

viewpoint

PUBLIC POLICY FOR THE PRIVATE SECTOR

Food Safety Standards

Economic and Market Impacts in Developing Countries

Compliance with public and private food safety standards has been the subject of increasing attention. Much of the literature on impacts of food safety regulation in developed countries focuses on public health. In poorer countries, the emphasis is on economic development. How standards shape access to markets and what is their economic impact on producers. This note discusses evidence of the economic and market impacts from three perspectives: compliance with public food safety standards; compliance with private standards; and the impact of technical assistance in achieving compliance.

Public and private regulation

Food safety touches upon issues of public regulation, private supply chain coordination, and international trade. More stringent food safety standards have emerged over the past two decades as the result of several factors, including advances in hazard detection and epidemiology, high profile health scares, scientific and regulatory consensus on best approaches to risk management, and the recognition of global standards and approaches under the WTO. As a result there is a consensus “among nations about the basic components of an effective food safety system... the vision is of a farm-to-fork, risk-based, scientifically supported safety control system” (Hoffmann and Harder 2010).

Compliance efforts differ for public and private standards. Public standards constitute legal requirements for market entry, and can be used by governments to deny market access for exporting

countries or firms that fail to comply. These standards may include requirements that must be met by public agencies in exporting countries as well as by private firms engaged in export. Public standards must meet World Trade Organization requirements for transparency, equal application to domestic and imported products, and must be based on scientific risk assessment. Typically such standards change only infrequently. Private standards are set by buyers (or a by a consortium of firms) and include both safety and quality specifications for particular market channels. While they may be de facto requirements for particular buyers, failure to comply with private standards will not, by itself, preclude entry into an importing country. Private standards change over time as buyers manage risks and reputation, and thus compliance must also evolve.

New regulations or standards can add to production costs. In high-income countries,

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such costs are weighed against the public health benefits from reduced foodborne illness. But in developing countries, studies have focused on how standards shape market participation, exports, and farm incomes. In this Viewpoint, we review evidence regarding economic and market impacts of compliance with (1) public food safety standards; (2) private standards; and (3) the impact of technical assistance in facilitating compliance. While public and private standards are distinct, we will also briefly discuss joint public-private strategies for responding to more stringent standards that can reduce their negative economic consequences.

A context of catalysts, costs, and scale

Three important themes from the literature provide context for a review of evidence. First, both public and private standards are important in high value markets. New public regulations that emerged in high-income countries in the 1990s became mandatory requirements for low-income country exporters. Even more stringent private standards quickly followed, as European retail chains used standards to establish brand identity and reputation, and to respond to emerging consumer concerns (Fulponi 2006). Second, the literature reflects the debate regarding whether standards are barriers to market participation or catalysts for strategic investments. Higher public standards in importing countries reduce traded quantities, especially from low-income exporters (see Wilson 2007 for review of trade studies). In contrast, Jaffee and Henson (2004) showed that higher standards can serve as catalysts for improved management, higher value added, and greater efficiency in production and marketing. Third, the costs imposed by more stringent standards have elevated concern that food safety standards pose a barrier to market participation by small farms or firms. The high non-recurring costs of setting up a food safety quality control system might give an advantage to larger firms and farms that can employ economies of scale and exclude smaller competitors. In addition, buyers incur higher transaction costs when they have to monitor compliance from many small suppliers.

Compliance with public standards incurs cost, noncompliance means loss of markets

Failure to meet public standards imposed by high-income countries led to the exclusion from

markets of some developing countries and firms as new standards came into force in the 1990s. Examples include European Union (EU) bans on imports of fishery products from Bangladesh in 1997 (Cato and Subasinge 2003); from Kenya in 1997-2000 (Henson and Mitullah 2004); and from Malaysia in 1998 (Alavi 2009); and a U.S. ban on raspberries from Guatemala in 1997-98 (Calvin et al. 2000). Case studies document how bans led to substantial export revenue losses and how many banned firms, struggling to comply, went out of business or, if they survived, incurred high compliance costs (Cato and Subasinge 2003; Calvin et al 2000; Henson and Mitullah 2004). Public sector support in exporting countries was sometimes required to underwrite investments beyond the reach of individual firms (Henson and Mitullah 2004). Such support enabled a resumption of exports as firms came into compliance, but at a lower and less profitable level than before.

Even where countries maintained export market access and avoided product bans, compliance costs were substantial. Compliance with seafood standards in the Philippines (Ragasa et al 2011) and Brazil (Donovan et al. 2001) imposed costs that were higher than expected, and likely reduced production and exports at the margin. Thus, exporter compliance with public standards imposed by importing countries increased costs and may have reduced trade. Compliance with public standards to achieve access to high-income markets may be a strategic priority for some governments, which suggests a public sector role in compliance.

Private standards can raise farm incomes but may exclude smallholders

Rigorous study of the impact of private standards has focused almost exclusively on private standards for horticultural products—mainly fruits and vegetables—particularly GlobalGAP for the EU market.¹ Compliance with private food safety standards has been found to lead to higher export sales and prices, revenues, and incomes in 10 studies of high-value horticultural exports in 14 different countries (Table 1 shows representative results). Other benefits identified in many cases include adoption of improved technology with spillover benefits for staple crops (Minten et al. 2009), higher or more stable labor income (Maertens and Swinnen 2009; Minten et al 2009),

and improved health through reduced on-farm exposure to pesticides (Kersting and Wollni 2012; Asfaw et al. 2009; Okello and Swinton 2009). The conclusions in these studies tend to support Jaffee and Henson (2004), who show that standards can serve as catalysts for improved products and yield premiums for exporting industries (Swinnen and Vandeplass 2011). Similar conclusions have emerged from studies of smallholder response to modernizing markets (Dries et al. 2009, Barrett 2011), in which improved food safety is one of many simultaneous changes.

Results of studies that focused on the exclusion effects of private standards on smallholders were more mixed (Table 1), possibly because prevailing market conditions and the varying compliance costs determine which producers turn these standards to their benefit and which are harmed (Xiang et al. 2012). A study of export supply chains over 19 years in Peru found that stringent standards led to greater buyer control of supply and exclusion of smallholders who remained independent (Schuster and Maertens 2013). In contrast, studies in Zimbabwe, Chile, Thailand, and India found that smallholders were able to adapt because the scale advantages of larger farms were modest, and transaction costs

in supply chains declined over time (Henson et al. 2005; Handschuch et al 2013; Kersting and Wollni 2012; Roy and Thorat 2008). In Senegal, a shift to estate production excluded smallholders, but these households then benefited from wage labor opportunities that led to higher incomes (Maertens and Swinnen 2009), and low-income workers in exporting firms also benefited from higher wages (Colen et al 2012). The Senegal studies demonstrate the strong poverty alleviation impacts that can result from job creation associated with successful market access.

Smallholders may be excluded by high costs, so to overcome cost barriers, exporting firms, governments, and donor institutions often pay a portion of suppliers' compliance costs (Kersting and Wollni 2013; Handschuch et al. 2013; Leimeilleur 2013; Subervie and Vagneron 2013; Henson et al 2005). In other cases, farmer groups or buyers provide intensive monitoring, training, and inputs to facilitate compliance (Henson et al. 2005; Okello and Swinton 2007; Lemeilleur 2013; Roy and Thorat 2008). Successful farmer compliance was found to be associated with education, male gender (Chile), experience, membership in a farmer association, and access to technical support (Kersting and Wollni 2012;

Table 1 Impact of compliance with private food safety standards for EU horticultural product markets

Country	Study	Impacts of compliance	
		On benefits and costs...	On smallholder inclusion...
Madagascar	2013 Subervie and Vagneron	Certified producers sell larger quantities at higher prices than those not certified.	Market access determined by proximity to processing plant, not scale of production.
Thailand	2012 Kersting and Wollni	Farmers' perceived benefits including improved quality, reduced pesticide risk, better market access.	One hectare increase in farm size associated with only 2% increase in likelihood of compliance.
Chile	2013 Handschuch, et al.	Certified producers gain higher yields, prices, and net income through better quality, offsetting higher fertilizer and pesticide costs.	Smaller farmers more likely to not be certified. Certification costs 11% of gross income per ha, making public support critical.
Kenya	2011 Kairuki, et al.	Certification raises prices 4.2% to 9.5%.	
10 SSA countries	2011 Henson, et al.	Certification leads to higher sales revenue (Euro2.6 million higher per firm).	About one-third of exporting firms' purchases are from smallholders.
Madagascar	2009 Minten et al.	Compliance leads to greater income stability, adoption of improved technology and better resource management, with spillovers for staple crop productivity.	Smallholders are able to meet quality requirements.
Senegal	2009 Maertens and Swinnen	Compliance leads to sharp growth in exports, higher rural incomes and poverty reduction.	A shift from smallholder contract farming to integrated estate production. Poor households benefit through labor markets.
Kenya	2009 Ashraf, et al.	Farmers switching to compliant export crops generate significantly higher income.	The switch is not sustained when new certification requirements are not supported.
India	2008 Roy and Thorat	Compliance increases successful export market participation and higher net profits for farmers.	Smallholders participate through group marketing arrangements and receive assistance through cooperatives.

Handschuch et al. 2013; Lemeilleur 2013). These results suggest that not all smallholders will be equally able to comply with standards, but also that assistance can support participation.

Technical assistance can have positive impacts on farmer and firm compliance

To support new income opportunities for smallholders, governments and donors have assisted in bringing about compliance with food safety standards through training and capacity building, direct financial support for certification costs, and fostering farmer organizations or cooperatives (Table 2). Market returns clearly motivate compliance, but technical assistance seeks to overcome barriers to entry that might prevent inclusive participation. Such assistance may also have spillover benefits, such as reduced pesticide exposure or improved farm management.

Six studies that tested explicitly for the impact of technical assistance found positive impacts in facilitating compliance, market participation, and higher incomes (Table 2). Technical assistance, subsidies for initial certification costs, and managerial support were effective in Chile and Thailand in promoting market participation of smallholders (Handschuh et al 2013; Kersting and Wollni 2013). In India, government-supported cooperatives facilitated farmer compliance (Roy and Thorat 2008). In 10 Sub-Saharan Africa countries, technical assistance from the EU Pesticide Initiative

Program (PIP) was a significant determinant of whether an exporting firm was certified to GlobalGAP (Henson et al 2011), although it had little influence beyond sales to the EU in Senegal (Caud and Jadot 2012). Interventions are not sustainable, however, when market conditions change or follow-through from donor institutions weak (Ashraf, et al. 2009). A review of experiences in Sub-Saharan Africa by Jaffee et al. (2011) emphasized the need to partner with buyers, who have a continued economic motivation to support farmer compliance.

Conclusion

Growing recognition of the importance of “co-regulation” or public-private partnerships for compliance with food safety standards has emerged from several of the studies listed in Table 2. Experience and the literature reviewed here demonstrate the benefits that flow from compliance. The question is whether public assistance can help stakeholders access these benefits. Public-private approaches may have the potential to reduce enforcement costs and improve compliance through supporting industry-led efforts (Martinez et al. 2007; Narrod et al 2009). These approaches have not yet been explored in the research literature as, for example, a means of reducing the costs of compliance with EU requirements in new member states in Eastern and Central Europe. Examples of such partnerships are emerging in pilot projects, such as those addressing aflatoxin

Table Impact of TA for compliance with food safety standards in developing countries

Country	Study	TA	Impact of assistance
Madagascar	2013 Subervie and Vagneron	Donor support for GlobalGAP certification	Certified producers have better access to markets and higher prices.
Chile	2013 Handschuch, et al.	Public support for compliance with export standards	Assistance is critical to smallholder participation in markets.
Thailand	2012, Kersting and Wollni	Donor support for group certification of small farmers	Support by donors and exporters enabled farmers' compliance.
SSA	2011, Henson, et al.	Compliance support for EU Pesticide Initiative Program	Firms more likely to be certified if they receive PIP technical assistance.
Senegal	2012 Caud and Jadot	EU PIP support for food safety management practices	PIP has a positive effect on horticulture exports to the EU but not on total horticulture exports.
Kenya	2009, Ashraf, et al.	NGO assistance to smallholder participation in export markets	Support for market services effective in supporting farmers' shift to export crops. Exports did not continue when support ended.
India	2008 Roy and Thorat	Government support for farmer cooperatives	Cooperatives result in higher net profits for farmers and facilitate smallholder inclusion.

risks in commercial feed markets in Africa (IITA 2013). Future research should rigorously evaluate the net benefits of these efforts, to provide models for how best to support improved food safety management outside of the export channels that have been the focus of the literature thus far.

Market access flowing from compliance with public and private food safety standards produces clear benefits just as market exclusion resulting from non-compliance imposes costs. These effects are now well-documented, with more recent evidence pointing to added benefits of poverty reduction and spillover effects for health and productivity resulting from compliance. Rigorous evidence also confirms the positive role of public or donor institution assistance. Most of the literature, however, has been focused on the relatively small market for EU horticultural products, which will provide opportunities for only a fraction of developing country producers. More work needs to be done exploring the potential market growth in regional and South-South trade that could emerge from meeting quality and safety demands in modernizing markets of developing countries (Jaffee et al. 2011). Filling these gaps in the literature would further inform meaningful public roles in addressing food safety in developing countries.

Note

1. "GlobalGAP is a collective private standard for the implementation of generally agreed principle of GAP [Good Agricultural Practices] in primary production, initially in fruit and vegetables and now in a wide range of plant and animal products." Henson et al. 2005

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