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Governance Reform of German Food Safety Regulation: Cosmetic or Real?

Bodo Steiner

With the emergence of the first BSE case in Germany in November 2000, the fast erosion of consumer confidence into the safety of meat products led to a rapid restructuring of government agencies and policy instruments related to food safety.¹ Similar to the release of information about British BSE cases in Germany in 1996, the arrival of the first German BSE cases in 2000 led to a highly intense and emotional reaction among German consumers (Loy and Steiner 2004). This intense, though periodic, mass-level attention to BSE is an important attribute of contested governance (see chapter 1, this volume) that has proven to be more dramatic in Germany than in France or Britain (see chapters 6 and 7, this volume). In November 2000, the mass-level attention to BSE not only led to a reduction of beef eating by more than half, but had repercussions for the entire food marketing chain, the animal breeding industry, the catering business, and EU farm policy as a whole (“A New Type of Farming” 2001, Fox and Peterson 2004).

Under political pressure, the federal minister of agriculture announced the establishment of a new ministry branch solely devoted to food safety only one week after the first BSE case was reported.² Up to then, the Health Ministry was fully responsible for handling food safety issues. One month after the first BSE case, Chancellor Schröder announced that BSE had become one of his-priority issues (*Chefsache*). When the federal ministers of agriculture and health refused to consider further swift changes, Schröder forced them to resign in January 2001 and named a lawyer from the Green Party, Renate Künast, as the new minister of agriculture. For the first time in German history, the minister of agriculture came from outside the sector. In addition to the changes in personnel,

the Ministry of Food, Agriculture and Forestry was renamed the Ministry of Consumer Protection, Food and Agriculture.

In the light of these changes, an important question to ask is: to what extent do the observed institutional governance modifications reflect continued contested governance in terms of public distrust, when it challenges the legitimacy of institutional arrangements related to food safety (chapter 1, this volume)?³ This chapter attempts to address this issue by exploring the scope and effectiveness of visual changes in governance in Germany, including the policy instruments that were implemented to address food safety issues and particularly the eroding trust in public authority. The key role of regaining trust in public authority in this process is echoed by policymakers themselves. Künast identified this as her top priority, emphasizing that “trust through change must be our motto” (Künast 2002). David Byrne, European commissioner for health and consumer protection, announced, “Clearly there is a need to develop trust. The food safety agencies, which have been established in many European countries, serve as good examples. These agencies create a credible and visible distance between different government structures with the broad aim of increasing transparency which, in turn, bolsters public acceptance and confidence” (Byrne 2004). However, before exploring to what extent these calls for public trust and reduced contestation were more than cosmetic rhetoric, this chapter first considers some specifics of Germany as they relate to food safety and food markets in general.

German consumers could be characterized as highly price sensitive. Discounters, for example, have gained a market share of close to 40 percent, which is higher than in any other European country (M+MPlanetRetail 2002).⁴ At the same time, only a small fraction of consumers purchase organic meat, which consumers perceive as being safer than conventional meat products.⁵

Given Germany’s traditional reliance on state intervention since the Bismarck era, a shift toward more industry-led initiatives in the food sector seems, at first sight, to be more challenging and more appropriate than in other European countries. Industry-led initiatives, such as the 2001 voluntary national quality assurance scheme Quality and Safety (QS), can be highly desirable in a world of increasingly differentiated

food produce. With increasing complexity in the food system, a greater reliance on market mechanisms that exploit the informational advantages of decentralized market participants has advantages over state intervention. This is because competitive forces can deliver efficient price discovery by exploiting local and idiosyncratic information (Hayek 1945) and by giving important incentives, for example through reputation, that are necessary for the functioning of quality assurance schemes.⁶ At the same time, increasing complexity calls for a stricter separation of tasks between markets and government and a stronger government focus on auditing mechanisms and liability law.

Indeed, we observe an increasing degree of government intervention along those dimensions when considering the food safety-related regulations initiated by Künast, or EU directives related to food safety. To emphasize, such intervention can generally be justified, since it is well known that without intervention, the market fails to deliver the optimal level of safety at the margin. The underlying problem of inadequate or asymmetric information can be addressed not only through the regulation of liability but also by public information provision and through the mandatory implementation of minimum quality standards or guarantees.⁷

The case for government intervention with regard to setting minimum product quality standards is a critical one in the context of this chapter.⁸ In a world of increasing proliferation of brands and private quality assurance systems, the problem of transparency and heterogeneity of product quality standards can often be addressed more efficiently through mandated quality standards, since certified quality standards reduce information cost to consumers about the safety level of quality attributes. Significantly, product quality standards rather than process quality standards enable the industry to choose the most efficient way of achieving a given level of food safety.⁹ In sum, since markets can help to resolve failures related to food safety through competition and reputation, and since governments can take an important role with regard to liability and information provision, a balanced, accountable, and transparent division of responsibilities poses the greatest challenge to a government trying to regain consumer confidence and assure an optimal degree of food safety at the margin.¹⁰

This chapter explores the newly emerging mix of market and government initiatives in Germany with regard to food safety, as exemplified by QS and the reform of governance structures at the federal level. Following a discussion of the changing scope of governance with regard to food safety, the chapter discusses the effectiveness and efficiency of the emerging reform elements of the new governance structures. In doing so, this chapter tries to answer to what extent food-safety-related governance in Germany remains contested. Finally, this chapter aims to provide an outlook on emerging tensions between governance modes, since these tensions are likely to determine the accountability, competence, and efficiency of forthcoming food safety regulations.

The Changing Scope of Governance

Given the federal structure and the institutions that are associated with a “social market economy” such as in Germany, we expect that the underlying system of governance as related to food safety is distinctly different from other economies (Chandler 1990).¹¹ However, before exploring several changes in Germany’s governance structure related to food safety, it is essential to identify what is meant by scope of governance, governance structure, and their role in shaping an incentive structure that underlies economic activity and political distress.

Following North (1990), Nelson and Sampat (2001), and vonTunzelmann (2003), the *scope of governance* can be captured by three key elements: process, structure, and control. In the context of this chapter, we consider governance *processes* as the changing roles and relationships of agents and agencies in the course of the BSE events in Germany.¹² Governance *structure* relates to the different forms through which decisions are made. Structures can thus induce and govern collective decision making. Finally, the capability of governance (competence) needs to be captured: *control* refers to the power to make economic and policy decisions through different structures.

In identifying the key parameters of regulatory organizations in OECD countries, Scott (2003) suggests that there are at least three main combinations of form and power: organizations established and given power by statute; organizations established without direct state involvement,

through contracts or incorporation, but empowered by state legislative instruments; and nonstate organizations exercising private regulatory power (p. 309).¹³ For example, consider the contrast between conventional modes of governance that rely on lengthy legislative processes, and more flexible governance modes such as those that rely more heavily on regulatory agencies or voluntary standards (e.g., QS). Lengthy legislative processes are more vulnerable to political and lobbying influences due to their structure as compared to the more robust and flexible structure of regulatory agencies in a social market economy, which are likely to undergo appropriate checks and balances. They are, therefore, more likely to be accountable and democratically legitimate (Persson, Roland, and Tabellini 1997). This is perhaps where the economic view of scope of governance is echoed most closely in the political view of contested governance, in terms of its challenge to the legitimacy of existing institutional arrangements, and in terms of its sectoral or multisectoral scope (chapter 1, this volume). Consider that the new institutional economics literature refers to a governance structure as the institutional framework within which the integrity of a transaction is decided (Williamson 1979, 235). The elements of such an institutional framework, the institutions themselves, are the humanely devised constraints that structure political, economic, and social interaction (North 1991, 97). According to North (1991), these institutions consist of the informal constraints (sanctions, customs) and formal rules (laws, property rights) that define part of the choice set of economic agents and thus determine the profitability and feasibility of engaging in economic activity (p. 97). These informal constraints and formal rules lie at the heart of those conditions that either challenge or support the legitimacy of existing institutional arrangements, and can therefore be directly associated with contested governance in the sense of Ansell and Vogel (chapter 1, this volume).

Given a mix of formal and informal constraints, the power of making economic and policy decisions through the above structures often fails to deliver equity and efficiency. We can identify several forms of failures that are responsible here: market failure, government failure, corporate failure, and network failure. There are two reasons why these different modes of failures should not be considered in isolation in the context of

our analysis. First, we are interested in exploring changes in the scope of governance following the BSE outbreak in Germany as they relate to the changing scope of contestation. Consider that the interrelationship between different modes of failure can be directly linked to the BSE outbreak. Government failure exacerbated market failure by relying on intransparent decision making and thus hampering economic incentives. Due to inappropriate liability rules at the farm and processing level, as well as inadequate and asymmetric information in the provision of ruminant feedstuff, a market failure emerged. But inadequate liability rulings at the level of public authorities, and thus the failure to align incentives between principals and agents in the political hierarchies, were also most likely important reasons for the BSE outbreak.

As a further example, consider the UK, where the specified bovine offal ban failed for at least two reasons. First, it failed because of noncompliance of industry participants. Second, it failed because government officials who were in charge of designing and enforcing the ruminant feed ban did not act in the interest of society. Government officials decided to lower the temperature for treating animal protein in feedstuff processing while their decision-making process took place in the absence of public scrutiny.¹⁴ Therefore, the conditions that led to the outbreak of BSE may be regarded as a prime example for contested governance. Ansell and Vogel (chapter 1, this volume) argue that contested governance is particularly likely where intense public scrutiny confronts an extensively institutionalized policy sector in which day-to-day routine decisions are delegated to experts or administrators with little ongoing attention or interest from the public.

The second and related reason that supports an analysis of the interrelationship between the above modes of failure relates to the three ideal types of governance modes: markets, networks, and hierarchies (Thompson et al. 1991).¹⁵ Importantly, two types of hierarchies can be distinguished here, the corporate hierarchy (large firms) and a country's political hierarchies.¹⁶ This division between governance modes is particularly relevant here, since this chapter argues that a transparent and sharp distinction between the roles of markets and political hierarchies is desirable in resolving contested governance with regards to food safety. The following sections explore these issues more explicitly, by analyzing

the key dimensions of changes in the political hierarchies in Germany, and by examining changes in a market-led initiative, both of which aim to address contestation in food safety matters.

A Voluntary National Quality Assurance Scheme: Quality and Safety (QS)

The shift in incentives for the German food demand chain to implement a large-scale QS scheme after the BSE events is a further reflection of the shifting balance of regulation away from publicly mandated food safety regulations and more toward industry-led initiatives.¹⁷ Several authors have explored general incentive and adoption issues of such quality assurance schemes at the industry level (Henson and Caswell 1999; Caswell, Bredahl, and Hooker 1998).¹⁸ However, given the scope of this chapter, the following sections attempt to describe the functioning of the QS scheme, highlight its actual and potential weaknesses, and explore its broader relevance in the context of German food safety regulation and contested governance.

The following discussion focuses on the new QS scheme for three main reasons. First, in contrast to the limited coverage of other retailer-led schemes, the QS scheme reaches across the entire demand chain for meat and meat produce as well as fruit and vegetables.¹⁹ Second, it takes an interesting intermediate position in terms of incentive provision to the food demand chain, as it combines elements of a voluntary industry-led quality assurance scheme and a publicly mandated set of food safety regulations. Third, largely due to the composition of its members, the cautious criticism of Minister Künast (Die Zeit 2003, Agrar.de 2003), and a recent BSE test scandal (Putz 2004), QS has become a focus of public debate that longs to be viewed through the lense of contested governance.

In October 2001, representatives from the German farmers' federation, the federations of feed processors, meat processors, and retailers joined together with the Central Marketing Association of German Agriculture (CMA), to form a limited liability corporation with the objective of establishing a national label and quality assurance scheme for conventionally produced meat and meat produce.²⁰ Each of the federations has a veto right and sends two representatives to an advising committee,

whose task is twofold. First, it sets the control criteria according to which independent auditors are asked to classify and accredit system participants.²¹ Second, it defines and interprets the criteria according to which the assigned label is set up and communicated to the outside world.

Two further institutions were established: the sanctioning committee and the board of trustees. The sanctioning committee consists of three members: a lawyer, a judge, and an expert sworn to impartiality. This committee rules over system participants that have not adhered to the control criteria established by the advising committee. It then imposes penalties according to guidelines that are established by the advising committee. The other institution is the board of trustees, whose functions lie in public relations and advising the sanctioning committee.²² In order to reduce a centralized administrative burden, key demand chain members, such as cooperatives, packers, and slaughterhouses, have become the local administrative centers for producers, who then become associated producers.

The structure of controls has three dimensions: the firm-level self-control, an independent auditing, and a control of the auditing. Currently this control of the auditing is performed by the QS corporation itself or by independent auditors chosen by QS. Independent auditing occurs randomly, but auditors have to announce their visit at least one week in advance. The auditors check on physical criteria such as hygiene and administrative criteria such as documentation. Some criteria are exclusion criteria, but after passing those, each farm obtains an index number. Depending on the percentage of criteria fulfilled, farms get classified as QS standard 1, 2, or 3. For example, a pork producer who has been classified into QS standard 1 has three years before he can expect the next auditor on his farm (two years for QS standard 2, and one year for QS standard 3). There are several incentive problems with this system. First, it is not made public into which QS standard a system participant (and thus his product) has been classified. Second, the auditing frequency differs according to species (higher for beef than for pork) and level of system participant (key distinction between farmers and local administrative centers). Third, the auditing frequency and stringency is particularly low at the retail level. As soon as more than 10 percent of retail outlets in a given chain have achieved a given QS standard, this

QS standard will automatically be granted to all the remaining outlets. Once a retail chain has been granted QS standard 1, only 10 percent of its outlets will be randomly selected for auditing (15 percent annually for QS standard 2 and 20 percent annually for QS standard 3).

Given the inexperience with this type of quality assurance scheme, it is of interest to examine the practical implications for the alliance members further. Beyond the mandatory federal requirements in terms of documentation of origin and medication, the use of antibiotics is more strictly regulated under QS. Growth antibiotics were permitted for the production of piglets and in the early fattening stages of pork production until January 2004. A total ban on growth antibiotics has now been implemented throughout the life cycle of all animals. However, the use of GM feedstuff as well as the use of fully slatted floors in pork production is still permitted (Putz 2004). Another important implication for farmers is the compulsory monitoring of *Salmonella* status, which exceeds the general mandatory federal regulations. The data about the *Salmonella* status of an individual animal as well as a classification of the entire farm are fed into a central *Salmonella* database. From there, farmers and slaughterhouses can access the data. Initially sow herds were exempt so the coverage of the *Salmonella* monitoring was incomplete until January 2004. Further, there are no implications and specifications on the farm or any other level regarding GMOs or animal welfare criteria. As slaughterhouses, processors, and retailers have to comply with federal regulation regarding traceability in any case, there is no additional impact from QS.

Since the initiation of the QS system, the first certified produce appeared on the markets in September 2002, while the first QS meat was sold through Wal-Mart. Clearly, that was a message to all those who believed that QS would automatically guarantee higher retail and producer prices.

However, for the first time in German history, a voluntary national quality assurance scheme was established. As regulators are interested in the efficient provision of a desired level of food safety, this should be seen in a positive light since we need to consider economies of scale associated with safety-specific capital.²³ With QS, as with other schemes of vertical integration, firms can obtain the necessary minimum efficient

scale of production. Nevertheless, after one year, QS had achieved only a limited coverage of the entire sector with about 50 percent of pork and 32 percent of beef produced under the QS label (October 2003). This is surprisingly low, given that QS originated as a result of safety problems in the beef sector. Beginning in early 2004, QS auditing also started in the fruit and vegetable sector. Furthermore, system participants hope that QS would improve international competitiveness of QS-certified fruits and vegetables, since QS audits will be embedded in the global system of EUREPGAP audits.²⁴

With the key objective of establishing a quality assurance scheme that covers the entire food demand chain based on hazard analysis and critical control points principles, the QS scheme has achieved standards only slightly greater than Germany's mandatory standards: its criteria rest generally on existing mandatory standards and are distinct only in terms of a more extensive data management system (which is meant to improve traceability) and increased *Salmonella* monitoring. According to those criteria, QS fulfills EU Food Safety Law 178/2002 in terms of traceability and self-control.

In sum, what are the most critical points of the QS system? Given its limited coverage in terms of total production, it appears that the system's credibility remains limited as long as there is leeway for members of the demand chain to circumvent the system. More striking is that the very reason for establishing the QS label does not appear to be taken seriously. According to Foodwatch, an independently funded German organization for consumer rights in the field of agricultural and food policy, nine German farms were identified where QS-certified beef was not tested for BSE (Putz 2004). Furthermore, considering the institutional structure of the QS system, the role of the sanctioning committee appears questionable in two ways. First, a potential conflict of interest emerges because the sanctioning committee imposes sanctions according to guidelines that were established by the advising committee. Second, and most important in the view of the declared objective of improving transparency, the names of the system members who violated the QS criteria and were punished with sanctions are not made public. Further, the lack of transparency with regard to participants' QS classification and the low

auditing frequency deserve to be emphasized again. Also, the *Salmonella* monitoring scheme is insufficiently rigorous, as there are no bacteriological examinations of the animals required.²⁵ Problems with establishing a more rigorous *Salmonella* monitoring scheme can only be anticipated from the fact that the German government had previously led a voluntary national eradication and disease control program, which was abandoned by the end of 1999 due to lack of participation.

Some critical issues extend further to the butchers and the retailers. The butchers' association has refused to join the label, based on two points. First, butchers argue that the additional compliance costs will not be counterbalanced by a higher consumers willingness to pay. Second, the butchers believe that their quality standards are already above QS standards. Results from a recent study (Loy and Steiner 2004) suggest that butchers have indeed been able to charge higher prices compared to supermarkets.²⁶ As several studies have confirmed, German consumers appear to value the personal relationship with a butcher more than placing their trust in an "anonymous label" (Nielsen 1998, Wirz 1996). The fact that butchers have not joined the QS system, although they currently account for about 40 percent of meat sales in Germany, is a further indication of the inability of the QS corporation to communicate the label's benefits to consumers, beyond those that are conveyed through the current mandatory standards.

Further, consider the retail level. The QS scheme started as a retailer-led quality assurance scheme, with its first meat being sold through Walmart. Many producers and food processors were thus implicitly forced to adopt QS standards or lose their outlets. Clearly, with an increasing concentration at the retail level, it is important to keep antitrust issues in mind.

In total, and accounting for the tightened standards as compared to the initialization stage, QS appears to have only slightly lifted the overall level of food safety beyond the current mandatory state regulations. However, it appears striking that a quality assurance scheme was put into place with little rigor first, before more stringent measures were adopted. This may be rational with regard to minimizing system participants' initial compliance costs. But it is unlikely to be a successful

long-term strategy with regard to regaining consumer confidence and market share. Consider that at present, the QS label appears to carry a low informational value, since it is difficult to communicate to consumers the differences between the QS label and the required standards objectively. Beyond the complexity of the underlying standards, a low consumer valuation is also anticipated due to a continuing lack of consumer trust. This is due not only to the fact that most of the information about QS originates from its system members, but also because German consumers continue to be surprised by undesirable substances in the food demand chain (May 2002: nitrofen in organic wheat; July 2003: dioxin in feedstuff).

Nevertheless, due to its broader scope and larger scale than previous industry-led quality assurance schemes, the implicitly improved standard harmonization could in principle be seen in a positive light with regard to consumer information. Consumer choice could be improved due to the reduction in the complexity of labeling and standards information. Due to the greater comparability of standards, transparency leads to greater competitive pressure on other sector participants to differentiate themselves. A continuing proliferation of domestic and international retailer- or producer-led quality assurance schemes could be expected to appear on the German market. Consumer gains could thus be in terms of price, but whether consumers gain in terms of information provision is likely to be determined by how industry players and the government find a balance between standards regulation and label proliferation.²⁷

Further, since QS system participants have developed the Salmonella monitoring system based on the European Parliament's regulation on the control of salmonella, QS is likely to serve as the basis for a faster and more efficient introduction of the expected mandatory regulation.²⁸ In the future, it should also guarantee a smoother compliance with the European Centre for Disease Prevention and Control (ECDC) (COM 2004) which started to operate in May 2005. But beyond the Salmonella criteria in QS, it is also the establishment of a central database that has anticipated recent EU regulation with regards to traceability.²⁹ Given these potential harmonization benefits, it will be interesting to continue to observe the forthcoming governance interplay between political and

corporate hierarchies, especially after the recent reform of federal ministries and regulations in Germany.

The Reform of Food Safety Regulation in Germany

The most visible change in the scope of governance that can be associated with food safety issues relates to the renaming of the Federal Ministry of Food, Agriculture and Forestry the Federal Ministry of Consumer Protection, Food and Agriculture (BMVEL) in January 2001. This occurred only one day after the federal minister for health and the federal minister for agriculture were forced to resign.

The following section outlines the changes in governance structure before attempting an assessment of these reforms. Throughout, this section will relate to a study of the German court of auditors, which was initiated by Chancellor Schröder at the end of 2000 ("von Wedel Report"; von Wedel 2001). This 127-page report, which was published in July 2001, is particularly insightful for two reasons. First, its editor was the president of the German federal court of auditors and, at the same time, the federal commissioner for operating efficiency in public administration.³⁰ Second, the report came about with the cooperation of experts of the court of auditors, the BMVEL, as well as an advising committee that consisted of representatives from farmers, consumers groups, and science.

The renaming of the ministry had an immediate structural consequence. The Federal Ministry for Consumer Protection (BgVV) was placed under the jurisdiction of the BMVEL and finally dissolved in November 2002. The BgVV's responsibilities were then taken over by three federal institutions: the BMVEL, the newly created federal institute of risk assessment (BfR), and the newly created federal office for consumer protection and food safety (BVL), with the latter two both created in November 2002. The BfR is responsible for risk analysis, risk communication to policymakers and the public, and cooperation with the European Food Safety Authority (EFSA) (Agrarbericht 2003). Risk management responsibilities (including the admission of pesticides) and the coordination of joint control functions between the federation and the federal states were taken over by the BVL. The reform of these

institutions has very much followed the blueprint of the von Wedel report.³¹

The report's criticism focuses on three traits of the previous scope of governance: the fragmentation of food safety-related responsibilities across federal ministries, the lack of an independent scientific center advising the BMVEL, and the lack of coordination between the federation, the federal states, and the EU in matters of food safety.

Fragmentation of Responsibilities

After the immediate reorganization of the BMVEL in January 2000, there were still food safety-related tasks for which the BMU (federal ministry for the environment, nature conservation, and nuclear safety), the BMWI (federal ministry for the economy and technology), and the BMG (Federal Ministry of Health) were responsible. The von Wedel report found that there were eighteen subordinate federal institutes engaged in food safety matters. In order to address this fragmentation, lack of coordination, and in response to the chancellor's intention that food safety matters should be concentrated within the BMVEL, the report contained two main suggestions. First, food safety tasks should be bundled within the BMVEL after a reorganized working structure of its departments. Second, a complete reform of the central policy department within the BMVEL was proposed to account for future strategic issues such as policy planning, coordination in research, and coordination in EU matters. While the bundling of food safety responsibilities has taken shape in the current BMVEL, the second proposal of the von Wedel report has not been implemented.

Establishment of an Independent Scientific Center for Risk Analysis

Within the structure of the previously established federal ministries, there was no scope for interdisciplinary risk analysis related to food safety. Therefore, the von Wedel report proposed the establishment of such a center with the following tasks: (1) collect, analyze, and evaluate information on food risk (risk analysis and risk communication) in order to provide objective and preventative policy advice; (2) serve as an intermediary between the BMVEL and national and international research institutes; and (3) serve as representative to the EFSA. The report rec-

ommended that this center be part of the BMVEL (in budgetary terms, with an independent governing status), that it have the power to contract research projects out, and that it be guaranteed independence through similar principles and measures that rule for the Deutsche Bundesbank. Given the unresolved budgetary issue and faced with the difficult task of overcoming principal-agent (incentive) problems that would underlie such an associated center, it is not surprising that this part of the proposal has not been put into practice in its original form.

The BfR in its current form considers itself to be the scientific body of the Federal Republic of Germany in matters of food safety. Legally it is a self-governing public institution, which is meant to provide the necessary scientific independence. It aims to prepare expert reports and opinions on questions of food safety and consumer health protection on the basis of internationally recognized scientific assessment criteria (BfR 2003). With the help of risk analyses, it aims to formulate action options for risk reduction. Its tasks include the provision of scientific advice to the federal ministries concerned with food safety matters and the publication of original research and risk assessments to the public in a transparent and comprehensible manner.³² Further, the BfR is engaged in scientific cooperation with other international institutions and organizations that are involved in consumer health protection and food safety. The BfR takes a role that more closely resembles that of AFSSA in France (see chapter 6, this volume), since its role as a public body for risk assessment is strictly separated from risk management. This contrasts with the UK reforms, where risk assessment, management, and communication functions are combined within the FSA (see chapter 7, this volume).

Addressing the Lack of Coordination at the National and EU Levels

In anticipation of the foundation of the EFSA, the von Wedel report focused on organizational weaknesses at the level of the federation, as well as on the division of responsibilities between federal states and the federation. In the past, the federation was only partly responsible on food safety matters. The responsibility was limited to the creation of laws at the level of the federation, as well as to cooperating responsibilities with EU institutions. Given Germany's constitution, the central role of the

federal states was and still is in the sphere of execution (monitoring food quality, feedstuff, and the private veterinary sector). In order to fulfill the joint tasks of the federation and the federal states in terms of risk management, risk evaluation, and risk communication, the von Wedel report suggested the creation of a more output-oriented “coordinating agency of the Federation” (KSB). Created in its governance structure as a mirror image to EU governance structures, this KSB has been established through the BVL (federal office for consumer protection and food safety). Its associated responsibilities lie in the establishment of a central internal data network for food safety issues and the harmonization of control standards and crisis management, such that the KSB functions as intercept for the European Rapid Alert System. However, two recommendations of the von Wedel report have not been followed so far: that the data collected through the KSB be made public and that the KSB be used as a mechanism for exploring the legal appropriateness of existing liability laws.

Beyond the reform of the BMVEL and its related institutions, the government enacted several other initiatives. On August 6, 2002, a law for the “new organization of consumer health protection and food safety” was passed in the upper house of the federal government. This legislation established not only the BfR and the BVL, but also relabeled the pesticide regulation, the epidemic regulation, and the feedstuff regulation to provide conformity with the newly labeled BMVEL. The government also invested about \$13 million to support the national research initiative on TSEs (transmissible spongiform encephalopathies). In addition, the government has reformed the liability laws by integrating consumer rights into the BGB (the German civil code), making it easier for consumers to sue individual firms and for consumer groups to sue associations.

Continued Contestation or Improved Competence, Accountability, and Legitimacy?

The 2001 Agriculture Report of the BMVEL, published on February 14, states that “the BSE scandal marks the end of agricultural policy of the old type. In the future, consumer protection in these sensitive areas of

agricultural and food policy will be given priority over economic interests (Agrarbericht 2001).”³³

In an attempt to explore the issue of remaining contestation in the above context and in the sense of Ansell and Vogel (chapter 1, this volume), it appears necessary to ask which traits of the reformed scope of governance can be linked to continuing public distrust in authority that challenges the legitimacy of existing institutional arrangements. This chapter suggests that the lack of the following governance traits as related to food safety can be used to reflect upon this issue:

*Competence*³⁴

- The capacity to select and replace ill-founded food safety policy instruments
- The capacity to design and implement well-founded food safety policy instruments (e.g., the capacity to judge whether risk is acceptable or not)

Accountability

- The aptness of institutions to respond to changing demands and insights from citizens (democratic accountability from within)
- The readiness of governing institutions to respond to evolving scientific knowledge and feedback from other democratic institutions (external democratic accountability)
- External and internal accountability require transparency: only when the operation of governance structures is transparent can a critical flow of information be returned from citizens and science to the institutions themselves.

A further issue that is not covered in the above view of competence and accountability, yet which emerges in the context of Germany's federal system, is the characterization of governance in terms of centralization versus decentralization and its effect on the competence of governance. It appears that the reduction in fragmentation of food safety-related responsibilities through the establishment of the BMVEL in its current form has led to a more competent scope of governance.

Further, with the established separation of risk management from risk analysis and risk communication through the BfR and BVL (which mirrors European governance structures as implemented in the EU Food

Safety Law 178/2002), accountability has also been, in principle, improved.

Regarding transparency, this chapter has stressed the lack of it on several occasions above, including in the context of the BfR. This may prove to be the greatest weakness in terms of improving the food industry's and government's accountability.

In sum, it appears that contestation in food safety matters has been reduced when judged in terms of competence and accountability. Initially, and following the decree of Chancellor Schröder for organizational reform in January 2001, a mere rebundling of responsibilities has been observed, without effective reform efforts related to food safety issues.³⁵ Largely due to the von Wedel report, this temporary peak in politicization has subdued. However, only the emergence of critical safety situations will prove how accountable and competent the governance structure will remain.

Effectiveness and Efficiency in a Changing Scope of Governance

The following section presents a brief assessment of effectiveness and allocative efficiency as it relates to the current scope of governance in food safety matters.

Effectiveness In order to consider the effectiveness of the reformed institutions more explicitly, the following criteria are employed:

- (i) Achievement of goals inherent in the implemented regulations and policies
 - (ii) Appropriateness of regulatory burden in its context
 - (iii) Facilitation of verification and traceability
 - (iv) Strengthening of liability law
- (i) The von Wedel report has established the fragmentation of the old Ministry of Agriculture as one of the main deficiencies to be resolved. Since the goals of the report were, in this respect, put largely into practice, it appears that the current governance structure represents a major—and yet overdue—improvement. However, without knowledge of the time allocation of individual ministries and branches on food

safety-related aspects and the corresponding achievement of specific goals, it is difficult to provide further judgment.

(ii) Given the bundling of responsibilities and the reduction in fragmentation, the regulatory burden through multiple and overlapping governance structures is likely to be reduced. The establishment of the BfR is important for improving the effectiveness of food safety regulations through conducting and promoting research in general, and through the use of cost-benefit analysis in particular. Since it is currently unknown to what extent the BfR uses cost-benefit analysis in the regulatory process (no such information was made public until June 2005), only the observed promotion of research and the associated establishment of a data network hint of an improvement in terms of regulatory effectiveness. Further, the above caveat in terms of lacking data transparency looms large.

(iii) The government's attempt to establish a voluntary Salmonella monitoring scheme that ensures traceability and facilitates verification has failed. Instead traceability has been achieved through the QS's Salmonella monitoring scheme and the central Salmonella database.

(iv) Finally, with regard to producers, consumers, and consumer groups, liability rules have been improved.

Efficiency Efficient governance mechanisms are those that align incentive problems between agents that frequently occur due to the separation of ownership and control (Williamson 1998). Good governance thus aims to align incentive problems in order to permit the realization of (mutual) gains between agents. There are several ways by which the achievement of such gains may be hampered. In the face of the previously discussed changes in scope of governance, this section will briefly focus on issues of authority, liability, and risk.

Authority, Decentralization, and Efficiency As Aghion and Tirole (1997) have emphasized, a gain in terms of efficiency can be made by giving up some control, that is, giving away real authority, even though formal control remains a top priority.³⁶ Considering the stricter bundling of food safety-related tasks at the federal level, the improved communication between federal ministries due to the reduction in overlap of

responsibilities, together with a more transparent decentralized federal governance structure, it is likely that the current governance structure is more efficient than previous ones.

Liability and the Provision of Information From an efficiency point of view, it is desirable to use food safety regulation and liability rules jointly in order to control for risk related to food safety hazards (Shavell 1984, Skogh 1989, Antle 1995).³⁷ Although an improved regulation of the provision of risk-related information helps to ensure and preserve consumers' freedom of choice, informational failures need to be addressed through standards and liability.³⁸ Since 2001 we have observed tighter liability rules that should strengthen deterrence. Together with an improvement of risk assessment, communication, and management that appears to have been made (through the establishment of the BfR and the BVL), it is likely that the balance between regulation and liability has been improved.³⁹ So far, considering information made public, it does not appear that much risk-related research has been performed in relation to food safety matters. It appears that in striving for more efficient risk regulation, the BfR should address important issues, such as: how do consumers respond to different communication efforts of the government, and how does consumers' capacity to use differently formatted information vary?⁴⁰

In sum, the reformed food safety regulation appears suited to improve efficiency through the emphasis on information provision, standards, and transparency as these help to safeguard consumers' freedom of choice.⁴¹ Since we observe some improvements in liability law and standards regulation and would expect that fewer resources are needed to achieve the acclaimed risk-related goals in the newly reformed governance structure, efficiency gains should be observed. Nevertheless, the lack of deterrence due to the reduction in potential liability that comes with the limited publication of risk data is likely to hamper efficiency (it is also in this sense that the QS scheme is inefficient by not publishing the identities of firms that defected).

Risk Standards, Cost-Benefit Analysis, and the Issue of Risk Perception When risk standards (standards to protect health) are used for choosing among different food safety regulations, a major concern is that the costs

of different policy options may not enter into the design of risk standards, and standard setting is likely to reflect evidence of risk biases and responsiveness to political factors (Viscusi and Hamilton 1999). This calls for the use of cost-benefit analysis. Furthermore, since governance decisions at the federal level need to account for private efforts to ensure food safety such as the QS initiative, cost-benefit analysis should be used to facilitate the identification of effective intervention points in the food demand chain and the identification of efficient mixes of mandatory and voluntary quality management systems (Unnevehr and Roberts 1997, Caswell 1998).⁴² The general importance and pitfalls of cost-benefit analysis for regulatory decision making are well established (Nichols 1991; Arrow et al. 1996). But importantly with regard to food safety, standard cost-benefit has also been refined to take account of scientific uncertainty, in ways that balance the precautionary principle against the benefits of waiting to learn before taking action (Gollier 2001).⁴³ This raises three issues related to the legitimacy of the BfR, the BVL, and the governance reforms as such. First, since it is unknown, at this stage, to what extent the BfR makes use of cost-benefit analyses, it is difficult to judge how efficient the operations of the BfR and BVL are along these lines (there are no publications that reveal its actual use, although the BfR's Web site proclaims that it is "developing concepts" for cost-benefit analysis (BfR 2005)). Second, from the published information it is not known to what extent the precautionary principle is actually integrated into cost-benefit research at the BfR. Third, even if this is done, it is not evident what role the precautionary principle takes as part of the reformed food safety regulations. However, in providing reformed institutional arrangements that reduce distrust in public authority and thus reduce challenges to legitimacy, the specification of a clear and transparent role of the precautionary principle in a newly emerging scope of governance should be given high priority.

Given consumers' different capacities and thus efficiency of using various forms of information, it is to be expected that consumer heterogeneity will pose further challenges to the work of the BfR and the BVL.⁴⁴ Since German consumers have proved to be more sensitive than other European consumers with regard to food safety scandals and the provision of food safety information, consumer heterogeneity and the

resulting problem of efficient allocation of risks should be part of the BfR's research agenda. An interdisciplinary research effort appears particularly appropriate, just as the von Wedel report has suggested, since this is likely to help in analyses to adjust the subjective risk to the objective one.⁴⁵ Future research could control for these aspects by taking advantage of the strengths of choice experiments from surveys, combining it with market data (Louviere et al.1999; Louviere, Hensher, and Swait 2000).

In sum, risk research should not degenerate to a governance marketing effort that aims at reducing perceived risk associated with search, experience, and credence attributes. Rather, a multidisciplinary research effort on risk perception is important for an efficient design of governance structures and a regaining of institutional legitimacy, since knowledge of perceived risk helps to rationalize and depoliticize risk assessment and those governance options that both the BfR and BVL have on their agenda. In doing this, those interested in the effectiveness and efficiency of the evolving scope of governance in Germany may wish to consider Viscusi's findings as their paradigm: "As in the case of risk perception biases, the most disturbing aspect of these potential market failures is that the government policies intended to eliminate the shortcomings often appear to be driven by the same set of influences" (Viscusi 1990: 261).

Conclusion

Six weeks after the first BSE case emerged in Germany, the foundations were laid for a sweeping reform of governance structures related to food safety: within forty eight hours, both the minister of health and the minister of agriculture were forced to resign, and a lawyer and member of the Green Party became head of the former Federal Ministry of Food, Agriculture and Forestry. The ministry was simultaneously renamed the Federal Ministry of Consumer Protection, Food and Agriculture. This chapter has explored an emerging mix of market and government initiatives in Germany with regard to food safety, as exemplified by an industry-led, voluntary national quality assurance scheme and the reform of federal level governance structures involved in food safety issues. Since

both mandatory regulations and markets, through reputation and competition, can serve to provide appropriate incentives and constraints with regard to food safety matters to actors in the food industry, the functioning and implications of QS were considered together with the reforms of governance structures at the ministerial level.

Before the actual changes in the different aspects of governance were discussed, an attempt was made to explore the key elements of scope of governance—that is, structure, control, and process—together with the evolving mix of types of governance modes in a more general context. This permits a clearer assessment of governance elements that follows with regard to aspects of competence, accountability, effectiveness and efficiency. In turn, it enables us to explore the extent to which the changing scope of governance faces ongoing public distrust that challenges the legitimacy of those newly reformed institutional arrangements (chapter 1, this volume).

This chapter suggests that the QS scheme has lifted the overall level of food safety only slightly above the one supplied by the current mandatory state regulations. This is largely due to an attempt to implement a more rigorous *Salmonella* monitoring system and the need to satisfy all members of the demand chain that participate in the QS system. A low informational value of the label is asserted, since it is difficult to communicate to consumers the differences between the QS label and the generally required mandatory standards objectively. But beyond the complexity of the underlying standards, a low consumer valuation is also expected due to a continuing lack of consumer trust. Public distrust has only recently received a boost due to allegations of failures in BSE testing (Putz 2004). However, given the broader scope and larger scale of the QS scheme compared to previous industry-led quality assurance schemes, the implicitly improved standard harmonization should, in principle, positively affect consumer information and consumer choice. Nevertheless it appears that in practice the standard harmonization has taken place at such a low level that those informational gains to consumers are outbalanced by the fact that the QS label masks shortcomings that are not likely to be anticipated by consumers (neither GM feedstuff nor animal welfare criteria are currently part of the QS certification; the auditing procedures are not stringent enough to be effective). As a result,

diminishing consumer trust may spill over to other existing or forthcoming labeling schemes.

However, since QS system participants have developed a *Salmonella* monitoring system based on the European Parliament's regulation on the control of salmonella, QS could serve as the basis for a faster and more efficient introduction of the forthcoming mandatory regulation at the EU level. In the future, the QS scheme should also guarantee smoother compliance with the proposed European Centre for Disease Prevention and Control (ECDC). But beyond the *Salmonella* criteria in QS, it is also the establishment of a central database, and thus traceability, that is anticipating forthcoming EU regulation. In sum, the introduction of QS appears to have brought little, if any, immediate consumer gains in terms of improving consumer choice and information, yet its pioneering character and large scope across the food demand system appear to have brought some gains with regard to the implementation of future institutional and regulatory changes. Since the German government must ultimately defend itself in terms of traceability measures and *Salmonella* monitoring in relation to the EU, these regulatory gains from QS may help to reduce contested governance in the interplay between market-led and government-led food safety initiatives.

The chapter goes on to explore governance changes with regard to the restructuring of German federal ministries and the government's initiatives with regard to liability issues and information provision. Along with the criticism and reform proposals of a report of the German court of auditors, the chapter considers three aspects of the scope of governance before 2000, which are all relevant to exploring the extent of distrust in public authority and the legitimacy of the underlying institutional arrangements. First, the fragmentation of food safety related responsibilities across federal ministries; second, the lack of scientific advice and research that links more directly with the Ministry of agriculture; and third, the lack of coordination between the Federation, the federal states, and the EU in matters of food safety. Accounting for the most recent governance changes, it appears that the governance in food safety matters is less contested in the sense of Ansell and Vogel (chapter 1, this volume), and as judged in terms of competence and accountability. Given the bundling of responsibilities and the reduction in fragmentation that has taken place, the regulatory burden is also likely to be reduced.

The establishment of the federal institute of risk assessment (BfR) and the federal office for consumer protection and food safety (BVL) in November 2002 was a credible attempt to separate risk analysis and risk communication from risk management. This approach is similar to the developments in France with the introduction of AFFSA (see chapter 6, this volume), but differs sharply from the UK approach, in which risk assessment, management, and communication are combined within the FSA (see chapter 7, this volume). The creation of the BfR is important for improving the effectiveness of food safety regulations through conducting original research and promoting research in general, and through the use of cost-benefit analysis in particular. Since it is currently unknown to what extent the BfR uses cost-benefit analyses in the regulatory process, only the promotion of research and the associated establishment of a data network suggests that regulatory effectiveness is likely to be improved. Also, liability rules have been improved for producers, consumers, and consumer groups. Nevertheless, lacking transparency with regard to data access to the outside world remains a problem.

Finally, this chapter attempts to make a brief efficiency assessment of the emerging governance structures. Considering a more focused and decentralized division of authority together with tighter liability rules that should strengthen deterrence, the governance reform promises efficiency gains. Together with an improvement of tasks related to risk analysis, communication, and management, it is likely that the balance between regulation and liability has been improved. Further, the reformed food safety regulations appear suited to improve efficiency through the emphasis on information provision, standards, and traceability, as these help to safeguard consumers' freedom of choice. Nevertheless, the lack in deterrence due to the reduction in potential liability that comes with the limited publication of risk data is likely to hamper efficiency.

Also, the recent and repeated defeat of the government's "information law" for consumers at the upper house of parliament must be seen as a setback for restoring trust in public authority. Further, extensive consumer consultation, as it is practiced in the UK through a dedicated consumer consultative committee (chapter 7, this volume), is also largely missing in practice, although the BfR proclaims risk communication as an interactive process and dialogue. These two conditions are all the

more important with regard to continuing contested governance, since effective risk communication is essential for building credibility, trust in public authority, and thus enhancing the legitimacy of institutional arrangements.

In view of the danger that the costs of different policy options may not enter into the design of risk standards and that standard setting is likely to reflect evidence of risk biases and responsiveness to political factors, this chapter suggests that cost-benefit analysis should be implemented at various stages in the planning and decision-making process of German food safety regulations. It is not currently evident whether or to what extent the BfR is making use of these tools. Further, a multidisciplinary research effort on risk perception, which should be linked to the BfR, is important and should be initialized in order to account for critical issues related to consumers' risk perception. To initialize such an effort appears important for an efficient design of governance structures, since knowledge of perceived risk helps to rationalize and depoliticize risk assessment and those governance options that both the BfR and BVL have on their agenda.

A final comment is in order with regard to the internal accountability and thus legitimacy of German governance structures related to food safety. Following the BSE crisis in Germany, it was a report by the German court of auditors that came about with the cooperation of consumer groups, farmers, and ministry officials that proposed sweeping changes in the scope of governance. Many of these changes have been implemented, anticipating forthcoming developments at the EU and international levels (Codex Alimentarius). In this sense, it appears that Germany's federal system has, due to its reliance on consensus building, been successful in improving the legality, effectiveness, and contestation of German food safety regulations.

Notes

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1. See Loy and Steiner (2004) for a review of the history of the BSE crisis in Germany and an exploration of price-setting behavior in the beef supply chain

related to the 1996 BSE events. Fox and Peterson (2004) provide more detailed scientific background on BSE and a chronology across Europe.

2. The Health Ministry was, up to then, fully responsible for handling food safety issues.

3. "Throughout his book, North [1981] . . . argues that good institutions will simultaneously support private contracts and provide checks against expropriation by the government or other politically powerful groups. There is a growing consensus among economists and political scientists that the broad outlines of North's story are correct: the social, economic, legal and political organization of a society, i.e., its 'institutions,' are a primary determinant of economic activity." Acemoglu and Johnson (2003: 4).

4. In 2002, the sales of discounter Aldi alone grew by 16 percent (M+MEurodata 2003).

5. Organic share of total food production in 2000: 2.2 percent (Hamm, Gronefeld, and Halpin 2002).

6. As we know from information economics, there is a role for government intervention, since Hayek's (1945) fundamental insight into market efficiency only holds when markets operate in the absence of imperfect information. A more refined argument would also need to take account of trade and industrial organization issues, such as the observed increasing concentration in the German food industry. These issues raise new concerns related to multilevel governance. Issues related to credence attributes will be discussed below.

7. Evidence of this is found in Regulation (EC) No. 178/2002, which created the European Food Safety Authority and established traceability at all stages in the food marketing chain.

8. Both extrinsic quality attributes (e.g., "QS label") and intrinsic quality attributes (e.g., "organic") have an impact on the quality perception of consumers. Intrinsic quality dimensions include, therefore, process attributes that are not observable at the point of purchase and may thus lead to market failure (even from ex post observations, the buyer can never be certain of the quality of the services he or she purchased (Emons 1997)). The literature (Nelson 1970) has therefore differentiated credence attributes from experience attributes (whose utility is assessed after purchase by actual consumption) and search attributes (which can be determined by inspection without the need for consumption).

9. In this sense, the European Commission has opted for efficiency: the White Paper on Food safety promotes food safety standards and emphasizes that food safety is related to the attributes of the products, not to a specific method of production.

10. Persson et al. (1997) make this call for accountability and transparency very clear in their analysis of political accountability: "Another relevant problem is how to increase the accountability and transparency of decisions in the European Union: witness the handling of the mad-cow disease by the European Commission" (p 1199).

11. Scholars in other areas, for example finance, have argued that we can distinguish national systems of governance, as defined by their methods of decision making and the underlying balance of power (Albert 1993). Consider also that presidential and parliamentary democracies involve different incentive structures, informational asymmetries, and thus scope for abuse of power (Persson, Roland, and Tabellini 1997).
12. This is meant to include changes in information processes, such as changes in a newly regulated information exchange between local and federal ministries.
13. "Paradoxically the last of these is often the most independent and most powerful because of its capacity to combine each of the three regulatory functions of rule-making, monitoring and enforcement, without the involvement of any other organizations." (Scott 2003, 309).
14. Fox and Peterson (2004) also emphasize the importance of cross-contamination of feed, in mills, and on farms, which is difficult to detect because of a lack of reliable tests.
15. "The key feature of networks... is the way cooperation and trust are formed and sustained within networks. In contrast to either hierarchy or market, networks coordinate through less formal, more egalitarian and cooperative means." Thompson et al. (1991, 18).
16. See Libecap (1992) for early evidence of the interrelationship between these hierarchies, as they were shaping the first federal food quality guarantees in the United States (1887–1891).
17. See Fearne, Hornibrook, and Dedman (2001) for previous retailer-led beef quality assurance schemes in Germany.
18. Buzby, Frenzen, and Rasco (2001) consider the adverse consequences on firms that may result from market forces (reputation, market share, revenue), food safety regulations (penalties) and product liability law (legal and compensation expenses).
19. A quality management system is in place in the dairy industry. The objective of the dairy industry is to align it with the QS system.
20. Most of the following factual information originates from the official website of QS: <www.q-s.info/de>
21. Auditors operate according to DIN 45011.
22. The board of trustees consists of twelve members. It is made up of academics, politicians, a union representative, a member from the German consumer association, and a representative from the sugar industry.
23. This point deserves further emphasis since German meat production, particularly of pork, is characterized by much smaller production units as compared to other European partners. The lack of large, homogeneous supplies is likely to lead to further competitive pressure, as German processors and retailers are likely to look beyond the German border as soon as others have adopted QS standards.

24. Key specifics of EUREPGAP are: transparency, recognition of existing schemes and programs via benchmarking, and an easy to adopt good agricultural practice protocol that is based on a master HACCP plan (no full HACCP exercise at the farm gate).

25. No judgment can be made regarding the actual status of infection; it is merely possible to judge whether an animal had contact with *Salmonella* in the past.

26. Also, in the wake of the 1996 BSE crisis in Germany, they appear to have been able to adopt a more consistent pricing strategy, as reflected in lower price variability (Loy and Steiner 2004).

27. Consider also that the German government does not intend to replace QS by any national set of regulations (BMVEL 2003).

28. See directive 2001/0176 (COD) and 2001/0177 (COD), as in COM(2003) 434, 16.7.2003.

29. EU Food Safety Law 178/2002 took effect on January 1, 2005.

30. Since January 2002, Dr. von Wedel has been a member of the European court of auditors.

31. Following the von Wedel report, a working group on the “reorganization of consumer health protection” was convened in the BMVEL and published its findings and proposals in December 2001 (BMVEL 2001).

32. “The assessment results will, in principle, be made publicly accessible whilst maintaining the confidentiality of protected data.” (BfR 2003).

33. “Der BSE-Skandal markiert das Ende der Landwirtschaftspolitik alten Typs. In Zukunft hat der Verbraucherschutz in diesen sensiblen Bereichen der Agrar- und Ernährungspolitik Vorrang vor wirtschaftlichen Interessen.” (Agrarbericht 2001).

34. Williamson (1998) differentiates governance structures in terms of their cost and competence.

35. “Es unterblieb eine umfassende interne Reorganisation, mit der Anliegen des gesundheitlichen Verbraucherschutzes entsprechend ihrer politischen Bedeutung gebündelt worden wären.” (von Wedel, 2001; 27).

36. Aghion and Tirole (1997) focus on a moral hazard setting (agents can take actions that are unobserved to others) with costly monitoring, which appears most suited in the present context.

37. When it is inefficient to address market failures through tort liability, there is need for regulation.

38. Issues related to inadequate and asymmetric information (credence qualities) have been discussed above. Liability can be shared, in a hierarchy, or it can be shifted among agents, each of which has different efficiency implications. Sunding and Zilberman (1998) analyze the case of shifting liability among firms and consumers, when agents follow what are perceived to be reasonable actions that result in accidental injury.

39. With “tightened” liability it will be more feasible to sue with lower transaction costs. Further, the legal instruments will be more suited to provide deterrence, assuming that firms correctly anticipate the compensation that would be imposed by the legal rules (Viscusi 1989a). An improvement of liability rules along those lines will, through the reduction of transaction costs, help to ensure that a level of food safety is provided that is socially optimal. Consider that lower transaction costs may also be achieved through the court system itself, due to clearer liability rulings.

40. Viscusi and Magat (1992) discuss the conditions under which different types of information provision instruments are effective. Just et al. (2002) extend existing models of value of information by incorporating consideration of individuals’ varying capacity to use differently formatted information and variation in their information needs.

41. The current refusal of the QS system to make the Salmonella status public could also be seen in this light: if the Salmonella status is disclosed, consumers could overestimate the uncertain outcome of contracting Salmonellosis with a certain probability. The level of meat demand would thus be suboptimal. However, a transparent system means also that scientists and the media have a role in transmitting the information to consumers such that these market failures can be averted.

42. See Unnevehr and Roberts (1997) for a discussion of cost-benefit analysis in the context of microbial food safety.

43. The precautionary principle asserts that uncertainty should never be used as a reason for postponing risk prevention efforts (Gollier 2001).

44. It is well known that it is important to account for the endogeneity of risk: consumers differ in their marginal productivity of self-protection (Ehrlich and Becker 1972, Shogren and Crocker 1999).

45. See Viscusi (1989b) for analyses that account explicitly for the relationship between consumers’ perception of risk and actual risk.