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**Christine Chemnitz,
Harald Grethe and
Ulrich Kleinwechter**

Quality Standards for Food Products
- A Particular Burden for Small Producers
in Developing Countries?

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Luisenstraße 56, D - 10099 Berlin (Mitte), Germany
tel.: + (49) - 30 - 2093 6317; fax: + (49) - 30 - 2093 6474

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Telefax: (49)-30-2093 6542

Quality Standards for Food Products – A Particular Burden for Small Producers in Developing Countries?

**Christine Chemnitz, Harald Grethe and Ulrich Kleinwechter
Humboldt University of Berlin**

(chemnitz@boell.de, harald.grethe@agrار.hu-berlin.de,
uli.kleinwechter@agrار.hu-berlin.de)

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Abstract

This paper develops an analytical framework which structures the problem of whether, how and to what extent small producers in developing countries are disadvantaged by the increasing prevalence of food quality standards. Based on a literature review, the empirical evidence is structured and research gaps are identified. The paper finds that small and medium producers rarely comply without support from downstream actors. In case of well-educated and relatively wealthy farmers, forward integration is also found. No empirical support exists for the intuitively appealing hypothesis of a lower cost of compliance per unit of output for large producers.

Keywords: Quality Standards, International Trade, EUREPGAP, Certification, Small Farmers, Developing Countries, Cost of Compliance

Zusammenfassung

In diesem Papier wird ein Analyserahmen entwickelt, um die Möglichkeit und das Ausmaß der Benachteiligung von Kleinlandwirten in Entwicklungsländern durch die zunehmende Verbreitung von Qualitätsstandards für Produkte der Agrar- und Ernährungsindustrie zu strukturieren. In einer Literaturübersicht werden die Ergebnisse empirischer Studien ausgewertet und Forschungslücken identifiziert. Es wird gezeigt, dass Kleinlandwirte aufwändige Prozessstandards selten ohne die Unterstützung von Unternehmen auf nachgelagerten Stufen der Wertschöpfungskette implementieren. Die einleuchtende und weit verbreitete Hypothese, dass die Cost of Compliance per Produkteinheit für große Produzenten niedriger als für kleine Produzenten seien, wurde bisher empirisch nicht bestätigt.

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1. Introduction

In the course of increasing and more differentiated demand for product quality, the nature of traded food products has changed from homogeneous to more heterogeneous products that have several quality characteristics: technical value, sensory quality, nutritional value and food safety, as well as the idealistic and psychological values of a product (Brockmeier, 1993, 23; Wiegand, 1997, 43). While the technical value and sensory quality of a product can be assessed by the consumer, the other three quality characteristics cannot. Nutritional value and food safety are credence characteristics that can be assessed based on the final product by third parties. Most idealistic values can be classified as Potemkin attributes – characteristics which cannot be assessed based on the final good either by the consumer or by third parties (e.g. social, environmental, and animal health and welfare conditions in the production process) (Jahn et al. 2003; Tietzel and Weber, 1991).

Akerlof (1970) was the first to show that markets fail if quality characteristics cannot be assessed by the consumer because of asymmetric information. Despite consumers' willingness to pay for these characteristics, the market does not provide them since consumers are unable to identify or assess the particular quality of the product. To overcome this market inefficiency, an information flow must accompany the traditional product flow that can communicate each "traded" attribute of food. This is of particular importance in today's highly fragmented global food markets, which are characterized by the increasing international separation of different parts of the value chain, such as production, processing, storing and transportation (Arndt and Kierzkowski, 2001). Therefore, the amount of parallel information requirements increases at every level of the value chain (Theuvsen, 2003). Providing such parallel information flows causes transaction costs which may be reduced by the establishment of adequate institutions.

As a consequence, there is the tendency to move away from spot markets to higher degrees of vertical coordination (Pingali et al., 2005, 11; Buhr, 2003, 24; Gibbon and Ponte, 2005, 111). As a result, management within the product chain changes, moving from management of individual firms that are trying to optimize their production processes towards total value chain management. The individual firm is thereby conceptualized as a part of the chain, interlinked with the production and exchange activities of other value chain participants (Kaplinsky and Morris 2000; Mayoux, 2003).

One aspect of the vertical coordination process is the increasing prevalence of standards, which enables the heterogeneous characteristics of a product, including process and traceability requirements, to be marketed whenever there is a willingness to pay for these characteristics. The guarantee of standards requires the collection, accumulation and communication of information along the food production chain (Theuvsen, 2005). This makes quality standards, which may be public as well as private sector-driven, an ideal instrument to overcome market inefficiencies and to reduce transaction costs. As such, standards define the

terms of membership of a chain and impose rules and conditions for participation. Gibbon and Ponte (2005, 163) underline the potential of standards to facilitate the inclusion of producers from developing countries in high-value chains, which are highly driven by consumers' demand for quality. Standards provide retailers with the option to obtain products from independent producers instead of fully integrated production without any information on product quality. However, standards do modify the challenges producers face in the marketing process, and may affect different types of producers differently, depending on the nature of the standard as well as the capability of the producer to comply with its requirements. Hence, the introduction of standards potentially affects market shares, and may be accompanied by the marginalization and exclusion of producers.

Besides the concern that small producers may be generally disadvantaged by institutional changes in the value chain (Gibbon and Ponte, 2005, 143; Pingali et al., 2005, 6), it is frequently asserted that small producers in developing countries have more difficulties coping with the increasing prevalence of standards. The reasons often mentioned for this tend to fall into two main categories:

1. The costs of compliance with a certain quality standard may be higher for small producers. This could result from the fixed cost component of complying with the standard, which would favour larger producers due to economies of scale (World Bank, 2005, 97). However, it could also be due to farm characteristics such as illiteracy of farmers, which makes information and documentation requirements more costly, or illiquidity, which may exclude farmers from the investments necessary to upgrade their farm to comply with the standard (Aloui and Kenny, 2005, 18; Jaffee and Henson, 2004, 15; Willems et al., 2005, 41).
2. The transaction costs involved in the compliance process for other chain participants such as exporters may be higher in the case of smaller farms, for example owing to higher communication costs and monitoring compliance costs. It may therefore be better for buyers to cooperate with larger farms (Pingali et al., 2005, 11; Swinnen, 2005, 46).

As a result, small producers may be excluded from markets which require standards, and their economic situation may deteriorate (Humphrey et al., 2004, 69; Reardon et al., 2001, 12; Reardon et al., 2003, 29; World Bank, 2005, 3). This may especially be the case for private standards which include on-farm process certification, because of the sudden increase in the cost of compliance and the higher level of requirements with respect to information, communication and documentation involved in process certification. This is in contrast to most public product standards, which have evolved gradually over time and typically do not require sudden fundamental adjustments in farm management and on-farm certification.

As an alternative to market exclusion, compliance and transaction costs could be reduced by ensuring a higher level of integration and coordination of farmers along the marketing chain.¹

¹ For an example of the successful integration of small developing country farmers in high-value export marketing chains, see Minten et al. (2006).

In contrast to remaining a single chain segment, the participation of producers in the value chain may take different forms. According to Orden et al. (2004), there is a continuum of coordination with at one end the spot market and at the other vertical integration. Between these two extremes, various forms of vertical coordination can be found, such as contract farming, relation-based alliances, or equity-based alliances (Peterson et al., 2001). In a trading environment that is increasingly determined by standards, transaction and compliance costs could be reduced by vertical coordination, including support from a downstream actor in the marketing chain. Vertical coordination, however, potentially increases the dependency of small producers on downstream actors, which can weaken their position.

In addition to costs, compliance with a standard may also bring benefits which may however be distributed unequally among farm types. Some sources mention productivity gains as a result of restructuring the farm when implementing the standard (World Bank, 2005, 71; Hatanaka et al., 2005, 362-363). If small farms are less efficient than larger ones, they may benefit more from such productivity gains.

Unfortunately, however, the assessment of the effect of standards on small producers in developing countries only has a very thin empirical base and is largely based on plausibility considerations. Furthermore, no systematic overview of the factors that could determine the comparative disadvantage of small producers in coping with quality standards exists.

This paper therefore has two main objectives. First, it seeks to develop an analytical framework that structures the problem whether, how, and to what extent small producers in developing countries are disadvantaged by the increasing prevalence of standards. This analytical framework is presented in Section 2 of the paper. Although it can be applied to compliance with food quality standards in general, certain aspects are only relevant for compliance with process standards, which are accompanied by third-party certification of agricultural producers.

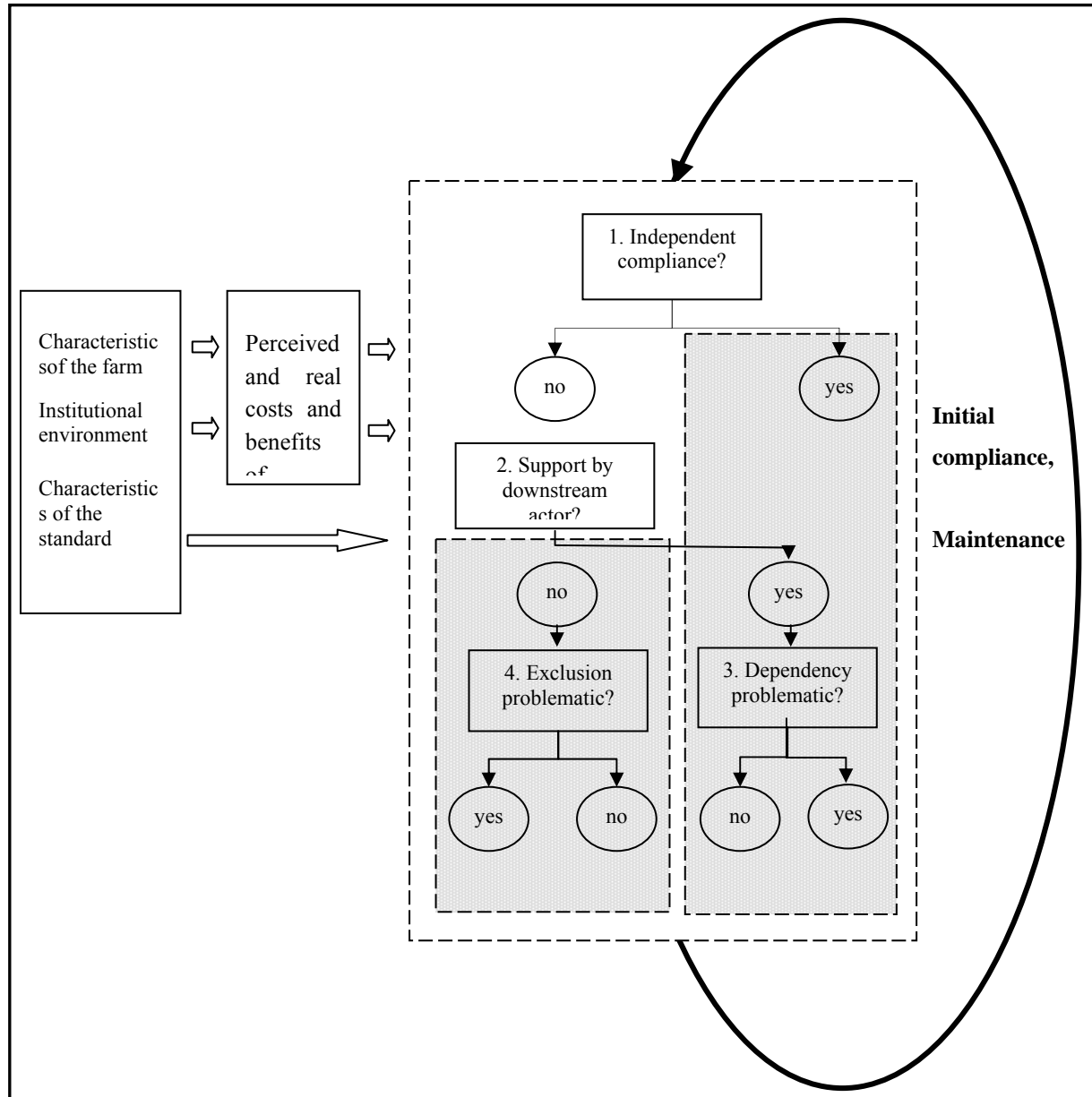
Second, the paper attempts to synthesize and structure the empirical evidence on the effects of quality standards on small producers in developing countries. Section 3 of the paper presents a literature review, which is organized according to the structure developed in Section 2. Finally, Section 4 draws some conclusions and identifies future research needs.

2. Structure of the Problem

The overall hypothesis that small producers have a comparative disadvantage in the compliance process is based on their specific farm characteristics and their institutional environment. This is depicted in the analytical framework provided in Figure 1, which is divided vertically into three blocks. The left side depicts farm-individual characteristics of small producers, characteristics of the institutional environment and characteristics of the standard. These affect the costs and benefits of compliance, which are depicted in the second block of the figure and comprise the two main determinants of the compliance process.

Finally, the third block depicts the ways in which the costs and benefits of compliance may disadvantage small producers.

Figure 1. Framework for the Analysis of Disadvantages for Small Producers in Coping with Food Quality Standards



Source: own illustration.

To enable this problem to be examined analytically, this part of the figure is structured into four analytical stages. The first stage explores whether small producers comply independently with the standard. The second shows how small producers may comply with the standard, but only with the support of a downstream actor in the marketing chain. The third stage discusses the effect that growing dependency of small producers on downstream actors could have, and

the fourth stage investigates whether exclusion from high-quality standard markets would be problematic for small producers.

The arrow on the right-hand side of Figure 1 indicates that compliance with a standard should not be seen as a one-off event, but rather as a process. For those producers who initially complied with the standard, questions at analytical stages 1 to 4 can be posed again with respect to maintenance, including upgrading because of potential updates of the standard. The only difference is that in case of first compliance, the necessary adjustments and costs involved are typically more significant.

As long as the standard is economically relevant, those producers who do not comply with the standard at any point in time will continuously be confronted with the choice of whether to comply or not. Therefore, the questions at analytical stages 1 to 4 again apply.

2.1 Individual Farm Characteristics, the Institutional Environment, and the Characteristics of the Standard

Individual farm characteristics and the institutional environment are the basic determinants of the compliance process, and small farms tend to share particular characteristics. This supports the hypothesis that they are disadvantaged in terms of their compliance with standards. These unfavourable characteristics and their institutional environment relative to large farms are:

- Lower technological production level
- Less capital and land resources
- Less human capital
- Less ability to cope with risk
- Less ability to exploit economies of scale
- Less access to credits
- Less access to information
- Less output, urging downstream actors to cooperate with many small farms to receive large quantities

In this definition, the term “small farmer” is defined in relative terms, which is the perspective chosen in this paper. However, small producers for markets which require standards may not necessarily be small (or even poor) in relation to farmers who produce for other markets, or subsistence producers. From a development point of view, this issue takes on special relevance if the relatively small producers for the market which requires the standard are poor, or if they face the risk of falling into poverty through a deterioration of their economic situation.

In addition, the characteristics of the standard determine whether small producers in developing countries are disadvantaged in the compliance process. For example, standards which require high levels of investment and access to capital or a high degree of documentation and the ability to read, write and keep records may be more difficult for small producers to fulfil than ensuring that the maximum residue levels of pesticides are not exceeded in the final product.

2.2 Costs and Benefits of Compliance

Figure 1 shows that the characteristics listed above potentially affect small producers' competitiveness through the costs and benefits of compliance. The costs of compliance can be defined as "all additional costs necessarily incurred [...] in meeting the requirement to comply with a given standard in a given [...] market" (World Bank, 2005, 67).

The costs of compliance include all costs resulting from upgrading the production process as well as money spent to maintain the level of compliance. Table 1 shows that the costs of compliance for the producer can be grouped into five main categories:

1. costs for physical upgrading,
2. costs for human capital upgrading,
3. management costs,
4. the opportunity costs resulting from potentially lower yields,
5. social costs.

In addition, recurrent and non-recurrent cost elements can be distinguished (Bennett et al., 2000, 108).² *Recurrent costs* are defined as the cost difference between the annual cost of production before and after compliance, once the standard has been implemented.³ *Non-recurrent costs* cover all upgrading costs needed to reach the quality level required by the standard. These are to a large extent "sunk" costs once the standard has been implemented. These two terms are used here in contrast to fixed and variable costs, since part of the recurrent costs is not related to the production quantity and therefore does not vary.

Table 1 additionally distinguishes between capital and labour costs, and indicates which of the cost components have to be borne by the producers, and which may alternatively be taken on by downstream value chain participants. In practice, producers are often supported in implementing a standard by the buyers of the products, who bear part of the costs of compliance. For example, "motivation of employees" requires capital as well as labour input. Theoretically, the capital requirements could be fully borne by any downstream actor. For the labour requirements, this may also hold for the non-recurrent component, for example through a downstream actor organizing an initial training workshop. For the recurrent labour requirement, which would involve the daily observation and motivation of farm workers, it seems plausible that at least part of the labour requirement must be borne at the farm level. The distinction as to whether compliance costs can, partially or fully, be borne by downstream actors is not clear-cut and depends on the structure of the value chain. Table 1 purely depicts the theoretically possible assumption of cost components.

² In addition, Bennett et al. (2000, 106) distinguish between direct and indirect costs, while the World Bank (2005, 69) distinguishes between tangible and intangible costs. As these concepts are a matter of measurement rather than a conceptual distinction, we do not use them throughout this text.

³ This distinction is not always unanimous. In reality, most standards evolve over time. Therefore, a typical compliance process would involve repeated upgrading as a response to updating of the standard and thus non-recurrent cost components.

Table 1. Costs of Compliance at Producer Level

Categories	Components	Non-recurrent		Recurrent	
		Capital	Labour	Capital	Labour
Physical upgrading	Buildings	●	●	● (maintenance)	● (maintenance)
	Machinery	●	●	● (maintenance)	● (maintenance)
	Equipment	●	●	● (maintenance)	● (maintenance)
	Certification	●	●	● (maintenance)	● (maintenance)
Human capital upgrading	Training of employees	●	●	●	●
	Adaptation of employee structure	●	●	-	-
Management	Motivation of employees	●	●	●	○
	Own information	●	○	●	○
	Conceptualization	●	●	-	-
	Coordination with trading partners	●	○	●	○
	Coordination with group members	●	○	●	○
	Documentation	-	-	●	●
Higher variable production cost	Analyses	-	-	●	●
	More intermediate inputs	-	-	●	●
	More expensive intermediate inputs	-	-	●	●
	More labour	-	-	●	●
Lower yields	-				x
Social costs	x				x

The cost component can be assumed by a higher-level actor: ● completely; ○ partly; x not.

Source: own analysis.

Like the costs of compliance, the benefits of compliance consist of several components and depend on farm-individual characteristics and the institutional environment. In addition, these benefits depend to a large extent on the further development of the prevalence of standards. Producers' benefits from compliance include:

- less risk of being excluded from the market requiring the standard;
- the option to sell a larger quantity on the market requiring the standard;
- higher product prices;
- cost reduction through optimized input use/technological change;
- higher yields through optimized input use/technological change.

Similar to the costs of compliance, the benefits of compliance can accrue to producers as well as to downstream actors. Who is able to capture which share of the benefits again depends on the structure of the value chain.

2.3 Analytical Stages

Analytical Stage 1: Does the Producer Comply Independently?

This sub-section explores under which circumstances small producers comply independently from support by downstream actors, whether as individual farmers or as farmer groups. Initial compliance with a standard can be separated into two steps; first the decision to adopt the standard, and second its implementation. The former is largely determined by the producer's perceived costs and benefits. A rational producer will comply whenever the perceived benefits are larger than the perceived costs. This situation changes once the producer starts to implement the standard, when compliance is increasingly determined by the real costs and benefits, which may differ from the ones initially perceived. Since investments in standards are usually in the long term, the benefits also tend to appear in the long term, and future market developments are important determinants of benefits.

Small producers share common features which tend to increase their costs of compliance. As displayed in Table 1, additional costs may arise from the physical upgrading process for human capital upgrading and management, because of lower yield, and in the form of social costs, and are discussed below in this order.

The capital intensity of the technical upgrading may be highly problematic for small producers' initial compliance. Since small farmers usually produce capital extensively at a lower technological level, the difference between this and the required technological level for compliance tends to be higher than for larger farms. As a consequence, substantial investments may be required to upgrade the farm. Taking into consideration the fact that small producers often have less own capital and less access to credit, costs thus tend to be higher than for larger producers.

Producers need access to information for human capital upgrading and management activities. Consequently, the introduction of standards not only requires a greater information flow from the producer to the buyer, but also from the buyer to the producer. Since small producers often have less access to modern means of communication and a lower level of market integration and human capital than larger producers, it is difficult for them either to generate this information individually or to receive it externally. Fairman and Yapp (2004), as well as Henson and Heasman (1998), underline how small enterprises are dependent on externally generated information. The need for information covers three different levels. First, the initial awareness of the existence of the standard and its importance for the market. Second, in the decision process, the producer needs detailed knowledge on the requirements of the standards. And third, far-reaching extension and support may be necessary in the implementation process, especially if human capital levels are low.

Other special features of small producers which impede initial compliance comprise their weak capacity to cope with temporary income losses and the missing option to test the standard only on part of their farm, which is often observed on larger farms.

Furthermore, the independent compliance of small producers is determined by factors other than considerations of the economic costs and benefits. These factors may include personal characteristics such as risk aversion or a preference for traditional production methods, or they could include institutional conditions (Strang and Meyer, 1993; Walgenbach and Beck, 2003). DiMaggio and Powell (1983) pronounce the importance of institutional isomorphism, which is defined as the tendency of participants in a sector to form homogeneous organizational structures. Since sectors form a homogeneous production network consisting of individual producers, the decision to comply with a standard at an early stage of diffusion implies the decision to depart from the homogeneity of the network. Conversely, not to comply with a standard which is already widely diffused also involves leaving the homogeneity of the network. Rogers (2003) underlines that small producers acting in close social relations might experience high social costs in taking such a step.

One important element of compliance with many process standards is the requirement of external farm certification. The certification process and the associated information, organization, and documentation require a high level of on-farm management skills, which are often less prevalent on small than on large farms. In order to cope with these constraints, the certification of farmer groups is an alternative option to certifying producers independently. This implies that a group of farmers establishes an internal quality management system which is externally audited. In this case, the producer group is the holder of the certificate.

Forming producer groups may reduce costs at various levels, and has three main implications. First, group certification implies that not each producer is audited externally; consequently the costs for the external audit per producer are lower. Second, the producer organization might function as a source of information for producers, who accordingly do not have to generate all information by themselves. The group can establish direct contact with the buyer and consequently develop an information flow from the buyer to the producer. Third, the external motivation for certification is much higher if producers are organized in a group which includes several members who have already been certified. Having said that, the implementation of an internal quality management system requires considerable management skills and produces high costs, to the extent that it is not clear at the outset that group certification is generally any more favourable for small farmers than individual certification.

Analytical Stage 2: Does the Producer Comply with Support by a Downstream Actor?

An alternative to complying independently with a standard is the compliance of a producer with support by a downstream actor in the supply chain, such as an exporter enterprise. This implies that the downstream actor bears part of the costs of compliance. The level of support can have different dimensions:

1. *Low level of support:* The downstream actor shoulders part of the costs of the information about the standard. Besides the information on the development of existing standards, this is of special relevance for the awareness of the existence of new standards. Since small producers often have limited access to information channels, they tend not to recognize

the necessity of compliance; this is rather noted by the downstream actor, who is more directly aware of importers' requirements.

2. *Medium level of support:* In addition to information costs, the downstream actor also bears other management costs to support the producer in order to implement and manage the standard. This implies that the downstream actor might carry out and take on parts of the costs of human capital upgrading and management activities (e.g. developing internal audits and management plans for the compliance process, training farmers and workers, etc.). In the case of standards that involve a certification process, the downstream actor may shoulder the certification costs and also be the holder of the certificate.
3. *High level of support:* The downstream actor additionally carries out and bears the production process costs, which are relevant for compliance with a standard (e.g. carrying out all pesticide and fertilizer applications).

Depending on the different levels of support from downstream actors, the producer faces different costs and benefits of compliance. These might favour a positive compliance process: not only do compliance costs decrease for the producer since they are partially borne by downstream actors, but also the risk of a misinvestment is partially assumed by the downstream actor. Furthermore, the producer might experience a direct benefit from compliance, since he or she could experience high external pressure and market exclusion in the case of non-compliance.

From the perspective of the downstream actor, the phenomenon of support can be explained by two motives: first, small producers may become more dependent on the downstream actor, which may be attractive from the latter's point of view. Second, downstream actors such as exporting companies are interested in a stable supply of compliant products. If this supply cannot be satisfied by larger producers alone, who should be more able to comply independently with a standard, companies have to revert to smaller producers who might neither see the necessity of implementing a standard without external support, nor be able to do so. However, in the long run the incentive for downstream actors to support small producers in compliance with the standards in order to ensure sufficient supply may diminish if larger producers apply the standard. In such cases, it may be more profitable for downstream actors to deal with larger suppliers because of the lower transaction costs involved in working with a few large producers instead of many small ones.

Although compliance of a small producer with support from a downstream actor allows the producer to avoid market exclusion, it does involve the risk of becoming dependent on the supporter. This risk increases with the level of support small producers receive.

The question whether this dependency is potentially problematic is discussed in analytical stage 3. If the producer does not receive any support and consequently does not comply with the standard, the subsequent question is whether exclusion from the market requiring the standard is problematic (analytical stage 4).

Analytical Stage 3: Is the Dependency Problematic?

The previous section introduced the risk of dependency on the part of the producer, which goes hand in hand with the level of support received. This dependency may be problematic for small producers for three reasons. First, compared to a situation of independent compliance, part of the value added may be transferred to downstream actors, which would cause the farm income of small producers to decline.

Second, when farm work and management tasks are carried out by downstream actors, the producer loses knowledge about the relevant production processes, i.e. those which are necessary to comply with the standard, as well as those which are generally relevant for production. He or she relinquishes control over production and management decisions, thus losing sovereignty. This could result in an “unlearning” process that could in the medium and long term deplete the farmer’s capacity to be autonomous and independent. Of course, such assistance could also have the opposite effect: external involvement in production and management might also potentially enhance farmers’ knowledge and thus result in a learning process.

Third, the downstream actor could make use of his or her strengthened market position, given the dependency of the producer (in an extreme case, this could be a fully monopsonistic position), and impose a product price that is below the competitive equilibrium. In case of standards which involve a certification process, the distribution of market power may hinge on whether the holder of the certificate is the farmer or the downstream actor.

Analytical Stage 4: Is Market Exclusion Due to Non-compliance with Standards Problematic?

It is evident that producers who fail to comply with a standard will be excluded from the market requiring this standard. Whether or not this is problematic depends on whether the possibility exists to produce for alternative markets for which compliance with the standard is not required; on whether production could be converted to other products; and on whether alternative employment opportunities exist. Alternative market access is determined by three different factors, as outlined below:

Existence of public quality standards. Countries apply different levels of public quality standards, depending on their average income level and on their cultural background. Generally, high-income countries tend to have higher-level public standards than middle or low-income countries. Thus, producers in developing countries that are excluded from high-standard export markets can still sell to markets requiring lower standards, which are mainly those of non-OECD countries or domestic markets.

Enforcement of public quality standards. If small producers in developing countries are excluded from formal domestic markets because of public quality standards, they may choose instead to supply informal markets such as street markets and small retailers, where public quality standards are often not enforced (Reardon et al., 2003).

Prevalence of private quality standards. Voluntary standards lead to a higher degree of market segregation. Exclusion of small producers due to non-compliance only happens in those market segments that require the standard. This can be problematic if private standards are becoming quasi-mandatory in a market, since downstream actors may increasingly insist on compliance as an essential marketing premise (Will, 2003). This can be observed for example with the EUREPGAP standard for fresh fruit and vegetable imports to the EU (USAID, 2005). The EU market is still in a transition period: retailers in some EU Member States (e.g. the UK and the Scandinavian countries) require EUREPGAP as a precondition, whereas many retailers in other Member States such as Germany and France prefer to buy EUREPGAP-compliant produce, but are also prepared to buy non-certified products when no EUREPGAP produce is available. From a producer perspective, this means that EUREPGAP constitutes a clear marketing advantage, but non-certified producers do not yet face exclusion from the EU market as a whole. However, although there are no direct sanctions, not complying with EUREPGAP means not fulfilling buyers' preferences and, from a producer perspective, implies potential market exclusion in the future.

As long as sufficient alternatives to high-standard markets exist, producers which are not able to comply with high standards can serve these markets. In the long run, however, private as well as public standards are becoming increasingly relevant, even on the domestic markets of developing countries (Reardon et al., 2003; 2004). The same holds for eastern European countries and other non-OECD importers (Csáki et al., 2004). As a consequence, shrinking demand for non-compliant products could force prices down for these products.

3. Empirical Evidence

In this section we review the empirical evidence in the literature to answer our basic research question as to whether standards represent a particular burden for small producers in developing countries.⁴ This literature has expanded rapidly since the end of the 1990s, when the relevance of standards for international trade of agricultural and food products increasingly attracted the interest of researchers.

To answer the research question, different strands of the empirical literature can be examined. Some analyses focus on the extent to which quality standards generally affect developing countries' exports, without explicitly dealing with effects at the producer level. This strand of literature comprises econometric studies based on cross-sectional data. Most of the econometric models applied are based on the gravity equation (e.g. Otsuki et al., 2001; Jayasuriya et al., 2006). Alternatively, other empirical analyses apply equilibrium models to show that quality standards can have significant effects on developing countries' exports (e.g. Maskus et al., [no date]; Ganslandt and Markusen, 2000; Peterson and Orden, 2006).

⁴ Empirical literature on the implementation of quality standards for food products in developing countries is dominated by research on the EUREPGAP standard, which therefore also dominates our literature review.

As this paper seeks to differentiate between producer groups within countries and sectors, we do not review the literature on the aggregate effect of standards. Instead, we focus on the part of the literature that can help us address the four questions raised during the analytical stages in Section 2. This part mainly consists of case studies based on sectoral surveys and, to a lesser extent, on farm surveys as well. We concentrate on the literature dealing explicitly with the effects of quality standards for food products on agricultural producers, and only incidentally draw upon the literature on organic and environmental standards, and standards for the manufacturing industry.

Some of the case studies formed part of larger research projects such as the USAID and Michigan State University surveys, which were conducted in Mozambique (Bawden et al., 2001), Zambia (Giovannucci et al., 2001), Malawi (Toomey et al., 2001) and Kenya (Harris et al., 2001). One year later, the results of a University of London project on the impact of standards on exports from Mediterranean countries were published. This project emphasized both the buyer's and the producer's perspective (Ababouch and Messaho, 2002; Yalcin et al., 2002; Laajimi, 2002). In 2003, as the result of a World Bank research project, Wilson and Abiola (2003) published case studies for Kenya, Mozambique, Nigeria, South Africa and Uganda.

Nevertheless, all these surveys concentrate on a rather general impact of standards on agricultural and food sectors. They do not present any farm-specific analysis, and the compliance process is largely neglected. However, most of the authors do assume that small producers tend to be more negatively affected by standards than larger farmers, without however providing any empirical evidence.

This is not the case in a recent and comprehensive World Bank research project, "Food Safety and Agricultural Health Standards: Challenges and Opportunities for Developing Countries" (World Bank, 2005). This includes case studies that look at both the supply and the demand perspective. On the supply side, case studies were conducted for Kenya (Jaffee, 2003), Morocco (Aloui and Kenny, 2005), Senegal (Mbaye, 2005) and Thailand (Manarungsan et al., 2005). These case studies include research at the farm level, but present little evidence on differentiation among producer groups.

In addition to publications in the context of these large-scale research projects, various other case studies have been published over the last decade. In the following sub-section, we review the literature in detail according to the questions raised in the analytical stages of Section 2. Since empirical evidence is still scarce, we also review some papers which do not have a particular focus on developing countries.

3.1 Empirical Evidence on Independent Compliance of Small Producers

Papers with a particular focus on the compliance process, and on the question of which factors affect this process, are rare. Henson and Heasman (1998) develop a model of the compliance process with food safety standards based on empirical evidence from food manufacturers and retailers in the UK. As one of their major findings, they underline that the compliance process

differs for small and large firms. They state that small firms generally implement regulations later and are more likely to choose partial or non-compliance. Fairman and Yapp (2004) modify the Henson and Heasman model to adapt it for the particular compliance process of small enterprises in the UK with food safety standards. They stress the complete reliance of small business on external information, and note that the compliance process is externally driven. Walgenbach and Beck (2003) discuss the compliance process of enterprises in various industries with ISO 9000 in Germany, based on new institutional theory. One of their major findings is the identification of a willingness to comply even if compliance is not in the direct economic interest of the firm. The authors emphasize the driving force of sectoral isomorphism for the compliance decision, which is based on interest in cooperation and social acceptance. This underlines the perspective of the decision-maker, who not only focuses on processes within the firm, but also sees the firm as part of an institutional system.

To the authors' knowledge, only three surveys explicitly explore the compliance process and compliance strategies of producers in developing countries. Okello and Swinton (2005) compare the compliance process of a large and a small family farm with the EUREPGAP standard in a paired case study in the Kenyan bean sector. The paper is based on transaction cost economics, the principal agent theory and the principle of economies of scale. One of its major findings is the identification of different strategies on the part of both types of producer to respond to private standard requirements. While the larger producer chooses to become certified as an individual farmer, the paper identifies considerable potential for smaller producers to reduce the costs of compliance through group certification. The paper does not provide any empirical evidence of small producers being particularly disadvantaged regarding upgrading costs, but does produce evidence that smaller farms face higher recurrent costs.

Chemnitz (2007) reports the results of a survey on the diffusion of the EUREPGAP standard in the Moroccan tomato sector, which includes a qualitative as well as a quantitative analysis. The paper explores the various factors that favour or impede certification based on innovation theory, new institutional theory, and the concept of economies of scale. Almost all Moroccan producers comply with the EUREPGAP standard independently from downstream actors. However, 22 out of the sample of 30 certified producers are vertically integrated into the value chain and control the processing and marketing of the raw product (whereas out of a sample of 33 non-certified producers, only 6 are vertically integrated). The ownership of the packing station may take two organizational forms, either individually or as a member of a cooperative. Two of the most important findings of the survey are that producers which are certified are in contact with their international buyers and experience external pressure from them, such as the threat of sourcing from other producers in case of non-compliance. The survey underlines the importance of vertical coordination for the compliance process of small producers. It also indicates that there is a medium to low correlation between the cost of compliance and farm size, suggesting that the "starting point" could well be more important than farm size.

In a study based on a similar methodological approach, Kleinwechter and Grethe (2006)⁵ analyse the compliance process with the EUREPGAP standard in the Peruvian mango sector. In the sample from this sector, all EUREPGAP-certified producers are engaged in contract farming or enjoy a higher order of vertical coordination. Only a few large farmers are certified independently, and all others rely on the support of export companies. The costs of compliance are found to range from 0.3% to 15.2% of the production value, and average 3.8%. This shows that the costs of compliance can impose a considerable economic burden, and are strikingly variable. No significant relationship between farm size and the cost of compliance is found.

3.2 Empirical Evidence on Producers' Compliance with Support from Downstream Actors

Fairman and Yapp (2004, 46) show for the UK market that smaller producers are unable to generate knowledge about consumer requirements. Hence, their compliance is mainly externally driven. Various case studies discussed in this section underline this finding for producers in developing countries, and point to the importance of downstream actors in supporting small producers in the compliance process.

In a study on how supermarkets in Central America obtain fresh fruits and vegetables, Berdegué et al. (2005, 265) describe a centralized procurement system under which a supermarket chain establishes technical assistance and training programmes to support its suppliers in complying with higher standards. Jaffee and Masakure (2005, 327-330) provide evidence from Kenya where exporters of vegetables support small suppliers by providing inputs, credits and extension services, advice in the application of agrochemicals, and supervision. Manarungsan et al. (2005, 6, 42-45) outline that with tightening vertical coordination, asparagus producers in Thailand are supported by exporting companies, packing houses or cooperatives. This support takes the form of the provision of training, extension, technical support and inputs. Generally, however, these studies do not go into much detail regarding the level, means and nature of support from higher-level actors.

Kleinwechter and Grethe (2006) underline the particular importance of downstream actors' support for the compliance process of small producers in the Peruvian mango export sector. One of the main findings of the study is that all small producers in the survey complying with the EUREPGAP standard rely upon outside support to implement the standard. This becomes especially visible through the observation that, despite the large differences between certified producers in terms of socio-economic characteristics such as farm size, education or wealth, all certified producers show a high level of vertical coordination, either by contracts with downstream actors or by vertical integration. In no case do producers who still sell to intermediate traders without direct contact to exporter enterprises comply with the standard. Additionally, the study shows that support may include the supply of inputs, extension and credit, as well as the assumption of farm management tasks (organization, application of

⁵ This study is comprehensively documented in Kleinwechter (2005).

pesticides). This reveals that the enterprises play a strong role in providing producers with information on the standard and directly influence their decision-making process. Thereby the downstream actors partially cover compliance costs by ensuring partial or complete coverage of cost components.

Finally, other studies mention the importance of contract farming for compliance with private standards (Reardon et al., 2004, 176; Swinnen, 2005, 4, 19; Pingali et al., 2005, 21; Minton et al., 2006, 2, 20; Swinnen and Maertens, 2006, 17). A case study from Madagascar (Minten et al., 2006) describes the success story of 10,000 small vegetable producers, who have benefited from micro contracts combined with on-farm extension and supervision programmes in order to comply with the required quality. Key and Runsten (1999, 386) see contract farming as a possibility to overcome the information gap of small producers, and thus to improve their knowledge on their trading partners' requirements. Swinnen and Maertens (2006, 10-13) show for various examples from Central European countries as well as from Mozambique, Kenya, Zambia and Latin America that farmers are increasingly engaged in contract farming and receive support in the form of credit, inputs, technical assistance and quality control.

In summary, there are many examples of downstream actors helping small farmers to comply with quality standards, although no real generalizations can be made. According to Swinnen (2005, 47), empirical surveys show a mixed picture rather than a general exclusion of small producers. Similar conclusions are drawn by Berdegué et al. (2005, 265), who find that 70% of the suppliers for Hortifruti, a highly developed specialized retail fresh fruit and vegetable supplier in Costa Rica, are small farmers.

By contrast, several papers describe examples of small farmers losing market share as a result of increasing quality standards. Humphrey et al. (2004, 69-70) describe the redistribution of market shares as a result of quality standards in the fruit and vegetable sector in Kenya. They underline that "own farm production" of downstream actors increased from 40% in 1998 to more than 60% in 2001. All interviewees stated that they had reduced their smallholder supply due to concerns expressed by supermarket buyers about product characteristics and product quality.

Maertens (2006, 3-5) underlines these findings for the horticultural sector in Senegal. Structural changes include a shift from contract farming with small-scale producers to large-scale vertically integrated farms owned by exporting companies. Some interview partners stated that they had shifted from 100% reliance on contract farming to 80% reliance on vertically integrated production.

There is insufficient empirical evidence to provide a clear picture on whether small producers are more excluded or supported when it comes to complying with quality standards. In addition, it would be interesting to know more about the determining factors for downstream actors' choice whether to support small producers or exclude them.

3.3 Empirical Evidence on the Dependency Effects of Supported Compliance

Given that farmers are often supported by downstream actors, this section discusses whether this support may, beside its positive effects, have any negative effects on small producers. Unfortunately, few studies explicitly mention and analyse the possible dependency effects of supported compliance.

In their analysis of contract farming and rural development in Latin America, Key and Runsten (1999, 381) outline the various problems involved in contract farming, including that smallholders can be extremely dependent on their contract partners. This is especially the case when contract farming goes hand in hand with decreasing diversification and the dependency on the provision of inputs, so that growers face limited exit options and lose bargaining power against downstream actors.

Jaffee and Masakure (2005, 330) show that the interference of exporting companies with the production process on farms in Kenya's vegetable export sector allows them to influence strongly key production decisions. Another aspect is highlighted by Kleinwechter and Grethe (2006), who describe how exporter enterprises in the Peruvian mango sector sometimes hold the EUREPGAP certificate. This might provide firms with monopsony power and allow them to pay producer prices below the competitive equilibrium.

To establish the extent to which small agricultural producers face disadvantages through increased dependency on downstream actors, what these disadvantages look like and their severity, a detailed understanding of power and governance within the value chain requires further research.

3.4 Empirical Evidence on How Problematic Exclusion Effects due to Non-compliance Are

Several papers mention the exclusionary effects of food quality standards for small producers (e.g. Gibbon, 2003, 615; World Bank, 2005, xviii, 39, 97, 103, 112; Hatanaka et al., 2005, 361-362, 366; Giovannucci and Ponte, 2005, 298-299; OECD, 2005, 56; Kleinwechter and Grethe, 2006, 14; Shepherd, 2005, 10; Swinnen, 2005, 45; Pingali et al., 2005, 2; Maertens, 2006, 5). This section takes a closer look at how problematic exclusion really is. For this purpose, we examine on which specific markets does exclusion due to non-compliance play a role, and which alternative markets exist.

Various surveys suggest that the export market is divided into three different standard levels: Scandinavia and the UK at the top, the remaining EU countries in the middle, and non-OECD countries at the bottom as low-standard markets (Aloui and Kenny, 2005, 16; Jaffee, 2003, 16). Chemnitz (2007) explores the exclusionary effects on the Moroccan tomato export market. Exports to high-level countries are only possible with EUREPGAP certification, and for the UK only with even higher standards such as "Nature's Choice" and "From Farm to Fork". Exporters to medium-standard countries have not until now faced any sanctions or

pressure if they are not certified. However, all interviewed producers expect to encounter problems in marketing non-compliant products in the future.

According to Berdegué et al. (2005) and Reardon (2005), food standards are becoming increasingly important for national markets in developing countries as well. This development is induced by the rapidly increasing importance of supermarkets in developing countries' markets. Several case studies place particular focus on the restructuring of national and regional markets and describe this process in developing and transition countries (Reardon et al., 2003; 2004; Swinnen, 2005). Various authors observe a market segmentation in which smaller producers are selling to less demanding but also less profitable markets (Hatanaka et al., 2005, 361, 366; Manarungsan et al., 2005, 1).

In summary, exclusion effects can be observed on many markets and, owing to the globally increasing demand for high-standard products, alternative markets are shrinking even in developing countries in the long run. This trend raises the question as to whether empirical evidence on poverty effects of market exclusion exists.

Recent studies emphasize the diverse effects of standards on poverty (Humphrey et al. 2004; Minten et al., 2006; Maertens, 2006). Based on a simulation model, Humphrey et al. (2004) argue that a shift away from smallholder production may have a poverty-reducing impact due to increasing employment on large farms. Maertens supports this conclusion and provides empirical evidence. One of the major findings of her survey is that high-standard agricultural trade is "an engine of pro-poor growth" in the Senegalese French bean sector (Maertens, 2006, 9). Increasing wage employment is found to provide income for the poorest households, while the reduction of contract farming concerns households which are relatively better off. Minten et al. (2006), on the other hand, provide evidence that 10,000 producers from the highlands of Madagascar have now entered the high-quality fruit and vegetable market of the EU, creating a new niche market. Small farmers who participate in this market have higher incomes and more income stability. In all three surveys, sectors have become increasingly competitive and have increased their international market share because they offer high-value production. This may be particularly important in interpreting the results by Maertens and Swinnen (2006), Maertens (2006) and Minten et al. (2006), who find a poverty-reducing effect of trade which is subject to high quality standards.

4. Conclusions and Future Research Needs

There is widespread concern that small producers in developing countries are negatively affected by the increasing importance of quality standards on international as well as national markets. In this article, we develop a conceptual framework to analyse this concern. We distinguish four analytical questions: do small producers in developing countries comply with quality standards independently, whether as individual farmers or in farmer groups? If not, do farmers receive support with compliance from downstream actors in the value chain? If they

do, is the resulting dependency problematic? And finally, if farmers do not comply, is their market exclusion problematic?

The concept of “small farmers” as applied in this paper and in several case studies is a relative one. Empirical evidence shows that so-called small farmers in developing countries producing for export markets may be neither small compared to producers for the domestic market, nor small in absolute terms. In addition, the properties which disadvantage farmers in compliance and which are often associated with “small farmers”, such as low production technology and efficiency as well as weak integration into the marketing chain, are only loosely related to physical farm size, especially when taking into consideration the small producers of the exporting sector.

On a theoretical basis we show that small farmers could well have a comparative disadvantage in complying with quality standards owing to their specific endowments, which hamper their ability to acquire information on the standard and to implement it. We structure the non-recurrent and recurrent components of the costs of compliance involved in a standard, and show how the properties of small farmers may result in higher costs of compliance than for large farmers. In addition, from a downstream actor’s perspective, working with many small farmers instead of a few large ones may be less attractive owing to higher transaction costs.

In contrast to the concerns resulting from theoretical and plausibility considerations, relatively little empirical evidence can be extracted from the literature. Few studies analyse the compliance process of small producers in any detail. The studies reviewed here hint that small and medium producers rarely comply without support from downstream actors. In the case of well-educated and relatively wealthy farmers, forward integration is also found, but there is no empirical support for the intuitively appealing hypothesis of lower cost of compliance per unit of output for large producers. This may be due to problems of measurement, for example owing to the assumption of part of the costs by downstream actors. This issue requires more detailed research. More empirical work is also needed with respect to the effect of group certification on the cost of compliance, which is considered to be a promising alternative for small producers in particular, but for which there is as yet no empirical data.

Many case studies report that downstream actors such as exporters are supporting small farmers in the compliance process. This support can range anywhere between a low and a very high level, resulting in the downstream actor playing an important role in farm production and management. There is, however, little empirical evidence as to why downstream actors act in this fashion, and how this affects power and value-added distribution along the value chain.

For some countries and sectors, there is some empirical evidence on the exclusion of small farmers from high-standard markets. Nevertheless, there is little evidence on how problematic such forms of exclusion are. Various alternatives could well exist, such as production for other markets, a shift to other products or wage employment in the high-standard production sector or elsewhere. Two of the studies reviewed here identify a strongly increasing level of wage employment as a result of the development of high-standard markets, which has a

positive effect on income distribution and poverty. Indeed, “small” contract farmers are excluded from export markets, yet they still constitute a more wealthy group than those who earn their wages on larger farms. Evidence is still too thin to draw any general conclusions, but the facts so far certainly do not suggest that high standards generally cause income distribution to deteriorate or that they increase poverty.

In light of the limited empirical evidence, there is much scope for further empirical in-depth case studies. Extremely interesting aspects that should be examined are the motives of downstream actors in supporting small farmers, and how this impacts the position of small farmers in the value chain. As both compliance with a standard and vertical coordination are dynamic processes, one promising approach would be to build an analysis using panel data sets capable of reflecting developments over time. From a development policy perspective, it is especially interesting to identify the institutional and structural requirements that allow the poor, irrespective of whether they are small farmers or employed on larger farms, to benefit from the development of high-quality standards markets.

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Corresponding Author:

Harald Grethe
Department of Agricultural Economics and Social Sciences,
Chair for International Agricultural Trade and Development,
Humboldt University of Berlin, Germany
phone: +49-30-2093- 6787, e-mail: harald.grethe @agrار.hu-berlin.de