

Standards as Barriers and Catalysts for Trade and Poverty Reduction

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Abstract

The importance of food standards in global agricultural trade has increased strongly, but the effects are uncertain. Several studies argue that these standards imposed by high-income countries diminish the export opportunities for developing countries and concentrate the benefits of trade with processing and retailing companies and large farms, thereby casting doubt on the development impact of international agricultural trade. Other argue that the standards can be catalysts for growth. In this paper we critically review the arguments and empirical evidence on the link between increasing food standards, developing country exports and welfare in those countries. We conclude that the evidence is often weaker as claimed. We also provide new insights from two recent survey-based empirical studies. We conclude that standards can be a catalyst for trade, growth and poverty reduction in developing countries.

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Introduction

Over the past 50 years, progress has been made in lowering the barriers to trade through a removal of quotas, a reduction in tariffs and preferential trade agreements. This has benefited developing country export performance. Agricultural exports from developing countries increased from \$ 92 billion in 1980 to \$ 169 billion in 2000 (Aksoy, 2005). Participation in international trade is generally recognized to favor economic growth and especially agricultural exports would promote development in low-income countries due to the link with the rural economy.

However, it is argued that the gains from trade liberalization are offset by increasing food standards that are mainly imposed by high-income countries and increasingly dominate the world's food trading system (Augier et al., 2005; Brenton and Manchin, 2002). These standards are argued to act as new barriers to developing country exports. Moreover, others argue that high standards concentrate the benefits of trade with processing and retailing companies and large farms, thereby casting doubt on the development impact of increased agricultural exports from developing countries. Standards would lead to an unequal distribution of the gains from trade and result in the marginalization of poorer farmers and small agri-food businesses.

The aim of this paper is to review the arguments and empirical evidence on the link between increasing food standards, developing country exports and welfare in those countries; and provide new insights from two original case-studies. The main conclusion resulting from this study is twofold. First, empirical evidence indicates that there are important net benefits for developing countries of investing in food quality and safety capacity to address increasing standards. In the short run, the cost of non-compliance with standards exceeds by far the cost of compliance. In the long

run, the costs are outweighed by the benefits of compliance. Second, the empirical evidence generally does not support the view of small farmers being marginalized as a result of increasing food standards. On the contrary, case-study evidence confirms that high-standards agricultural trade can have important positive effects on the well-being of small farmers in developing countries. In summary, standards can serve as a catalyst for realizing pro-poor export-led growth in developing countries.

The paper is structured as follows. In a next section we briefly describe the increased importance of food standards in world agricultural trade and the factors contributing to explaining this. In section three we discuss how standards can act as barriers and/or catalyst to developing country exports. The main focus of the paper is on the distributional consequences of standards and the welfare implications of high-standards agricultural trade; which is subject to section four. In section five we present the results of two original case-studies and discuss the insights this brings. In section six we present the final conclusions and implications from our study.

Increasing food standards

Since the past two decades the importance of food standards in agricultural trade is increasing sharply. Food standards are increasing not only in quantity but also in complexity. We first discuss the reason behind this increase and then the growing complexity of food standards.

Factors behind the increasing importance of food standards

Food standards have emerged and proliferated in rich countries and are starting to appear in developing countries, especially in their urban markets. A number of factors contribute to explaining the increasing prevalence and importance

of food standards in global agricultural trade. First, consumers in high-and middle income countries – and increasingly also in urban markets of developing countries – have a growing demand for product quality and food safety. This growing demand stems from rising incomes levels, changing dietary habits and increasing health awareness. A series of food crises¹ during the 1990s in the US and European countries and more recently in East Asia have increased consumer awareness for food safety risks and have put food safety on top of the agenda in food policy. This has led to public and private action in setting food standards, establishing effective control mechanisms, developing certification schemes and validating food labels; and has resulted in a complex aggregate of food standards. In addition, consumers are increasingly (made) aware of ethical and environmental aspects related to food and agricultural trade, which increases the need for standards related to these aspects and results in action from the non-profit sector.

Second, increased trade in fresh food products prone to food safety risks has increased the need for elaborated food standards that guarantee food quality and safety throughout the supply chain. The share of fresh food products – such as fruits and vegetables, and fish and seafood products – in world agricultural trade, and especially in developing country exports, has increased sharply over the past two decades (Aksoy, 2005). Fresh food products are not only subject to specific quality and safety demands by consumers in high-income countries; trade in such products also entails higher food safety and quality risks. The increased importance of trade in fresh products has put forward differences in norms between countries that stem from cultural differences, differences in income levels and difference in food safety risks and the perception of these risks. In general, consumers' expectations for quality and

¹ E.g. BSE (bovine spongiform encephalopathy) in the UK, E.coli in hamburgers in the US; dioxine in animal feed in Belgium, salmonella outbreak in UK, and avian flu in Asia.

safety are much lower in developing countries than international norms (Wilson and Abiola, 2003). This divergence in norms across countries has created a need for coordinating international trade in food and agricultural products through standards.

Third, the changing structure of the agri-food chain with food distribution increasingly organized through large retail chains – in industrial countries² as well as in developing countries³ – has increased the importance of food standards. Large retailers such as super- and hypermarkets put much emphasis on freshness, product quality and food safety because the risk of selling ‘bad’ food is potentially catastrophic to a branded supermarket – much more than to traditional traders in a wet market where the rule is *caveat emptor*⁴ (Gulati et al, 2005)

Fourth, the presence of foreign investors and subsidiaries of multinational companies in the agro-food sector in developing countries has contributed to the prevalence of food standards. FDI in food processing, exporting and retailing in developing countries is increasing as a result from a liberalized investment climate and proactive efforts by developing countries to attract FDI in this sector⁵. Such FDI companies might impose and spread the use of high standards in developing countries to serve markets in their home economies, to reduce transaction costs in regional distribution and supply chains, or to harmonize production and processing standards across subsidiaries of multinational holdings.

Fifth, enhanced technical and scientific knowledge has contributed to the increasing complexity of food standards. Scientific expertise of food safety risks and

² The concentration in food retail is particularly high in some EU countries such as France where eight retailers account for 90% of food retails. Also in the US this increased consolidation is apparent with a market share of the top 20 retailers that has grown from 37% in 1987 to 59% in 2001.

³ Particularly in Latin America and Asia large super- and hypermarkets are emerging and gaining importance. The share of food retailed through these outlets ranges between 30% and 75% in Latin American countries (Reardon and Berdeque, 2002):

⁴ *Caveat emptor* or ‘let the buyer be aware’.

⁵ A survey of African investment promotion agencies carried out by UNCTAD (1999) suggests that the agri-food sector receives a considerable share of total FDI inflows in those countries.

agricultural health has facilitated (and justified) the accurate setting of food standards in correspondence with public health interests. Also new technical possibilities have shifted norms and consumer expectations.

Increased complexity of food standards

The increased complexity of food standards is apparent in a number of ways. First, there are standards at different levels – national, regional and international – and a lack of harmonization across these levels and across countries. Even within the EU certain standards (e.g. MRL, maximum contaminations levels) vary largely across countries and differ from EU and international standards.

Second, there is a distinction between mandatory or public and voluntary or private standards⁶. The former are set by national and international legislation while the latter emerge from the private sector. Large food processing and distribution companies are increasingly engaging in establishing their own private standards for food safety and quality⁷. The delineation between public and private standards is not always clear. For example in the case of EU traceability standards⁸ there is a mandatory part that applies to agro-food businesses within the EU and a private part imposed by various importers who require traceability throughout the chain up to the level of overseas primary producers.

Third, there are standards in different spheres, focusing on different aspect. Often a distinction is made between product standards that stipulate attributes of the

⁶ Private standards are sometimes referred to as market-driven standards while public standards are called technical (Wilson and Abiola, 2003). We do not use this distinction here as in our view public standards go beyond technical regulation while private standards may include technical specifications as well.

⁷ Henson (2006) describes the evolution of private standards and outlines how and why these private standards have come to play an increasingly dominant role.

⁸ Traceability in general requires agro-food business to document from/to whom they are buying/selling produce such that products can be traced back to their origin in case of food safety risks.

product itself and process standards that relate to the processes of production, handling, processing and transportation. These latter standards are becoming increasingly important (Farina and Reardon, 2000). In the literature most attention has been given to food quality, safety and agricultural health standards. However, also other standards are emerging and are likely to increase in importance in the future. These include among others ethical standards (e.g. the UK Ethical Trade Initiative which is concerned with labor practices) and environmental standards (e.g. Rainbow Alliance focusing on sustainable management practices and ecosystems protection), which are often the initiative of NGO's and trade unions.

Fourth, not only the standards itself but also the control and enforcement mechanisms are increasingly complex. Procedures for conformity assessment and monitoring compliance with food standards differ strongly across countries and are increasingly arranged by the private sector. For example, Jaffee (2003) notes that, despite efforts to harmonize regulations for pesticide residues for FFV imports in the EU, there remain wide variations owing to different country approaches to surveillance and enforcement. Henson and Mitullah (2004) report wide variations in food safety requirements and conformity assessment procedure – border inspection in the importing country versus certification of processing facilities in the exporting country – in the case of fishery products.

Food standards as barriers and catalysts for export growth

Food standards are increasingly important for developing countries' exports. Some argue that standards are new trade barriers that diminish the export opportunities for developing countries and offset the gains from trade liberalization (e.g. Augier et al., 2005; Brenton and Manchin, 2002). Others claim that compliance

with food standards can be a catalyst for upgrading and modernization of developing country's food supply systems (e.g. Jaffee and Henson, 2005). In this section we briefly review and challenge the arguments of these different views⁹.

Discriminatory use of standards

Food standards have the potential to be used as protectionist tools or as a (scientifically-justified) excuse for protectionism by industrial countries. Standards can be set higher for imports than for domestically produced goods or standards can be designed to protect national industries rather than consumer health. Increased trade liberalization creates incentives for countries that see quotas removed and tariffs reduced, to indeed (mis)use standards to bar developing country exports and protect domestic farmers and agri-food companies (Neff and Malanovski, 1996).

The empirical evidence on this is mixed. Some argue that the protectionist use of standards and trade disputes over food quality and safety issues has increased in the past decade and is likely to increase in the future. For example Mathews et al. (2003) note that several countries effectively discriminate by having zero-tolerance for salmonella on imports of poultry products while not attaining and not monitoring this standard for domestic supplies. However, Jaffee and Henson (2005) argue that there is no systematic evidence on whether or not countries apply higher standards to imports than to domestically supplied food products.

Still, the WTO has taken action to circumvent such discriminatory use of standards with the Sanitary and Phytosanitary (SPS) Agreement and the Technical Barriers to Trade (TBT) Agreement and has seen a rise in dispute settlement cases

⁹ We discuss the impact of standards in general and do not distinguish between in particular between public and private standards. Henson (2006) notes that much of the debate on the impact of food standards has focussed on public standards and provides arguments on how private standards in particular can affect developing countries' exports.

related to these agreements (Hufbauer et al., 2002). A key message for developing countries is to develop expertise for participation in international negotiations and capacity to settle international trade disputes.

Cost of compliance

Apart from the discriminatory use of standards there is another reason why standards may act as barriers to trade: the high cost-of-compliance with food standards. This cost is likely to be higher for developing countries because they generally lack the institutional, technical and scientific capacity for food quality and safety management. Hence adherence to high standards imposed by high-income countries might require substantial investment – from the public sector¹⁰ as well as from the private sector – to realize that capacity. In addition, there is generally a divergence between national food quality and safety norms in a particular country and international standards. This ‘standards diverge’ increases the cost of compliance and is likely to be higher for developing countries. For poor countries, lacking financial means, the cost of compliance with standards might be too high and undermine their competitive capacity.

However, some studies have estimated the cost of compliance to food quality and safety standards and have demonstrated that these are much lower than generally assumed. For example Aloui and Kenny (2005) estimate the cost of compliance with SPS measures to be three percent of total costs of export tomato production in Morocco. Cato et al. (2005) have estimated the cost to implement compliance to quality and safety standards to be less than less than 3% and the cost to maintain this compliance less than 1% of the total value of shrimp exports from Nicaragua. Still, it

¹⁰ Compliance with high food standards might require public investment in infrastructure and institutions to improve the administrative, technical and legal capacity for food safety management.

is argued that compliance costs could be substantially reduced if standards would be harmonized across countries and internationally uniform conformity assessment and certification producers adopted (Aloui and Kenny, 2005).

Cost of non-compliance

The cost of compliance might be relatively low compared to export earnings but the cost of non-compliance with standards is potentially very high. The inability to comply with food standards can lead to border detentions of produce and trade restrictions such as import bans for specific products. For example, in 1997 the EU banned fish exports from Kenya on grounds of food safety risks (Henson et al., 2000) and from Bangladesh on the basis of incompliance with hygiene norms in processing plants (Unnevehr, 2000). The US Food and Drug Administration reported almost 3,000 border detentions of imported FFV and more than 1,500 detentions of fishery products in the period January – May 1999. Most of the products originate from developing countries and are denied because of contamination, pesticide residue violation and failure to meet labeling requirements (Unnevehr, 2000).

Such detentions and import bans are extremely costly; in the short run in terms of immediate forgone export earnings and in the long run in terms of damaging a country's reputation and eroding its export competitiveness. For example the EU ban on fish exports from Kenya decreased export earnings with 37% (Henson et al., 2000) and US border detentions of vegetable shipments from Guatemala made this country lose \$ 35 million annually in the period 1995-1997 (Julian et al., 2000).

Benefits of compliance

Some developing countries have been successful in complying with increasing food standards. Among the success stories are Thai and Kenyan horticulture (World

Bank, 2005; Jaffee, 2003); Thai and Nicaraguan shrimp (World Bank, 2005); and Indian spices (Jaffee, 2005). The case-studies at the end of this paper demonstrate that also FFV exports from Senegal and Madagascar can be added to this list. These sectors experienced accelerated export growth precisely during a period of increasing standards – as was the case also for Kenyan export horticulture (Jaffee, 2003).

Instead of acting as barriers, emerging food safety and quality standard might provide incentives for developing countries for upgrading their export capacity and for gaining access to high value food markets. Jaffee and Henson (2004) note that the most successful countries and/or sectors have used high quality and safety standards to (re)-position themselves in competitive global markets. In fact, standards provide a bridge between producers in developing countries and consumer preferences in high-income markets and could be used as catalysts for upgrading and modernization of developing countries' food supply systems and improving their competitive capacity. If standards can be used as catalysts in such a way, they provide a basis for long term export growth. A key element in attaining these benefits is to be proactive in food quality and safety and facilitate business strategic responses (Jaffee and Henson, 2004).

Food standards as barriers and catalysts for growth and poverty reduction

Understanding the link between standards on the one hand and export competitiveness and performance of developing countries on the other hand is crucial in the design of a broader development agenda. Yet, a more critical issue for policy-makers concerned with equitable growth, is to understand the link between standards, developing country exports and poverty in those countries. As indicated by the World Bank (2005) the cost and structural changes associated with compliance with food standards can cause significant redistribution of welfare across countries, along

supply chains and in societies. Such redistribution determines the capacity of high-standards agricultural trade to serve not only as a basis for long term export growth and a tool for upgrading and modernizing developing country food supply systems but also as an engine of economic growth and poverty reduction. Some studies argue that high-standards trade may do little for the fate of poor farmers and fishermen as they are likely to be excluded from high-value supply chains while the rents in the chain are extracted by multinational companies and developing country elites (e.g. Dolan and Humphrey, 2000; Farina and Reardon, 2000; Reardon et al, 1999). But empirical evidence supporting these arguments is limited.

In analyzing the distributive consequences – and ultimately the welfare implications – of high-standards agricultural trade in developing countries one should distinguish two issues. The first (“exclusion”) concerns the participation and exclusion of weaker players such as small and medium enterprises and poor farmers. The second (“rent distribution”) concerns the distribution of the gains from high-standards agricultural trade among the different participating agents within the supply chain. Both issues are critically related to how food supply chains have restructured in response to increasing food standards. These structural changes include consolidation and increased vertical coordination at different levels of the supply chain and their effects. In what follows we discuss these structural changes and the implications for the participation of smaller enterprises and poorer farmers in high-standards supply chains and their share in the benefits thereof. We briefly review the (limited) empirical evidence available from the literature and present two original case-studies which bring important new perspectives into the debate.

Food standards and supply chain restructuring: consolidation

Food standards pose specific challenges to small agro-food businesses, exporters and farmers in developing countries to stay into business in export markets. These challenges arise from the – financial and other – constraints these small enterprises face in complying with food standards. They experience difficulties in accessing the necessary information on standards, in translating such information into specific investment needs, and in making the necessary investments for quality and safety upgrading while facing financial, technical and institutional constraints. Although, in general, the cost of compliance with standards might be low relative to the total export value in a particular sector, this cost might be very high relative to the means of small firms and poor farmers (Reardon et al., 1999). Therefore food standards can lead to those weaker players exiting the profitable export market and hence to consolidation of the export supply base.

The literature has presented some evidence of ongoing consolidation of agricultural exporting activities in developing countries. Dolan and Humphrey (2000) find that in Kenya and Zimbabwe smaller firms are increasingly squeezed out of fresh vegetable trade and that the FFV export sector is dominated by a few large agro-industrial companies and exporters. Also Jaffee (2003) points to that fact for the case of Kenya FFV exports and estimates that 90% of the export volume is controlled by (only) six companies.

There is also evidence of ongoing consolidation at the level of primary production. This is closely related to increased vertical coordination in the export supply chain and is discussed further.

Food standards and supply chain restructuring: vertical coordination

Compliance with increasingly complex and stringent food standards and monitoring of this compliance throughout the supply chain requires tighter vertical coordination at different nodes in the chain. At the export-import node of the chain; importers in high-standards markets, especially the large retail chains, increasingly procure from a list of preferred suppliers in order to guarantee quality and safety of the produce. Being on this list and attract contract deals with importers becomes increasingly crucial for exporters in developing countries to gain and maintain market access. This is specifically tough for smaller exporters who are disadvantaged in vertically coordinated supply chains because they cannot provide the quantities large multinational food distributors demand. This might lead to further consolidation at the level of exporting companies. For example in Kenya, the few large FFV exporting companies who dominate the sector all have contracts with supermarket chains in the UK and other European countries (Dolan and Humphrey, 2000).

Upstream the supply chain, vertical coordination between exporters/processors and primary producers in developing countries might increase. Traditional spot market trading systems with intermediaries or 'middlemen' are generally not effective in high-standards export supply chains. In such trading systems, monitoring compliance with standards is extremely difficult and expensive in terms of transaction costs. Increased vertical coordination upstream the supply chain can occur in two ways. First, agro-exporting firms relying on contract-farming with primary producers might apply tighter contract coordination as to guarantee product quality and assure process conformity. Such production contracts can include specifications on specific product and process attributes in addition to an agreement on the price and quantity to

be delivered. Moreover, contractor firms can intensify farm assistance programs with the provision of inputs, credit, loan guarantees and extension services such that contracted suppliers can overcome the financial, technical and other constraints they face for compliance with food standards. Firms might also involve more closely in farm management decision; e.g. by stipulating the technical itinerary to follow or by carrying out chemical application on the farmers' fields. Such highly coordinated contracts reduce transaction costs related to enforcing compliance with standards, monitoring product quality and assuring safety of food production and processing. In addition, contract-farming might ease conformity to traceability standards; which are increasingly important for exports to the EU.

Second, it is argued that there is a shift from smallholder contract-based production towards large-scale vertically integrated estate production. This would be a more radical change of increased vertical coordination and implies exporters and agro-processing companies to start their own primary production on bought or rented land. Such integrated way of production increases the scope for standardized production and for meeting high standards at low transaction costs. However, such large-scale integrated production entails risks for agro-exporting companies and increases other costs; e.g. supervision costs of labor and the cost of renting or buying land.

Empirical evidence shows that vertical coordination in developing country export supply chains increases with increasing food standards. Gulati et al. (2005) have noted a sharp increase in animal contract-production in Southeast Asia in response to increasing standards. For the FFV export sector in Kenya Jaffee (2003) reports intensified extension services and closer governance in supplier-contracts, motivated by increased standards.

However, there is mixed evidence on how far-reaching the shift from small-scale contract-based production to large-scale industrial estate production actually is. Jaffee (2003) estimates that the share of smallholder production in total vegetable exports in Kenya has decreased from 45% in the mid 1980s to 27% in 2002. Dolan and Humphrey (2000) state this shift in Kenyan horticulture to be much more pronounced with smallholder production decreasing from 75% to 18% over a decade¹¹. Also Minot and Ngigi (2004) observe a shift towards vertically integrated agro-industrial production in the banana sector in Ivory Coast. However, Unneveher (2000) mentions the fruit export sector in Ivory Coast to be still largely based on smallholder contract-production.

The empirical findings highlight that there might be a divergence in how supply chains respond to increasing standards and that hence more empirical evidence is needed to provide a more general picture. Below we present evidence from two case-studies that illustrate this divergence.

Participation of small farmers

The general view in the literature is that small farmers, and especially the poorest ones, are increasingly being squeezed out from high-standards export production¹². Many authors point to the fact that poor farmers do not benefit from agricultural trade because high standards impede their participation in export supply chains (e.g. Reardon et al., 2003; Pimbert et al., 2001; Kerallah, 2000; Gibbon, 2003).

This exclusion of the smallest farmers is argued to happen either because contract-farming is biased towards large farmers or because large-scale vertically

¹¹ For a more detailed discussion on the importance of smallholder contract-farming in the Kenyan FFV export sector and an explanation for the varying figures presented in the literature, we refer to Gibbon (2003).

¹² Another view is supported by Swinnen (2005) for the case of transition countries where a surprisingly large number of small farmers is included in high-value food supply chains.

integrated production crowds out small suppliers. First, contract-farming might be biased to larger farmers because of the high transaction costs processing and exporting firms face in sourcing from a large number of (dispersed) small suppliers (Key and Runsten, 1999). Especially monitoring conformity with standards might involve very high transaction costs. Second, smaller and poorer farmers might need more intensified farm extension and additional financial assistance in order to meet quality and safety standards. The burden this brings to exporting companies might lead them to choose to contract only larger farmers.

However, standards are themselves instruments for specifying and harmonizing products and processes attributes over suppliers, thereby reducing transaction costs in dealing with a large number of suppliers (Reardon et al., 2003). Moreover, well-specified contracts include farm extension and assistance programs that can alleviate the financial and technical constraints small farmers face in meeting increasingly stringent standards. In fact, high-standards contract-farming including tight contract-coordination and intensified farm assistance programs could provide a basis for constrained small farmers to become involved in high-value export production. In addition, there are a number of reasons why exporting firms might prefer to contract with smaller farmers. First, smaller farmers might have substantive cost advantages, especially if it concerns labour intensive production with relatively small economies of scale, such as FFV production (Swinnen, 2005). Second, contract-enforcement might be less costly with small suppliers than with large farms (Swinnen, 2005).

While several papers in the literature argue that the poorest farmers are excluded from high-value contract-farming (e.g. Reardon et al., 2003; Weatherspoon and Reardon, 2003; Reardon and Barrett, 2000; Kirsten and Sartorius, 2002; Reardon

et al., 1999) there are actually very few studies providing strong empirical evidence on this issue. Moreover, to assess the impact of food standards and induced supply chain restructuring on overall participation of rural household in high-standards supply chains, one needs to look beyond exclusion from contract-farming. An important – and much overlooked – argument in the debate on the shift from smallholder contract-based production to large-scale integrated estate production is that the exclusion of small suppliers, if it happens, is only a partial outcome. One needs to take into account the new employment opportunities brought about by increased estate production. Rather than decreasing overall participation of small farmers, the induced shift to high-standards estate farming may primarily change the status of household participation in the supply chain from (contracted) farmers to (salaried) farm workers.

Furthermore, if contract-farming is indeed biased to relatively larger farmers, it might well be that a shift from smallholder contract-based production to estate production improves the participation of poorer households as farm workers on agro-industrial estates. This puts a new perspective into the debate on household participation in high-standards production on which the empirical evidence – that needs to be based on farm and household-level survey work – is still lacking. One of the case-studies presented below fills this gap in the empirical literature.

Distribution of the gains

Participation of small enterprises and poorer farmers in high-standards export production and trade is a necessary but not a sufficient condition for an enhanced welfare effect of high-standards agricultural trade; these agents also need to effectively benefit from this participation. It has been repeatedly argued in the literate

that the gains from high-standards agricultural trade are captured by foreign investors and developing country elites (e.g. Dolan and Humphrey, 2000; Farina and Reardon, 2000; Reardon et al., 1999).

Contract-farming has been criticized as a tool for agro-industrial firms and food multinationals to exploit unequal power relationship vis-à-vis farmers and to extract rents from the supply chain to the disadvantage of poor farmers (Warning and Key, 2002). Consolidation of the export supply base and vertical coordination in the supply chain are said to amplify the bargaining power of large exporting companies and displace decision-making authority from the farmers to the downstream agro-industrial companies. This would strengthen the capacity of large companies to extract rents from the chain.

However, contracts in general reduce transaction costs and provide a basis for constrained farmers to access the credit, inputs, and technology they need in order to upgrade their production processes to meet increasing food standards and share in the benefits from high-standards agricultural trade. Moreover, contract-farming can reduce crop price volatility, lead to more stable incomes and reduce households' cash flow constraints.

Recent empirical studies have demonstrated this beneficial effect of contract-farming for rural household in low-income countries. For example Dries and Swinnen (2004) show that small dairy farmers gain in terms of productivity and investment from contract-production with large foreign milk processors. Gulati et al. (2005) provide similar evidence for the case of smallholder animal production in Southeast Asia. In addition, apart from the direct benefits from contract-farming, there might be important farm and household spillover effects. This is demonstrated in the case-study on vegetable exports from Madagascar below.

The shift from smallholder contract-based production to large-scale industrial farming is generally perceived as bad from an equity perspective. This shift would marginalize small farmers, change their status from farmers to farm-workers, and diminish the gains they receive from agricultural trade. However, this argument seems to run counter to development economics literature which mentions off-farm employment opportunities as an important catalyst for rural development and poverty reduction due to farm – non-farm linkages. Humphrey et al. (2004) find that households involved in export horticulture in Kenya, whether as contracted farmer or as farm worker on agro-industrial estates, are better-off than those which are not. We find similar findings for the case of vegetable exports from Senegal (see case-study below).

Case-studies on the welfare implications of high-standards exports

The following two case-studies provide illustrative examples of the welfare impact of high-standards agricultural trade in two poor Sub-Saharan Africa countries; Madagascar and Senegal.

The case of vegetable exports from Madagascar (from Minten et al., 2006)

In Madagascar – one of the poorest countries in the world – the production of vegetables, mainly beans, destined for export to EU supermarkets has grown rapidly over the last fifteen years despite the imposition of more stringent public and private safety and quality requirements. The number of export-oriented vegetable farmers has grown, despite major disadvantages of geography, bad local infrastructure, low rural

education levels, and high compliance and transaction costs. Almost 10,000 smallholders in the Highlands of Madagascar produce vegetables for supermarkets in Europe on extremely small plots of land ranging from 0.01 to 0.05 ha.

The vast majority of high-standards vegetable exports from Madagascar go through one company, who has regular contracts with five supermarket chains in Europe. The firm is obliged to stick to the requirements of these supermarkets through private protocols which indicate the required quality of the product (length of the beans, colour, etc.), hygiene instructions in the processing plant but also ethical standards (e.g. proscription of child labour) and employment practices. The company itself buys vegetables from more than 9,000 small farmers based on contracts. These contracted farmers are small farmers with an average farm area of 1 ha, which is about the national average farm size in Madagascar. As part of the contract, seeds, fertilizer and pesticides are supplied on credit by the firm at the beginning of the growing season. The firm has set up an elaborate system of on-farm monitoring using a strict hierarchical structure with around 300 permanent extension agents. The majority of contracted farmers (71%) are visited by these company agents at least once a week; and many (41%) even several times a week. With this intensive monitoring systems the company wants to ensure correct production management, avoid 'side-selling' and provide technical advice to the farmers. In some cases (34% of contracted farmers) the company agents themselves take care of chemical applications on the farmers' field in order to ensure adherence to strict MRL standards that apply in EU countries.

Farmers largely benefit from this high-standards contract-production through a combination of effects. First, the contract directly improves farmers' access to modern inputs and credit. For example 57% of contracted farmers mentions not to be able to

find the same quality seeds themselves without the aid of the contractor company. Second, the income gained from contract-farming importantly contributes to household income. Household income from high-standard vegetable production on contract is on average 87,270 Ariary and constitutes 47% of total monetary household income. Third, contracts lead to large productivity spillover effects on other crops which further contribute to enhanced income. One of the benefits of contracting farming is that the firm teaches farmers better technologies and management practises such as the use of compost. This results in spillover effects on other crops. More than 90% of contract-farmers have changed their cultivation method for other crops after they signed the contract (table 1). As a result rice productivity is 64% higher on plots under contract. Fourth, smallholders who participate in contract-farming have higher welfare and more income stability. The length of the lean period has reduced with two months due to contract-farming (figure 1); which is an important indication of poverty reduction.

The case of vegetables exports from Senegal¹³ (from Maertens and Swinnen, 2006)

Exports of FFV from Senegal increased sharply over the past 15 years and play a central role in Senegal's export diversification strategy. The majority of these exports is French beans destined for the EU market and has to satisfy a series of stringent public and private food quality and safety standards such as marketing standards, SPS measures including maximum residue levels and hygiene rules. Throughout the past couple of years EU food standards increased with new and more stringent measures, such as traceability requirements, HACCP control mechanism and maximum levels of contaminations by heavy metals. Despite these increasing

¹³The case-study is based on a unique dataset combining data from existing data sources and information from qualitative expert interviews with primary data collected in 2005 from quantitative interviews with nine vegetable exporting companies and a survey of 300 households in the main horticulture region of the country (for more details see Maertens and Swinnen, 2006).

standards Senegal has been able to successfully establish the label *Origin Sénégalaise*, maintain its competitive position in the international export market and increase horticulture export earnings during the past couple of years (figure 2).

Increasing food standards have induced structural changes in the vegetable export supply chain in Senegal. They put pressure on exporters to make additional investments for compliance with standards and only larger companies are able to make these investments. From 2000 onwards some of the smaller exporters have dropped out which has resulted in consolidation of the supply base: from 27 vegetable exporting companies in 2000 to only 20 exporting firms in 2005. In addition, standards have induced increased vertical coordination in the export supply chain. First, exporting firms, especially larger firms, are increasingly engaging in tighter coordination with downstream importers and wholesalers in the EU through more binding contracts. Second, exporting firms rely on more elaborated production contracts with smallholders and tighter coordination within those contracts. Some firms go as far in contract-coordination as the complete management of fertilizer and pesticide application and daily or weekly inspection of the farmers' fields. Third, larger exporters in the chain are increasingly engaging in fully integrated estate production instead of relying on contracts with small farmers (table 2). In fact, the seven largest exporters have founded an organization in 1999 with the specific aim to comply with traceability standards and become EurepGAP certified and have agreed on account of this to seek to source at least 50% of the exported volume from the companies own estate production. This recent shift from smallholder contract-farming towards integrated estate production has resulted in a decreasing volume of vegetables that is sourced from smallholders.

High-standards exports and the induced structural changes in the vegetable export supply chain in Senegal have major implications for small farmers and rural households. First, participation of rural households in export production continues to increase but their role is shifting from contract-farmers to estate farm-workers. Overall participation of local households in vegetable export production has increased from 10% in 1992 to 40% in 2005 (figure 3). However the nature of household participation has changed. During the 1990s households increasingly participated in export production through contract-farming while from 2000 onwards household participation grew mostly through estate wage employment while contract-farming decreased. Second, not only more but also more poorer households participate in export production as farm workers on agro-industrial estates. Contract-farming in export vegetable production is biased towards relatively better-off (albeit still small) farmers with more land and means to cultivate the land while wage employment in vegetable estates undertaken by rather poorer, larger and lower educated households. With the shift from smallholder contract-farming towards integrated estate production, induced by increasing food standards, participation in the vegetable export supply chain became more equitable. Third, this participation, whether as estate farm worker or as contracted farmer, increases household income by respectively 60% and 120% (figure 4). Fourth, these developments have a major impact on rural poverty reduction. It is estimated that poverty is actually 17% lower than in the hypothetical case of no vegetable export production.

Conclusions

Both case-studies show that with increasing, complex and stringent standards it is possible for poor countries to maintain their competitive capacity in export

markets. Firms' strategic responses are important in this but these responses might diverge across countries, reflecting underlying differences in initial conditions, and lead to different supply chain structures. In Madagascar increasing standards have led to the elaboration of an intensified smallholder contract system with increased coordination, monitoring and extension while in Senegal exporting companies have sought to increase vertically integrated production on bought or rented land. As a result, high-standards vegetable export production is realized through smallholder contract-production in Madagascar while it is increasingly organized around integrated estate production in Senegal. Both strategies have been successful for realizing high-standards exports and for assuring small farmers and rural household to share in the benefits of these exports. The case-study from Madagascar illustrates that given the right incentives poor farmers can successfully participate in and gain from high-standards export production. The results from Senegal demonstrate that rural households do share in the benefits of high-standards export production, even if this production is realized through integrated estate farming rather than through smallholder contract-farming. Moreover, these positive welfare effects emerge even if the export sector is becoming increasingly concentrated and dominated by one (as in the case of Madagascar) or a few large firms. The benefits rural households receive might be direct or indirect (as illustrated by the Madagascar case-study) and can lead to improved equity and reduced poverty in rural societies (as illustrated by the Senegal case-study). These case-studies are unique in directly analyzing the welfare effects of high-standards agricultural trade at the local level and clearly indicate that standards can be a catalyst for trade, growth and poverty reduction in developing countries.

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Tables

Table 1: Impact of contract-farming on technology adoption in Madagascar

	% of farmers
Are you obliged to produce compost and use it on your plots?	93
Before you first contract with the firm, did you use already compost?	12
Are you now using compost on other plots than those under contract?	87
If the contract would stop, would you continue using compost?	95
Did you change the cultivation method of other crops because of the contract?	93
a. use of inputs (fertilizer, pesticides, manure)	91
b. use of compost	96
c. use of a strict scheme	66
d. more maintenance (weeding, watering)	72

Source: Minten et al., 2006

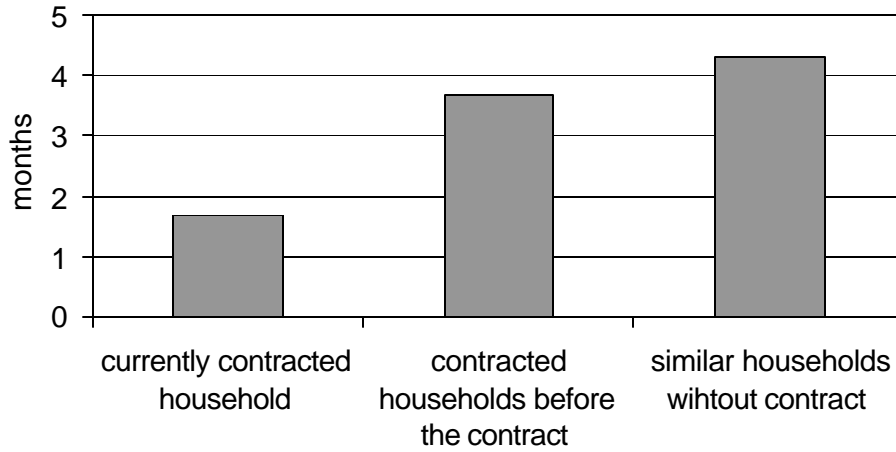
Table 2: Changing procurement systems of vegetable exporting firms in Senegal

Company name	Year starting vegetable export	Export volume in 2004 (ton)		% of supply from contract-farming	
		French beans	other crops	1 st year of operation	last season
Soleil Vert	2000	800	1100	100	20
Sepam	1992	883	1410	100	60
Master	1989	68	0	50	40
Baniang	1999	80	150	85	85
Agriconcept	2002	100	80	30	30
ANS Interexport	2001	64	0	100	100
Pasen	2000	30	0	100	60
Agral Export	1992	180	0	100	100
PDG	1993	173	239	100	100

Source: Maertens and Swinnen, 2006

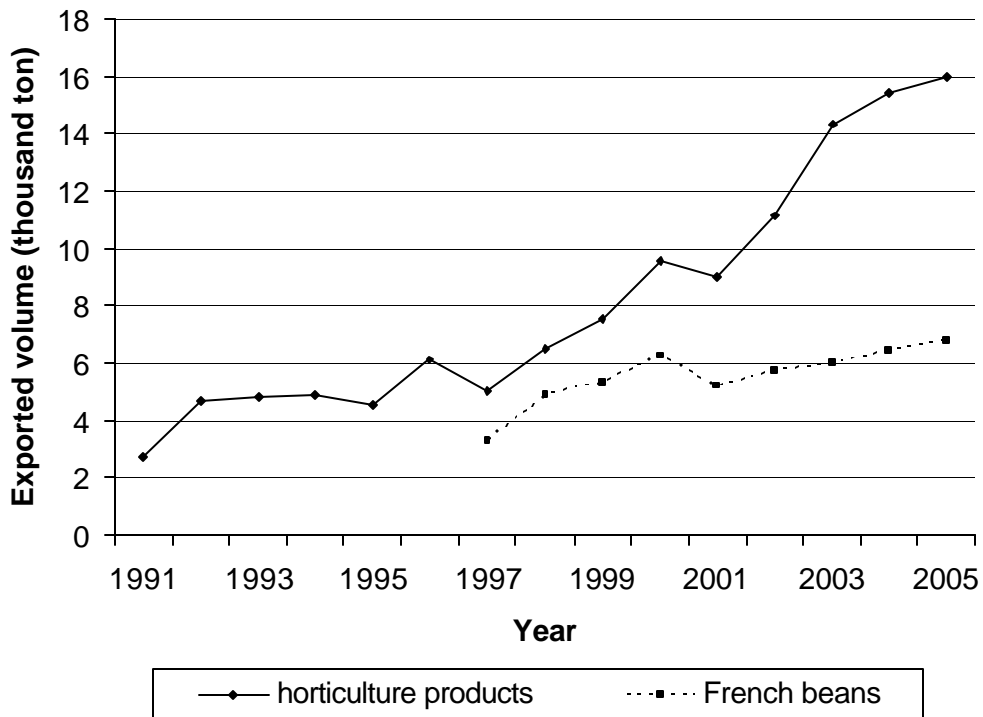
Figures

Figure 1: Impact of contract-farming on the length of the lean period in Madagascar



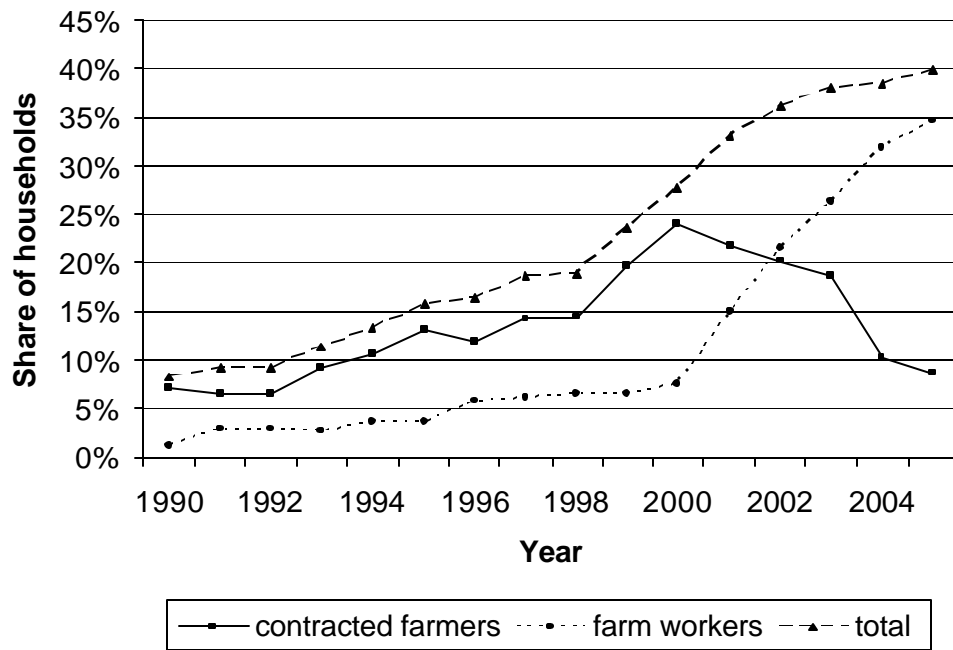
Source: Minten et al., 2006

Figure 2: Horticulture exports from Senegal, period 1991-2005



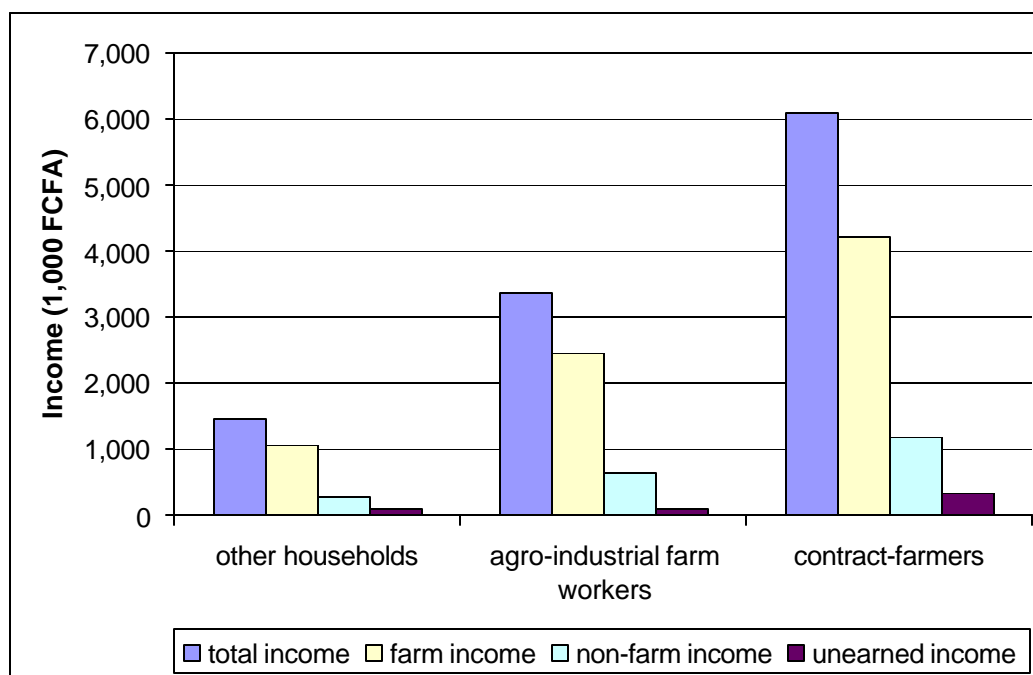
Source: Maertens and Swinnen, 2006

Figure 3: Evolution of household participation in vegetable exports from Senegal



Source: Maertens and Swinnen, 2006

Figure 4: Household income (in 1,000 FCFA) from different sources for contracted and non-contracted horticulture households in Senegal



Source: Maertens and Swinnen, 2006