Co-regulation as a possible model for food safety governance: Opportunities for public-private partnerships

Co-regulation as a possible model for food safety governance: Opportunities for public–private partnerships

Marian Garcia Martinez [a,*], Andrew Fearne [b], Julie A. Caswell [c], Spencer Henson [d]

[a] *Applied Economics and Business Management Section, Kent Business School, University of Kent, Imperial College's Wye Campus, Ashford, Kent TN25 5AH, UK*
[b] *Centre for Supply Chain Research, Kent Business School, University of Kent, Canterbury, Kent CT27NZ, UK*
[c] *Department of Resource Economics, University of Massachusetts Amherst, 80 Campus Center Way, 215 Stockbridge Hall, Amherst, MA 01003, USA*
[d] *Department of Agricultural Economics and Businesses, University of Guelph, Guelph, Ont, Canada N1G 2W1*

Received 31 January 2006; received in revised form 30 June 2006; accepted 27 July 2006

Abstract

Public concern about food safety is placing increasing pressure on government agencies to be more prescriptive and proactive in their regulation of the food industry. However, given the scarcity of public sector resources, concerns about the impact of regulation on competitiveness and the scale of the task at hand, there is growing interest in co-regulation, with public and private sectors working hand-in-hand to deliver safer food at lower (regulatory) cost. This paper explores the scope for the co-regulation of food safety in the UK and North America, where there are distinct differences in the established regulatory processes. The authors conclude that opportunities clearly exist, to varying degrees in the different countries analysed, but that considerable obstacles remain to the widespread adoption of co-regulatory practices in the area of food safety.

Keywords: Co-regulation; Food safety; Public–private partnerships

* Corresponding author. Tel.: +44 2075942962; fax: +44 2075942838.
E-mail addresses: marian.garcia@imperial.ac.uk (M. Garcia Martinez), a.fearne@kent.ac.uk (A. Fearne), caswell@resecon.umass.edu (J. A. Caswell), shenson@uoguelph.ca (S. Henson).

Introduction

Increases in the recorded incidence of food-borne illness alongside the recent history of high-profile outbreaks that have been linked to food in a number of industrialised countries have created both political and economic demands for more effective food safety controls. Consequently, government oversight of food safety has increased substantially in the last decade, including the introduction of *ex ante* direct regulations and *ex post* indirect controls (Henson and Caswell, 1999). In addition, private mechanisms of food safety control have developed substantially and now play an important role in the supply of higher quality, safer food. The result is an intricate and complex network of both public and private incentives to implement enhanced food safety controls.

The potential benefits of co-regulation of food safety are self-evident; coercion can breed minimalist approaches to compliance resulting in sub-optimal improvements to public health alongside significant expenditure of resources on enforcement and monitoring. Indeed, regulatory action often demonstrates rather high rates of non-compliance. However, co-regulation remains a relatively new concept in most parts of the world. A lack of trust among actors in the food chain and perceived risks associated with allowing market forces to play a role in the regulation of food safety are factors that limit a closer coordination of private and public resources in the control of food safety. Moreover, there are significant challenges in formulating food safety policies that reflect private and social benefits and costs; private and social interests are often distinct and an efficient food safety control system from a private business perspective may not yield socially efficient outcomes.

However, the realities of food safety responsibilities (and liabilities) from 'farm to table' have brought about a new paradigm in stakeholder relationships characterised by complex interactions between public and private modes of regulation (Fearne and Garcia Martinez, 2004a,b). This shift of responsibilities towards the private sector has created a more complex and demanding 'policy space' involving public and private sector incentives and controls (Garcia Martinez and Poole, 2004). Hence, the need to understand the incentives for private actors to implement enhanced food safety controls (Henson and Hooker, 2001; Hobbs et al., 2002) and, in this context, explore the opportunities for greater public–private coordination in the effective and efficient regulation of food safety.

This paper explores the opportunities for co-regulation of food safety in the context of different institutional approaches in North America (USA and Canada) and Europe (UK). It aims to contribute to the current debate on the role that government and industry might have in providing for an effective food safety control system, while ensuring that actors along the food supply chain benefit from the potential efficiency gains when the responsibility for protecting consumers from food-borne illnesses is shared between the public and private sectors.

The paper is in seven parts: the next section explores the scope for co-regulation in the area of food safety, with reference to the food safety literature, and the following sections look specifically at the four key aspects of food safety regulation – setting standards, process implementation, enforcement and compliance monitoring. The paper concludes with some thoughts on the role of co-regulation in food safety and the need for further research.

Co-ordinated approach to food safety

For any given food safety problem, the level of public intervention may range from doing nothing – leaving the market to find the requisite solution – to direct regulation (Better Regulation Task Force, 2003). In-between, there is a wide range of options including industry self-regulation, government provision of information, education campaigns and labelling requirements (Fig. 1). While food safety has been the focal point of most regulatory programmes, the desire to protect consumers from fraud, encourage healthy and balanced diets and promote particular values (i.e., local food) has led to increasing government involvement in the control of other food quality attributes' (i.e., country of origin, organic, PDOs, PGIs, GMOs). Determining consumer derived demand for quality from other motivations for regulatory activity is an on-going challenge (Caswell and Joseph, 2006).

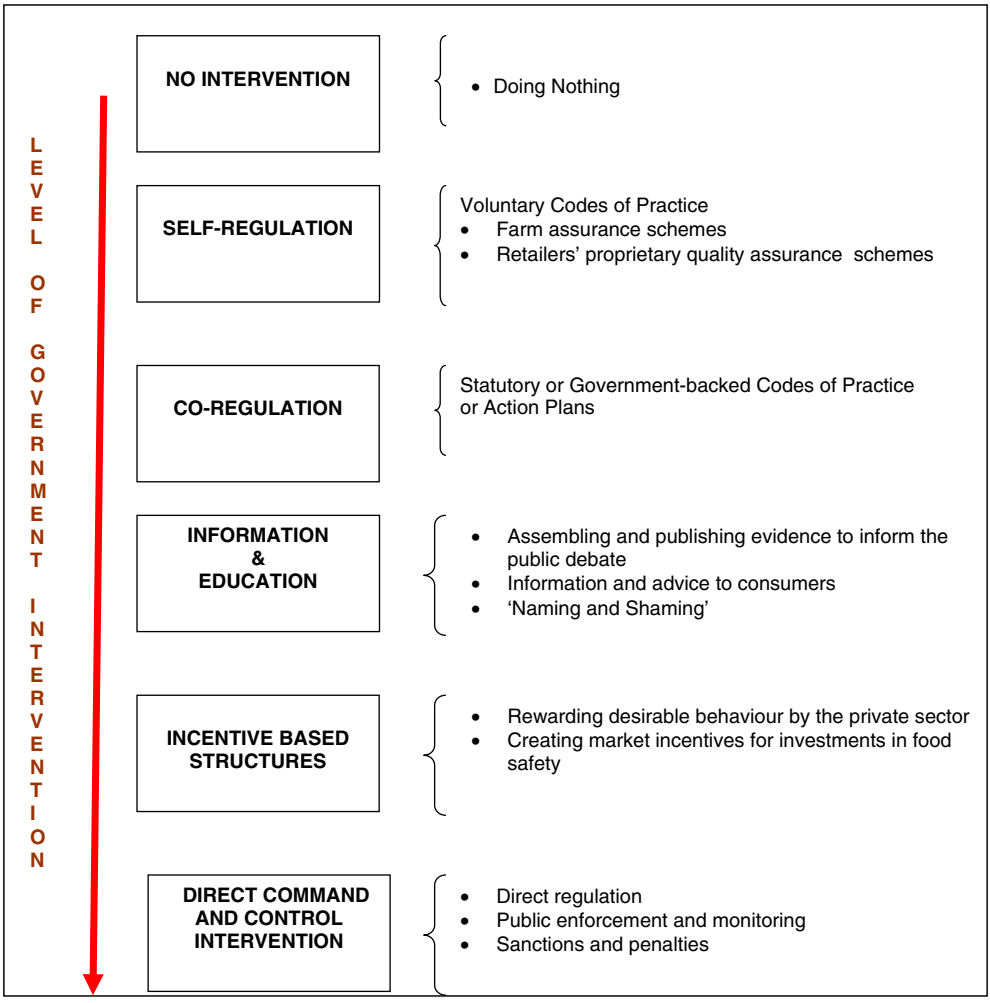

Fig. 1. Options for public intervention. *Source*: own elaboration.

Although certain interest groups, for example those representing consumers, have concerns about more liberal approaches, there may be circumstances where there is a *prima facae* case for governments not to intervene in food markets (Antle, 1995; Henson and Caswell, 1999). A careful analysis of the benefits and costs of alternative regulatory options may advise policy-makers that there is no economic case to regulate in normal market transactions, for example where costs of preventing an uncertain food safety hazard outweigh the probable benefits. Moreover, there may be inequalities in the distribution of costs and benefits associated with regulatory action, for example increases in food prices that have a disproportionate impact on low-income consumers and/or costs of compliance that diminish the competitiveness of small and medium-sized enterprises (SMEs). The difficulty and/or costs of enforcing new legislation can also persuade governments that regulation is not the best course of action.

At the other extreme, regulatory action is an appropriate response when food markets fail to deliver the level of safety required to satisfy social public health goals. The nature of the regulation can take different forms, from prohibition, where certain actions, products and/or processes are banned (e.g. the compulsory removal of the spinal chord from beef and sheep carcases) to prescription, where procedures for dealing with a recognised problem are stipulated by the authorities (e.g. mandatory HACCP in food manufacturing). Capture of the regulatory process by economic interest groups can also be a motivator to regulate (Henson and Caswell, 1999).

Incentives for and the types of regulation required will vary depending on where a company is in the food chain and what products it you produces. Specifically, certain food sectors carry higher risks of food-borne illness than others (e.g. fresh meat versus canned soups), so will attract greater regulatory attention. Similarly, the likelihood of detection and the severity of the penalty provide downstream stakeholders in concentrated supply chains (e.g. retailers) with a strong incentive to impose rigorous monitoring and detection systems on upstream stakeholders (e.g. manufacturers and primary producers) which in turn increases the probability of compliance relative to supply chains where there is less concentration at the point of consumption and the probability of detection of non-compliance is lower (e.g. catering and food service).

Within the hierarchy of possible forms of public intervention, there remain a number of possibilities to co-ordinate public and private actions and resources in the regulation of food safety. The question is what form should this co-regulation take, and under what circumstances might private regulations and standards be the most efficient and effective mechanisms to manage food safety either in combination with, or as an alternative to, public regulation?

Co-regulation is an approach in which a mixture of instruments is brought to bear on a specific problem, in this case management of food safety, typically involving both primary legislation and self-regulation or, if not self-regulation, at least some form of direct participation of bodies representing stakeholders in the regulatory decision-making process (Eijlander, 2005). Co-regulation aims to combine the advantages of the predictability and binding nature of legislation with the flexibility of self-regulatory approaches. It thus involves self-regulation and legislative action working together in a manner that mutually reinforces one another.

An essential element of a co-regulatory approach to governance of food safety is cooperation between the public and private sectors in the process of creating new rules. This cooperation in the field of regulation may result in various forms of governance, such

as agreements, conventions and even regular legislation (Eijlander, 2005). Key to the co-regulation debate is the distinction between private and public motives for the use of co-regulation and the possible relationships between private and social benefits and costs emerging under a co-regulatory framework. In the field of food safety economics, social welfare analysis of policies focuses on the regulation of markets to increase social welfare (i.e., improvements in public health) in situations where markets fail, while the political economy (private) approach focuses on the position of interest groups in the process of regulation (Fearne and Garcia Martinez, 2004a,b). An element in the political economy perspective is the relationships between regulators and the regulated and the scope for regulatory capture, that is, the pursuit of the regulated businesses' interests rather than those of the public at large.

Policy-makers frequently argue that the primary responsibility for food safety lies with the private sector, whereas the definition of basic standards, monitoring and policing is the responsibility of the public sector. However, in an era of heightened concern for food safety, both public and private regulations and activities are jointly instrumental to the delivery of a safer food supply. Hence, the analysis of co-regulation of food safety presented in this paper focuses on four stages in the regulatory process where greater coordination of public and private efforts may yield dividends in terms of the efficacy and/or economic efficiency of food safety controls: (i) setting food safety standards; (ii) process implementation; (iii) enforcement; and (iv) monitoring. An analysis on how the three study countries are approaching each of these stages aims to identify the level and nature of prevailing incentive structures and the regulatory context in which co-regulation of food safety is more likely to succeed.

Regulatory standard-setting process

In recent years, governments have progressively employed risk assessment methodologies to provide standardised, science-based and 'objective' evaluations of specific risks. This is followed by risk management decisions that seek to identify appropriate regulatory interventions. Risk management involves careful analysis of the benefits and costs of alternative regulatory interventions. This plays a similar role to risk assessment in disciplining decision-making, providing empirical support for the regulatory options chosen and enhancing transparency of the policy process (Caswell, 1998, 2004). While precise estimates of the economic benefits and costs associated with alternative policy options can rarely be made *ex ante*, systematic analysis of the technical and economic implications of changes to the regulatory framework can reduce the probability of regulatory changes that result in unforeseen technical problems associated with compliance and/or excessive increases in the cost of production. In those instances where investment in a technical solution is required and/or the costs of compliance are not trivial, such analysis, routinely undertaken as part of a Regulatory Impact Assessment (RIA) allows a degree of transparency in the regulation process, so policy-makers can make better decisions.

RIA for new or revised legislation or rules is a common feature in many industrialised countries, including the UK and US. Further, existing legislation may be subject to periodic assessment through post-implementation reviews and policy evaluation, as in the case of the UK. RIA is a point for co-regulation to enter as the government consults with interested parties in developing its analyses. In principle, RIA has the benefit of facilitating comparative analysis of policy options, informing the policy decision-making process

and enhancing transparency and accountability. However, a widespread perception within the UK food processing sector is that RIAs are generally undertaken too late in the decision-making process to have a significant influence on the promulgation of legislation, while there are charges of inadequate consultation with industry over the scale and incidence of compliance costs (Fearne and Garcia Martinez, 2004a,b). This perceived lack of consultation is of particular concern, as previous work has revealed little evidence of the effectiveness of RIAs in producing 'better' food safety legislation (Fearne and Garcia Martinez, 2004a,b). At the same time, a perception of lack of consultation challenges the very credibility of the RIA process.

Alongside mandatory food safety standards, governments can pursue co-regulation through producing and/or stimulating the generation of voluntary codes of 'good practice'. These codes set standards for the food sector and facilitate communication of information along the supply chain and to consumers. In the UK a plethora of private farm assurance schemes has developed. These schemes typically incorporate, or at lest reference, official codes of practice and/or require their members to be aware of and to implement these codes. In the UK, they cover over 85% of production in the milk, eggs, chicken, pork and combinable crop sectors and over 65% for beef and lamb and horticultural produce (Food Standards Agency, 2002).

Two examples in the UK, the Lion Quality Scheme and the ZAP Salmonella Monitoring Programme, illustrate how the progressive development of farm assurance schemes towards stringent standards is seen as beneficial in providing for enhanced levels of food safety (Fearne and Garcia Martinez, 2005). However, this development is uneven across sectors with the establishment of stringent food safety standards in concentrated and/or integrated sectors (e.g. eggs, poultry and pigs), with retailer pressure also being a strong influence in this process (Food Standards Agency, 2002). Moreover, the impact of retailer-driven assurance schemes on the level of food safety can often be much greater than generic codes of practice developed by producer organisations or government agencies, typically designed to bring compliance up to a minimum level. However, a potential problem with this approach is the promulgation of multiple (competing) private standards and their impact on suppliers resulting from increases in (multiple) compliance costs. One solution to this problem is the development of industry standards, with which all buyers comply. Thus, for example, in the UK, supermarkets agreed to replace their individual food safety audit processes by a single audit procedure accredited by the British Retail Consortium (BRC), which has reduced the food safety monitoring costs in supermarket supply chains whilst maintaining food safety standards (Arfini and Mancini, 2003). Similarly, the formation of the Global Food Safety Initiative (GFSI) through the Food Business Forum (CIES) and the development of a common private protocol on good agricultural practices by the Euro-Retailer Produce Working Group (EUREPGAP) are further steps towards harmonisation and mutual recognition of national and/or regional standards amongst food retailers.

A contrasting picture emerges in the US where industry, consumer groups and other interested parties are more actively involved in the promulgation of regulations. This is reflected, for example, in the often substantial changes in regulations between the proposed and final rule stages. This iterative process may be particularly important as a form of co-regulation in areas where scientific knowledge and/or processing technologies are changing rapidly. Critics of the system, however, argue that the US food industry is better

organised and resourced than consumer lobby groups and, thereby, has a greater influence in the regulatory process.

In the US regulators are often presented with fully researched cost impact assessments by the food industry. As a result, final regulations may be better designed, complement industry incentives more effectively and have a better benefit–cost profile. However, the risk is that proposed regulations become 'watered down' as some industry stakeholder voices are heard more strongly than those of weaker groups, leaving affordable public health benefits unachieved. Thereby, achieving an appropriate balance in this context is a formidable challenge for policy decision-makers and for co-regulation.

In the US, the development of baseline food safety standards by the private sector is not widespread and there is less co-regulatory interaction between private schemes and government regulations. The US presents examples where the lack of co-regulation has resulted in duplication of effort; an example is the voluntary organic certification and labelling programme for organic foods implemented in 2002. Prior to the establishment of this scheme, about 50 organic certifiers operated nationwide. However, in developing a national voluntary organic standard existing and established standards were not adopted, rather the national standard was developed from first principles. Partly as a result, the voluntary organic certification and labelling programme took 10 years to develop.

Food safety standard-setting in Canada is the responsibility of Health Canada, which must undertake an RIA under requirements for all federal government legislation. However, human and other resource limitations and the priority given to other activities within the agency (most notably health care) suggest that fully researched RIAs are far from universal; in most instances these produce crude estimates over the scale and incidence of likely compliance costs. Moreover, institutional structures for co-regulation through consultation and stakeholder input to the regulatory process are limited. Where consultation does occur the mode is passive rather than active. This casts doubt over the transparency of the decision-making process and the priorities considered during rule-making. At the current time, however, there is increasing recognition of the weaknesses of the current regulatory system within Health Canada, and pressure for reform of regulatory processes across the federal government from the External Advisory Committee on Smart Regulation (2004). Thus, there is evidence of a shift towards greater stakeholder involvement and more comprehensive cost–benefit analysis.

Canada provides an interesting perspective of co-ordinated actions by the public and private sector in the development of farm food safety programmes. The initial impetus for the development and implementation of on-farm HACCP programs came from the industry itself; a number of commodity organisations (especially for pork, chicken and eggs) made efforts to develop voluntary codes of good food safety practice in agricultural production. In order to facilitate the more effective and timely implementation of these programmes, it was recognised that a more co-ordinated approach was needed. Thus, the Canadian Federation of Agriculture implemented the Canadian On-Farm Food Safety Program (COFFSP) with funding from Agriculture and Agri-Food Canada (AAFC). Subsequently, a system of formal recognition of individual commodity programs by the CFIA was implemented.

Further efforts have been made in Canada at the provincial level to induce the development of farm assurance schemes. For example, in Ontario the industry and Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) are working together to

implement enhanced food safety controls in agricultural production through a staged process, moving from Good Agricultural Practice (GAP) to HACCP and from voluntary to mandatory implementation. This staged implementation is not unusual in Canada, with a similar process of implementation in the case of the Food Safety Enhancement Program (FSEP); a HACCP-based scheme for the meat sector that started as a voluntary program but became mandatory at the end of 2005.

Process implementation

There is also scope for co-regulation in both determining the ways in which regulatory requirements are implemented and in the specific modes through which implementation is induced and facilitated. The recent evolution of EU food safety legislation provides a good example of this. Following the application of new EU food hygiene regulations from 1 January 2006, responsibility for the production of safe food lies more explicitly with food business operators, a requirement that is already contained in current legislation and is underpinned in General Food Law.[1] All food business operators are required to have controls that demonstrate they are managing food safety within their business. This legislative framework represents a shift from a prescriptive 'command and control' approach towards an 'enforced self-regulatory' approach (Braithwaite, 1982), with the regulator imposing a requirement on businesses to determine and implement their own internal rules and procedures in order to fulfil the regulator's policy objectives. The regulator is then responsible for approving these internalised rules and monitoring compliance. Arguably, the more risk-based and flexible nature of these procedures is better matched to the needs of individual businesses and to enforcement. They allow rapid adoption of new monitoring technologies by the industry (i.e., Radio Frequency Identification Data – RFID) and provide better opportunities for businesses to demonstrate that they have effective risk management systems in place[2] and that their products present lower risk to consumers.

The three main EC Regulations[3] that make up the package of new food hygiene standards are directly applicable, and therefore constitute the law, in each EU Member State. National legislation is not required, or indeed allowed, to give effect to these regulations, beyond providing for their enforcement in national jurisdictions. However, there are a number of areas in which these regulations either require or allow Member States to adopt additional provisions as appropriate in their national law.

Some shift in focus of regulation is also visible in the US, from predominantly prescriptive process and product standard approaches to more flexible and performance-based standards that provide greater choices for businesses in the mode of implementation. The Pathogen Reduction/Hazard Analysis and Critical Control Points (PR/HACCP) rule requires meat plants to identify critical control points[4] (CCPs), take responsibility for implementation and control of their HACCP programs, maintain performance records

[1] Regulation (EC) No. 178/2002 of the European Parliament and of the Council of 28 January 2002.

[2] Article 5 (1) of Regulation 852/2004 requires that the procedure or procedures be based upon Hazard Analysis and Critical Control Points (HACCP) principles set out in Article 5(2). The wording of the Article gives flexibility in that it requires that the procedures be based on those principles. It does not necessarily constrain businesses to implement a HACCP system, if this is not appropriate.

[3] Regulation (EC) No. 852/2004 on the hygiene of foodstuffs Regulation (EC) No. 853/2004 laying down specific hygiene rules for food of animal origin. Regulation (EC) No. 854/2004 laying down specific rules for the organisation of official controls on products of animal origin intended for human consumption.

[4] CCP refers to any part of the production process where food safety is at risk.

and adopt plans for action should processes get out of control. The PR/HACCP rule stipulates that individual processing plants must complete a separate HACCP plan for each of its manufacturing processes (e.g. raw beef not ground). A team of Food Safety and Inspection Service (FSIS) process control inspectors enforces these regulations by determining whether sanitation and process control systems are working to prevent adulteration. This system, however, differs significantly from HACCP implementation in the seafood processing, which has been mandatory since 1997. In this latter case, inspection is relatively infrequent such that enforcement is largely at the company level. Moreover, importers have different options for verifying that imported product was produced under HACCP compliant conditions, including use of third party certifiers and reliance on assurances from suppliers.

The predominant approach to the implementation of regulatory food safety requirements in Canada to date has been detailed process and/or product standards with enforcement through plant-level inspection. Until very recently, the implementation of HACCP in the food processing sector has been voluntary, although in an example of co-regulation the CFIA has operated an official system of verification and recognition through the FSEP. The one exception, however, is fish and seafood processing for which HACCP has been mandatory under the Quality Management Program (QMP) since 1992. As a result of the relatively slow uptake of FSEP, however, implementation has recently been made mandatory in all federally registered meat and poultry processing facilities. Extension of this requirement to other commodities, for example milk and dairy products, is anticipated in the future. Under FSEP, plants are required to implement a specified pre-requisite program but can develop a HACCP system tailored to their own plant and categories of product. The establishment's management is responsible for verifying that the HACCP system is operating effectively, with CFIA inspectors auditing procedures and records. This represents a significant change in the focus of food safety regulation in the meat and poultry processing sector, with a shift of responsibility towards food businesses, but at the same time flexibility to implement a system of food safety control that reflects their own particular circumstances.

Perhaps counter to the shift towards mandatory HACCP at the federal level, the province of Ontario has recently promulgated and implemented a voluntary standard for HACCP implementation aimed predominantly (although not exclusively) at the meat and poultry processing sector. This standard, entitled 'HACCP Advantage', was developed in close collaboration with the food sector and allows for verification and recognition of the implementation HACCP and associated pre-requisite program through certification by the Standards Council of Canada. Interestingly, OMAFRA, which is responsible for regulatory inspection of meat and poultry and dairy processing facilities, plays no role in the recognition and verification process. Since the development of this standard, the main activities of OMAFRA related to HACCP Advantage have focused on promotion of the voluntary standard, development of training materials and assessment of the costs and benefits of implementation.

The move across countries from a prescriptive towards an enforced self-regulatory approach raises a number of concerns regarding the delivery of a socially optimum level of food safety. Although the law may permit food processors, whether individually or collectively, to develop and implement their own food safety controls, this level and form of self-regulation may not be acceptable to all stakeholders, particularly consumers.

Enforcement

A key factor influencing the degree to which food safety regulations achieve their desired aim is the rate of compliance among food businesses. Distinct inspection regimes influence behaviour in different ways. If the aim is to win the ''hearts and minds'' of food business operators and their employees to encourage well-embedded and lasting changes to practices, enforcement officers may concentrate on promoting good practice through advice and education rather than enforcement action. This requires a set of prevailing incentives to upgrade food safety controls over and above the potential enforcement actions of regulatory officials. Conversely, the required speed of action and/or lack of prevailing incentives may require more stringent enforcement approaches, for example where there are acute risks to human health. In extreme cases, this may take the form of forced closure of processing facilities, seizure of products and/or prosecution (Food Standards Agency, 2004).

Regardless of the mechanism of enforcement, it is evident that access to reliable information and advice is a vital component of any strategy aimed at achieving high rates of compliance, especially among SMEs that may lack expertise and/or resources. Recent studies by Yapp and Fairman (2004, 2006) on enforcement approaches for food safety in SMEs shows that education activities by local authority had significant effects on inspection rating scores and compliance levels.

In addition to advice, support and an effective inspection regime, incentives need to be in place to encourage compliance (Hampton, 2004). Regulatory incentives may take the form of positive gains from the adoption of enhanced food safety controls, for example through enhanced efficiency or 'peace of mind', and/or of negative consequences from non-compliance in the form of sanctions such as fines or repercussions in the form of declining market share and/or exclusion from markets. In general, incentives to comply with regulatory food safety standards have focused on enhancing the costs of non-compliance, whether real or perceived, for example through warnings backed up by the threat of action through the courts. A more positive (and potentially more effective) strategy may be to promote the potential gains from compliance through enhanced business performance, a co-regulatory approach that has been largely overlooked.

The role of market-based reputational mechanisms as drivers for businesses to comply with regulatory requirements can be significant. Perhaps the most explicit use of this mechanism by regulators to 'discipline' firms is the posting of inspection results outside restaurants which has been shown to have a significant impact on both customer patronage and business performance (Jin and Leslie, 2003). This so-called 'scores on doors' approach can have the greatest impact in the case of large retail or food service chains that have high levels of brand capital to maintain (Boehnke and Graham, 2000). Reputational sanctions may also be used through the publication of recall information and/or 'naming and shaming' firms that supply products that violate legal standards.

Finally, effective penalties are an essential mechanism of last resort in the regulatory system. They deter the most intransigent businesses from breaching regulations and provide assurance to compliant businesses that firms trying to gain competitive advantage through non-compliance will be sanctioned (Hampton, 2004). Moreover, an effective penalty regime can help to build consumer confidence in the food supply chain (Cragg Ross Dawson, 2005). For large firms, while the financial penalties in terms of fines associated with non-compliance may be trivial, the costs of bad publicity and/or product recalls

can act as powerful market incentives for compliance. These can take the form of both the immediate costs of product withdrawal and disposal and, more significantly, the longer-term loss of market share (Salin and Hooker, 2001; Wang et al., 2002). For smaller firms, the financial penalties associated with regulatory action alone can impose significant economic costs and provide sufficient deterrence to non-compliance.

The UK has a compliance-based enforcement system with an emphasis on preventing harm from occurring, as opposed to a deterrent-based strategy, achieved through a tiered inspection regime. The work of enforcement officers is to encourage compliance by first promoting best practice among food business operators through education, training and advice. However, if an offence is detected, enforcement follows a hierarchy of progressively more onerous action including an improvement notice, formal caution, closure of food business, prosecution, and disqualification.

Under UK law, although prosecution is considered an enforcement action of last resort, non-compliance with food safety legislation is a criminal offence with financial penalties depending on the level of infraction, imprisonment, or both. Major offences can be elevated to a higher court where unlimited fines or imprisonment of two years can be levied, although this is rare. However, enforcement officials have argued that, for certain types of offences, these penalties are too low to be an effective deterrent,[5] for example where large quantities of unfit food are introduced into the food chain. In these cases, the enforcement authorities may seek charges of conspiracy to defraud as a route to higher penalties, although this is difficult to prove and such cases are costly to pursue.

In the event of non-compliance with regulatory requirements, food businesses are required to withdraw their products form the market and inform their local enforcement authority. The FSA issues alerts to warn enforcement officials and consumers of acute food safety problems associated with food products. In most cases food businesses recall their products on a voluntary basis, again a form of co-regulation, although enforcement officials are empowered to require a product to be withdrawn and/or seize products if necessary.

In the US, food safety enforcement relies substantially on voluntary compliance, with the exception of meat and poultry that are subject to continuous inspection by the FSIS. For HACCP enforcement, FSIS examines recorded information and conducts scheduled and unscheduled spot checks of plant procedures. If an inspector, together with a FSIS compliance officer, determine that a plant is not properly performing tasks critical for safe food, they can decide that the plant is out of compliance.

The low recorded rates of non-compliance with referral food safety regulations for meat and poultry products may lead one to believe that FSIS secures compliance through the exercise of strong enforcement powers. However, FSIS uses its enforcement powers rather infrequently. If a plant has a chronic problem with sanitation or its HACCP system, an inspector can temporarily close the contaminated equipment or responsible department. Records for the period 1999–2001 indicate that FSIS issued an average of one closure penalty per 75 plants. Although a stronger action, plant closure by removal of inspection services, is possible, protracted court proceedings in the past have led FSIS to use this enforcement tool on only very rare occasions. The high performance of sanitation and HACCP systems in relation to the level of enforcement powers suggests that plants and

[5] http://www.food.gov.uk/multimedia/pdfs/philiphampton.pdf.

their customers believe that these operations are important to business performance (Ollinger and Ballenger, 2003).

In the case of an acute food safety problem, the FSIS requests but cannot mandate, a supplier to recall its products and issues a press release. If the plant refuses to recall the product, FSIS can seize it from the market and/or request an injunction from the courts. This system operates on the premise that food businesses will act to prevent and/or manage the costs associated with offending products.

Food safety regulations in Canada are enforced in a similar manner to the UK, through traditional forms of inspection and enforcement action on the part of enforcement officials, with an escalating system including warnings, detentions, seizures, recalls and prosecutions. In 2003–2004, the CFIA pursued 68 prosecutions nationwide that resulted in 46 convictions with an average fine of CAN$6565 (CFIA, 2004). Like the UK, therefore, the penalties associated with prosecution are not the major incentive for compliance with regulatory requirements. The costs of negative publicity are undoubtedly the major factor inducing food businesses that are regulated in the federal sphere towards compliance; the CFIA issues a press release in the event of a successful prosecution and details are made available on its website.

There is an on-going concern in Canada about rates of compliance among federally registered processing facilities. In 2003–2004, rates of compliance ranged from a high of 99.4% in the case of federally registered egg processing facilities to 78.2% in the case of federally registered dairy processing facilities (CFIA, 2004). Indeed, the annual report of the federal Auditor General in 2000 criticised the performance of the CFIA for the persistence of high rates of non-compliance. Among others, the report recommended the implementation of risk-based inspection programs across federally registered processing facilities. There are similar concerns about the efficacy of existing traditional inspection-based enforcement regimes in many provinces. For example, a recent inquiry into meat inspection in Ontario recommended an entire overhaul of the existing system, with a shift towards risk-based modes of inspection and enforcement (Haines, 2004).

In contrast to the meat and poultry sector of the US, the CFIA is empowered to require the recall of food products that are considered in violation of regulatory requirements and pose an acute risk to human health. In 2003–04, CFIA undertook 4462 investigations of potential violations related to food safety, labelling, or fraud, resulting in 474 recalls (CFIA, 2004). As a first step, the CFIA requests that a food retailer, distributor, importer or manufacturer issues a voluntary recall, and in the vast majority of cases this is sufficient. Of the 2233 recalls co-ordinated by the CFIA over the period 1997–98 to 2003–04, only six required a mandatory recall order (CFIA, 2004). This suggests both effective coordination between the CFIA and the food sector and that mandatory recalls impose much greater costs on violators, particularly in terms of negative publicity. Details of recalls are routinely published on CFIAs website and there is a facility for the regular distribution of recall notices by email to subscribers.

Monitoring of business performance

To maintain compliance with food safety regulations requires on-going monitoring and evaluation of business performance. There is increasing recognition that inspections can be an inefficient and resource-intensive form of enforcement action, particularly in the case of low and/or chronic food safety risk and businesses with consistently high rates of compli-

ance. Other mechanisms may be more effective, for example provisions of advice aimed at continual improvements in performance (Hampton, 2004).

There are co-regulation opportunities for government agencies to rely more on private mechanisms of food safety control, including compliance with private codes of practice and implementation of systems such as the new ISO 22000 series. For example, compliance with such norms may enable enforcement officials to distinguish between high and low risk establishments and focus inspection efforts accordingly. This relies on the trust of enforcement officials in the efficacy of private mechanisms to assess and maintain compliance with private norms and the degree to which these accord with legal food safety requirements.

There are potentially significant equity issues associated with the use of private standards and codes of practice as a means to allocate enforcement efforts. On the one hand, participation in farm assurance schemes, for example, is voluntary and non-participation cannot be used as an indicator of low food safety standards relative to legal requirements. On the other, participation in farm assurance schemes may be costly, acting to exclude certain operators, for example smaller farms. There is also a potential danger of 'reverse capture'; the cooption of voluntary food safety standards and assurance schemes by regulatory authorities.

As described above, private food safety assurance schemes are less well-developed in the US and Canada than in the UK, although a number of producer organisations are currently promulgating commodity-specific farm-level food safety schemes. Currently there is less scope for the use of such private mechanisms of food safety management as a means to assess and monitor the risks associated with food operators and allocate enforcement resources accordingly. However, with the implementation in Canada of official mechanisms through which private standards are verified and recognised, farm-level food safety schemes could become a means by which food safety performance is monitored by regulatory authorities. This is unique to Canada at least among the three countries studied here. Likewise, the implementation of official voluntary food safety standards, such as HACCP Advantage in Ontario, could become a mechanism through which food safety standards are assessed by regulatory authorities. Undoubtedly this will require a cultural shift on the part of federal and provincial regulatory authorities but it is not inconceivable in the medium term.

At the current time, regulatory authorities in Canada at both the federal and provincial levels base their inspection efforts on some form of risk assessment that involves the monitoring of on-going food safety standards relative to regulatory requirements. For example, while there is a minimum level of inspection required of all food premises, beyond this level the frequency of inspection is based on an assessment of risk, predominantly according to the outcome of the previous inspection. The progressive implementation of HACCP across the food processing sector in Canada, most immediately in the meat and poultry sectors, will undoubtedly contribute to this trend.

What role for co-regulation?

The challenge of food safety and the regulation thereof is a global one which has attracted increased attention in recent years. Different countries/regions have responded in different ways to the growing awareness of and concern about food safety. Those with a strong export orientation (e.g. Australia, New Zealand, Canada) have had a strong

economic incentive to respond, for fear or losing export markets. Others have approached the problem primarily from the perspective of domestic consumer protection. This paper contains examples from the UK and the USA, where the focus has been on the latter and Canada, where the threat of losing access to export markets has been a major driver of regulatory approaches to food safety.

Co-ordination of public and private food safety management efforts at different stages in the regulatory process can potentially result in improvements in the level of food safety at lower cost and the more effective allocation of scarce regulatory resources. Yet, as identified in this paper, co-regulation of food safety remains limited in practice across the three study countries.

At the same time there are signs that co-regulation is becoming acknowledged as a valid means through which food safety can be regulated more effectively, driven by both regulatory change and/or the evolution of the structure and *modus operandi* of food supply chains. Recent developments in the EU regulatory environment are providing a wider range of opportunities for closer collaboration between regulatory agencies and the private sector in the management of food safety. In the US, the implementation of HACCP across a number of key product sectors is shifting the responsibility for the monitoring of food safety to business operators. In Canada, there are moves towards risk-based enforcement and monitoring as a means to enhance the efficacy of enforcement efforts at both the federal and provincial levels.

Despite these trends, there are a number of potential barriers to the wide-scale adoption of co-regulation. Above all, the formulation of negotiated food safety policies that pursue both private and social benefits is a significant challenge. There are very real concerns about the potential for regulatory capture and a situation where regulators place too much emphasis on the costs of regulation and not enough on regulatory benefits for both consumers and food businesses. Another concern is that co-regulation would further enhance existing inequities in the regulatory process. Consumer organisations may have concerns about a potential weakening of food safety regulations. This is particularly an issue in the UK where there are prominent concerns about the 'power' of the major food manufacturers and retailers. Restricting such power was an important rationale for the establishment of the FSA. Although such concerns are not so prominent in Canada, the role of the CFIA is certainly seen as regulating food businesses. Conversely, in the US regulation is seen more as the action of 'last resort' where there is a clear rationale in terms of responding to market failure. Although this tends to limit the regulatory powers of food safety authorities, it is also not conducive to co-regulation.

The three countries studied exhibit varying degrees of stakeholder engagement in the regulatory process. Although there is scope for capture of the regulatory process by dominant economic interests, such engagement can enhance the efficacy and efficiency of regulatory measures by adapting requirements to industry and/or sector-specific requirements. This can reduce compliance costs and facilitate implementation, enforcement and monitoring. The possibility of consulting the food industry is particularly important in the process of evaluating compliance costs and potential impacts on the competitiveness of businesses at an early stage in the regulatory decision-making process. However, this requires mutual trust and understanding on the part of government, industry and other stakeholders in order that 'quality' information is collected and assimilated into the regulatory process.

Perhaps the greatest scope for co-regulation of food safety is in processes of enforcement and monitoring rather than the establishment of regulatory standards *per se*. There may be scope for regulators to make use of private mechanism of food safety management, for example private standards and codes of practice, as a mechanism to allocate scare enforcement resources. However, this would require, a fundamental change in culture on the part of enforcement officials, away from a 'policing' function in response to non-compliance and/or acute food safety problems (Yapp and Fairman, 2006) and towards facilitation and encouragement. This is perhaps most prominent in the UK, where EU legislation is moving towards an enforced self-regulation approach, including wholesale HACCP adoption. The challenge for such approaches is the economic and political fall-out when wide-scale food safety failures occur. The real test of co-regulation approaches to food safety regulation will be how to withstand the inevitable scrutiny when the next 'food scare" occurs or a major outbreak of food-borne illness hits the headlines.

Acknowledgements

The authors wish to acknowledge the funding from the UK Food Standards Agency (FSA) for the research upon which this paper is based. The views expressed in the paper are entirely those of the authors and do not necessarily represent the views of the FSA.

References

Antle, J.M. (Ed.), 1995. Choice and Efficiency in Food Safety Policy. The AEI Press, Washington, DC.

Arfini, F., Mancini, M.C., 2003. British Retail Consortium (BRC) standard: a new challenge for firms involved in the food chain. Analysis of Economic and Managerial Aspects. Paper presented at the 82nd seminar of the EAAE, Bonn, Germany.

Better Regulation Task Force, 2003. Imaginative Thinking for Better Regulation. Available from: <http://www.brtf.gov.uk/docs/pdf/imaginativeregulation.pdf>.

Boehnke, R.H., Graham, C., 2000. International survey on public posting of restaurant inspection reports, and/or grade card posting scheme based on health inspections. Ottawa-Carleton Health Department, Ottawa.

Braithwaite, J., 1982. Enforced self-regulation: a new strategy for corporate crime control. Michigan Law Review 80 (1), 1466–1507.

Caswell, J.A., 1998. Valuing the benefits and costs of improved food safety and nutrition. The Australian Journal of Agricultural and Resource Economics 42 (4), 409–424.

Caswell, J.A., 2004. Setting food safety priorities: towards a risk ANALYSIS based system. In: Hoffman, S.A., Taylor, M.R. (Eds.), Setting Food Safety Priorities: Towards a Risk-Based System. Resources for the Future, Washington, DC.

Caswell, J.A., Joseph, S., 2006. Consumers' food safety, environmental and animal welfare concerns: major determinants for agricultural and food trade in the future. Paper presented at the Summer Symposium of the International Agricultural Trade Research Consortium (IATRC). Food Regulation and Trade: Institutional Framework, Concepts of Analysis and Empirical Evidence, Bonn, Germany, 28–30 May, 2006. Available from: <http://www.agp.uni-bonn.de/iatrc/iatrc_program/Session%205/Caswell_Joseph.pdf>.

CFIA, 2004. Canadian Food Inspection Agency Annual Report 2003–2004. Canadian Food Inspection Agency, Ottawa, Canada.

Cragg Ross Dawson, 2005. Food Scares and Food Safety Regulation. Qualitative Research on Current Public Perceptions. Available from: <http://www.food.gov.uk/multimedia/pdfs/foodscaresresearch.pdf>.

Eijlander, P., 2005. Possibilities and constraints in the use of self-regulation and co-regulation in legislative policy: experience in the Netherlands – Lessons to be learned for the EU? Electronic Journal of Comparative Law 9 (1).

External Advisory Committee on Smart Regulation, 2004. Smart regulation: a regulatory strategy for Canada, Ottawa, External Advisory Committee on Smart Regulation.

Fearne, A., Garcia Martinez, M., 2005. Opportunities for the coregulation of food safety: insights from the United Kingdom. Choices 20 (2), 109–116.
Fearne, A., Garcia Martinez, M., et al., 2004a. Review of the economics of food safety and food standards. Imperial College London, London.
Fearne, A., Garcia Martinez, M., et al., 2004b. Mapping of Potential Research Areas for Economic Research. Imperial College London, London.
Food Standards Agency, 2002. Review of Food Assurance Schemes, Food Standards Agency. Available from: <http://www.food.gov.uk/multimedia/pdfs/FAS_Report.PDF>.
Food Standards Agency, 2004. Protecting Consumers: The Food Standards Agency and Regulation. Available from: <http://www.food.gov.uk/multimedia/pdfs/protectingconsumers.pdf>.
Garcia Martinez, M., Poole, N., 2004. The development of private fresh produce safety standards: implications for developing Mediterranean exporting countries. Food Policy 29 (3), 229–255.
Haines, R.J., 2004. Farm to Fork: A Strategy for Meat Safety in Ontario: Report of the Meat Regulatory and Inspection Review. Ontario Ministry of Agriculture and Food, Guelph, Canada.
Hampton, P., 2004. Reducing administrative burdens: effective inspection and enforcement, HM Treasury. Available from: <http://www.hm-treasury.gov.uk/media/935/64/Hampton_Interim_Report_709.pdf>.
Henson, S., Caswell, J., 1999. Food safety regulation: an overview of contemporary issues. Food Policy 24 (6), 589–603.
Henson, S., Hooker, N.H., 2001. Private sector management of food safety: public regulation and the role of private controls. International Food and Agribusiness Management Review 4 (1), 7–17.
Hobbs, J.E., Fearne, A., et al., 2002. Incentive structures for food safety and quality assurance: an international comparison. Food Control 13 (2), 77–81.
Jin, G.Z., Leslie, P., 2003. The effect of information on product quality: evidence from restaurant hygiene grade cards. The Quarterly Journal of Economics 118 (2), 409–451.
Ollinger, M., Ballenger, N., 2003. Weighing incentives for food safety in meat and poultry. Amber Waves 1, 34–41 http://www.ers.usda.gov/Amberwaves/April03/pdf/FeatureFoodSafety.pdf.
Salin, V., Hooker, N.H., 2001. Stock market reaction to food recalls. Review of Agricultural Economics 23 (1), 33–46.
Wang, Z., Salin, V., et al., 2002. Stock market reaction to food recalls: a GARCH application. Applied Economics Letters 9 (15), 979–987.
Yapp, C., Fairman, R., 2004. The Evaluation of Effective Enforcement Approaches for Food Safety in SMEs. Food Standards Agency.
Yapp, C., Fairman, R., 2006. Factors affecting food safety compliance within small and medium-sized enterprises: implications for regulatory and enforcement strategies. Food Control 17 (1), 42–51.