



Executive Summaries

Private sector management of food safety: public regulation and the role of private controls

SPENCER HENSON AND NEAL H. HOOKER

This paper serves as an introduction to this special issue on the management of food safety within the private sector. More specifically, it aims to highlight a number of issues in the management of food safety, particularly in the dynamic environment of food safety regulation. This special issue of the Review concentrates on the nature of compliance decisions, the strategic responses to food safety regulations, the efficacy of food safety management systems, and the potential impact of food safety failures. The role of private food safety controls is particularly explored, with an emphasis on the relationships between regulation and adoption of private control measures. Indeed, this is a recurring topic that examined in more detail in a number of the papers in this special issue.

Currently, there is a paucity of research on the private sector response to food safety regulation and the incentives of firms to independently, or cooperatively with members of their supply chains, to invest in advanced food safety management systems. Given this paucity much of this paper draws on the more general literature of regulatory compliance and previous studies in the area of compliance with environmental regulation. This research has typically focused on the adoption of private controls, rather than exploring the wider strategic responses of firms. Of relevance to food safety management, this literature explores the degree and manner in which firms comply with regulatory requirements and the consequent impact on their competitive position. Such issues are an important factor influencing the impact of food safety regulations and the actions of private businesses to manage food safety. This special issue throws some light on this strategic response, but also serves to highlight the need for further research on this issue.

The management of perceived risk in the food supply chain: a comparative study of retailer-led beef quality assurance schemes in Germany and Italy

ANDREW FEARNE, SUSAN HORNIBROOK, AND SANDRA DEDMAN

In recent years stakeholders in the food supply chain have been exploring a range of strategic options that both meet consumers' needs and comply with food safety legislation. One such

option is the assurance of quality by means of systems that manage quality into the product quality assurance schemes (QAS). Yet, to date there has been little research into consumer attitudes towards such schemes, which can be both costly and difficult to implement. This paper focuses on the recent experience with retailer-led quality assurance schemes for beef in two European countries—Germany and Italy. The focus is on the potential for QAS to reduce the risks associated with fresh beef, as perceived by consumers. Results of two consumer surveys are reported.

The results of the two case studies show that the stakeholders have responded to a perceived need for greater reassurance over the safety of fresh beef, with the German retailer also embracing growing demand for improved animal welfare. Moreover, these schemes are part of a long-term strategy to gain competitive advantage by reducing the perceived risk associated with fresh beef, whether it be from an extrinsic quality or intrinsic (safety/welfare) perspective. However, the results from the consumer surveys indicate that considerable scope remains for improving the communication of the objectives of such schemes, which have been poorly understood by substantial segments of the stakeholders within the agri-food supply chain, not least consumers.

From a theoretical perspective, there is evidence from this study to suggest that QAS have the potential to reduce both perceived product category risk and product specific risk. The former should be the concern of all stakeholders in the industry, including public sector organizations and government, as higher levels of perceived category risk will act as a severe brake on any initiatives to halt the long-term decline in fresh beef consumption. The latter is important for individual firms and supply chains, as it offers a means of creating product differentiation in a commodity sector.

From a practical perspective, the key lesson that firms and supply chains seeking to develop QAS can learn from this study is the need for a strong communication strategy to support the core objectives of such a scheme and the scope for such schemes (and the communication thereof) to contribute to the process of building shopper loyalty (for supermarkets) and consumer loyalty (for product manufacturers). For as long as product category risk exists to a significant degree, opportunities will remain for organizations in the private sector to gain competitive advantage through strategic initiatives aimed at reducing product specific risk and securing increased brand loyalty. “Prodotti con Amore” is one such initiative from which other retailers and members of their associated supply chains can learn.

Using farm assurance schemes to signal food safety to multiple food retailers in the UK

JAMES R. NORTHEN

Food safety has come under close scrutiny in the United Kingdom, especially through the 1980s and 1990s. Nowhere has this scrutiny been more rigorous than in the UK fresh meat supply chain. The BSE crisis in 1996 (and suggested link with new variant CJD), the *E. coli* outbreak in Scotland and, more recently, Foot and Mouth Disease have led to concerns regarding the safety of meat and the need for the supply chain to find ways of assuring food safety.

This paper considers quality (farm) assurance schemes that have been introduced in response to food safety concerns regarding meat and, specifically, the use of these schemes in selling meat to major food multiples in the UK. As multiple food retailers claim to sell farm assured meat, it follows that abattoirs supplying them should buy farm assured live-stock (from farm assurance schemes). Additionally, other factors that may affect an abattoir's trade with multiple food retailers are considered including (a measure of) traceability and hygiene, size and extent of processing (packaging).

A mail survey to the population of abattoirs operating in the UK provided the necessary data. The hypotheses were tested using a logistic regression.

The results of the regression indicate the buying farm assured livestock is positively related to an abattoir trading with supermarkets in the UK, hence selling farm assured fresh meat is a crucial determinant of an abattoir's trade with multiple food retailers. This result supports the assertion of multiple retailers that the meat they sell is farm assured and that such schemes are used by retailers as signals of food safety attributes.

Competitors co-operating: establishing a supply chain to manage genetically modified canola

STUART SMYTH AND PETER W. B. PHILLIPS

This paper examines the Canadian canola industry voluntary identity preserved production and marketing (IPPM) system designed to contain the GM canola to the North American market in 1995–1996.

The paper presents a case study of the cause, process, structure and impact of the voluntary IPPM system developed in Canada in 1995–1996. When GM canola entered the market in Canada, the industry feared that Japan, the single largest export market, would interrupt trade until they had time to review the technology. The potential loss of the Japanese market drove industry stakeholders to develop the IPPM system. While the private sector led in the development of the technical aspects of the system, which routed unapproved GM varieties to North American markets, the industry worked closely with Canadian regulators and the Canola Council of Canada to ensure that Japanese canola importers trusted that Canada could effectively segregate GM canola. This large uncharacteristic degree of ex ante trust exhibited by the Japanese importers is the result of 20 years of consultations between Canadian oilseed exporters and Japanese regulators and industry. The closed loop systems established for GM canola were operated for 2 crop years and then abandoned when Japan approved the new varieties for import. While the system was quite expensive, it ensured early market adoption in Canada and substantially improved the net profitability of the new varieties.

The study observed on three key features. First, the success of the system depended critically on the level of trust in the system and on the two technology companies allying themselves with credible market actors. Second, while the IPPM system worked, it was costly and probably is not a good model for long-term segregation and identity preservation. Discussions with the various stakeholders revealed that the cost of the IPPM system was C\$33–C\$41/tonne, which added 12% to 15% to the cost of producing and transporting

conventional canola. Those costs were shared by those who expected some benefit—owners of the technology, farmers who expected higher yields and the grain trade and processors which sought to increase their market share. While there were no premiums in the market for GM or GM-free canola, the total benefits of accelerated adoption of the technology certainly exceeded the costs of the program. Nevertheless, it is not clear that all of the partners were net beneficiaries. Third, there is significant room to improve the efficiency and effectiveness of IPPM systems. The two largest costs identified—opportunity costs of limited marketing opportunities and freight inefficiencies—both might be reduced if the firms acted collectively to establish industry standards for IPPM systems. Ultimately, IPPM systems in a product market are only as effective as the weakest link.

Ultimately IPPM systems succeed or fail depending on whether they are trusted. Firms or sectors seeking to develop IPPM systems would be advised to seek out partnerships or collaborations with those who have the trust of the critical markets. IPPM systems can be key strategies to accelerate adoption of controversial technologies but to succeed in the long-term they must compensate each partner in the system. Costs and effectiveness of IPPM systems can be reduced if firms in a market act collectively to establish credible platform standards that both reduce cost and potential for failure.

Economic impact of a ban on the use of over the counter antibiotics in U.S. swine rations

DERMOT J. HAYES, HELEN H. JENSEN, LENNART BACKSTROM, AND JACINTO FABIOSA

Over the counter antibiotics are currently used in most swine feeds in the United States today. A ban on the use of feed grade antibiotics will lead to changes in production processes and practices in production of pork, and is likely to have an economic impact on the U.S. pork industry and markets. The EU is in the process of restricting feed use of antibiotics and is in a position to sell pork from untreated animals on world markets. The strategic quandary for the U.S. pork industry is whether any challenge to an EU import ban or competition in other markets is worth the United States being perceived as having lower food safety standards. The purpose of the research is to evaluate the impact of such a ban on the U.S. pork industry.

Evidence from the historical Swedish experience with restriction on over the counter antibiotics and other experts' opinions provide information used to adjust a model of the U.S. pork industry to estimate likely effects of a ban in the United States. The model incorporates both biological and economic processes that govern production and consumption. Simulations were conducted by using changes in model parameters.

Under the most-likely case, the changes include increased age of weaning, decreased feed efficiency, and increased piglet and fattening pig mortality. With reservations for all uncertainties about the assumptions made, the estimated effect of a ban on the use of over the counter antibiotics would increase costs per head by \$5.24 at the end of the 10-year period for the most-likely case. However, with the higher prices, net profit would decline by only \$0.79 per head. The estimates include costs of adding troughs and space to allow restricted feeding. On the consumer side, retail prices would increase by 5 cents per pound.

The Swedish experience must be regarded very cautiously as an exact indicator of what might happen in the United States. If use of restricted feeding is necessary, almost all U.S. producers will be forced to make some adjustments. However, the estimated impact of a ban on an “average” farm masks very wide differences across farms. Those who follow good hygienic, health and management practices will see the smallest impact. The social impacts of the changes may be very different than the economic impacts. Additional research is needed on consumer attitudes in the U.S. However, one very important consumer response is the one that may occur in export markets. The Japanese market is very important to the U.S. pork industry. If Japan were to become concerned about the use of antibiotics among its suppliers, losses to the U.S. pork industry due to loss of such an important export customer would dwarf the other losses described in the analysis.

The potential for recall insurance to improve food safety

JERRY R. SKEES, ALETA BOTTS AND KIMBERLY A. ZEULI

This paper explores the economic incentives provided by emerging recall insurance products that protect against losses, including damages to reputation and subsequent losses in sales. The paper reviews some product recall cases in the meat sector as well as several of the new product recall and product contamination insurance products that are now available. Discoveries of contamination, in particular life-threatening pathogens, in the meat and poultry industry are increasing. The financial losses that follow a recall can be substantial as illustrated by recent U.S. cases—Hudson Foods, Bil Mar, and Thorn Apple Valley Inc. While this paper focuses on the U.S., the issues are similar in many parts of the world—consider the 1999 dioxin contamination incident in Belgium. New insurance products protect against product recall costs for the food processor, including providing up to 1 year of damage to reputation and business interruption.

Our conceptual approach suggests that insurance underwriters could provide improved incentives to both initiate a recall and monitor risk mitigation systems, such as HACCP, better than government regulators. Meat processing plant managers should be more willing to improve quality control when responding to the economic incentives that are presented by a risk-sharing partner rather than the command and control approach used by government regulators. Still, our preliminary interviews with those offering recall insurance suggest that opportunities to perform more stringent underwriting have been largely unexploited. If the insurance underwriter becomes more informed and more diligent about requiring state-of-the-art technologies in exchange for lower premium rates, the advent of recall insurance could significantly reduce the incidence of illness and death from foodborne pathogens.