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# The reliability of third-party certification in the food chain: From checklists to risk-oriented auditing

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#### ABSTRACT

In recent years, certification has become increasingly relevant for agribusiness. In Europe, substantial parts of the value chain are already being certified by standards such as the International Food Standard (IFS) or GLOBALGAP (the former EurepGap). It is not known, however, whether these approaches can de facto ensure high quality control. This article is based on a database analysis of the German certification system Quality and Safety (QS) and a workshop with the QS-certification bodies conducting 85% of all agricultural audits. It seeks to deduce the first empirical hypotheses concerned with the connection between the reliability of third-party certification and the institutional framing of standards.

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#### 1. Introduction

In recent years, certification procedures have gained great importance in the international agribusiness sector. Different certification standards have been established to serve as instruments of quality assurance within the food supply chain (Deaton, 2004; Fulponi, 2006; Jahn, Schramm, & Spiller, 2005). In this study, we define certification as "the (voluntary) assessment and approval by an (accredited) party on an (accredited) standard" (Meuwissen, Velthuis, Hogeveen, & Huirne, 2003). A key feature of a certification system is that inspections are carried out by independent bodies (third-party certification) in accordance with standards laid down by external organisations (Luning, Marcelis, & Jongen, 2002).

Especially in Europe, large parts of the agribusiness sector are already certified. In Germany, for example, the national Quality and Safety (QS) system has already conducted more than 110,000 audits, mainly in the meat industry, covering about 85% of all German fattening pigs (European Meat Alliance (EMA), 2006). The animal feed industry and all important German slaughterhouses have also been covered. Besides QS, the International Food Standard (IFS) and GLOBALGAP are also widely used certification schemes.

In contrast to this rapid diffusion, the debate on the question of whether this type of quality assurance can reliably perform its tasks has so far remained largely neglected. Only few studies can be found

questioning the trustworthiness of third-party certification (TPC) as a quality signal and addressing the problems of auditor independence and objectiveness (Anders, Souza Monteiro, & Rouviere, 2007; Schulze, Albersmeier, Jahn, & Spiller, 2006; Tanner, 2000). Beyond the communication of risk management, standard authorities have to make sure that actions de facto match their words (Röhr, Lüddecke, Drusch, Müller, & Alvensleben, 2005). In Germany, there have been several quality scandals (dioxin in animal feed and spoiled meat, for example), even after the set-up of certification schemes. Although companies with QS certificates were only marginally involved in these cases, a few critical voices have been raised indicating that this problem is, nevertheless, relevant for the QS system. Amelung, Kiefer, Scherb, and Schwerdtle (2002) observed that companies in the poultry sector perceived the control pressure to be quite low after initial ISO 9000 certification and thus calmly looked forward to the follow-up audits. Certification is perceived to be a formal inspection rather than a valid examination of quality standards (Walgenbach, 2007). A further indication of the weaknesses of auditing practice is the comical rephrasing of GMP audits from "Good Manufacturing Practice" to "Give Me Papers".

Besides these developments in practice, a discussion has arisen in recent years dealing with the potential for private self-regulation in contrast to public command-and-control systems (Ansell & Vogel, 2006; Henson, 2006). In this debate, EU legislation defined a clear position for private systems of regulation. This concern was emphasised especially in Regulation No. 178/2002, which states that "a food business operator [...] should have primary legal responsibility for ensuring food safety" (EG (Eds.), 2002, p. 9). By increasing the self-responsibility of the food businesses, the European Parliament is seeking to assure "a high level of protection of human health





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and consumers' interest in relation to food" (EG (Eds.), 2002, p. 6). Currently, Regulation No. 178/2002 is the most specific and authoritative codification of structures and practice in food safety regulation. Furthermore, this is a central issue of the current green paper on agricultural product quality (COM (2008) 641).

Although, legislation on an EU level has assigned greater responsibility to food businesses, society regularly calls on the government if food scandals occur. This is the result of traditional structures in the food chain, in which, in most European countries, public governance has predominated (Verführt, 1996). In those days, the primary, small-sized industry was overstrained by the technical demands concerning food safety and food-related health risks (Spriggs & Isaac, 2001). However, these arguments do not pertain to the globalized and fragmented structure of modern agribusiness. Hence, Beck (1988) warns that, due to their lack of publicity and failure to reorganise their businesses, companies nowadays can hide behind a more formal, state-controlled system. In consequence, "organized irresponsibility" can occur. Private self-regulation of the industry, though, does not mean the total withdrawal of public authority, but the concentration on their major competences in food safety.

Thus, in this study we will focus on the effectiveness of certification and analyse the structures of TPC for agribusiness on a broad, quantitative basis. Considering the manifold resources that currently go into the development of quality assurance systems, it seems reasonable to critically review the validity and reliability of audits and question whether TPC is more than just a superficial veneer of legitimation.

#### 2. Trust in marketing signals

According to the traditional economic model, the market is the meeting point of supply and demand with the aim of exchanging homogeneous products. The (neo-) classical model implies that both suppliers and buyers are fully informed about all commodities concerned. But in fact, goods are not homogeneous, nor are all participants equally well informed (Caswell & Moiduszka, 1996)--and this is particularly true for the agribusiness sector (Deaton, 2004). Market activities are often characterised by farreaching information deficits that incentivise opportunistic behaviour and impede the smooth functioning of markets (Akerlof, 1970; Spence, 1976). Depending on the degree of information asymmetry between supplier and customer, different types of goods can be identified according to their dominant quality attributes (Antle, 2001; Darby & Karni, 1973; Nelson, 1970). While search and experience qualities are known before purchase (for example, freshness) or appearance) or after consumption (for instance, taste or shelf life), credence attributes (like pesticide residuals), in contrast, cannot be judged by the consumer even after inspection and use. The only way to verify the characteristics of credence attributes is through inspections carried out by external organisations, public authorities, or competitors. The likelihood of detecting firms falsely claiming specific credence qualities depends on (a) the amount of monitoring in the respective product category and (b) whether the company is famous enough for newspaper reports that disperse the results of monitoring. Assuming strict monitoring by third parties and a high disclosure rate, credence goods could theoretically be treated as experience goods (McCluskey, 2000). Third parties supplying customers with information about credence goods result in reliable quality signals. In consequence, specific marketing investments (like advertising and branding) bind manufacturers although high information asymmetries create strong incentives for cheating (Ippolito, 1990; Kirchhoff, 2000).

For some types of credence goods that are connected with production methods, information asymmetry cannot, however, easily

be by-passed by classical quality signals such as advertising, branding, and guarantees. This is especially true of food since nearly all quality attributes are process-based. Some process attributes—like GMO-free— could theoretically be tested by third parties, but it is impossible to analyse the characteristics of products marked with fair trade, animal welfare, organic farming or dolphin-safe labels after the production process. Hence, the only way to detect fraud for the latter attributes is to directly monitor the company's internal production process. For most third parties, for example, consumer agencies or other stakeholders, direct monitoring is not feasible since only public authorities have the right to conduct investigations within a company. Additionally, these rights are restricted to cases of suspected contravention (such as threats to food safety and environmental harm). Furthermore, for comprehensive control to be exerted, sufficient public manpower and budgetary means must be available. All in all, consumer agencies. NGOs, and public authorities are usually not able to verify marketing claims or discover opportunistic behaviour for process oriented credence goods. Quality statements can be made with hardly any risk of disclosure.

What is needed to circumvent these fundamental problems is an investigation scheme that covers the whole supply chain and ensures onsite inspections throughout the production process. Certifying systems are able to guarantee these inspections, which is why they are gaining popularity in the agribusiness sector (Auriol & Schilizzi, 2002). By means of regular control and, where necessary, additional sampling, neutral inspection institutions monitor the entire supply chain. Once in possession of the requisite certificate, companies are entitled to make use of the quality label (for instance, Organic Farming, Fairtrade, GMO-free or Protected Designation of Origin [PDO]) for marketing purposes.

However, certification systems and labelling imply multifaceted problems to which the parties involved have so far paid little attention. The central task of certification, the reduction of information asymmetry, can be fulfilled only if the institutions in charge succeed in assuring a high quality of control and, thus, the validity and reliability of the audit signal. Only if the underlying organisation is effective in establishing a quality reputation in the market will the corresponding label be accepted as a quality surrogate. A label needs to demonstrate a credible commitment to the principles and specific regulations of the certification system in question. A priori it cannot be taken for granted that the certifiers or the companies to be audited will conform to the respective regulations, especially since the companies can choose among the auditors and pay them.

All in all, the aforementioned factors indicate existing problems with TPC. Given the rapid growth and the still poorly developed structures of the comparably young certification market as well as the lack of experience on the part of the protagonists, fraud is likely to occur. In the following, the institutional structure of certification systems is analysed in order to reveal flaws that support fraud. The theoretical analysis is based mainly on analogies in financial auditing.

#### 3. Institutions and structures of certification

#### 3.1. Institutional framework

Basically, all certification systems have a similar structure. The starting point for the auditing process is the relationship between the producer and the customer (consumer or institutional buyer) (see Fig. 1). The supplier provides a certificate serving as a quality signal that is issued by a neutral certifier based on the quality and certification standards laid down by the scheme owner. Certifiers, in turn, have to prove their ability to carry out inspections according



Fig. 1. Basic structure of certification.

to these rules through an accreditation (Luning et al., 2002). This accreditation is usually given on the basis of the ISO 65/EN 45011 standard, which includes general requirements for assessment and accreditation of certification bodies.

Given these basic elements, different certification systems can be described according to the scheme owner responsible for developing standards and control procedures. Firstly, there are public (state-run) and private initiatives. Governmental certification systems serve consumer protection purposes by providing quality labels to improve market transparency (for instance, Organic Farming or PDO labelling). Public standards prevent mislabelling through laws and fines enforced by official authorities. As McCluskey (2000) argues, the main disadvantages are a loss of flexibility and innovation, lock-in effects and the low number of incentives for overcompliance. While public certification schemes still predominate in the markets (notably, in the USA, Canada, and Japan), private standards are characteristic of the European food industry (Jensen & Hayes, 2006; Theuvsen & Spiller, 2007).

Private certification procedures tend to be significantly different depending on whether the certification is to be used for consumer marketing purposes or should meet the demands of institutional buyers. ISO 9000, for example, is primarily a business-to-business (B2B) marketing tool. Other well-known examples are the GLOBAL-GAP standard, covering agricultural producers, and the British Retail Consortium (BRC) or its German and French equivalent, the IFS, which are directed towards the manufacturers of private labels. Most of these schemes are based on the retailers' efforts to control the suppliers. Nevertheless, as a countervailing power there are also certification systems initiated by suppliers, such as the British Assured Farm Standard (AFS). In future a diffusion of private standards even on international markets seems likely in order to facilitate entry to foreign markets (Bai, Ma, Gong, & Yang, 2007; Henson, 2006).

While the above-mentioned certification schemes focus mainly on the supply chain, there has been a shift towards certification labels directed at the consumer. Among these, the meat industry approaches comprising the whole value chain (the Dutch IKB system or the German QS system, for example) have become most important in Europe. Furthermore, specific associations (like organic producer associations, such as the British Soil Association) refer to one homogeneous segment of an industrial sector only. The Marine Stewardship Council (MSC) label, which focuses on sustainable fishing practices, and its equivalent in forestry, the Forest Stewardship Council label (FSC), are basically supported by stakeholders from different NGOs. Schemes such as Fairtrade or Max Havelaar are further examples of this type of labelling. Finally, some individual certifying organisations, including the European Food Safety Inspection Service (EFSIS) and the German Technical Inspection Agency (TÜV) have developed standards of their own. Fig. 2 provides a typology of these different private certification systems according to their importance for consumer marketing.

#### 3.2. Reliability of the quality signal

Fig. 1 describes the parties involved in a certification system. In practice, this simplified outline is, however, blurred, as all parties act as economic players. Since the intended de lege structure of certification systems can deviate from the de facto form, an analysis of certification schemes that seeks to improve the functioning of certification systems must take into account tendencies towards opportunistic behaviour. Considering highly concentrated retailing markets and successful certification as a market entry barrier, manufacturers are under increasing (economic) pressure to become approved. Several studies have revealed that suppliers view certification as an externally imposed obligation rather than as an intrinsically motivated quality management system (Walgen-



Fig. 2. Typology of private certification systems.

bach, 2007). Hence, it can be implied that suppliers are generally not interested in the highest possible standard of inspection. This behaviour lowers the probability of reliable certification since suppliers have an incentive to select auditors known to employ low inspection standards (Pie Pierce & Sweeney, 2004).

Correspondingly, certifiers can act in the same way assuming a given inspection fee. That is, they will seek to minimise their audit costs. Without monitoring or a liability system, certifiers do not face risks because of superficial inspection. In addition, they can become dependent on their clients through a special form of setting the fee, known in auditing theory as "low-balling" (Calegari, Schatzberg, & Sevcik, 1998; DeAngelo, 1981). In order to win the contract, auditors set the fee for the first inspection far below their calculated real costs. As profits tend to be realised only in an ongoing business relationship, the annual returns from subsequent inspections represent a quasi-rent since they depend on customer loyalty. Low-balling makes inspectors undesirably dependent on their clients (Makkawi & Schick, 2003).

Furthermore, as each inspector is an agent of a larger certification company, it cannot be assumed that every certifier (agent) pursues the same objectives as the certification company (respective principal) (Arrow, 1985; Jensen & Meckling, 1976). In fact, agents can maximise their own profit. In practice, this includes bribery by companies they have been ordered to inspect (a practice known as side contracts) (Pechlivanos, 2004; Tirole, 1995).

# 4. Reliability of TPC: from checklist governance to risk oriented auditing

With the increasing importance of TPC as a quality signal in the agribusiness sector, the reliability of certification schemes grows to be a crucial factor for trust in the institutions and the credibility of consumer and B2B marketing. Our theoretical considerations allow some initial suggestions that weak auditing—and, in some cases, even cheating—can lead to relevant food safety risks. To the best of our knowledge, there are no broader empirical analyses on the reliability and validity of audits in quality certification. However, there are a number of case studies on the quality of social auditing (O'Rourke, 2000, 2002).

For example, an article in the *Financial Times* that unveiled the fraud practices used by Chinese firms drew considerable attention. International auditing firms that certify textile suppliers in China with standards such as the SA 8000 are presumably systematically fooled (by such means as computer-faked pay slips) (Harney, 2005). An in-depth report analyses the practices of auditors during the execution of social audits in developing countries (Clean Clothes Campaign, 2005). The authors describe TPC as a cat-and-mouse game between naive and badly trained auditors and unscrupulous managers, in which the auditors currently lack the means for effective monitoring. Thus, it can be concluded that so-cial certification practices have already suffered considerable credibility losses, at least regarding the working conditions in developing and threshold countries. It, therefore, seems reasonable to think preventively about the weak points of TPC in agribusiness.

In the following sections, we will refer to an auditing procedure that is incapable of unveiling substantial material deficiencies but primarily evaluates formal factors as *checklist governance*. *Checklist governance* describes an auditing procedure in which the certifiers use a checklist to—somewhat schematically—monitor the existence of certain quality performance elements (Schulze et al., 2006). For companies on the same production stage, typically similar, mostly even equal requirements are made in the criteria catalogues of the scheme owners. Usually, no attention is paid to the special characteristics and conditions of the industrial sectors. Instead, the audit of the company is carried out based on a formal checklist, which is executed point by point by the auditor without any economic incentives to unveil material shortcomings, All in all, checklist governance, in our view, represents reliability problems in auditing, which might be due to an insufficient auditing model.

In this article, we contrast this model, which is based on standardisation and uniformity, with the concept of risk oriented auditing. The purpose of this risk-oriented auditing is the alignment of the audit with the risk situation and risk potential of the individual client (Konrath, 1989). The approach is based on auditing theory, was introduced in the 1970s and has been further refined following recent scandals (such as Enron and Parmalat). In traditional auditing, the auditor relies on what is called the audit-risk. This risk constitutes a false estimation of the annual accounts where the audit certificate is unwittingly not restricted or rejected, even though the annual accounts contain significant flaws (Quick, 1996; von Wysocki, 1992). The risk consists of several subcomponents. Firstly, the risk of error occurring specifies the probability that errors fundamentally occur in the population. Secondly, the detection risk recognizes the risk that the flaws occurring in the company may not be concretely detected by the auditor (Graham, 1985a). This risk originates in the choice of improper procedures and in the auditor's personal deficiencies (Brumfield, Elliott, & Jacobson, 1983). The influencing factors of the error risk include an inherent risk as well as a control risk (Graham, 1985b). While the inherent risk refers to the probability that errors generally occur in the absence of a monitoring system, the control risk shows the probability that important errors will not be detected by the monitoring system and will reach the annual accounts (Graham, 1985c, 1985d; Houghton & Fogarty, 1991; Wallace, 1991).

Auditing practice shows that the efficiency and efficacy of inspections improves if the auditor intensifies the control in areas where risk is high and fraud has strong negative effects (Alderman & Tabor, 1989; Konrath, 1989). Hence, the risk orientated concept demands intensive interaction with the company and its environment. In this way, the probability of detecting fraud increases, and expenditures decrease. This is especially true for opportunism since the chance of detecting it rises due to higher flexibility. An individual risk evaluation of the auditor compensates for the standardized guidelines of the standard owner. In this way, auditors are no longer steered by external variables (like the standard owner), but more emphasis is placed on their own performance or, rather, the auditing results. The self-responsibility of the auditors, thus, is a central element of the risk oriented approach presented here.

Since this concept has proven itself of value in auditing practice, we have applied it to agribusiness. Standards have a much longer tradition in the auditing sector, and the basic parameters that led to the development of the risk oriented auditing concept apply similarly to today's certification systems in the food chain. Certifiers are in severe competition for contracts, which are commissioned by the companies that are to be audited. Here the risk of false incentives and adverse selection is high. Furthermore, the rapid growth of certification systems could lead to the suspicion that auditing procedures and staff qualifications have not yet been sufficiently well developed (Anders et al., 2007; Jahn et al., 2005).

#### 5. Empirical results on the reliability of certification audits

#### 5.1. Data base

Besides theoretical approaches (Jahn et al., 2005), there are only a few empirical analyses of audit quality, and they refer to single case studies and undercover observations of auditing practices (Anders et al., 2007; O'Rourke, 2000, 2002). The negative sides of this approach lie in the complex opportunities to generalise the results and in the lack of verifiability of the reports. The following analysis, therefore, uses a statistical approach based on data of the German QS GmbH. QS is an initiative of the German meat industry founded in 2001, when scandals and food crises reached their climax and consumer insecurity was at its peak. In the organisational structure, this is reflected by the six shareholders who represent all the relevant associations and organisations of the food industry. Today, the QS system has emerged as the most important quality assurance system in Germany and is of relevance even in other European countries. Around 100,000 producing, processing and retailing companies have already joined the scheme (QS, 2008). Thus, the QS system covers all stages integrated in the meat production process: the animal feed industry, agriculture, slaughtering and deboning companies, the meat products industry and, finally, food retailers.

A special feature of the OS system is its database, which contains data entry forms filled out by the certifiers on the structural characteristics of the companies audited and the results of the audits. The following information is collected: name and registered office of the certification company, name of the auditor, name and registered office of the client, type of business, product category, date of the audit, overall result of the audit, score per criterion, duration of the audit and type of audit (regular or sample). The certifier awards a differentiated auditing judgement with the four nuances "QS status 1" (at least 90%), "QS status 2" (<90-80%), "QS status 3" (<80-70%) and "failed". The latter can be the result either of insufficient performance (<70%) or of a single, particularly severe flaw (KO criterion). In this study, all inspection results from the period between 2002 and 2005-a total of 102,648 auditswere analysed. The considerations focus exclusively on the audits carried out in Germany (98.8%) and in the meat sector (85,218 audits).

The audit results in the three agricultural sectors certified by QS are depicted in Table 1. It can be seen that, altogether, auditors

## Table 1QS statuses of the agricultural sectors in Germany.

awarded very good evaluations. Most firms (89.7%) received the certificate "QS status 1". On average, only 2.5% of the firms failed the audit. The performance of the poultry producers was significantly higher than that of the pork and beef producers.

The results indicate that the probability of failing the audit is relatively low. The QS system at its core is an approach for securing minimum legal standards. It can, thus, be expected that the vast majority of the audited companies will successfully pass the audit. It also seems plausible that vertically integrated poultry fattening in Germany, which is also monitored by large-scale poultry processors, shows fewer weak points than the red meat market. Nevertheless, there is also a risk that the low failure rates conceal deficiencies in the auditing process. Can this be a case of checklist governance?

# 5.2. Differences in the auditing quality of different certification organisations

The starting point of the statistical analysis is the hypothesis that certifiers—whether due to deficiencies in competence or to economic pressure—do not all conduct their audits with the same diligence. If this is the case, there should be significant variations in the auditing results of different firms or certifiers.

To eliminate the influence of the different business sectors, the following calculations are limited to pork production. In addition, it seems necessary to focus the analysis on one German state to avoid regional effects, which are reported in Table 2.

Fig. 3 shows that audit outcomes also differ regarding some of the main criteria in pork production. Farmers from Lower Saxony show better scores than the average farmer in Germany and the Netherlands.

The above-mentioned variations can be due either to regional sector characteristics, such as difference in farm size, or to varying strictness among certifiers working predominantly in different re-

AGR	QS status 1 (100–90%)		QS status 2 (<90–80%)		QS status 3 (<80–70%)		Certification refused (<70%)		Total	
	Quantity	Rows (%)	Quantity	Rows (%)	Quantity	Rows (%)	Quantity	Rows (%)	Quantity	
Pork	33,686	89.7	2627	7.0	286	0.8	943	2.5	37,542	
Beef	40,919	89.4	3293	7.2	385	0.8	1196	2.6	45,793	
Poultry	1836	97.5	32	1.7	2	0.1	13	0.7	1883	
Total	76,441	89.7	5952	7.0	673	0.8	2152	2.5	85,218	

Table 2

QS statuses of p	oork producers	in regional	comparison.
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Region	QS status 1 (100–90%)		QS status 2 (<90–80%)		QS status 3 (<80–70%)		Certification refused (<70%)		Total	
	Quantity	Rows (%)	Quantity	Rows (%)	Quantity	Rows (%)	Quantity	Rows (%)	Quantity	
BB	241	92.0	14	5.3	4	1.5	3	1.1	262	
BW	2420	89.4	206	7.6	12	0.4	68	2.5	2706	
BV	6328	88.6	456	6.4	17	0.2	341	4.8	7142	
HE	377	83.2	37	8.2	12	2.6	27	6.0	453	
MWP	186	94.4	7	3.6	3	1.5	1	0.5	197	
LS	10,519	93.5	565	5.0	57	0.5	114	1.0	11,255	
NRW	10,216	86.4	1124	9.5	168	1.4	320	2.7	11,828	
RP	329	95.9	11	3.2	0	0.0	3	0.9	343	
SA	256	90.8	22	7.8	1	0.4	3	1.1	282	
SH	1387	92.7	87	5.8	5	0.3	18	1.2	1497	
SN	209	92.1	15	6.6	1	0.4	2	0.9	227	
ТН	203	91.0	9	4.0	1	0.4	10	4.5	223	
G	33,686	89.7	2627	7.0	286	0.76	943	2.5	37,542	
NL	475	82.9	6	1.0	3	0.52	89	15.5	573	

BB = Brandenburg; BW = Baden–Wuerttemberg; BV = Bavaria; HE = Hesse; MWP = Mecklenburg–Western Pomerania; LS = Lower Saxony; NRW = North Rhine–Westphalia; RP = Rhineland–Palatinate; SA = Saxony–Anhalt; SH = Schleswig–Holstein; SN = Saxony; TH = Thuringia; G = Germany; NL = Netherlands. *Note*: The table includes only states where more than 100 audits were carried out. "Germany" includes all German states.



Fig. 3. Audit results for pork production: comparison of Germany, Netherlands and Lower Saxony.

gions from one another. For the following, we, therefore, will focus on the state of Lower Saxony as an example. Table 3 shows a central finding of the analysis: there are highly significant differences between the auditing judgments of certification bodies who have audited pork producers in Lower Saxony. The spread ranges from 86.3% of companies in "QS status 1" by certification body H to 98.6% by certification body A.

Given the large sample and the limitation to one state and one sector, it is seems highly likely that the reported variations may result from weaknesses in the auditing process. The failure rate for certification body H, for example, is over 12%, while for body A, only 1.4% were rated below "QS status 1", and none failed the audit. Auditing body G rated many companies as "QS status 2", while the failure rate was average. Quite obviously, these differences, which can also be demonstrated in other states and sectors, point to nonconformities in auditing practices.

These findings are supported by comparable variations in the analysis of single auditors working with the eight largest certification bodies (see Table 4). In total, 110 auditors have been active in the certification of pig holdings in Lower Saxony since 2002. Of the 110 auditors, 44 have conducted less than 10 audits, and 32 have conducted more than 100 (84.0% of all audits). Five auditors have

### Table 3 Auditing results of certification bodies (Lower Saxony; pork).

Certification body	QS status 1 QS status 2 (100–90%) (<90–80%)		QS status 3 (<80–70%)	Certification refused (<70%)	
	Rows (%)	Rows (%)	Rows (%)	Rows (%)	
A	98.6	1.4	0.0	0.0	
В	98.3	1.2	0.1	0.3	
С	95.3	3.9	0.2	0.6	
D	93.7	3.6	0.0	2.8	
E	92.9	2.9	0.0	4.3	
F	92.7	5.4	0.2	1.7	
G	90.4	7.4	1.1	1.2	
Н	86.3	1.4	0.0	12.3	
Average	93.5	5.0	0.5	1.0	

*Note*: Auditing companies are made anonymous by letters. For a more convenient presentation, only those auditing companies are listed that performed more than 33 audits. Thus, eight companies with a total of 103 audits are not listed. The line "Average" includes all 16 auditing companies (11,255 audits).

issued more than 500 certificates each and thus alone account for 35.9% of all audits in the pork sector. This high concentration might lead to competence deficiencies on the part of the less involved auditors. However, it could also indicate stress of competition (low-cost strategy) and a strongly varying duration/intensity of the audits. Auditor H1, for example, inspected, on average, 30 min longer than auditor C1, who conducted a particularly large number of audits.

#### 5.3. Reasons for the audit differences

First of all, the variations in the auditing results described above reveal the varying assessment standards of the individual certification bodies and auditors. Confronted with these results at a workshop in March 2007, managers of the German association of certification bodies (Deutscher Verband Neutraler Klassifizierungsund Kontrollunternehmen e.V.), who conduct 85% of all agricultural audits, tended to explain these results by invoking different client structures. The variations observed, however, are too big to be interpreted only by differences in the performance level of diverse producer groups. Similar discrepancies can also be found between different auditors within the same certification body, as well as at other stages of the supply chain (such as industry and the food trade). Hence, there must also be other reasons for these significant differences. On the one hand, it cannot be ruled out that

Table 4	
Comparison of auditing results dependent on auditors (Lower Saxony; pork)	•

QS status 1 (100–90%)	QS status 2 (<90–80%)	QS status 3 (<80–70%)	Certification refused (<70%)	Duration (hh:mm)	
Rows (%)	Rows (%)	Rows (%)	Rows (%)	Average	
98.3	1.7	0.0	0.0	01:32	
100.0	0.0	0.0	0.0	01:27	
98.1	1.3	0.2	0.4	01:24	
93.2	3.8	0.0	3.0	01:35	
91.1	3.6	0.0	5.4	01:44	
96.0	2.0	0.0	2.0	01:27	
74.9	18.2	3.7	3.2	01:29	
86.3	1.4	0.0	12.3	01:56	
93.5	5.0	0.5	1.0	01:38	
	QS status 1 (100–90%) Rows (%) 98.3 100.0 98.1 93.2 91.1 96.0 74.9 86.3 93.5	QS status 1 (100-90%)         QS status 2 (<90-80%)           Rows (%)         Rows (%)           98.3         1.7           100.0         0.0           98.1         1.3           93.2         3.8           91.1         3.6           96.0         2.0           74.9         18.2           86.3         1.4           93.5         5.0	QS         status 1         QS         status 2         QS         status 3           (100-90%)         (<90-80%)	QS status 1 (100-90%)         QS status 2 (<90-80%)         QS status 3 (<80-70%)         Certification refused (<70%)           Rows (%)         Rows (%)         Rows (%)         Rows (%)         Rows (%)           98.3         1.7         0.0         0.0           100.0         0.0         0.0         0.0           98.1         1.3         0.2         0.4           93.2         3.8         0.0         3.0           91.1         3.6         0.0         5.4           96.0         2.0         0.0         2.0           74.9         18.2         3.7         3.2           86.3         1.4         0.0         12.3           93.5         5.0         0.5         1.0	

Note: The line "Average" includes all auditors.

know-how differences between the individual auditors and varying auditing intensities might be responsible for the variations. On the other hand, economic dependencies might cause auditors to issue "courtesy certificates".

Differences in auditing quality are likely because all certification concepts in agribusiness are still in the implementation stage, and only a few re-audits have been carried out so far. Thus, it can be assumed that single auditors might still lack appropriate training and knowledge. As yet, there is no specific training in agribusiness for the newly developed profession of certifiers. Competence deficiencies have already been detected by the scheme owners (like QS GmbH), whereupon training efforts and auditing guidelines have been substantiated and expanded.

Economic dependencies could be the second potential cause of the varying auditing results. In all private certification schemes, the client can choose the certification body. The pronounced stress of competition and the low prices that certifiers report in personal conversations ( $\epsilon$ 200– $\epsilon$ 300 for one farm audit) can lead some auditors to deliberately audit inattentively in order to minimise their costs and at the same time increase their chance of recontracting and being recommended. This is based on the interest of the audited companies (that is, the customers) in being assured of passing the audit. To pass, they will avoid very strict auditors and exert pressure. This effect can be especially strong when individual clients have powerful positions. This is the case, in the QS system, because here so-called "Buendler" (slaughterhouse companies, co-operatives and marketing associations) choose the auditor for the individual parties in the "bundle" (in many cases, several hundred farmers). Such structural flaws are, however, relevant for other certification standards, such as IFS or GLOBALGAP. For the latter, the option known as Option 2 allows GLOBALGAP certifying bodies to supervise only the quality management system of a farmers' association and to conduct a few additional sample farm audits.

All in all, our statistical analysis cannot directly measure dependencies, knowledge deficits or fraud, but the huge differences indicate different control efforts.

#### 6. Risk oriented auditing in agribusiness

The above-mentioned problems can cause safety risks and destroy customers' confidence in the labels awarded, since reputation is easily destroyed in an industry with low consumer trust. The system operators can react to the problems in different ways. For one thing, they might try to assure the uniformity of the tests by greater standardization of the audits. A trend towards this procedure can be found by analysing, for example, the development of organic production (EU Regulation No. 2092/91 and 834/2007). While this process started out with a thin booklet of obligations, these days the auditor has to follow a checklist in which the inspection is specified in an audit handbook with hundreds of pages. From our point of view, another approach seems more promising. Although it might seem counter-intuitive at first glance, it can be plausibly argued that a detailed specification of auditing procedures will result in lower auditing quality in the long run. Such tight regulation relieves auditors of the need to individually improve auditing quality. They will be able to prove they have conducted their audits appropriately through ticking the boxes on the checklists—technically correct, but crucial quality risks can go unnoticed at the same time because they are not specifically provided for on the checklist of technical requirements.

Thus, we conclude by suggesting a concentration on risk oriented auditing approaches. These focus more strongly on the personal responsibility of the auditor by allowing more leeway in the auditing process. For this approach it is, however, important to develop incentive structures within the system that economically foster the auditor's interest in a high auditing quality—controlling results instead of actions.

Table 5 summarises the overall concept and the goal of the risk oriented approach, compared to the current system, which can be described as "checklist governance". While, since each company is treated equally, "checklist governance" is perceived as a "fair" auditing procedure by the inspected business, the risk oriented approach angles for an "efficient and effective" audit. Hence, a consistent audit (checklist) requiring the same time, expenditures and audit intervals is contrasted with a concentration on risk areas, which means that time and expenditures as well as audit intervals can vary with regard to the companies' risk potential. Another important difference can be seen in the ability to systematically apply random audits without announcement and with additional risk oriented sampling audits.

The risk oriented approach contrasts sharply with some of the expectations in agribusiness that auditing should be more standardized and equal. Certification systems that attempt to introduce risk classifications have to convince clients and certification bodies of the advantages of risk oriented approaches. At first sight, different auditing intervals, auditing depth, unannounced spot checks and differentiated auditing focuses seem unfair to some clients. However, a certification system can only survive if it is able to guarantee the unobservable credence qualities that lie in the foreground of consumer interest (for instance, food safety, animal welfare, social standards).

Nevertheless, standard owners cannot implement such a new auditing technique without the coordination or agreement of their inspection organisations. So far, these companies show some reservations towards the audit-risk approach. Their arguments against the audit-risk approach are fear of increased controversy between farmer and auditor over optimal control contents and length, and related to this issue—a further boost of price competition on the certification market, where performance is paid by the hour and the price is mainly based upon contracts. Furthermore, the certification bodies fear that so-called audit tourism will become a relevant issue again on the basis that audit contents are not equivalent and that some retailers may not accept the certificates. However,

Table	5
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The g	goals	of	risk	oriented	auditing
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Overall concept	Checklist governance	Risk-oriented auditing		
	"Fair" audit	"Efficient and effective" audit		
Goals	Consistent audit/checklist Stepwise refinement of the catalogues of requirements Same expenditures and amount of time for every audit Same audit intervals Same training for all auditors Only regular audits with announcements	Concentration on risk areas Stepwise improvement of the efficiency and effectiveness of the audits Reduction of time and expenditures by selective audits Risk-oriented audit intervals Training of the auditors for special risk areas Randomly chosen audits without announcements plus additional risk-oriented sampling audits		

the use of checklists is a necessary tool for auditing; and risk oriented means are much more useful for safeguarding against opportunistic behaviour.

#### 7. Conclusion

This study reveals initial empirical data that underline the threat of weak auditing procedures in quality certification systems. Beyond single case studies, anecdotal information or rumours, for the first time, statistical analyses clearly indicate differences between various certification bodies (auditors). Certification standards were implemented by private and public authorities in order to regain consumers' trust. Although the results do not reveal any concrete reason for the variations among certification bodies and auditors, they clearly hint at problems and inefficiencies in the control system. It can be stated that the validity and reliability of audits is not guaranteed, and, hence, it is doubtful whether TPC actually achieves its stated goals.

The theoretical framework is derived from analogies in financial auditing. The auditing sector has had to face similar difficulties in recent years. These were traced back to a variety of causes: knowhow differences between auditors and varying auditing intensities, as well as economic dependencies, which could not be excluded and might cause "courtesy certificates". In order to improve audit quality, the risk oriented approach was implemented in financial auditing. Risk oriented auditing is in some points a contrary model to the dominating practice of relying on standardized checklists.

This empirical study is limited to the statistical analysis of the QS database, which does not provide a clarification of all reasons for variations among certification bodies and auditors. In further research, the statistical data could be supplemented by case studies.

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