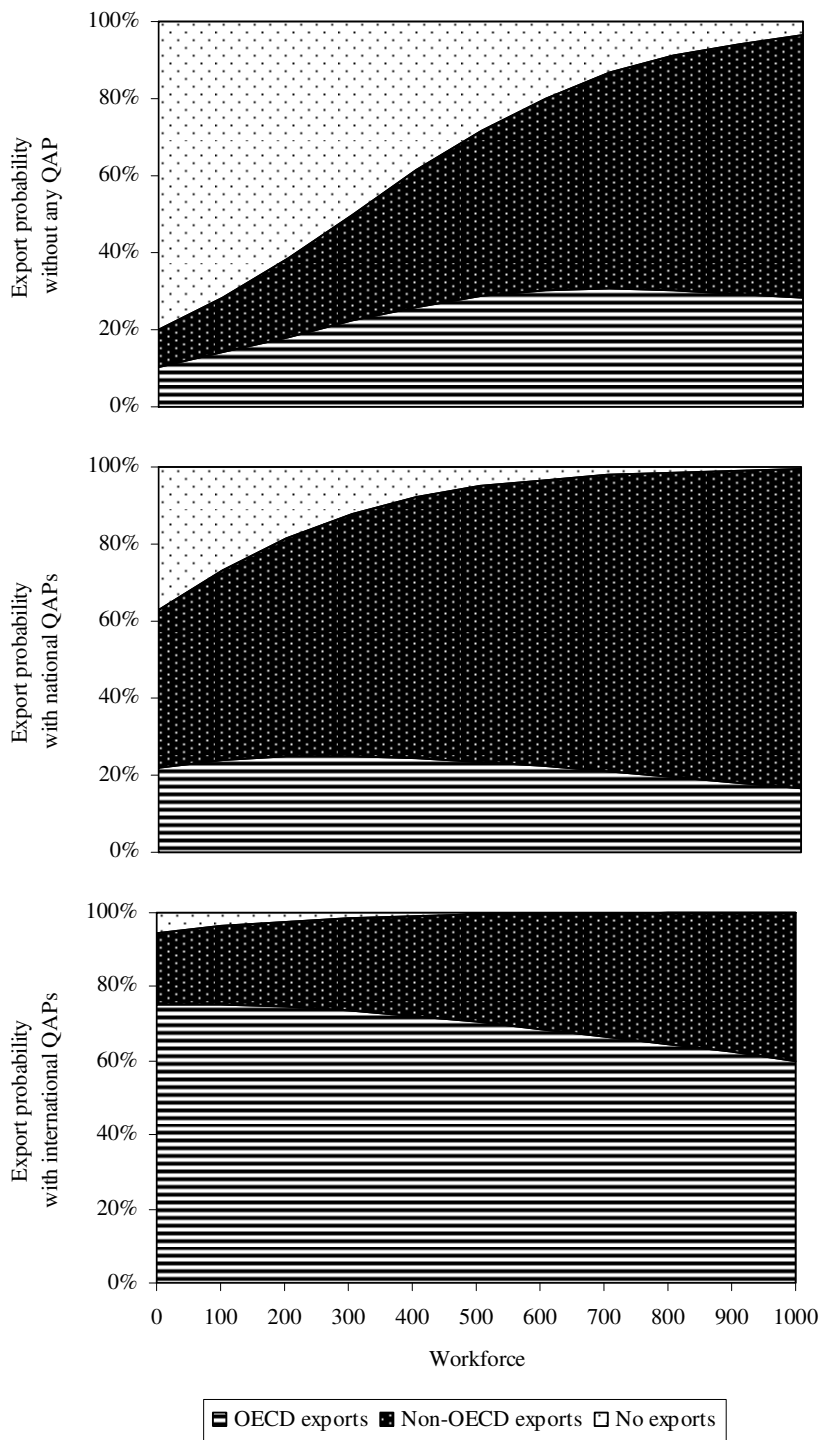


Figure 3: Predicted probabilities for access to different export markets by firm size and QAP